

**R** RENOWNED  
KNOW-HOW

Automation Technology



**RK ROSE+KRIEGER**

A Phoenix Mecano Company



***Linear Technology***

# How to use this catalogue

Depending on your level of experience, we suggest you proceed as follows

## **If you are new to linear technology**

Please use our selection guide from page 9 onwards.  
We will guide you to the right product for your particular application.

## **If you know all about linear technology**

You know exactly what you require and can go straight to the right product category, where you will find a product overview on the first pages.

## **Specific search**

...if you are looking for a specific product, we suggest you start in our index on the last pages of this catalogue.

**If you have any questions, do not hesitate to contact one of our product consultants.**



## Introduction

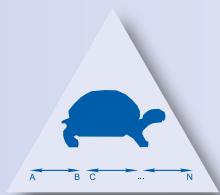
- About Us
- Our products
- Service
- Level of service

From page 4

## Linear Technology - Selection guide

- Systematic product range  
(What is linear technology?)
- Four steps to your recommended product  
(How do I find the right product?)

From page 9



## Move-Tec

- Width, length and height adjustment

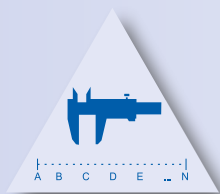
From page 21



## Place-Tec

- Loading and unloading, palletising, pick & place

From page 319



## Control-Tec

- Numerically controlled positioning

From page 426

## Motors and controls

From page 490

## Modules

From page 542

## Appendix

From page 551

- Lubricants
- Fax enquiries
- Glossary
- Index

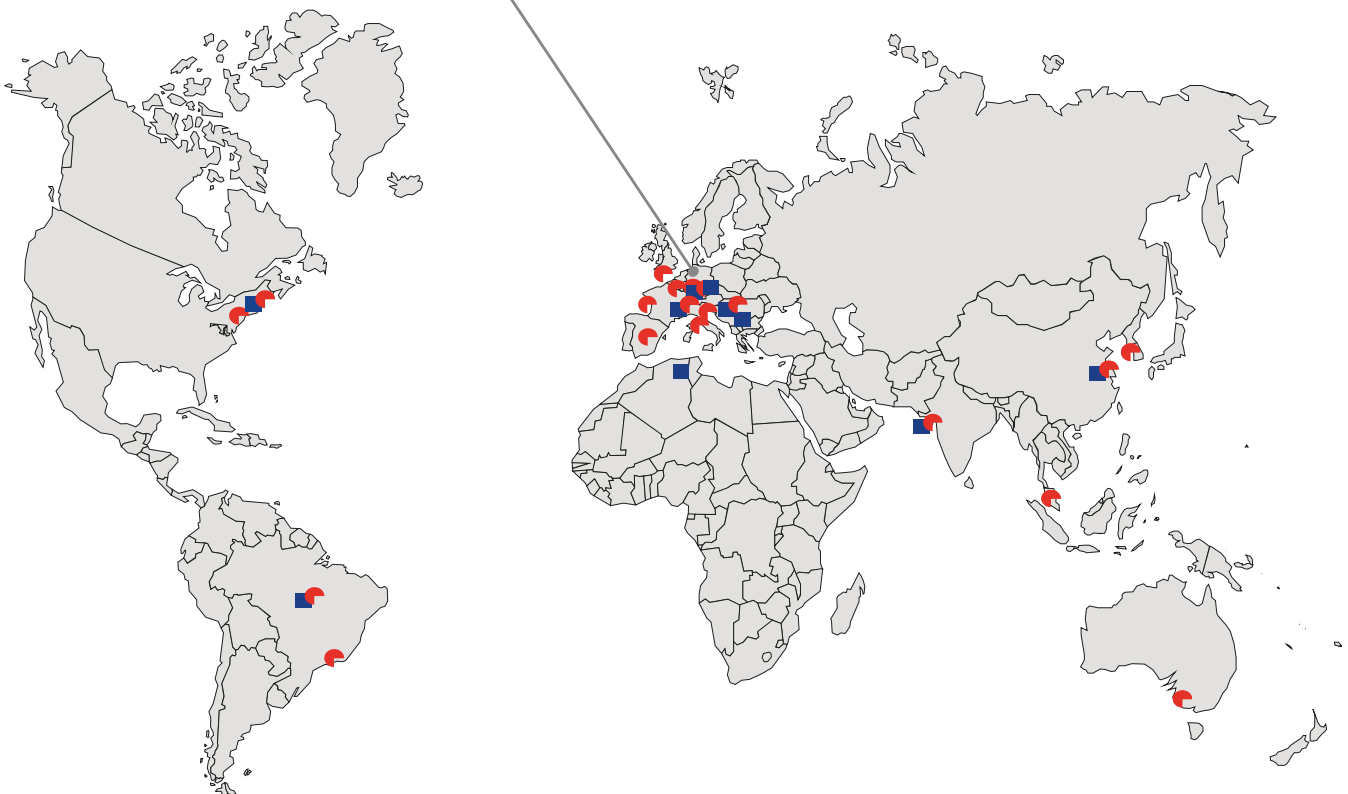
# About Us

As a subsidiary of the global Phoenix Mecano AG, we offer an unrivalled range of products in the fields of linear, profile, connecting and module technology. With decades of experience and expertise in a huge range of industrial applications, you need look no further for a highly competent partner. From the first point of contact through to delivery, we focus entirely on your requirements. Individual advice and short delivery periods are two central priorities in our customer-focused corporate philosophy. Our aim is your success, and we look forward to being your strategic partner.



**Head Office:** Germany, Minden/Westph.

- ✓ Company sales representatives
- ✓ Distributors and system partners



## Available around the globe.

- ✓ Profit Centre within Phoenix Mecano
- ✓ Sales and system partners

■ = Production facilities

● = Distribution companies

  
**RK ROSE+KRIEGER**

A Phoenix Mecano Company

# Our product range

## LINEAR TECHNOLOGY

- ✓ Linear actuators
- ✓ Manual guide units
- ✓ Electric cylinders
- ✓ Lifting columns
- ✓ We can move loads for you of up to 3 t and up to 12 m dynamically, reliably and with great precision

### Movement and positioning



## CONNECTING TECHNOLOGY

- ✓ Fittings for the secure clamp connection of round and square profiles
- ✓ Elements made of aluminium, stainless steel and plastic
- ✓ Sizes from 8 mm to 80 mm

### Clamp and release solutions



## PROFILE TECHNOLOGY

- ✓ The proven and tested BLOCAN® aluminium assembly system, with profiles offering cross-sections from 20 mm to 320 mm, for a broad spectrum of applications
- ✓ Connection techniques with an unsurpassed combination of flexibility and reliability

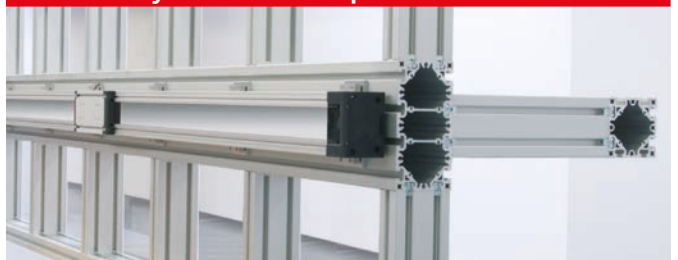
### Mix'n'match



## MODULE TECHNOLOGY

- ✓ We develop, manufacture and assemble
- ✓ Machine frames
- ✓ Workstations
- ✓ Machine guards
- ✓ Multidimensional linear actuator modules
- ✓ Complete drive solutions

### Consultancy services and optimisation

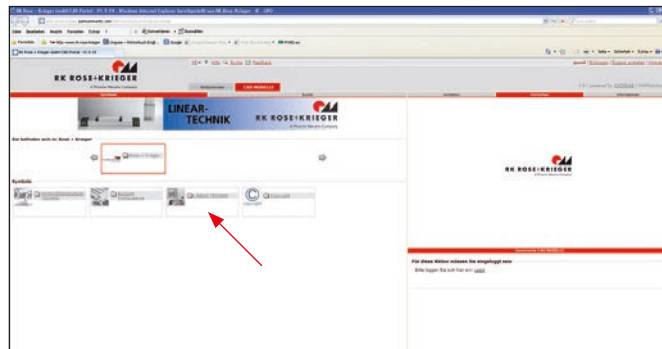


# What we can do for you

## We help you make the right choice:

### CAD component library

To help you design your products, we give you free access to the component data stored in our Rose+Krieger component library (drawings, technical descriptions). This library lets you choose between around 60 different file formats (2D/3D). The link to our component server can be found on our web site at: [www.rk-rose-krieger.com/deutsch/service/cad-daten.html](http://www.rk-rose-krieger.com/deutsch/service/cad-daten.html)



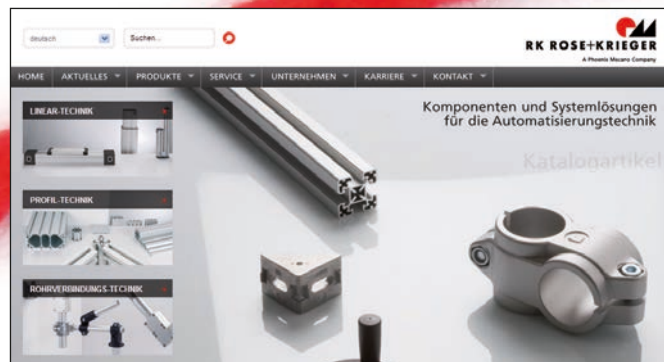
### In-house RK product consultancy

The RK infovan - our showroom on your doorstep. With more than 20 presentation boards containing exhibits and functional samples and a range of applications from the world of drive and linear technology, our infovan provides a complete cross-section of the RK products currently available. Our Key Account managers and sales consultants are happy to visit you on site and help you draw up concrete proposals for practical solutions.



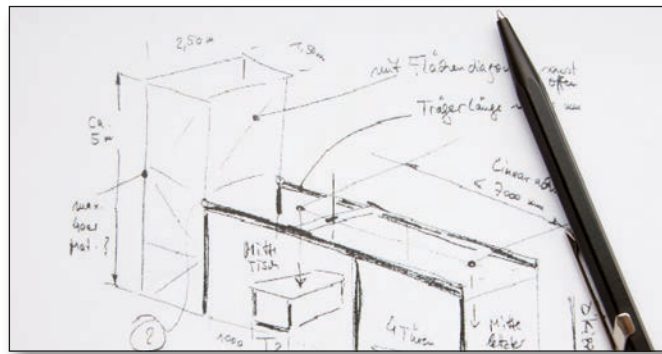
### RK website: [www.rk-rose-krieger.com](http://www.rk-rose-krieger.com)

At our website you will find a wealth of information on our company and our products. You will also find the details of company contacts in your area and the latest catalogues (PDF format) available to download.



Do you need to focus your resources on other tasks and are you looking for an expert partner you can rely on? Working in close collaboration with you, our specialists will develop solutions tailor-made to meet your needs. If you wish, we can also assemble and commission the units on site.

**Just make a sketch of your requirements**



**Our product specialists will develop a solution for you**



**We can deliver your turnkey solution or assemble and commission it for you on site**



# Level of service

## You decide...

100%



### Catalogue items

If you know what you want and take the time to browse our catalogue, you are sure to find what you're looking for in our standard range.



### Different models, modified standards

Our expertise at your fingertips. Our expert consultants can recommend the optimum products modified to your requirements.



### Customised developments

Are you looking for something completely new. Then we'll team up with you to develop it.



### Modules and systems

You require your skills and time for other tasks and are looking for a partner you can rely on.

...what level of service you require

0%

## We offer

- ✓ A broad range of compatible products
- ✓ 40 years of experience in numerous industries
- ✓ Expert advice for all your requirements
- ✓ Quality – because we deliver what we promise







## Contents

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What is linear technology? .... Page 10

How to find the right product ... Page 11

The RK linear circle..... Page 12-13

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Control-Tec..... Page 18

# ***Selection guide***

# Systematic product range

## What is Linear Technology?

Whether guiding, adjusting, positioning or moving uniformly, the demands on linear motion sequences are as varied as the available solutions. We offer a broad spectrum of linear movement components: from the occasional manual adjustment, through to frequent movements and highly dynamic positioning in continuous operation.

And to help you select the most suitable range of products for your requirements quickly and easily, we have developed a system that is strictly application-oriented. Within the selected range you can then determine the ideal size and model based on your performance requirements.

And if you need any further help, we are only too happy to assist.

## Why waste time with trial and error...



...when we can offer a fast  
and systematic solution

## Four steps to your recommended product

### Step 1:



#### Your application takes centre stage

- Width, length and height adjustment
- Loading and unloading, palletising, pick & place
- Numerically controlled positioning applications

### Step 2:



#### Which product version do you require?

- Rodless style (linear actuator)
- Rodstyle (E-cylinder, lifting column)

### Step 3:



#### What functions do you require the product to perform?

- Guide
- Drive
- Guide + drive

### Step 4:

#### Which performance category do you require?

- Stroke length
- Load
- Speed
- Accuracy
- etc.

...just follow our system and you'll find the terms are self-explanatory

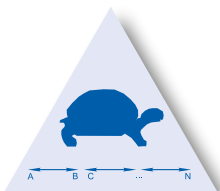
# The RK linear circle



Width, length and height adjustment

## Features:

- ✓ Manual or electric drive
- ✓ Occasional to multiple adjustments daily
- ✓ Low duty cycle
- ✓ Low speed
- ✓ Medium to high stability



**Move-Tec**  
continued on page 14

**Place-Tec**  
continued on page 16

**Your application  
takes  
centre stage**

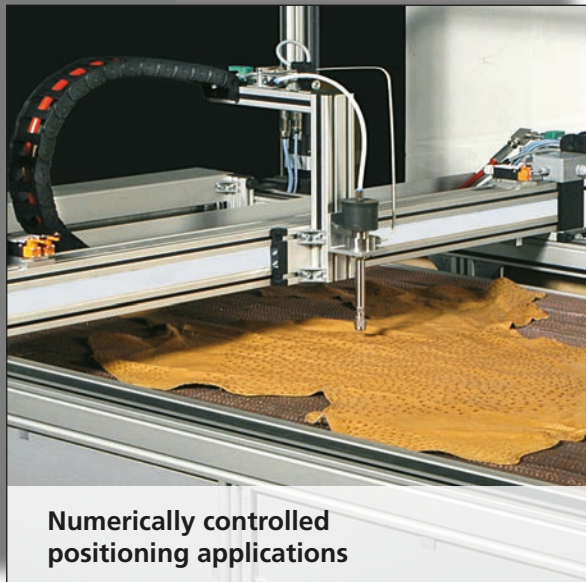
**Control-Tec**  
continued on page 18



**Loading and unloading,  
palletising, pick & place**

**Features:**

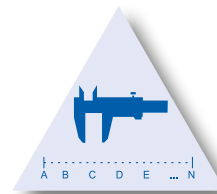
- ✓ High repeatability
- ✓ Short cycle times
- ✓ High cycle rates
- ✓ 3 shift operation
- ✓ High reliability

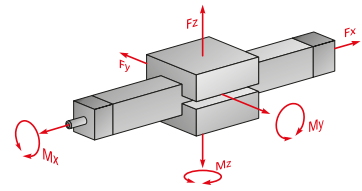


**Numerically controlled  
positioning applications**

**Features:**

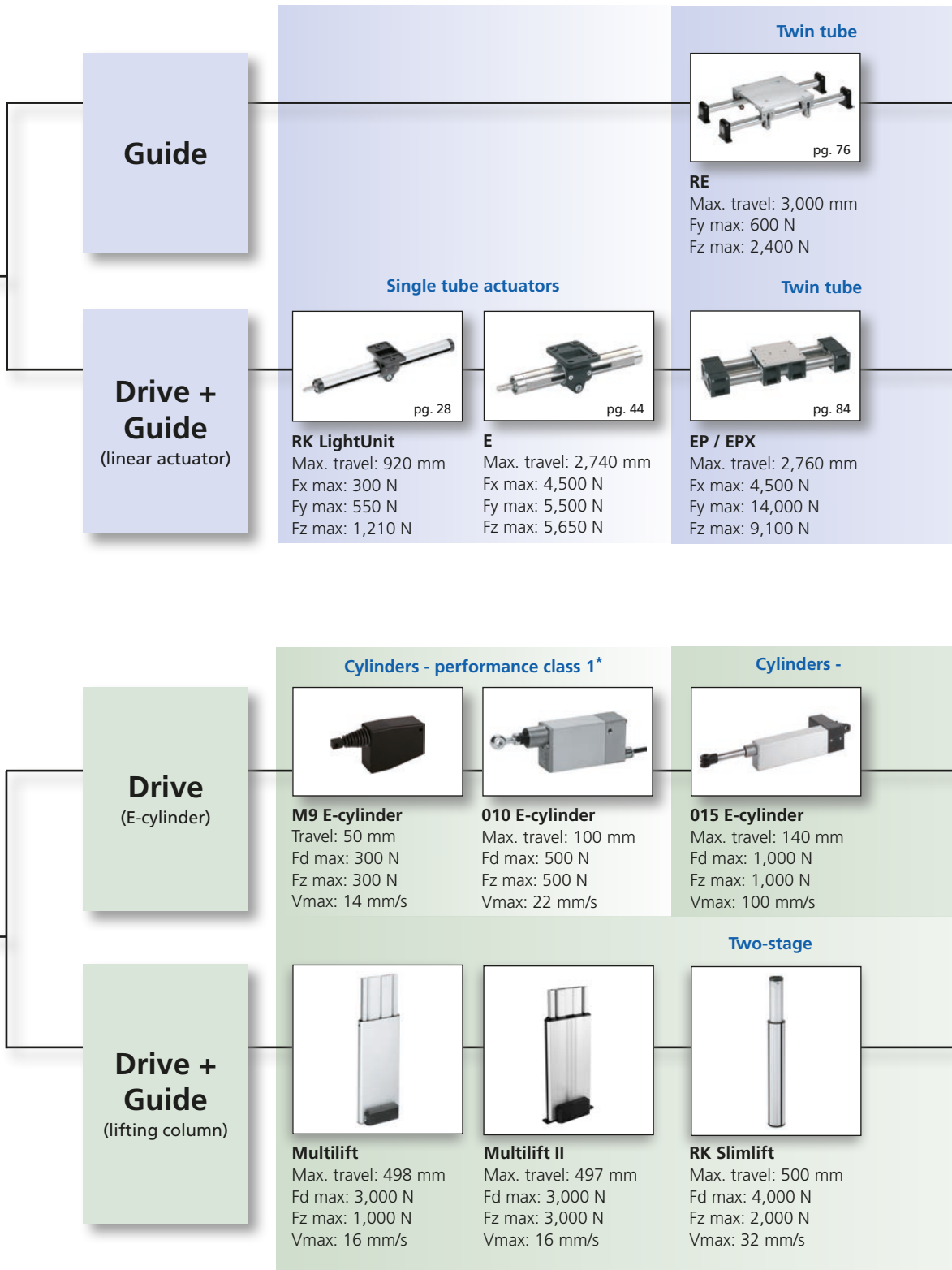
- ✓ High positioning accuracy
- ✓ Uniform motion
- ✓ High drive stiffness
- ✓ 3 shift operation
- ✓ IP 40 protection class

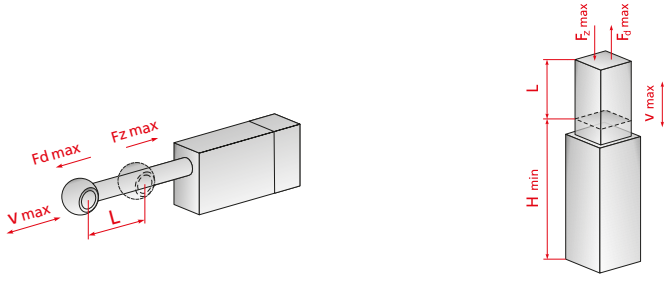




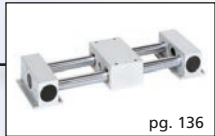
**Rodless style**  
(up to 6 m travel)

**Rodstyle**  
(up to 2 m travel)

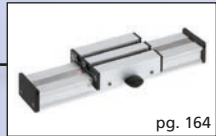




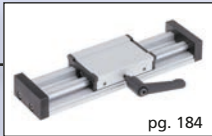
**guides**



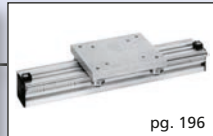
**RC**  
Max. travel: 2,250 mm  
F<sub>y</sub> max: 3,500 N  
F<sub>z</sub> max: 5,200 N



**PLM-G**  
Max. travel: 2,935 mm  
F<sub>y</sub> max: 200 N  
F<sub>z</sub> max: 220 N



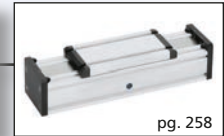
**RK Compact-G**  
Max. travel: 400 mm  
F<sub>y</sub> max: 1,150 N  
F<sub>z</sub> max: 1,150 N



**SQL**  
Max. travel: 5,750 mm  
F<sub>y</sub> max: 2,500 N  
F<sub>z</sub> max: 1,500 N



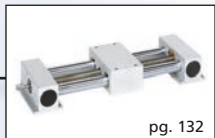
**PL**  
Max. travel: 5,860 mm  
F<sub>y</sub> max: 2,550 N  
F<sub>z</sub> max: 2,550 N



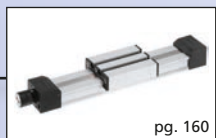
**RK DuoLine R**  
Max. travel: 7,692 mm  
F<sub>y</sub> max: 5,100 N  
F<sub>z</sub> max: 8,900 N

**Profile guides**

**actuators**



**COPAS**  
Max. travel: 2,250 mm  
F<sub>x</sub> max: 1,600 N  
F<sub>y</sub> max: 3,500 N  
F<sub>z</sub> max: 5,200 N



**PLM**  
Max. travel: 855 mm  
F<sub>x</sub> max: 125 N  
F<sub>y</sub> max: 200 N  
F<sub>z</sub> max: 220 N



**RK Compact**  
Max. travel: 400 mm  
F<sub>x</sub> max: 215 N  
F<sub>y</sub> max: 1,150 N  
F<sub>z</sub> max: 1,150 N



**quad®EV**  
Max. travel: 2,850 mm  
F<sub>x</sub> max: 2,500 N  
F<sub>y</sub> max: 6,000 N  
F<sub>z</sub> max: 6,000 N



**PLS**  
Max. travel: 3,000 mm  
F<sub>x</sub> max: 3,050 N  
F<sub>y</sub> max: 2,550 N  
F<sub>z</sub> max: 2,550 N



**RK DuoLine S**  
Max. travel: 2,984 mm  
F<sub>x</sub> max: 3,400 N  
F<sub>y</sub> max: 5,000 N  
F<sub>z</sub> max: 6,000 N

**Profile actuators**

**performance class 2\***



**LAMBDA E-cylinder**  
Max. travel: 600 mm  
F<sub>d</sub> max: 6,000 N  
F<sub>z</sub> max: 4,000 N  
V<sub>max</sub>: 21 mm/s



**LZ 60 E-cylinder**  
Max. travel: 597 mm  
F<sub>d</sub> max: 4,000 N  
F<sub>z</sub> max: 4,000 N  
V<sub>max</sub>: 85 mm/s



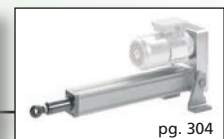
**LZ 70 TR PL E-cylinder**  
Max. travel: 1,000 mm  
F<sub>d</sub> max: 5,000 N  
F<sub>z</sub> max: 5,000 N  
V<sub>max</sub>: 48 mm/s



**LZ 80 E-cylinder**  
Max. travel: 1,005 mm  
F<sub>d</sub> max: 10,000 N  
F<sub>z</sub> max: 10,000 N  
V<sub>max</sub>: 25 mm/s



**LZ 80 TR PL E-cylinder**  
Max. travel: 1,005 mm  
F<sub>d</sub> max: 10,000 N  
F<sub>z</sub> max: 10,000 N  
V<sub>max</sub>: 27 mm/s



**SLZ 90 E-cylinder**  
Max. travel: 2,000 mm  
F<sub>d</sub> max: 25,000 N  
F<sub>z</sub> max: 25,000 N  
V<sub>max</sub>: 77 mm/s

**Heavy duty cylinders**

**lifting columns\***



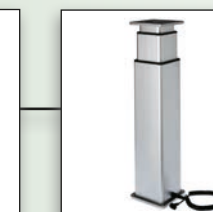
**RK Powerlift**  
Max. travel: 500 mm  
F<sub>d</sub> max: 3,000 N  
F<sub>z</sub> max: 3,000 N  
V<sub>max</sub>: 50 mm/s



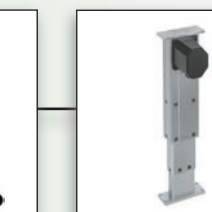
**RK Multilift II telescope**  
Max. travel: 650 mm  
F<sub>d</sub> max: 1,600 N  
F<sub>z</sub> max: 800 N  
V<sub>max</sub>: 30 mm/s



**RK Powerlift telescope**  
Max. travel: 650 mm  
F<sub>d</sub> max: 1,600 N  
F<sub>z</sub> max: 800 N  
V<sub>max</sub>: 30 mm/s

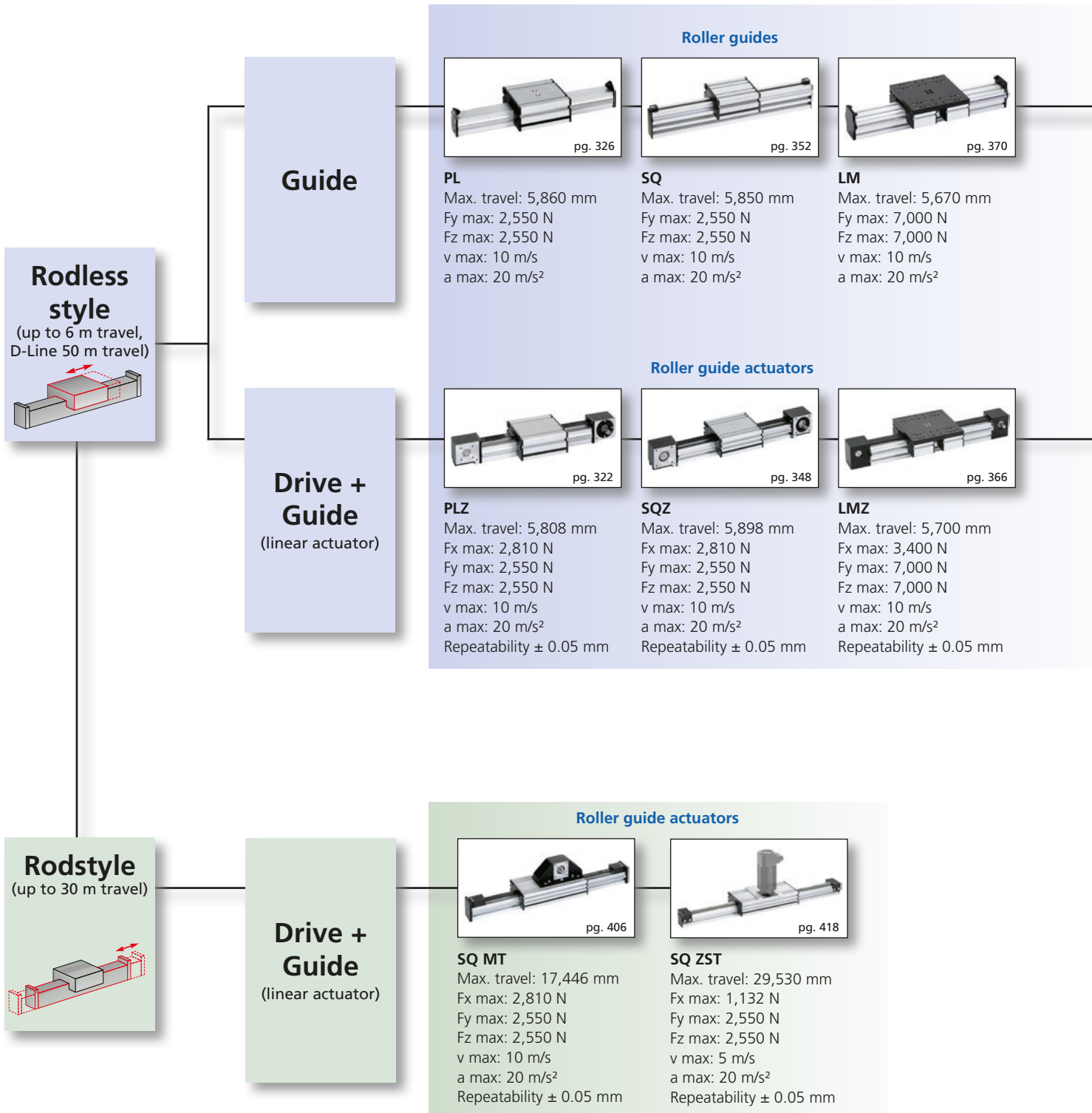


**Alpha Colonne**  
Max. travel: 700 mm  
F<sub>d</sub> max: 3,000 N  
F<sub>z</sub> max: 3,000 N  
V<sub>max</sub>: 18 mm/s

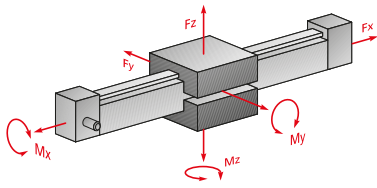


**LAMBDA Colonne**  
Max. travel: 600 mm  
F<sub>d</sub> max: 4,500 N  
F<sub>z</sub> max: 4,500 N  
V<sub>max</sub>: 20 mm/s

\* For further details, please refer to the catalog "Linear Technology Lifting columns and electric cylinders"







**Ball rail guide**



**MultiLine R**

Max. travel: 5,620 mm  
 $F_y$  max: 10,000 N  
 $F_z$  max: 10,000 N  
 $v$  max: 5 m/s  
 $a$  max: 50 m/s<sup>2</sup>



**RK DuoLine R**

Max. travel: 7,692 mm  
 $F_y$  max: 5,100 N  
 $F_z$  max: 8,900 N  
 $v$  max: 5 m/s  
 $a$  max: 50 m/s<sup>2</sup>

**Ball rail actuators**



**MultiLine**

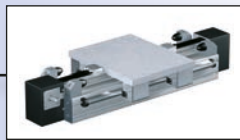
Max. travel: 5,620 mm  
 $F_x$  max: 4,700 N  
 $F_y$  max: 10,000 N  
 $F_z$  max: 10,000 N  
 $v$  max: 5 m/s  
 $a$  max: 50 m/s<sup>2</sup>  
 Repeatability  $\pm$  0.05 mm



**RK DuoLine Z**

Max. travel: 9,010 mm  
 $F_x$  max: 6,000 N  
 $F_y$  max: 5,100 N  
 $F_z$  max: 8,900 N  
 $v$  max: 5 m/s  
 $a$  max: 50 m/s<sup>2</sup>  
 Repeatability  $\pm$  0.05 mm

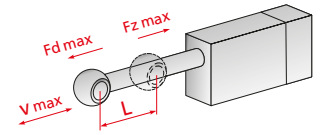
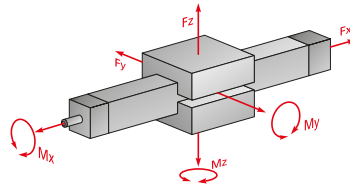
**Heavy duty actuators\***



**D-Line (on request)**

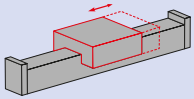
Max. travel: 50,000 mm  
 $F_x$  max: 4,700 N  
 $F_y$  max: 10,000 N  
 $F_z$  max: 10,000 N  
 $v$  max: 5 m/s  
 $a$  max: 50 m/s<sup>2</sup>  
 Repeatability  $\pm$  0.1 mm

\*For further details, please refer to the catalog  
 "Heavy duty linear units D-Line"



## Ball rail actuators

### Rodless style (up to 4.4 m travel)



### Drive + Guide (linear actuator)

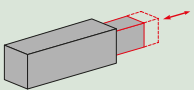


pg. 430

#### DuoLine S

Max. travel: 4,440 mm  
 Fx max: 8,000 N  
 Fy max: 7,000 N  
 Fz max: 8,000 N  
 Mx max: 500 Nm  
 My max: 600 Nm  
 Mz max: 500 Nm  
 v max: 2,5 m/s  
 a max: 20 m/s<sup>2</sup>  
 Positioning accuracy  $\pm 0.05$  mm

### Rodstyle (up to 2 m travel)



### Drive (E-cylinders)

## Heavy duty cylinders



pg. 460

#### LZ 70 FL/PL E-cylinder

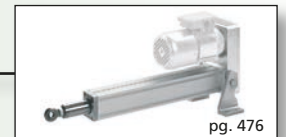
Max. travel: 1.000 mm  
 Fd max: 5,000 N  
 Fz max: 5,000 N  
 v max: 1.000 mm/s  
 Positioning accuracy  $\pm 0,05$  mm



pg. 460

#### LZ 80 FL/PL E-cylinder

Max. travel: 1.005 mm  
 Fd max: 6,200 N  
 Fz max: 6,200 N  
 v max: 284 mm/s  
 Positioning accuracy  $\pm 0,05$  mm

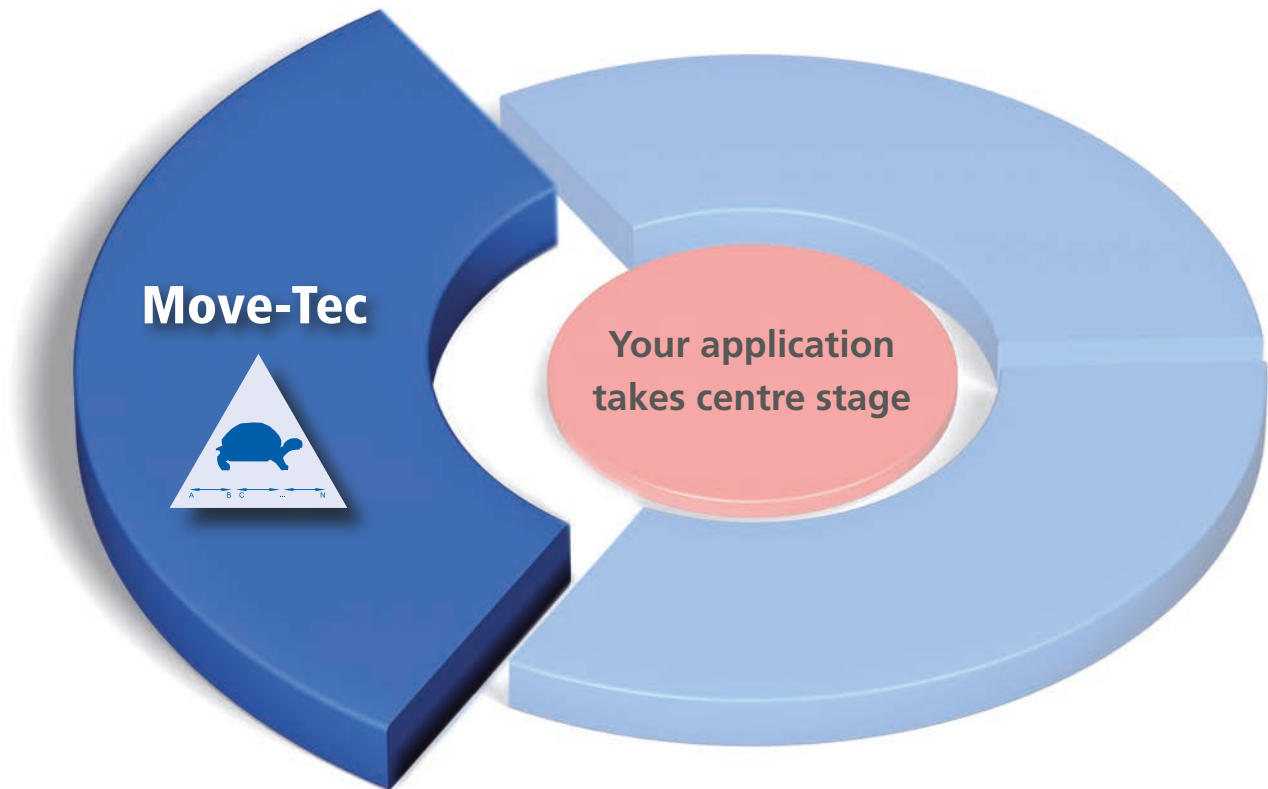
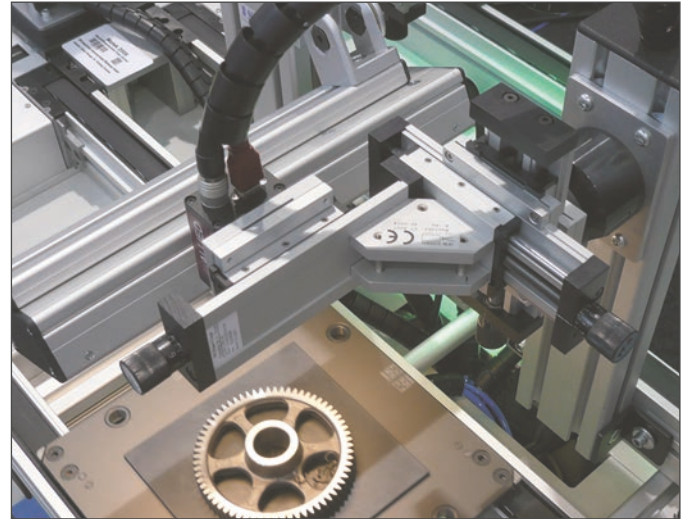


pg. 476

#### SLZ 90 E-cylinder

Max. travel: 1.900 mm  
 Fd max: 25,000 N  
 Fz max: 25,000 N  
 v max: 933 mm/s  
 Positioning accuracy  $\pm 0,1$  mm



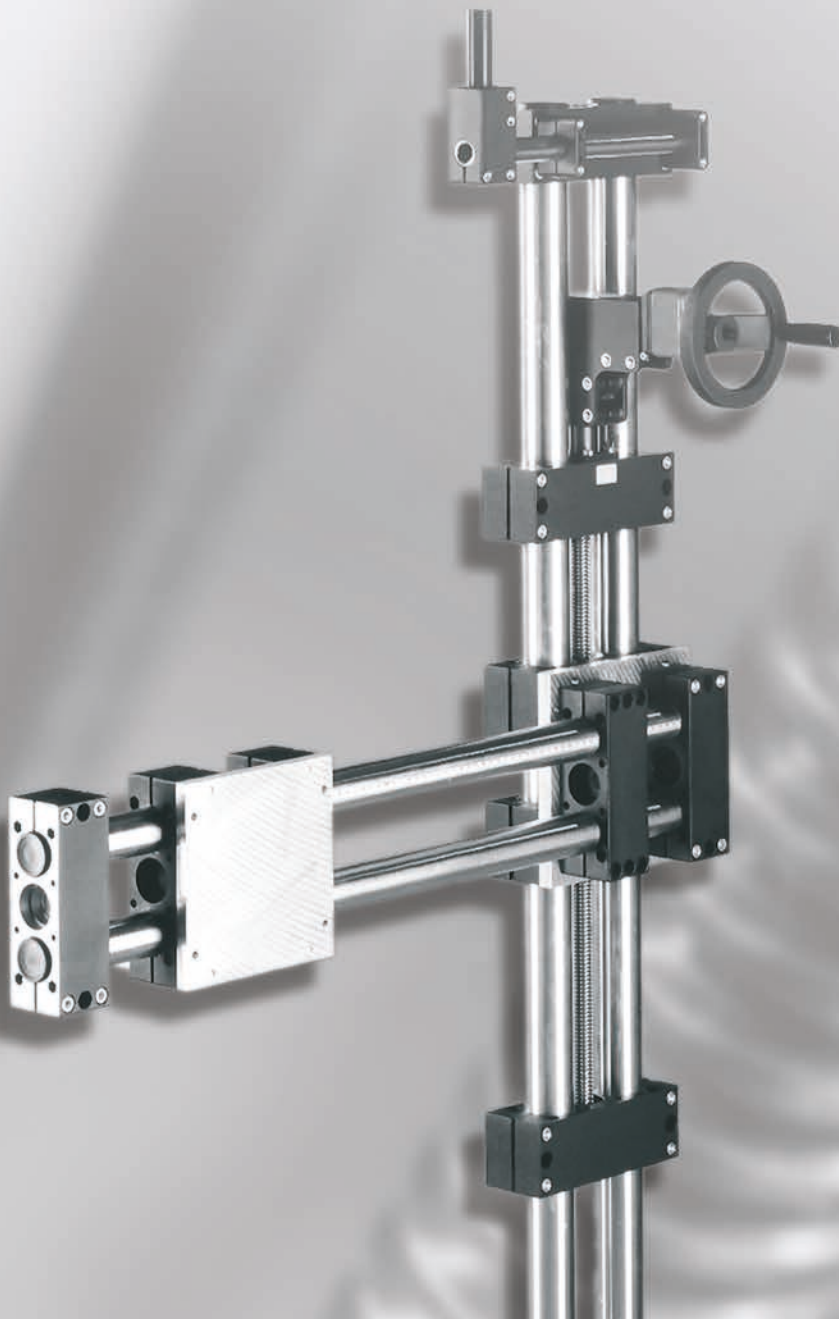


### Move-Tec features:

- ✓ Manual or electric drive
- ✓ Occasional to multiple adjustments daily
- ✓ Low duty cycle
- ✓ Low speed
- ✓ Medium to high stability



**RK ROSE+KRIEGER**



**Width, length and height adjustment**

Rodless style..... Page 28 - 281

**Rodstyle:**

Drive (elec. cylinder) ..... Page 24 - 25

Drive +  
Guide (lifting column)..... Page 26 - 27

***Move-Tec***

# Move-Tec overview

## Rodless style | Drive + Guide

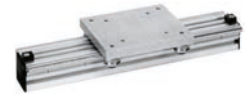
### Single tube actuators

The data refers to standard sizes

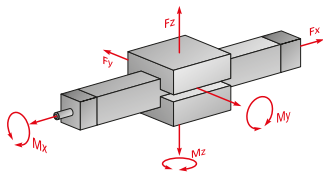


Features	RK LightUnit from page 28	E from page 44
Size	30	18, 30, 40, 50, 60, 80
Max. travel	920 mm	890-2740 mm
Fx max.	300 N	400-4500 N
Fy max.	550 N	90-5500 N
Fz max.	1210 N	60-5650 N
Mx max.	2.5 Nm	1.5-70 Nm
My max.	5.5 Nm	4-170 Nm
Mz max.	5.5 Nm	4-170 Nm
Screw, right or lefthand thread	●	●
Screw, right and lefthand thread	●	●
Screw, split		●
Guide (without drive)		
Features	✓ The "light option" for simple hand adjustments	✓ Flexible all-rounder – a simply unbeatable price/performance ratio

### Profile actuators/guides



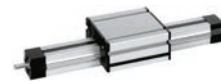
Features	PLM from page 160	RK Compact from page 180	SQL from page 196
Size	20, 40 x 20	30, 50, 80, 120	40, 60, 80, 120, 160
Max. travel	855 mm	130-400 mm	5750 mm
Fx max.	125 N	50-215 N	–
Fy max.	160-200 N	160-1150 N	1500-2500 N
Fz max.	180-220 N	160-1150 N	1000-1500 N
Mx max.	3-4 Nm	3-32 Nm	50-134 Nm
My max.	10-14 Nm	3-59 Nm	70-121 Nm
Mz max.	10-14 Nm	3-59 Nm	140-243 Nm
Screw, right or lefthand thread	●	●	
Screw, right and lefthand thread	●	●	
Screw, split	●		
Guide (without drive)	●	●	●
Features	✓ The small range for positioning small loads	✓ Flat short-stroke linear actuator for hand adjustment – with excellent price-performance ratio	✓ Low-cost guide for medium to heavy loads



**Twin tube actuators/guides**



RE from page 76	EP(X) from page 84	COPAS from page 132
30, 40	18, 30, 40, 50, 60, 80	20, 30, 40
3000 mm	320-2610 mm	1300-2300 mm
-	400-4500 N	800-1600 N
330-600 N	200-14000 N	700-3500 N
1600-2400 N	100-9100 N	1000-5200 N
65-155 Nm	20-650 Nm	30-234 Nm
65-155 Nm	30-780 Nm	22-218 Nm
20-65 Nm	35-1100 Nm	32-294 Nm
•	•	•
•	•	•
•	•	•
•	•	•
✓ Robust guide for simple adjustment of medium loads	✓ The robust twin tube unit – compensates for high bending moments during manual and motor-driven adjustments	✓ Elegant anodised aluminium design ensures precision running even for high load ratings



quad® from page 204	PLS from page 234	RK DuoLine S from page 254
30, 40, 50, 60, 80	30, 40, 50, 60, 80	50, 80, 120 x 80
1375-4157 mm	830-3000 mm	2268-2984 mm
800-2500 N	340-3050 N	1400-3400 N
600-6000 N	790-2550 N	930-5000 N
600-6000 N	790-2550 N	1100-6000 N
6-80 Nm	14-124 Nm	45-380 Nm
11-140 Nm	20-168 Nm	65-430 Nm
8-85 Nm	22-169 Nm	56-370 Nm
•	•	•
•	•	•
•	•	•
•	•	•
✓ Compact and versatile linear actuator for motor-driven and manual adjustment of medium loads	✓ Motor-driven or manual adjustment of medium to heavy loads – easy for the PLS profile linear unit	✓ The all-rounder with encapsulated drive/guiding concept

# Move-Tec overview

Rodstyle | Drive + Guide

## Order information:

■ For detailed information, please look in our catalogue, "Linear Technology Lifting columns and electric cylinders"

### Cylinders performance class 1



All data refer to standard sizes

Features	M9	010
Max. travel	50 mm	40–100 mm
Max. push force	300 N	500 N
Max. pull force	300 N	500 N
Max. travel speed	14 mm/s	22 mm/s
Protection class	IP 30	IP 40   IP 54
Integrated limit switch	●	+ (adjustable)
Fitted with signal contact optional	●	●
Potentiometer optional	●	●
Features	<ul style="list-style-type: none"> <li>✓ Lightweight</li> <li>✓ Bellows</li> </ul>	<ul style="list-style-type: none"> <li>✓ Range of lifting speeds</li> </ul>

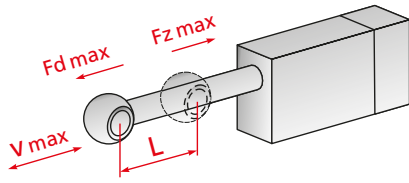
### Cylinders performance class 2



All data refer to standard sizes

Features	015	LAMBDA	LZ 60 P/S
Max. travel	300 mm	600 mm	600 mm
Max. push force	1000 N	6000 N	4000 N
Max. pull force	1000 N	4000 N	4000 N
Max. travel speed	100 mm/s	21 mm/s	85 mm/s
Protection class	IP54	IP 66	IP 54
Integrated limit switch	+ (adjustable)	●	●
Can be synchronised by means of control system		●	●
Fitted with signal contact optional	●	●	●
Integr. control			●
Potentiometer optional	●	●	
Features	<ul style="list-style-type: none"> <li>✓ Rugged design</li> <li>✓ Adjustable travel</li> </ul>	<ul style="list-style-type: none"> <li>✓ Clamping protection optional</li> </ul>	<ul style="list-style-type: none"> <li>✓ Various connections for industrial applications</li> </ul>





$L$  = Travel  
 $F_d$  = Push force  
 $F_z$  = Pull force  
 $V$  = Travel speed

### Heavy duty cylinders

All data refer to standard sizes



Features	LZ 80 page 282	LZ 70 TR PL page 290	LZ 80 TR PL page 290	SLZ 90 page 302
Max. travel	1005 mm	1000 mm	1005 mm	2000 mm
Max. push force	10000 N	5000 N	10000 N	25000 N
Max. pull force	10000 N	5000 N	10000 N	25000 N
Max. travel speed	27 mm/s	48 mm/s	27 mm/s	77 mm/s
Protection class	IP 54   IP 66	IP 54   IP 66	IP 54   IP 66	IP 54
Integrated limit switch	●		●	
Can be synchronised by means of control system		motordependent	motordependent	motordependent
Fitted with signal contact	●		●	
Features	✓ Industrial cylinder with DC- Motor	✓ Industrial cylinder with adaptable motor		

# Move-Tec overview

## Order information:

■ For detailed information, please look in our catalogue, "Linear Technology Lifting columns and electric cylinders"

### Two-stage lifting columns (up to 500 mm travel)



All data refer to standard sizes

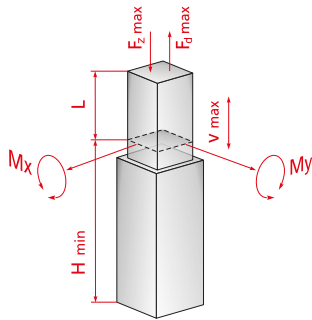
Features	RK Multilift	RK Slimlift	RK Slimlift EM
Max. travel	498 mm	460 mm	500 mm
Max. push force	3000 N	4000 N	1000 N
Max. pull force	1000 N	2000 N	1000 N
Mx dyn. max	150 N	100 N	75 Nm
My dyn. max	100 N	100 N	75 Nm
Mx stat. max	300 N	200 N	150 Nm
My stat. max	200 N	200 N	150 Nm
Max. travel speed	8/16 mm/s	8-32 mm/s	25 mm/s
Protection class	IP 20	IP 30	IP 30
Integrated limit switch	●	●	●
Can be synchronised by means of control system	●	●	●
Integr. control			
Features	✓ Tested to EN 60601-1	✓ Rod-shaped design and extremely quiet operation	✓ Rod-shaped design and extremely quiet operation ✓ Optimum stroke/installation height ratio

### Two-stage lifting columns (up to 500 mm travel)



All data refer to standard sizes

Features	RK Powerlift Z	RK Powerlift S	RK Powerlift M
Max. travel	490 mm	500 mm	500 mm
Max. push force	2000 N	3000 N	3000 N
Max. pull force		1000 N	1500 N
Mx dyn. max	125 N	80 N	200 N
My dyn. max	125 N	80 N	200 N
Mx stat. max	250 N	125 N	400 N
My stat. max	250 N	125 N	400 N
Max. travel speed	50 mm/s	25 mm/s	13 mm/s
Protection class	IP 30	IP 30	IP 30
Integrated limit switch	●	●	●
Can be synchronised by means of control system	●	●	●
Integr. control	●	●	●
Features	✓ High lifting speed	✓ Adjustable stroke length	✓ Tested to EN 60601-1



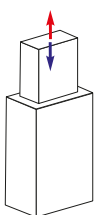
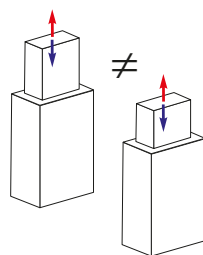
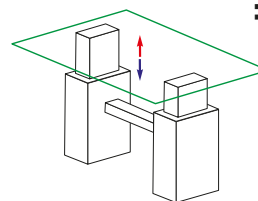
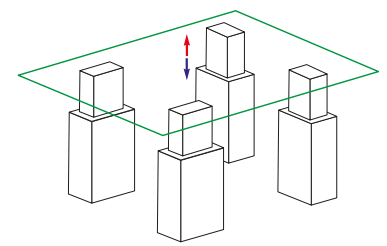
L = Travel  
 H = Installation dimension  
 $F_d$  = Push force  
 $F_z$  = Pull force  
 V = Travel speed

**Multi-stage lifting columns more than 500 mm travel**

All data refer to standard sizes

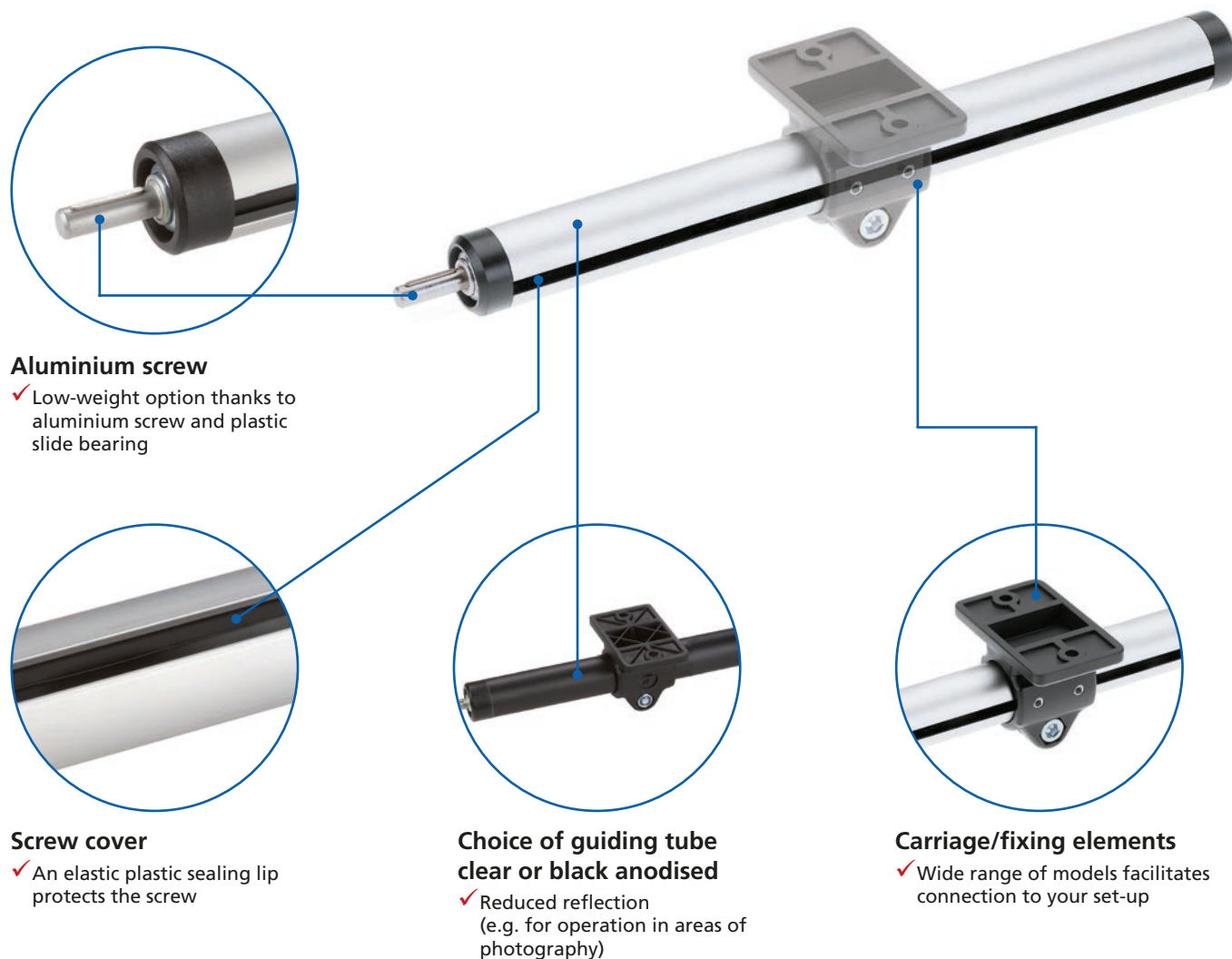


Features	RK Powerlift telescope	Alpha Colonne	LAMBDA Colonne
Max. travel	650 mm	700 mm	600 mm
Max. push force	1600 N	3000 N	4500 N
Max. pull force	800 N	3000 N	4500 N
Mx dyn. max	125 N	200 N	250 N
My dyn. max	125 N	200 N	250 N
Mx stat. max	200 N	200 N	250 N
My stat. max	200 N	200 N	250 N
Max. travel speed	15-30 mm/s	8-18 mm/s	8-20 mm/s
Protection class	IP 30	IP 30	IP 54   IP 40
Integrated limit switch	●	●	●
Can be synchronised by means of control system	●	●	●
Integr. control	●	●	
Features	✓ Optimal stroke/installation height ratio	✓ Suitable for push and pull force	✓ Guides set to minimum backlash

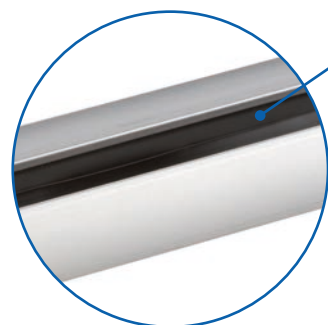
**Preferred field of application**
**Mono columns**  
 (single or joint movement)

**Individual operation / Mono operation**

**Parallel operation**
**Synchronised columns (2-32 pc.)**  
 (can be moved synchronously)

**Synchronised operation**

**Multiple column system**

# Single tube actuator – *RK LightUnit*

The “light option” for simple manual adjustments



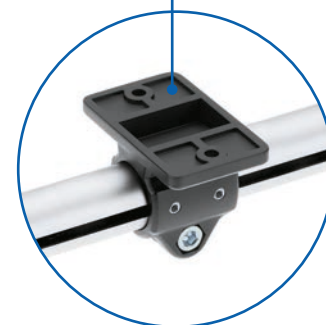
**Aluminium screw**  
✓ Low-weight option thanks to aluminium screw and plastic slide bearing



**Screw cover**  
✓ An elastic plastic sealing lip protects the screw



**Choice of guiding tube clear or black anodised**  
✓ Reduced reflection (e.g. for operation in areas of photography)



**Carriage/fixing elements**  
✓ Wide range of models facilitates connection to your set-up



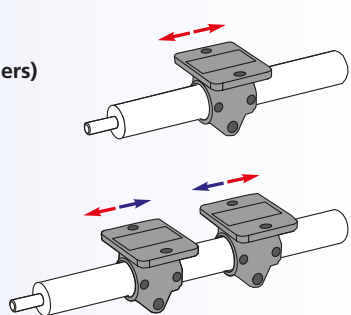
## Features:

- Unit for “light” moving applications
- Low-cost manual adjustment
- For applications where the focus is on “weight reduction”
- Suitable for use in areas susceptible to corrosion

## Options:

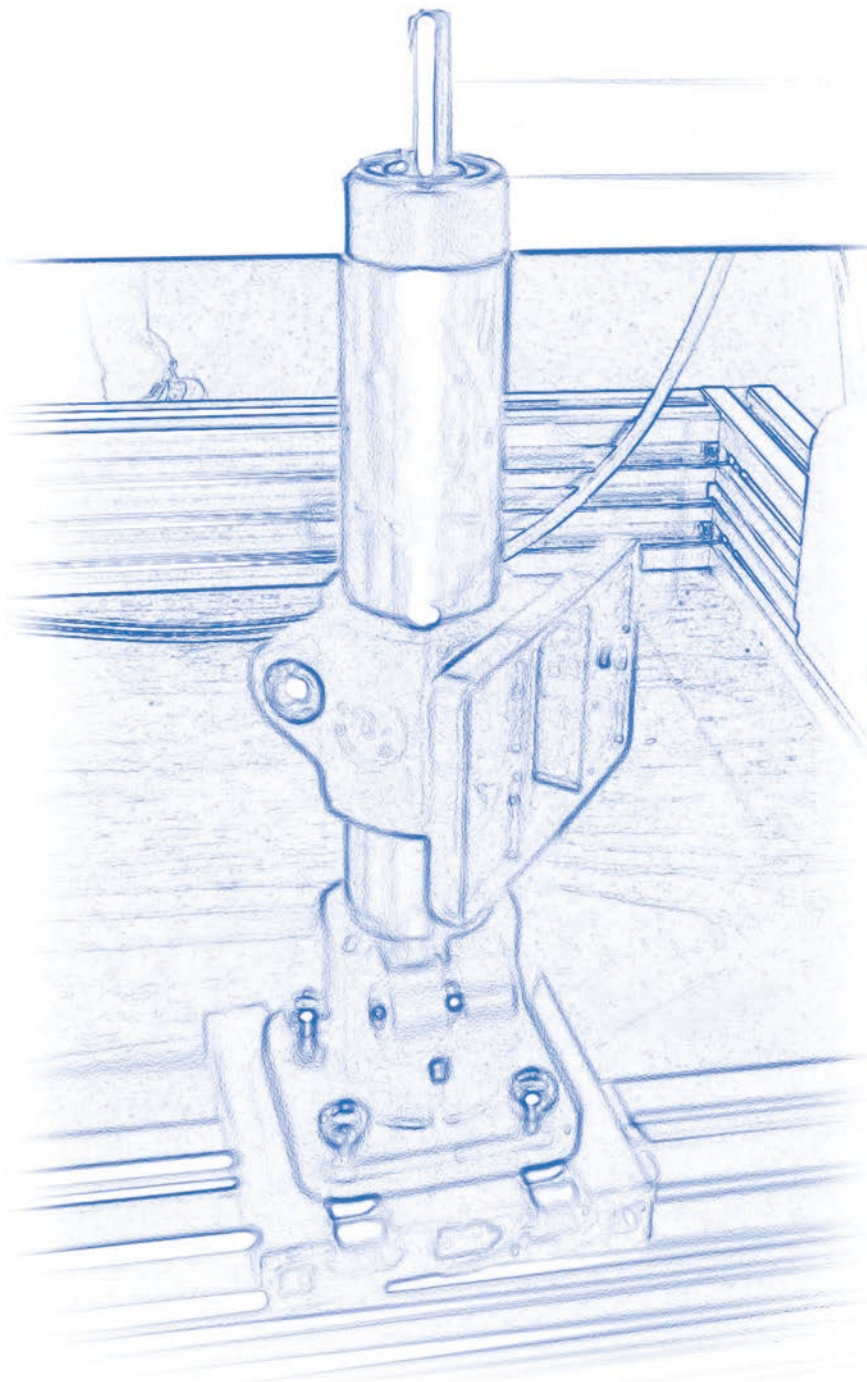
- Additional non driven carriage as torque support.

**RK LightUnit - Table of contents**

<b>Properties/Technical data</b>		<ul style="list-style-type: none"> <li>■ General information/operating conditions ..... 30</li> <li>■ Loaddata..... 31</li> </ul>
<p><b>Versions</b> (Dimensions, order numbers)</p> 		<ul style="list-style-type: none"> <li>■ Right or lefthand thread ..... 32 - 33</li> <li>■ Right <i>and</i> lefthand thread ..... 34 - 35</li> </ul>
<b>Accessories</b>	<b>Fixing</b>	<ul style="list-style-type: none"> <li>■ Carriage ..... 36 - 37</li> <li>■ Fixing elements ..... 38 - 39</li> <li>■ Reducing bushes ..... 40</li> <li>■ Clamping lever ..... 41</li> </ul>
	<b>Drive</b>	<ul style="list-style-type: none"> <li>■ Handwheel ..... 42</li> </ul>
	<b>Position determination</b>	<ul style="list-style-type: none"> <li>■ Positioningindicator..... 43</li> </ul>

## General information/operating conditions

Design	Actuator with aluminium ACME screw in a slotted aluminium profile
Guide	Slide guide
Installation position	Any position
Lead accuracy	$\pm 0.3$ mm/300 mm travel
Screw lead	3 mm
Self-locking	Yes
No-load torque	0.35 Nm
Ambient temperature	0°C to +60°C

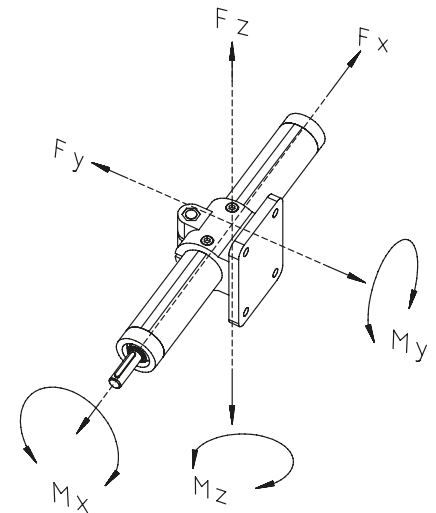




**Load data\***

- F Force [N]
- M Moment [Nm]
- I Geometric moment of inertia [cm<sup>4</sup>]

\* with reference to carriage (static, resting on end elements)

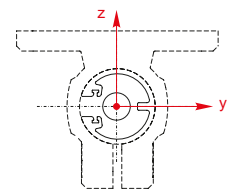


Type	F <sub>x</sub>	F <sub>y</sub>				F <sub>z</sub>				M <sub>x</sub>	M <sub>y</sub>	M <sub>z</sub>
Total length [mm]		300	500	800	1000	300	500	800	1000			
Deflection [mm]		1.0	2.5	4.0	5.0	1.0	2.5	4.0	5.0			
Force	300	700	550	270	140	1390	1210	600	450	2.5	5.5	5.5

**Geometric moment of inertia**

[cm<sup>4</sup>]

Type	I <sub>y</sub>	I <sub>z</sub>
RK LightUnit	1.90	1.88



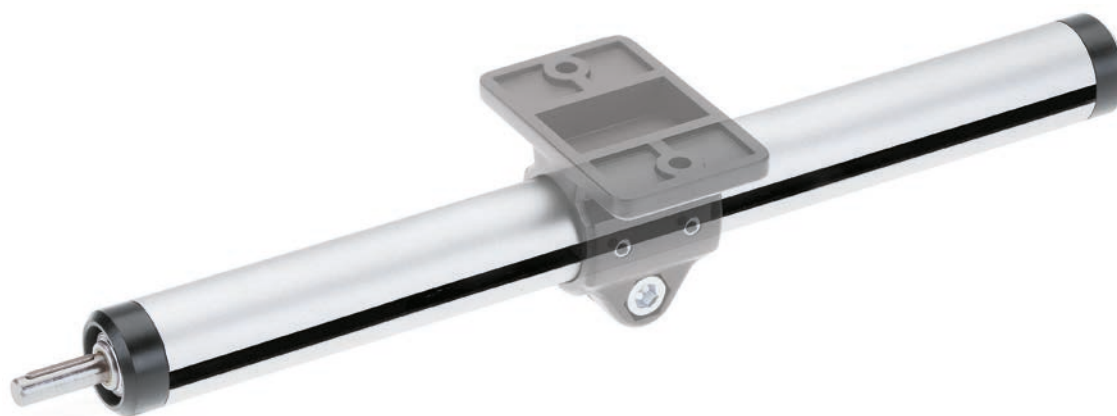
# RK LightUnit – Versions

## Order information:

- Choice of carriage - this must be ordered separately
- Standard lengths in stock!  
Take advantage of our fast delivery times.

## Version

- Standard lengths
- Righthand thread



## Standard lengths

- Total length 300, 500, 800 or 1000 mm
- Guiding tube clear or black anodised
- Righthand thread screw with a drive shaft

[mm]

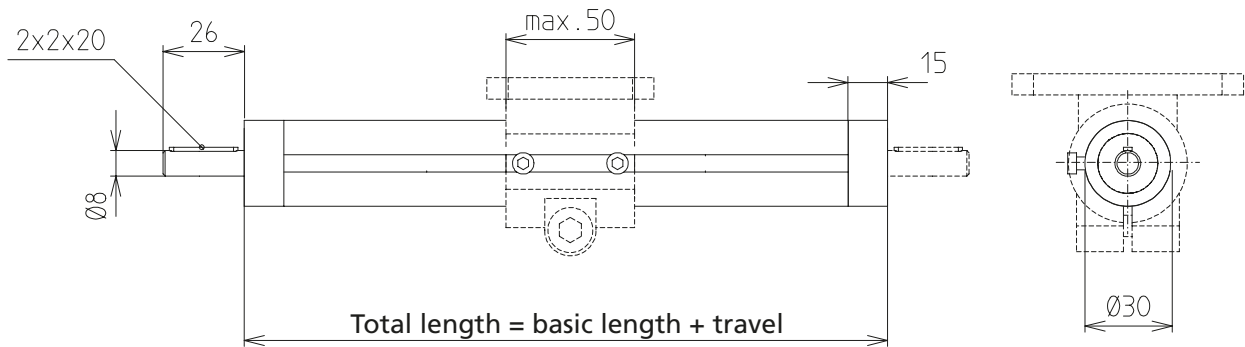
Code No.	Type	Screw	Travel	Total length	Mass [kg]
TFA 3000 T_0300	30	14 x 3	220	300	0.31
TFA 3000 T_0500	30	14 x 3	420	500	0.51
TFA 3000 T_0800	30	14 x 3	720	800	0.81
TFA 3000 T_1000	30	14 x 3	920	1000	1.01

**Guiding tube**  
A = clear anodised  
C = black anodised



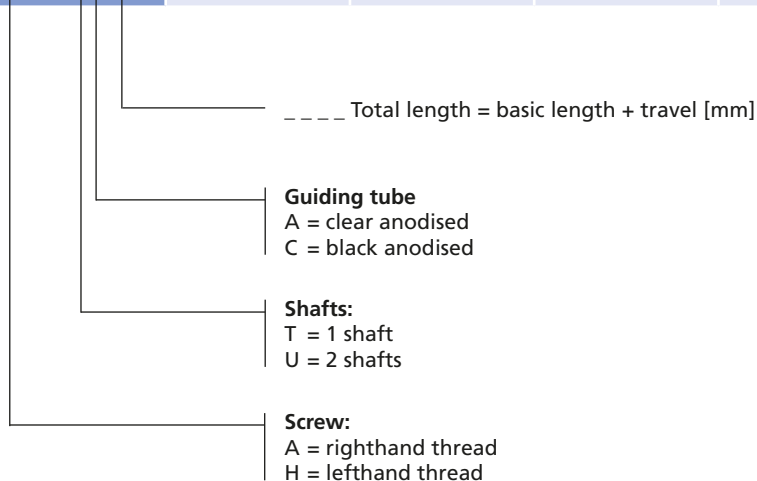
Version

- Variable lengths
- Right or lefthand thread



Variable lengths

Code No.	Type	Screw	Basic length	Max. travel	Mass [kg]	
					Basic length	per 100 mm travel
TF_3000	30	14 x 3	80	920	0.097	0.099



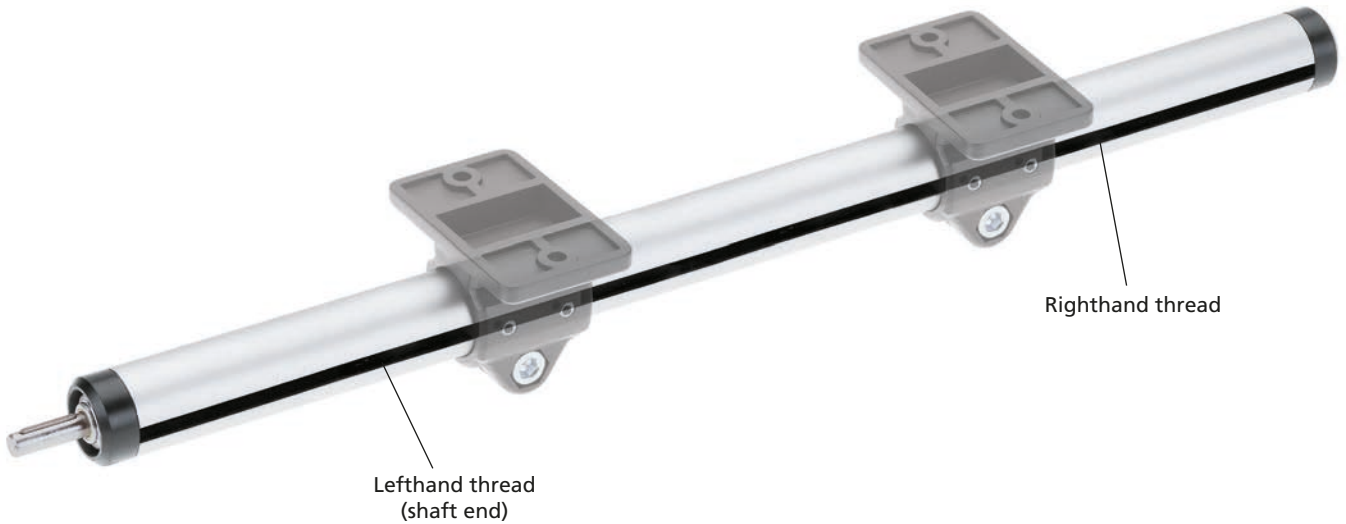
# RK LightUnit – Versions

## Order information:

- Choice of carriage - this must be ordered separately
- Please specify total travel when placing an order

## Version

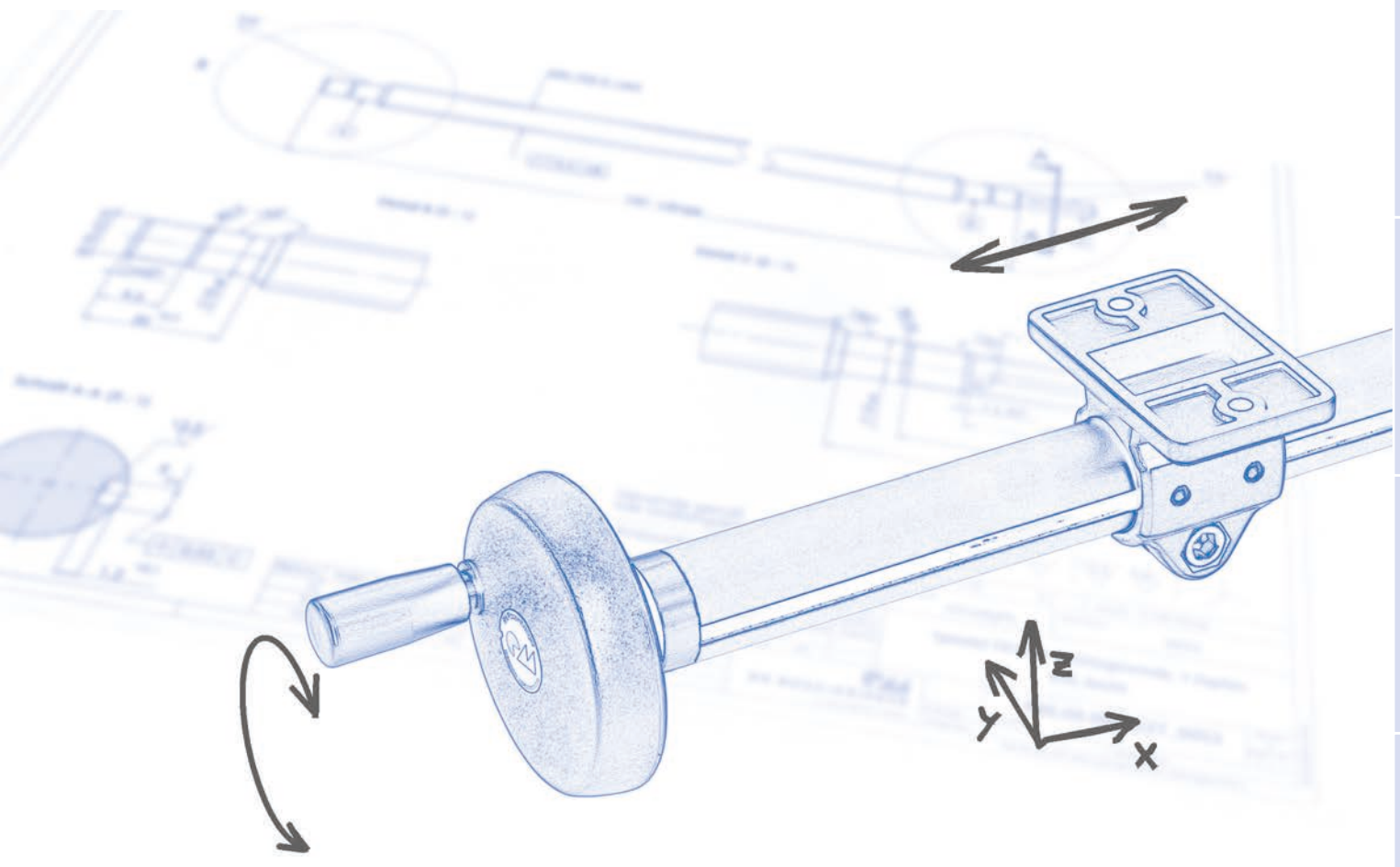
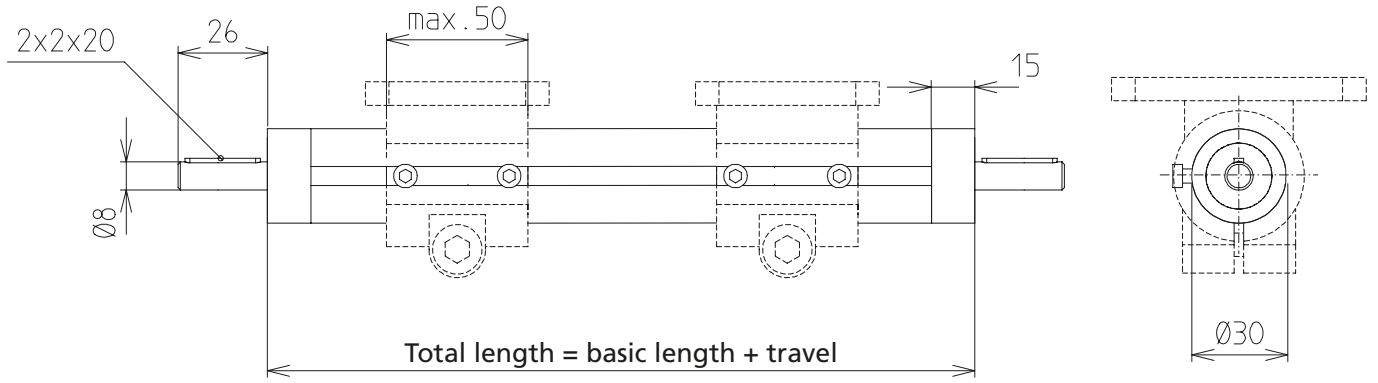
## ■ Right and lefthand thread



[mm]

Code No.	Type	Screw	Basic length	Max. travel	Mass [kg]	
					Basic length	per 100 mm travel
TFC 3000	30	14 x 3	130	870	0.113	0.099

- Total length = basic length + total travel [mm]
- Guiding tube**  
A = clear anodised  
C = black anodised
- Screw:**  
S = 1 shaft on the lefthand thread side  
T = 1 shaft on the righthand thread side  
U = 2 shafts



# RK LightUnit – Fixing

## Order information:

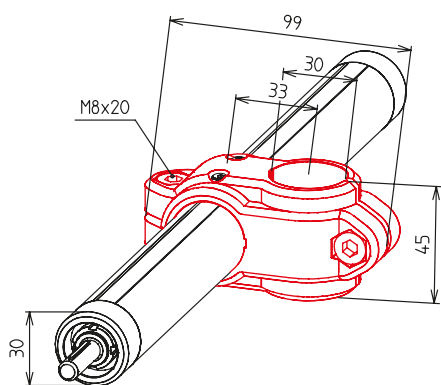
- The carriages are fitted with screws as standard. These can be replaced with clamping levers if required. For clamping lever, please see page 41.
- Screws in stainless steel on inquiry
- Suitable reducing bushes on page 40

## Carriage

- A wide range of models facilitate mounting

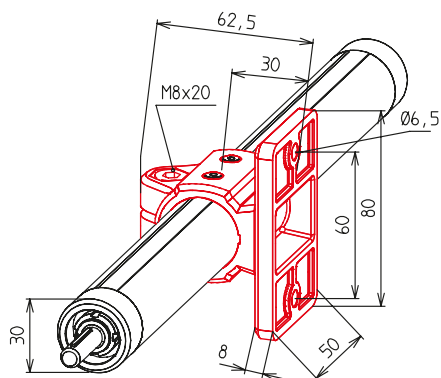
**Material:** Reinforced polyamide, black; fastenings galvanised or stainless steel

### K-KU



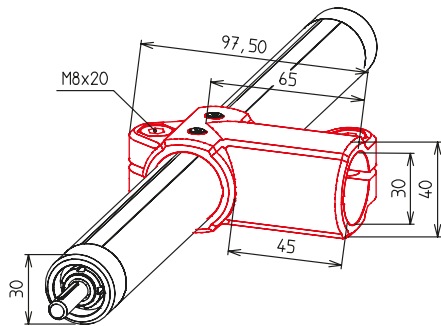
Code No.	Type	[mm]
13001200CSR30	K-KU 30	

### FK-KU



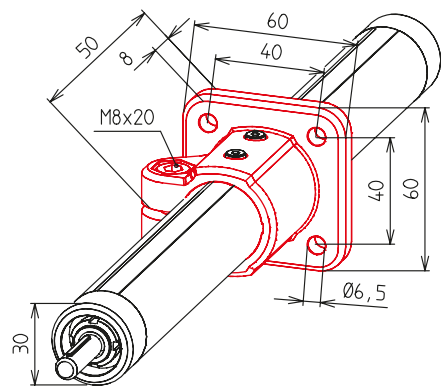
Code No.	Type	[mm]
13009200CS	FK-KU 30	

W-KU



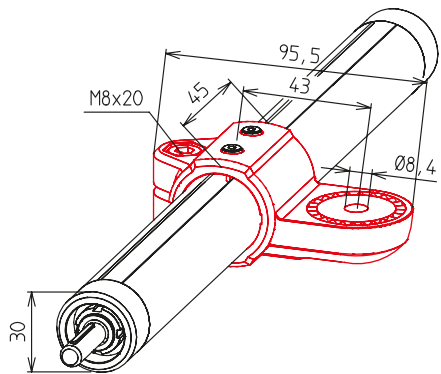
Code No.	Type
13007200CSR30	W-KU 30

FS-KU



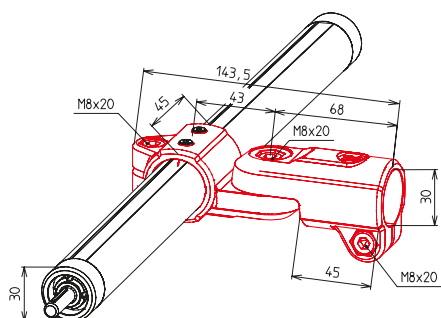
Code No.	Type
13011200CS	FS-KU 30

LW-KU



Code No.	Type
13014200CS	LW-KU 30

GW-KU



Code No.	Type
13016200CSR30	GW-KU 30

# RK LightUnit – Fixing

## Order information:

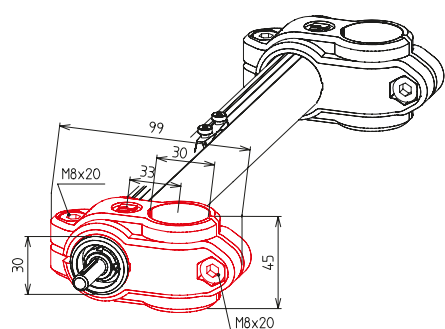
- The carriages are fitted with screws as standard. These can be replaced with clamping levers if required. For clamping lever, please see page 41.

## Fixing elements

- A special reducing bush system enables connection to a range of tube diameters
- A wide range of models facilitate mounting

**Material:** Reinforced polyamide, black; fastenings galvanised or stainless steel

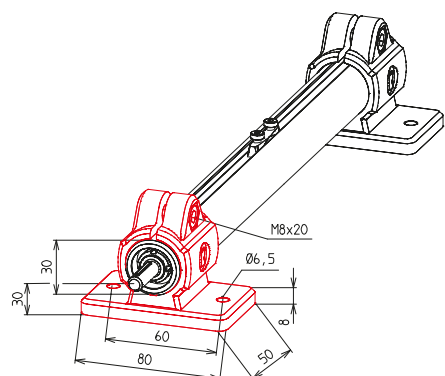
## K-KU



[mm]

Code No.	Type	Package Qty
K00030ACSR30R30	K-KU 30	1
K00030BCSR30R30	K-KU 30	5

## FK-KU

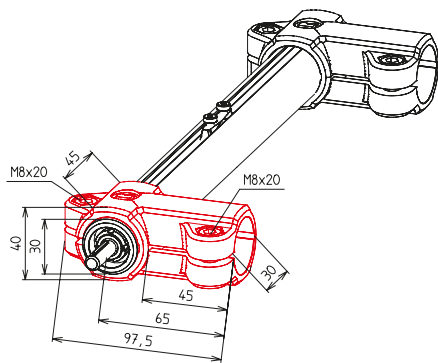


[mm]

Code No.	Type	Package Qty
K20030ACSR30	FK-KU 30	1
K20030BCSR30	FK-KU 30	5

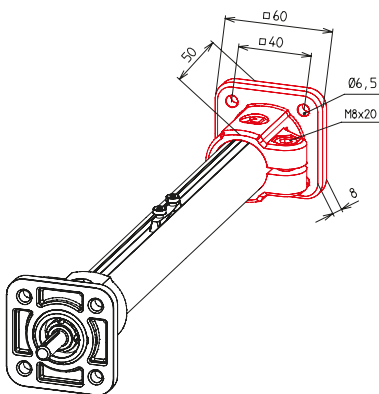
Fixing elements

W-KU



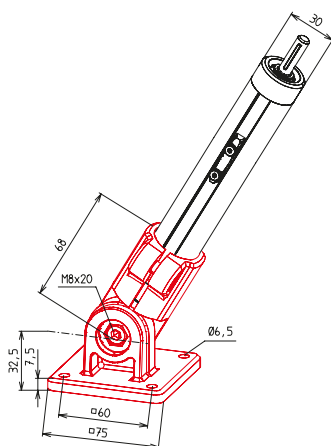
Code No.	Type	Package Qty
K10030ACSR30R30	W-KU 30	1
K10030BCSR30R30	W-KU 30	5

FS-KU



Code No.	Type	Package Qty
K30030ACSR30	FS-KU 30	1
K30030BCSR30	FS-KU 30	5

GF-KU



Code No.	Type	Package Qty
K80230ACSR30	GF-KU 30	1
K80230BCSR30	GF-KU 30	5

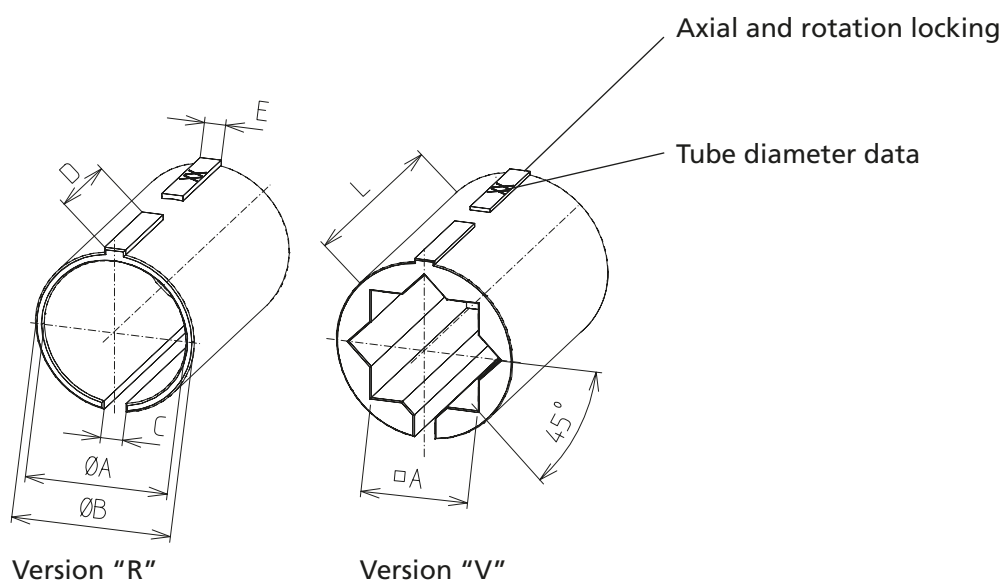
# RK LightUnit – Fixing

## Reducing bushes



- Simply replace the reducing bush to modify the tube diameter on carriages or fixing elements
- In the case of fixing elements, the reducing bushes are included in the scope of delivery when entering the order number and do not need to be ordered separately

**Material:** PA6.6 GF30



Version "R"

Version "V"

[mm]

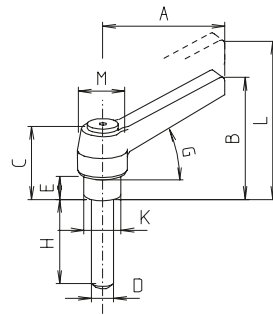
Code No.	Type	Version	Package Qty	A + 0.1	B	C	D	E	L
96204AC	30	R20	1	20.25	30	3.5	18.9	3.4	45
96204BC	30	R20	5	20.25	30	3.5	18.9	3.4	45
96206AC	30	R25	1	25.25	30	3.5	18.9	3.4	45
96206BC	30	R25	5	25.25	30	3.5	18.9	3.4	45
96208AC	30	V20	1	20.25	30	3.5	18.9	3.4	45
96208BC	30	V20	5	20.25	30	3.5	18.9	3.4	45



**Clamping lever**

- For the equipping of fixing elements and carriages

**Material:** Handle made of PA, black



[mm]

Code No.	Type	Screw	A	B	C	D	E	G	H	K	L	M
902381	30	steel	65	48.5	36.5	M8	14	20°	25	13	52.5	18

# RK LightUnit – Drive

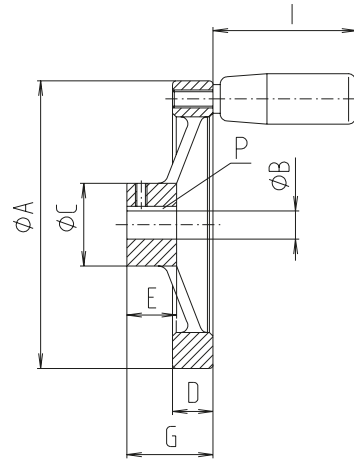
## Handwheel

- Rotating cylindrical grip
- Fully turned wheel rim
- Machined hub

**Material:** Aluminium die cast, black powder-coated



Ø 80



[mm]

Code No.	Type	A	B	C	D	E	G	P	I
90903	30	80	8	23	11	17	35	2 x 2	42



### Positioning indicator

- max. ambient temperature +80°C
- Figure height 6 mm
- Indicating accuracy ± 0.1 mm

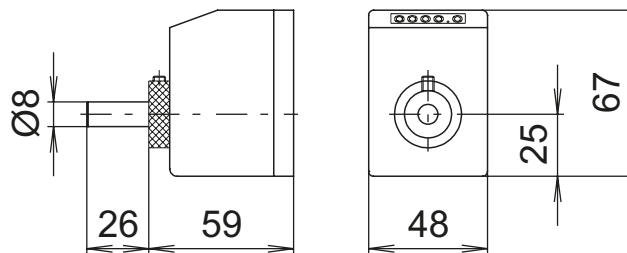
**Material:** Housing polyamide 6 Orange RAL 2004, Steel parts, corrosion protected

**Scope of delivery:** Positioning indicator, clamping ring, shaft extension and fastenings

**Note:** "rising" and "falling" versions refer to the clockwise rotation of the drive shaft.



Installation position: horizontal



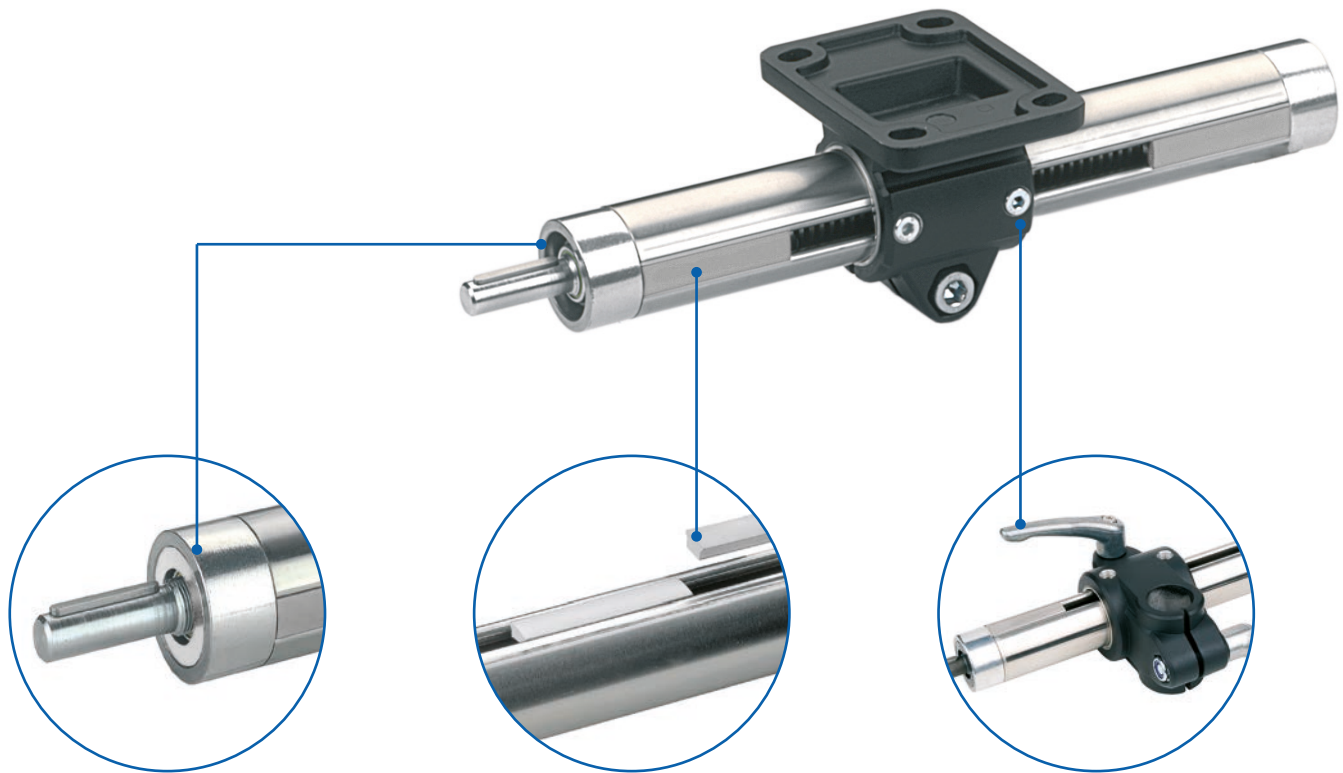
Installation position: vertical

Code No.	Installation position	Version*
91043	Horizontal	3 mm rising
91053		3 mm falling
91063	Vertical	3 mm rising
91073		3 mm falling
91010	Horizontal	6 mm rising
91029		6 mm falling
91020	Vertical	6 mm rising
91019		6 mm falling

\* Version with double lead e.g. for installation on righthand/left-hand thread screws

# Single tube actuator – E linear unit

Flexible all-rounder –  
with an unrivalled price-performance ratio



## Bearing cover

- ✓ Dust/spray protection on Type 30-60
- ✓ Option of screw with slide bearing (resistant to fine dust/abrasions)

## Cover clips

- ✓ Slot cover, as dust protection or stroke limitation

## Carriages/fixing elements

- ✓ Wide range of models facilitates connection to your designs
- ✓ Option of carriage with slide bushing (lower input torque, wear minimized)



## Features:

- Units for light to heavy moving applications
- Manual and motor-driven adjustments supported
- Different sizes can be combined
- Comprehensive range of accessories

## Options:

- Corrosion-protected units
- Second free-running carriage

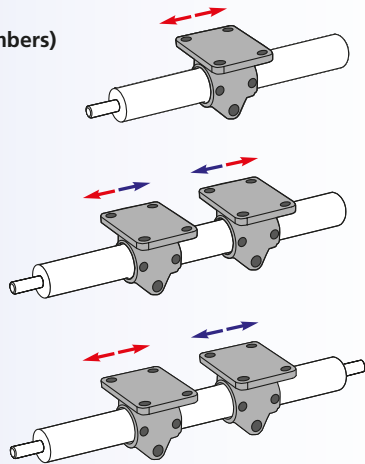
## E linear unit - Table of contents

### Properties/Technical data

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### Versions

(Dimensions, order numbers)



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- Right *and* lefthand thread ..... 50 - 51
- *Split screw* ..... 52 - 53

### Accessories

#### Fixing

- Carriage ..... 54 - 59
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- Cover clips for E-II ..... 64
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#### Drive

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- Motor adaptor/coupling..... 70

#### Position determination

- Scale/positioning indicator ..... 72 - 73
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# E linear units – Technical data

## General information/operating conditions

Design	Actuator with ACME screw in a slotted tube
Guide	Slide guide, optional carriage with slide guide available
Installation position	Any position
Positioning accuracy	± 0.2 mm/300 mm stroke
Self-locking	Yes
Ambient temperature	0°C to + 60°C

## Screw lead

Type	Screw lead [mm]	Speed with slide bearing 80 rpm [mm/s]	Speed with ball bearing 250 rpm [mm/s]
E 18	2	2,7	8,3
E-II 30	3	4	12,5
E-II 40	4	5,3	16,7
E-II 50	4	5,3	16,7
E-II 60	5	6,7	20,8
E 80	6	8	25

Required screw speed\* n [rpm] =  $\frac{\text{speed [m/min]} \times 1000}{\text{screw lead [mm]}}$

Max. screw speed      with slide bearing 80 rpm  
                                 with ball bearing 250 rpm

## No-load torque

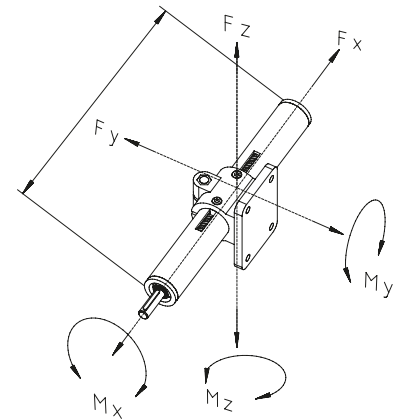
[Nm]

Type	Screw with slide bearing	Screw with ball bearing
E 18	–	0.20
E-II 30	0.45	0.35
E-II 40	0.65	0.50
E-II 50	1.20	0.90
E-II 60	–	1.10
E 80	–	0.90

**E linear units - Technical data**
**Load data\***

- F Force [N]
- M Moment [Nm]
- I Geometric moment of inertia [cm<sup>4</sup>]

\* with reference to carriage (deflection of guide element  $f = 0.5$  mm, static, end elements supported)



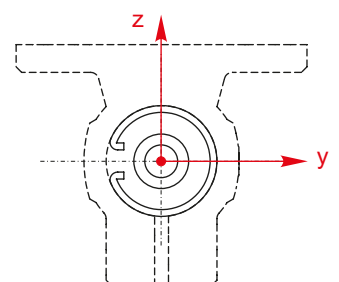
	F <sub>x</sub>	F <sub>y</sub>			F <sub>z</sub>			M <sub>x</sub>	M <sub>y</sub>	M <sub>z</sub>
Total length [mm]	500	500	1000	1500	500	1000	1500			
Type										
E 18	400	90	10	–	60	8	–	1.5	4	4
E-II 30	800	500	60	10	500	50	9	6	15	15
E-II 40	1000	2100	250	60	1900	140	50	14	40	40
E-II 50	1700	3000	600	140	3000	600	140	30	65	65
E-II 60	2500	4500	1500	380	4500	1300	320	45	120	120
E 80	4500	5500	2300	550	5650	2500	650	70	170	170

**Note:**  
Linear units that support higher torques available on request!

**Geometric moment of inertia**

 [cm<sup>4</sup>]

Type	I <sub>y</sub>	I <sub>z</sub>
E 18	0.22	0.27
E-II 30	1.34	1.56
E-II 40	4.58	5.24
E-II 50	11.31	12.32
E-II 60	23.11	24.98
E 80	98.72	118.53

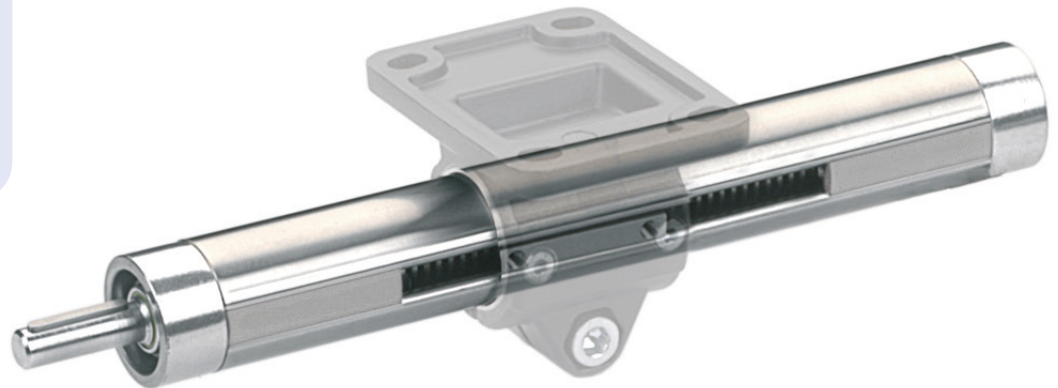


# E linear units – Versions

## Order information:

- Choice of carriage - this must be ordered separately
- Different "R" dimensions available on request
- Corrosion-protected units available on request

Version ■ Right or lefthand thread



Type 30-60



Code No.	Type	Screw	Basic length	B	D 1	D 2	J
70_181 1	18	Tr 10x2	134	18	6	–	24
70_183 1	18					6	
78_301 _	30	Tr 14x3	198	30	8	–	38
78_303 _	30					8	
78_401 _	40	Tr 20x4	209	40	12	–	55
78_403 _	40					12	
78_501 _	50	Tr 20x4	233	50	12	–	63
78_503 _	50					12	
78_601 1	60	Tr 24x5	278	60	14	–	78
78_603 1	60					14	
70_801 1	80	Tr 32x6	300	80	20	–	100
70_803 1	80					20	

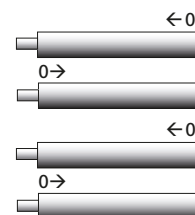
----- Total length = basic length + travel [mm]

### Screw bearing:

- 0 = screw with slide bearing
- 1 = screw with ball bearing

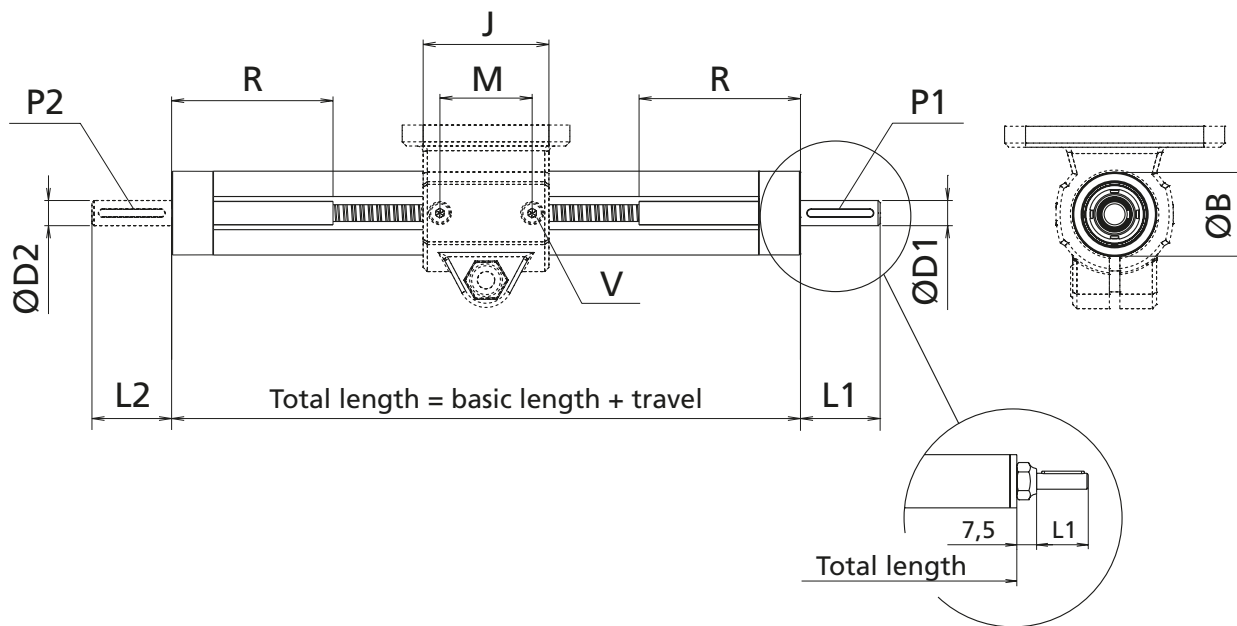
### Version:

- 1 = righthand thread
- 2 = lefthand thread
- A = righthand thread with scale at 270° \*
- B = righthand thread with scale at 270° \*
- C = lefthand thread with scale at 270° \*
- D = lefthand thread with scale at 270° \*



\*Scale only for Type 30-60. Details see page 72





Only for E18

[mm]

L 1	L 2	M	P 1	P 2	R	V	Max. travel	Mass [kg]	
								Basic length	per 100 mm travel
17	-	18	2 x 2 x 12	-	55*	M3 x 5	1049	0.225	0.097
	17			2 x 2 x 12				1032	0.229
26	-	28	2 x 2 x 20	-	80	M4 x 8	1376	0.610	0.212
	26			2 x 2 x 20				1350	0.620
38	-	44	4 x 4 x 32	-	77	M6 x 10	2831	1.305	0.432
	38			4 x 4 x 32				2831	1.336
38	-	44	4 x 4 x 32	-	85	M6 x 10	2817	1.955	0.539
	38			4 x 4 x 32				2817	1.990
38	-	50	5 x 5 x 32	-	100	M8 x 12	2774	3.211	0.764
	38			5 x 5 x 32				2774	3.257
31.5	-	70	6 x 6 x 22	-	100	M8 x 25	2700	10.00	1.940
	31.5			6 x 6 x 22				2700	10.10

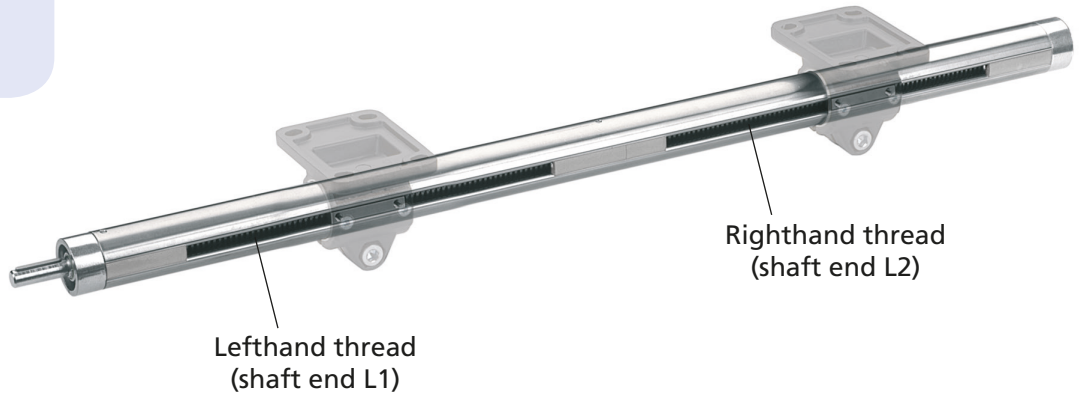
\* For total lengths < 300 mm, dimension R = 25 mm

# E linear units – Versions

Version ■ Right and lefthand thread

## Order information:

- Choice of carriage - this must be ordered separately
- Please specify total travel when placing an order
- Different "R" dimensions available on request
- Corrosion-protected units available on request



Type 30-60



Code No.	Type	Screw	Basic length	B	D1	D2	J
70318_1	18	TR 10x2	195	18	6	6	24
78_30_ _	30	TR 14x3	261	30	8	8	38
78_40_ _	40	TR 20x4	293	40	12	12	55
78_50_ _	50	TR 20x4	325	50	12	12	63
78_60_ 1	60	TR 24x5	388	60	14	14	78
70380_ 1	80	TR 32x6	465	80	20	20	100

----- Total length = basic length + total travel [mm]

### Screw bearing:

- 0 = screw with slide bearing
- 1 = screw with ball bearing

### Version:

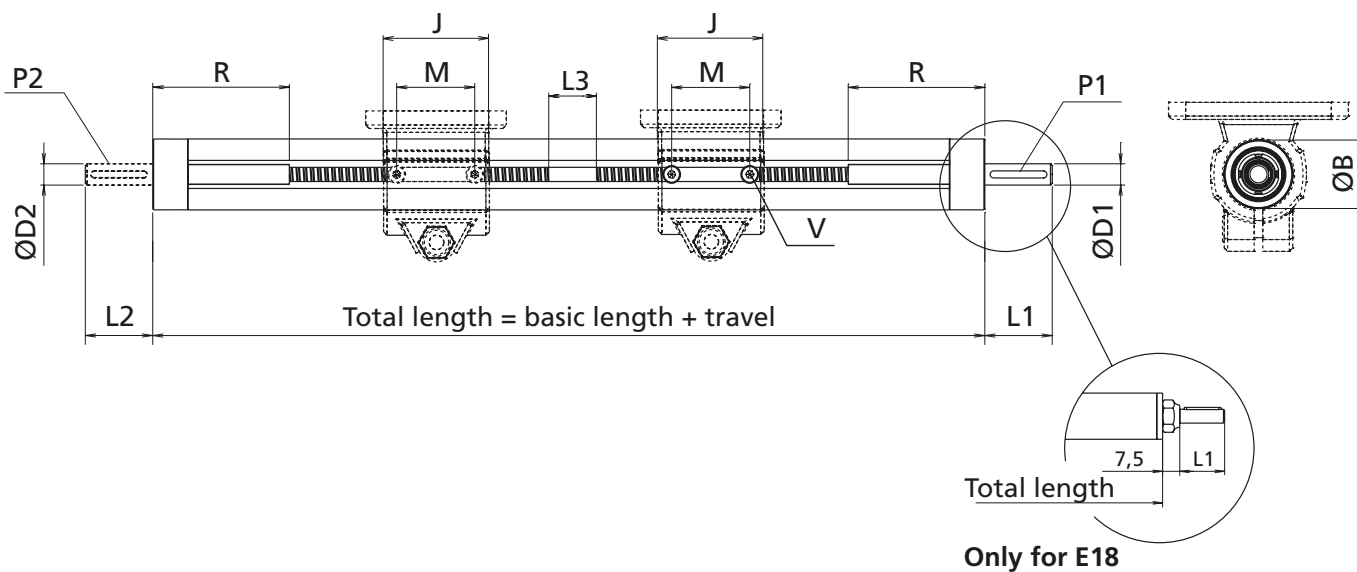
- 1 = 1 drive shaft at lefthand thread end
- 2 = 1 drive shaft at righthand thread end
- 3 = 2 drive shafts

### Version:

- 3 = Right and lefthand thread (RH/LH)
- N = RH/LH with scale at 270° \*



\*Scale only for Type 30-60. Details see page 72



[mm]

L 1	L 2	L 3**	M	P 1	P 2	R	V	Max. travel	Mass [kg]	
									Basic length	per 100 mm travel
17	17	37	18	2 x 2 x 12	2 x 2 x 12	55*	M3 x 5	1325	0.330	0.097
26	26	25	28	2 x 2 x 20	2 x 2 x 20	80	M4 x 8	1739	0.798	0.212
38	38	29	44	4 x 4 x 32	4 x 4 x 32	77	M6 x 10	2707	1.742	0.432
38	38	29	44	4 x 4 x 32	4 x 4 x 32	85	M6 x 10	2675	2.725	0.539
38	38	32	50	5 x 5 x 32	5 x 5 x 32	100	M8 x 12	2612	4.306	0.764
31.5	31.5	65	70	6 x 6 x 22	6 x 6 x 22	100	M8 x 25	2535	13.290	1.940

\* For total lengths < 300 mm, dimension R = 25 mm

\*\* From a total length of 1000 mm

# E linear units – Versions

Version ■ *Split screw*

**Order information:**

- Choice of carriage - this must be ordered separately
- Please specify total travel when placing an order
- Different "R" dimensions available on request
- Corrosion protected units available on request



Type 30-60



Code No.	Type	Screw	Basic length	B	D1	D2	J
78_3031	30	TR 14x3	280	30	8	8	38
78_4031	40	TR 20x4	308	40	12	12	55
78_5031	50	TR 20x4	340	50	12	12	63
78_6031	60	TR 24x5	400	60	14	14	78
7048031	80	TR 32x6	465	80	20	20	100

----- Total length = basic length + total travel [mm]

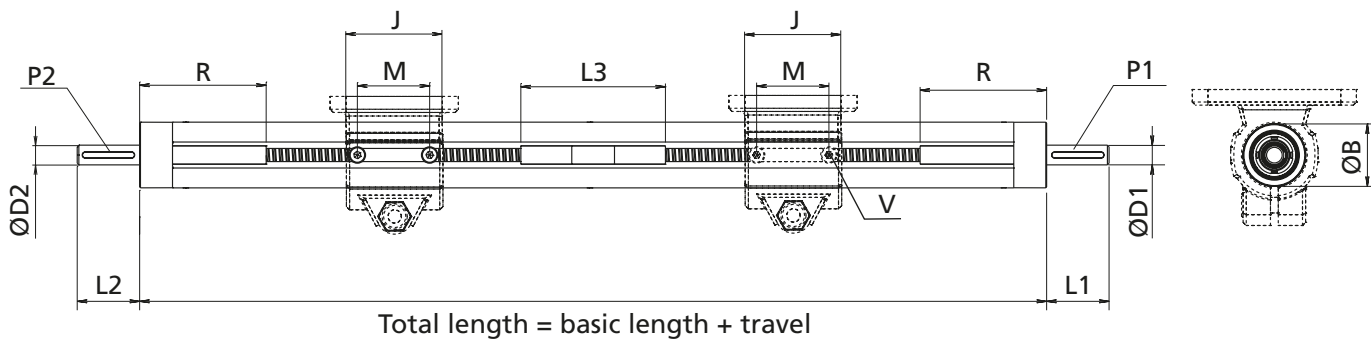
**Version:**

4 = Split screw

U = Split screw with scale at 270° \*



\*Scale only for Type 30-60. Details see page 72



[mm]

L 1	L 2	L 3	M	P 1	P 2	R	V	Max. travel/end	Mass [kg]	
									Basic length	per 100 mm travel
26	26	44	28	2 x 2 x 20	2 x 2 x 20	80*	M4 x 8	1377	0.673	0.212
38	38	44	44	4 x 4 x 32	4 x 4 x 32	77	M6 x 10	1366	2.317	0.432
38	38	44	44	4 x 4 x 32	4 x 4 x 32	85	M6 x 10	1355	3.169	0.539
38	38	44	50	5 x 5 x 32	5 x 5 x 32	100	M8 x 12	1326	3.571	0.764
31.5	31.5	50	70	6 x 6 x 22	6 x 6 x 22	100	M8 x 25	1267	15.970	1.940

\* For total lengths < 300 mm, dimension R = 53 mm

# E linear units – Fixing

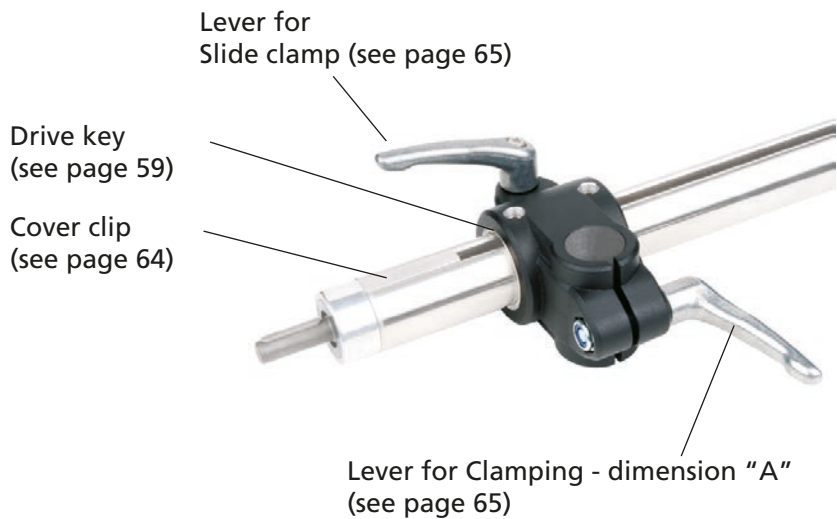
## Order information:

- Coloured powder-coating available on request.
- A rotation locking device (drive key) is included in the scope of delivery of the linear unit. Additional drive keys (e.g. for free-running carriages) can also be ordered as an optional extra
- For further dimensions, please refer to the catalogue "Connecting Technology"

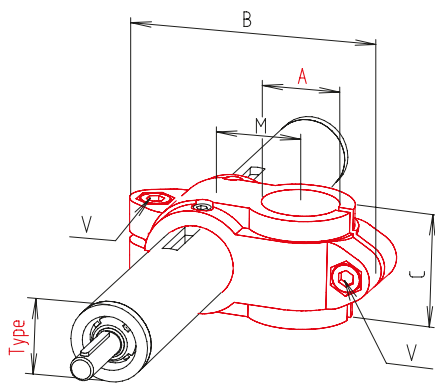
## Carriages

- A range of different versions facilitate mounting

**Scope of delivery:**  
Carriages with screws, loosely enclosed



K\*



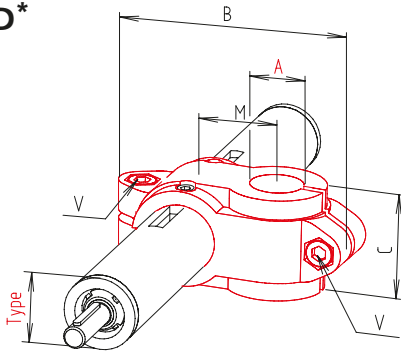
Code No.	Type	A	B	C	M	V
11801_00	18	18	66	25,5	20	M6x20
13093_0_	30	20	99	40	33	M8x25
12501_0_	30	25	99	40	33	M8x25
13001_0_	30	30	99	40	33	M8x25
14001_0_	40	40	137	60	45	M10x30
15003_0_	50	40	154	70	53	M10x35
15001_0_	50	50	154	70	53	M10x35
16001_0_	60	60	190	80	65	M12x45
18001_00	80	80	255	120	90	M16x65

[mm]

0 = without scale  
A = scale at 270°

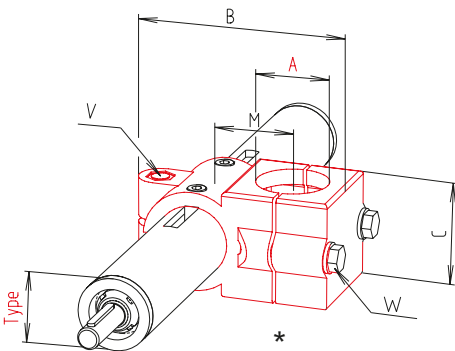
0 = without slide bushing  
1 = with slide bushing

\* The external diameters of fixing plates are the same while the internal diameters of fixing holes may vary. Please also refer to KD range.

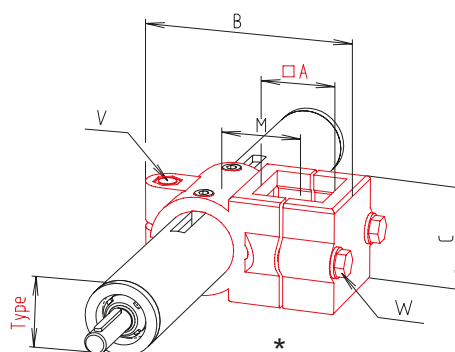
**E linear units - Fixing**
**Carriages**
**KD\***


Code No.	Type	A	B	C	M	V1	V2
11803_00	18	30	84	40	27	M6x18	M8x25
13003_0_	30	14	84	33	27	M8x25	M6x18
13004_0_	30	40	137,5	65	45	M10x35	M10x35
14003_0_	40	20	110	50	36	M10x30	M8x25
14004_0_	40	30	137,5	65	45	M10x35	M10x35
15004_0_	50	30	137,5	65	45	M10x35	M10x35
16004_00	60	50	180	80	60	M12x45	M12x40

\* Different external diameters of the fixing plates and different internal diameters of fixing holes. Please also refer to K range.

**KR**


Code No.	Type	A	B	C	M	V	W
13005_0_	30	30	86	45	33	M 8x35	M8x35
14005_0_	40	40	117	60	47	M10x50	M8x45
25005_0_	50	50	126	86	53	M 8x50	M8x50

**KVR**


Code No.	Type	A	B	C	M	V	W
13006_0_	30	30	86	45	33	M 8x35	M8x35
14006_0_	40	40	117	60	47	M10x50	M8x45
25006_0_	50	50	126	86	53	M 8x50	M8x50

\* Type 50 (image similar)

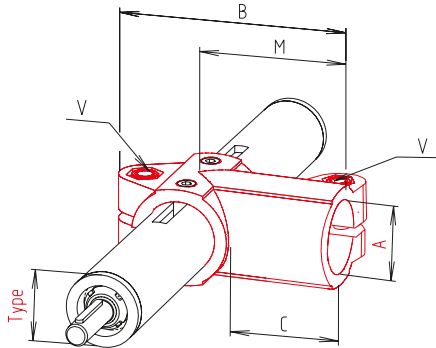
0 = without scale  
A = scale at 270°

0 = without slide bushing  
1 = with slide bushing

# E linear units – Fixing

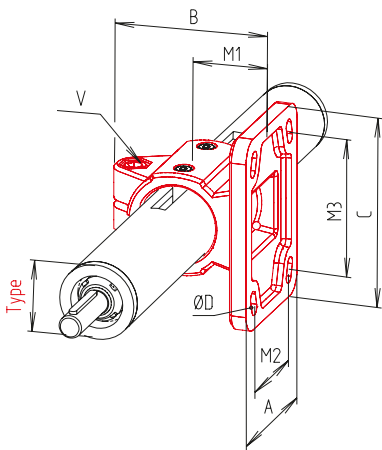
## Carriages

### W



Code No.	Type	A	B	C	M	V
11807_00	18	18	66	30	43	M6x20
13007_0_	30	30	93	40	60	M8x25
14007_0_	40	40	134	60	88	M10x30
15007_0_	50	50	149	65	98	M10x35
16007_0_	60	60	183	80	120	M12x45
18007_00	80	80	259	121,7	176,7	M16x65

### FK



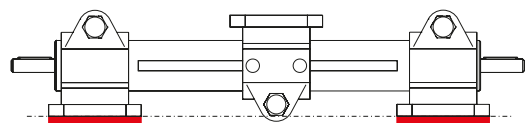
Code No.	Type	A	B	C	D	M1	M2*	M3*	V
11809_00	18	35	41	50	5,5	18	-**	40	M6x20
13009_0_	30	55	63	78	6,5	30	-**	53-60	M8x25
13023_0_	30-4	55	63	78	6,5	30	35-40	53,60	M8x25
14009_0_	40	80	87	105	8,5	42	52-60	80-82	M10x30
15009_0_	50	90	98	128	10,5	50	60-62	98-100	M10x35
16009_0_	60	110	123	150	10,5	60	74-80	100-118	M12x45
18009_00	80	164,7	162,4	180	17,5	80	120	140	M16x65

0 = without scale  
A = scale at 270°

\* Type 30-60 with slot  
\*\* Type 18-30 with central holes

0 = without slide bushing  
1 = with slide bushing

If using FK elements as carriages and fixing elements, spacers provide the necessary clearance.



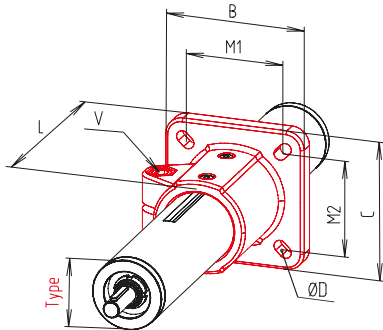
Code No.	Type	Spacer
96713	30	5 mm plate thickness, vibratory finished
96714	40	
96716	60	





Carriages

FS

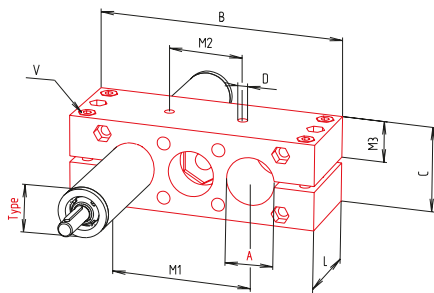


[mm]

Code No.	Type	B	C	D	L	M1*	M2*	V
11811_00	18	42	42	5,5	37	28-30	28-30	M6x20
13011_0	30	60	60	6,5	50	40-42	42-45	M8x25
14011_0	40	90	90	8,5	70	60-64	60-64	M10x30
15011_0	50	105	105	10,5	85	74-80	74-80	M10x35
16011_0	60	120	120	10,5	100	80-89	80-89	M12x45
18011_00	80	170	174,5	17,5	141,4	120	120	M16x65

\* Type 30-60 with slot

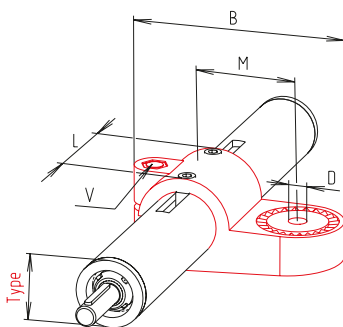
PB



[mm]

Code No.	Type	A	B	C	D	M1	M2	M3	L	V
11813_00	18	18	82	28	M 5	40	18	14,5	28,5	M5x20
23013_0	30	30	130	52	M 6	70	42	27	50	M6x45
14013_0	40	40	180	62	M 8	90	62	32	61	M8x45
25013_0	50	50	206	72	M 8	100	62	37	72	M8x60
26013_0	60	60	240	86,5	M10	130	74	44	80	M8x75

LW



[mm]

Code No.	Type	B	D	L	M	V
11814_00	18	59	M 6	25	27	M6x16
13014_0	30	93,5	M 8	40	43	M8x35
14014_0	40	127	M10	56	60	M10x50
15014_0	50	148	M10	66	70	M10x60

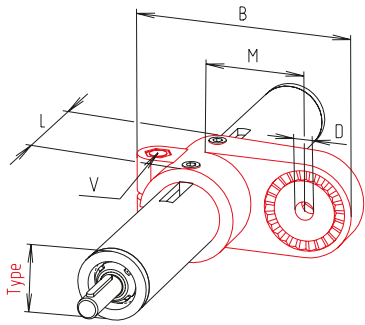
0 = without scale  
A = scale at 270°

0 = without slide bushing  
1 = with slide bushing

# E linear units – Fixing

## Carriages

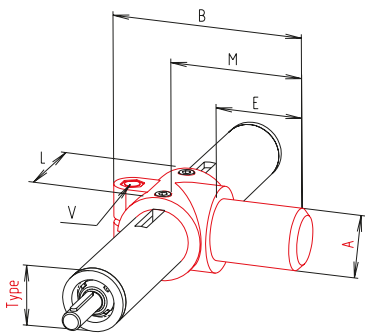
### LQ



[mm]

Code No.	Type	B	D	L	M	V
13015_0_	30	93,5	M 8	45	43	M8x35
14015_0_	40	128	M10	60	60	M10x50
15015_0_	50	148	M10	70	70	M10x60

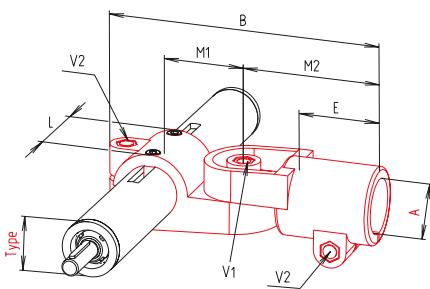
### S



[mm]

Code No.	Type	A	B	E	L	M	V
11818_00	18	18	72,5	33	32	48	M6x16
13018_0_	30	30	100	42	45	67	M8x25
14018_0_	40	40	135	57	60	88	M10x30
15018_0_	50	50	148	67	70	103	M10x60
16018_0_	60	60	188	82	85	125	M12x45

### GW



[mm]

Code No.	Type	A	B	E	L	M1	M2	V1	V2
11816_00	18	18	90,5	25	25	27	44	M6x16	M6x16
13016_0_	30	30	146,5	45	40	43	73	M8x35	M8x35
14016_0_	40	40	200	60	56	60	100	M10x50	M10x50
15016_0	50	50	230	70	66	70	115	M10x60	M10x60

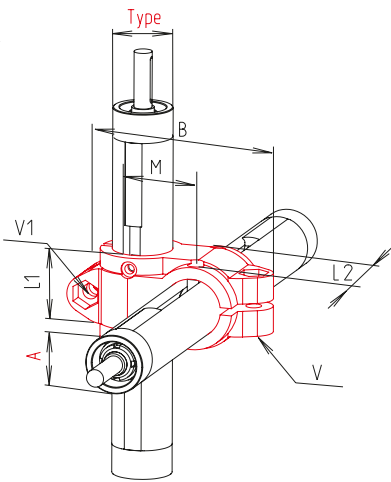
0 = without scale  
A = scale at 270°

0 = without slide bushing  
1 = with slide bushing



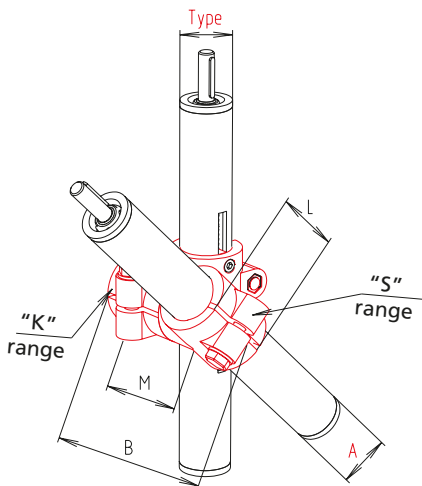
Carriages

EK



Code No.	Type	A	B	L1	L2	M	V1	V2
11819_00	18	18	66	25,5	25,5	20	M6x20	M6x20
13020_0_	30	18	84	40	30	27	M8x25	M6x16
13019_0_	30	30	99	40	40	33	M8x25	M8x25
14020_0_	40	30	137	65	65	45	M10x35	M10x35
14019_0_	40	40	137	60	60	45	M10x30	M10x30
15020_0_	50	40	137,5	65	65	45	M10x35	M10x35
15019_0_	50	50	137,5	65	65	45	M10x35	M10x35
16020_0_	60	50	180	80	50	60	M12x45	M12x40
16019_0_	60	60	190	80	80	65	M12x45	M12x45
18019_00	80	80	255	120	120	90	M16x65	M16x65

EKS



Code No.	Type	A	B	L	M
13022_0_	30	18	65	25	29
13021_0_	30	30	94	45	43
14022_0_	40	30	119	45	56
14021_0_	40	40	132	60	61
15022_0_	50	40	169	60	64
15021_0_	50	50	169	70	69
16022_0_	60	50	151	70	76
16021_0_	60	60	186	85	65

0 = without scale  
A = scale at 270°

0 = without slide bushing  
1 = with slide bushing

Drive key for carriages

- Rotation locking for additional free-running carriages

**Note:** The order number of the linear unit includes a drive key



Code No.	Type	Installation length
95990	E 18	24
95987	E-II 30	38
95997	E-II 40	55
95998	E-II 40 x 20*	55
95988	E-II 50	60
95989	E-II 60	75
95996	E 80	100

\* For carriage KD 40 x 20

# E linear units – Fixing

## Fixing elements

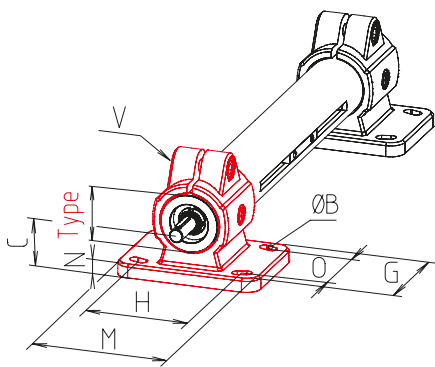
- Clamping elements for the simple fixing of E units
- For further elements, please refer to the catalogue "Connecting Technology"

**Material:** Gk Al Si 12, vibratory polished

Coloured powder-coatings available on request.

For further dimensions, please refer to the catalogue "Connecting Technology"

## FK

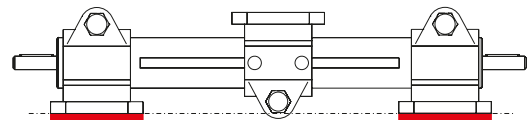


[mm]

Code No.	Type	B	C	G	H*	M	N	O*	V
12180000020	18	5.5	18	37	40	50	5	-**	M6 x 20
12300000020	30	6.5	30	55	53-60	78	7	-**	M8 x 25
12300100020	30-4	6.5	30	55	53-60	78	7	35-40	M8 x 25
12400000020	40	8.5	42	80	80-82	105	10	52-60	M10 x 30
12500000020	50	10.5	50	90	98-100	128	14	60-62	M10 x 35
12600000020	60	10.5	60	110	100-118	150	15	74-80	M12 x 45
12800000020	80	17.5	80	164.7	140	180	20	120	M16 x 65

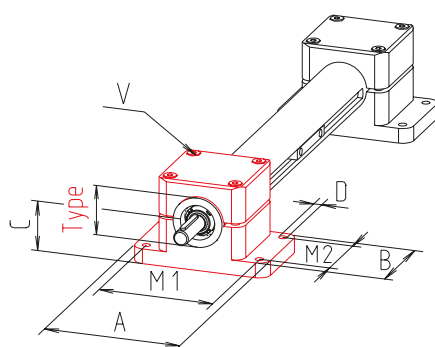
\* Type 30-60 with slot  
 \*\* Type 18-30 with central drill holes

If using FK elements as carriages and fixing elements, spacers provide the necessary clearance.



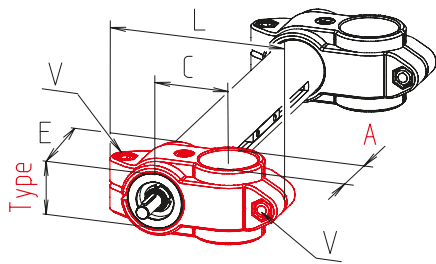
Code No.	Type	Spacer
96713	30	5 mm plate thickness, vibratory finished
96714	40	
96716	60	

## FKR

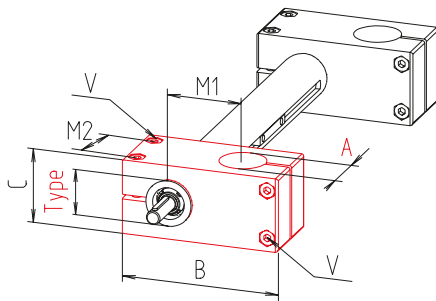


[mm]

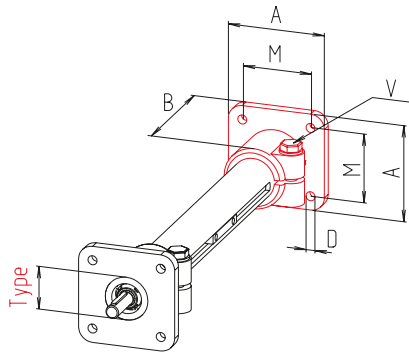
Code No.	Type	A	B	C	D	M1	M2	V
22300003026	30	100	60	30	6.5	82	42	M6 x 45
22400003026	40	110	70	40	6.5	92	52	M6 x 60
22500003026	50	125	125	50	8.5	98	98	M8 x 80
22600003026	60	144	100	60	8.5	122	78	M8 x 90

**Fixing elements**
**K**


Code No.	Type	A	C	E	L	V
101800000200	18	18	20	25.5	66	M6 x 20
103000000200	30	30	33	40	99	M8 x 25
104000000200	40	40	45	60	137	M10 x 30
105000000200	50	50	53	70	154	M10 x 35
106000000200	60	60	65	80	190	M12 x 45
108000000200	80	80	90	120	255	M16 x 65

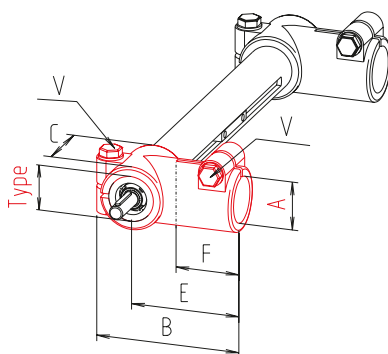
**KRR**


Code No.	Type	A	B	C	E	M1	M2	V
203000030266	30	30	82.5	45	63	37.5	44	M6 x 35
204000030266	40	40	110	60	75	50	53	M6 x 45
205000030266	50	50	149	86	86	70	65	M8 x 60
206000030266	60	60	170	100	100	80	78	M8 x 60

**FS**


Code No.	Type	D	M	B	A	V
13180000020	18	5.8	30	37	42	M6 x 20
13300000020	30	6.5	40-42	50	60	M8 x 25
13400000020	40	8.5	60-64	70	90	M10 x 30
13500000020	50	10.5	74-80	85	105	M10 x 35
13600000020	60	10.5	80	100	120	M12 x 45
13800000020	80	17.5	120	141.4	174.5	M16 x 65

\* Type 30-50 with slot

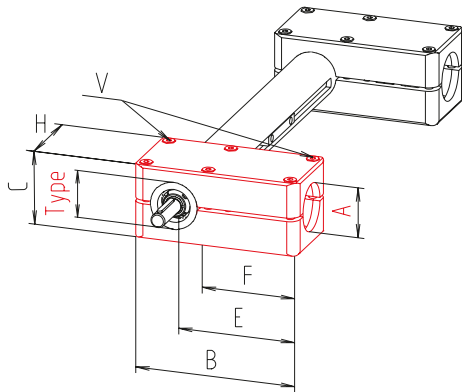
**W**


Code No.	Type	A	C	E	L	M	V
111800000200	18	18	30	32	67.5	43	M6 x 20
113000000200	30	30	40	45	93	60	M8 x 25
114000000200	40	40	60	60	134	88	M10 x 30
115000000200	50	50	65	70	149	98	M10 x 35
116000000200	60	60	80	80	183	120	M12 x 45
118000000200	80	80	121.7	123	259	176.8	M16 x 65

# E linear units – Fixing

## Fixing elements

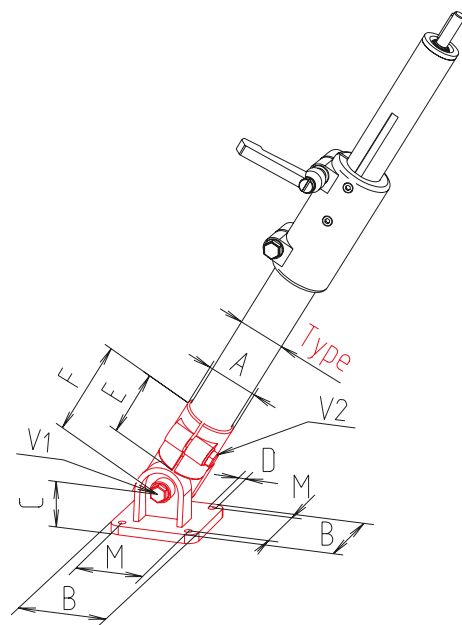
### WR



[mm]

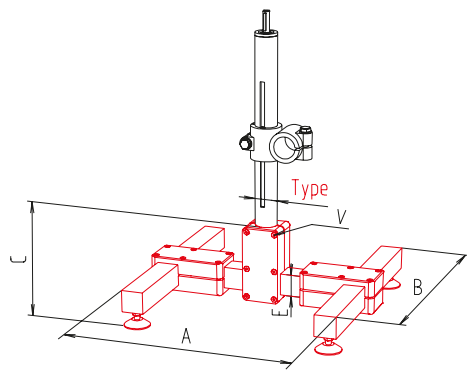
Code No.	Type	A	B	C	E	F	H	V
214000030266	40	40	140	62	105	70	70	M8 x 60
215000030266	50	50	161	79	118	85	86	M8 x 70
216000030266	60	60	190	90	140	100	100	M8 x 80

### GF



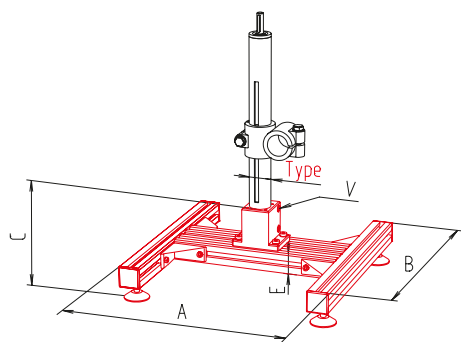
[mm]

Code No.	Type	A	B	C	D	E	F	M	V1	V2
18180002020	18	18	35 x 50	20	5.3	25	44	38	M6 x 16	M6 x 16
18250002020	25	25	75	32.5	6.5	45	73	57	M8 x 35	M8 x 35
18300002020	30	30	75	32.5	6.5	45	73	57	M8 x 35	M8 x 35
18320002020	32	32	100	44	8.5	60	100	76	M10 x 50	M10 x 50
18400002020	40	40	100	44	8.5	60	100	76	M10 x 50	M10 x 50
18500002020	50	50	125	52	8.5	70	115	98	M10 x 60	M10 x 60

**Fixing elements**
**FHR\***


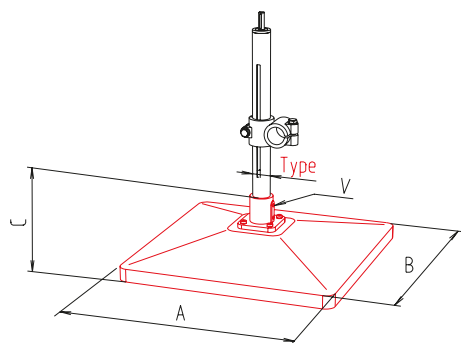
Code No.*	Type	A	B	C	E	V
2330002002 __	30	350	350	120	30	M6 x 40
2340002002 __	40	400	400	140	40	M6 x 55
2350002002 __	50	500	500	161	50	M8 x 70
2360002002 __	60	600	600	190	60	M8 x 80

[mm]

**FHNR\***


Code No.*	Type	A	B	C	E	V
2330002202 __	30	350	350	90	40	M8 x 25
2340002202 __	40	400	400	110	40	M8 x 45
2350002202 __	50	500	500	145	60	M10 x 35
2360002202 __	60	600	600	190	60	M12 x 45

[mm]

**FPFS\***


Code No.*	Type	A	B	C	V
1330001202 __	30	500	500	130	M8 x 25
1332001202 __	32	500	500	150	M10 x 30
1340001202 __	40	500	500	150	M10 x 30
1350001202 __	50	500	500	165	M10 x 35
1360001202 __	60	500	500	180	M12 x 45

[mm]

\* For versions, please also refer to the catalogue "Connecting Technology"

# E linear units – Fixing

## Cover clips

- Slot covers, can be used as dust protection or stroke limitation
- Can be shortened or lengthened if required

**Material:** Stainless steel  
**Scope of delivery:** Pack of 2 cover strips or as bar material



The cover clips are available as a pack of two, or as bar material.



The linear unit comes with two cover clips for the bearing seats.



Additional clips can be inserted in the guide slot.

Code No.	Type	Length [mm]
Cover clips, pack of 2		
90440	30	63
90441	40	57
90442	50	60
90443	60	74
Cover, bar material		
90445	30	3010
90446	40	3010
90447	50	3010
90448	60	3010





# E linear units - Fixing

## Clamping lever

- For the equipping of fixing elements and carriages

**Material:** Zinc die cast handle  
Steel parts galvanised

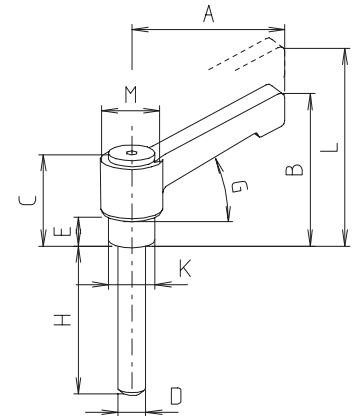
Stainless steel lever available on request.



Lever for slide clamp



Lever for component clamp

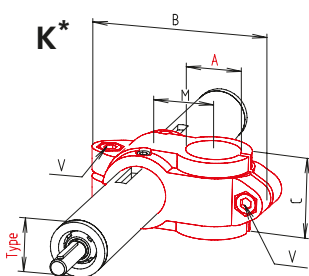


[mm]

Code No.	Version V	A	B	C	D	E	G	H	K	L	M
90210	M6x16	40	30	25	M6	6,5	20°	16	10	33,5	13,5
90209	M6x18	40	30	25	M6	6,5	20°	18	10	33,5	13,5
90215	M6x45	65	41,5	28,5	M6	6,5	20°	45	13,5	45,5	19,5
90222	M8x25	65	41,5	28,5	M8	8,5	20°	25	13,5	45,5	19,5
90224	M8x35	65	41,5	28,5	M8	8,5	20°	35	13,5	45,5	19,5
90225	M8x45	65	41,5	28,5	M8	8,5	20°	45	13,5	45,5	19,5
90226	M8x50	65	41,5	28,5	M8	8,5	20°	50	13,5	45,5	19,5
90228	M8x60	65	41,5	28,5	M8	8,5	20°	60	13,5	45,5	19,5
90230	M8x80	80	53,5	37	M8	8,5	20°	80	16	58	23
90250	M10x30	80	53,5	37	M10	10	20°	30	16	58	23
<b>90251</b>	M10x35	80	53,5	37	M10	10	20°	35	16	58	23
90243	M10x50	80	53,5	37	M10	10	20°	50	16	58	23
90244	M10x60	95	61	43	M10	10	20°	60	16	66	23,5
90255	M12x40	95	61	43	M12	13,5	20°	40	18	66	27,5
90253	M12x45	95	61	43	M12	13,5	20°	45	18	66	27,5
90270	M16x72	126	72	57,5	M16	19	20°	72	23	77	33



**For example:** Selection lever for slide K-40\*



\*Slide K-40 (see page 54)

Code No.	Type	A	B	C	M	V
11801_00	18	18	66	25,5	20	M6x16
13093_00	30	20	99	40	33	M8x25
12501_00	30	25	99	40	33	M8x25
13001_00	30	30	99	40	33	M8x25
14001_00	40	40	137	60	45	M10x35
15003_00	50	40	154	70	53	M10x35
15001_00	50	50	154	70	53	M10x35
16001_00	60	60	190	80	65	M12x45
18001_00	80	80	255	120	90	M16x65



# E linear units – Drive

## Handwheel

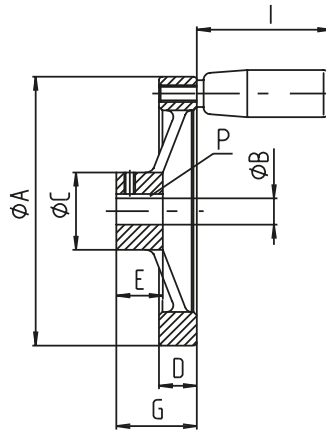
**Material:** Die-cast aluminium  
black powder-coating



Diam. 140-200

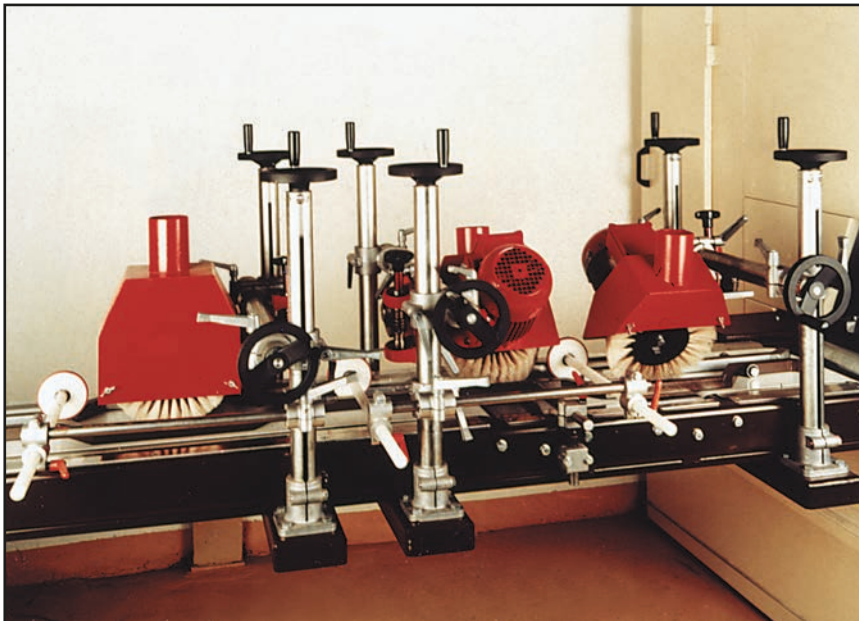


Diam. 60-100



[mm]

Code No.	Type	Diam. A	B	C	D	E	G	P	I
90901	18	60	6	18	13	16	22	2 x 2	28
90913	30	100	8	28	14	17	30	2 x 2	52
90915	40-50	100	12	28	14	17	30	4 x 4	52
90905	40-50	140	12	36	16.5	19.5	36	4 x 4	66
90906	60	140	14	36	16.5	19.5	36	5 x 5	66
90918	60	160	14	36	18	20	39	5 x 5	80
90929	80	200	20	42	20.5	24	45	6 x 6	80



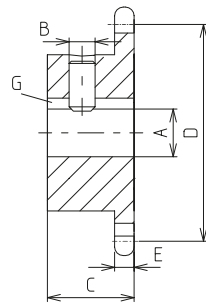


### Chain wheel



■ Other sizes on request

Material: Steel, 500 N/mm<sup>2</sup> min



[mm]

Code No.	Type	A	B	C	D	E	G	No. of teeth	Size
91703	30	8	M6	18	41.1	4.5	2 x 2	10	1/2 x 3/16"
91704	40	12	M6	20	53	4.5	4 x 4	13	1/2 x 3/16"
91705	50	12	M6	20	61	4.5	4 x 4	15	1/2 x 3/16"
91706	60	14	M6	25	85	4.5	5 x 5	21	1/2 x 3/16"
91708	80	20	M6	25	85	4.5	6 x 6	21	1/2 x 3/16"

### HTD timing-belt pulley

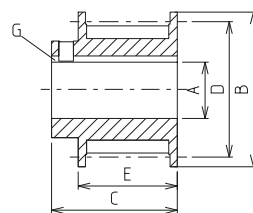


■ Suitable for maintenance-free continuous operation

■ Excellent accuracy and zero backlash during change of direction

■ Can be clamped on feather key

Material: Steel



[mm]

Code No.	Type	A	B	C	D	E	G	Pull force	Pitch
92103	30	8	23	20	19.09	14.5	2 x 2	220 N	5
92105	40/50	12	32	26	28.65	20.5	4 x 4	330 N	5
92106	60	14	32	26	28.65	20.5	5 x 5	330 N	5

### Timing-belt (endless)



■ HTD timing-belt with steel insert

For pull force, see pulley. Other lengths available on request.



[mm]

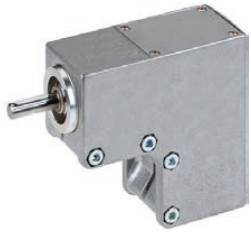
Code No.	Type	A	B	C	D	Timing-belt length			
92204	30	3.81	1.75	5	9	305	550	750	1000
92205	40/50/60	3.81	1.75	5	15	305	565	800	900



Timing-belt length [mm]

# E linear units – Drive

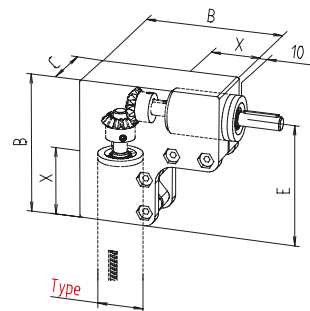
## Angular drive



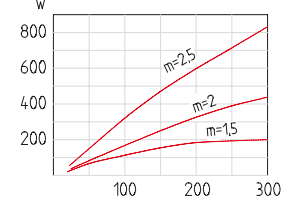
- If angular drives are fitted, the linear units are delivered exclusively with ball bearings

**Scope of delivery:** Housing, bevel gear set and transmission unit

**Material:** Angular drive housing made of die cast aluminium  
Steel parts galvanised



Power transmission of bevel gears



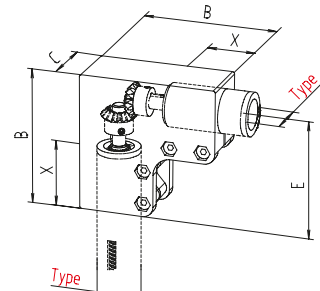
Code No.	Type	i	Module	No. of teeth	Diameter	B	C	E	X
91523	30	1:1	1.5	16	8	96	42	75	43
91504	40	1:1	2	16	12	128	54	100	55
91555	50	1:1	2.5	16	12	148	65	115	68
91506	60	1:1	2.5	16	14	170	80	130	80

## Angular drive housing



- For plug-in angular drive connection of 2 E linear units fitted with bevel gears.

**Material:** Angular drive housing, die cast aluminium. Steel parts, galvanised



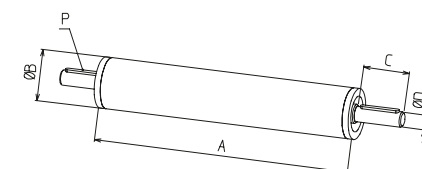
Code No.	Type	B	C	E	X
213000090266	30	96	42	75	43
214000090266	40	128	54	100	55
215000090266	50	148	65	115	68
216000090266	60	170	80	130	80

## Transmission unit

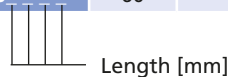


- For torque transmission with parallel linear units

**Material:** Tube and bearing elements galvanised steel, Shaft bright

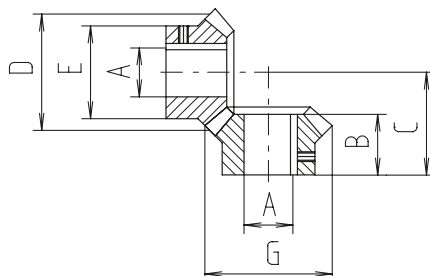


Code No.	Type	A (basic length)	B	C	D	P
92523	30	53	30	26	8	2 x 2 x 20
92544	40	65	40	38	12	4 x 4 x 32
92555	50	78	50	38	12	4 x 4 x 32
92506	60	90	60	38	14	5 x 5 x 32



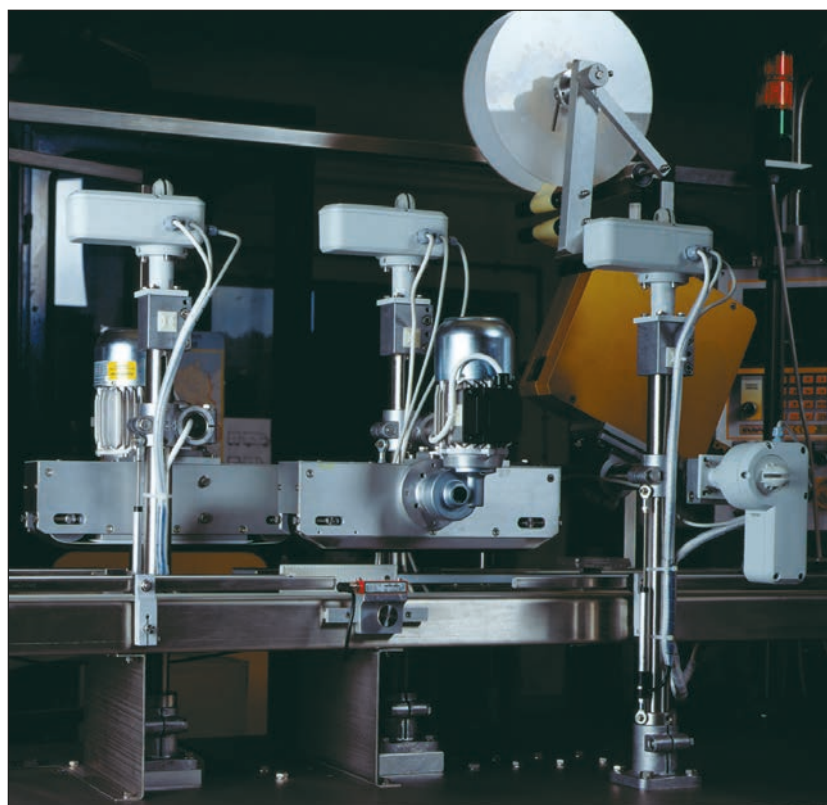
**Bevel gear set**

- Straight toothed
- Pressure angle 20°
- Shaft angle 90°
- Crowned tooth flanks



[mm]

Code No.	Type	A	B	C	D	E	G	No. of teeth	Module
91603	Set 30	8	15	24	24	18	26.11	16	1.5
91623	Single component 30	8	15	24	24	18	26.11	16	1.5
91604	Set 40	12	19	31	32	26	35	16	2
91664	Single component 40	12	19	31	32	26	35	16	2
91605	Set 50	12	22	37	40	32	44	16	2.5
91625	Single component 50	12	22	37	40	32	44	16	2.5
91606	Set 60	14	22	37	40	32	44	16	2.5
91666	Single component 60	14	22	37	40	32	44	16	2.5



# E linear units – Drive

## Selection table - motor adaptor/coupling

Type	Three-phase motor		EHL electr. handwheel	Drive unit	
	90/120 W	180/250 W		LZ S	LZ P
E 30	949983	–	92663	949700	949701
	9109200812	–	–	9109200810	9109200810
E 40	949984	–	92664	949702	949703
	9114301212	–	–	9114301012	9114301012
E 50	949985	–	92665	949704	949705
	9114301212	–	–	9114301012	9114301012
E 60	–	949606	949666	949706	–
	–	9119401414	–	9114301014	–
E 80	–	950001	92682	on request	–
	–	9119401420	–	9119401020	–

↓

Code No. Motor adaptor:  
**950001**

Code No. Coupling with  
specification of shaft  
diameter  
1st end = 12 mm  
2nd end = 12 mm:  
**9114301212**

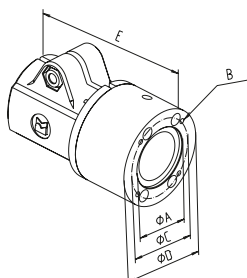
**Note:**  
For further details on motor versions,  
please refer to the chapter "Motors and  
controls"

### Motor adaptor for three-phase motor



- Clampable adaptor
- Flange surface machined

**Material:** Die-cast aluminium



Code No.	Type	A	B	C	D	E	[mm]
949983	30	50	M5	65	80	102.5	
949984	40	50	M5	65	80	128	
949985	50	50	M5	65	80	128	
949606	60	80	M6	100	120	136	
950001	80	80	M6	100	120	199.5	

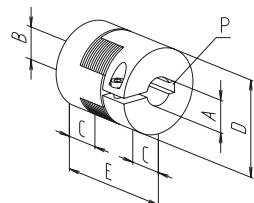
### Coupling



- Small size
- Shaft connection without backlash
- Maintenance-free
- Easy plug-in assembly

**Material:** Hub – aluminium  
Spider ring – polyurethane

To ensure proper function of the  
coupling, a clearance of **D + 3 mm**  
is required.



Code No.	Type	A	B	C	D	E	P	Torque [Nm]		[mm]
								with feather key	without feather key	
9109200812	30	8	12	10	22	30	2 x 2/4 x 4	5	3	
9114301212	40/50	12	12	11	30	35	4 x 4/4 x 4	12	6	
9119401414	60	14	14	25	40	65	5 x 5/5 x 5	17	10	
9119401420	80	14	20	25	40	65	5 x 5/6 x 6	17	10	



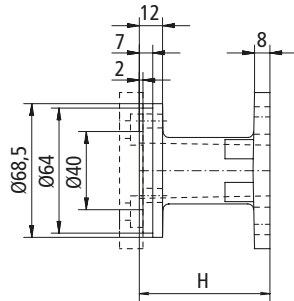
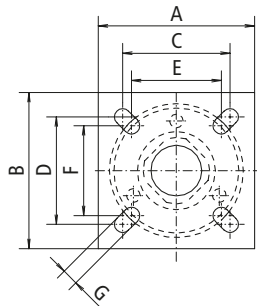
**E linear units - Drive**

**Motor adaptor for EHL electronic handwheel**

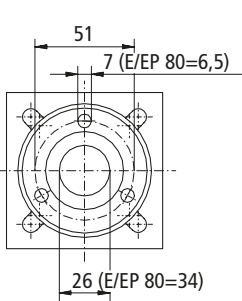
- Clampable adaptor
- Incl. coupling

**Note:** To mount the motor adaptor on a Type E linear unit, a sleeve clamp is required (this is included with the adaptor). Please note that the stroke may be limited.

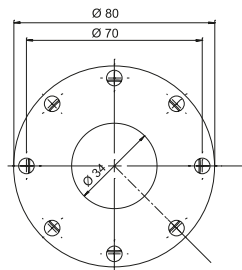
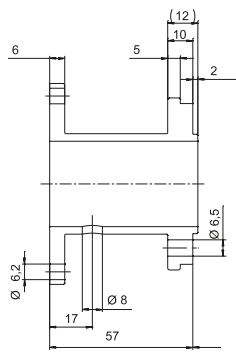
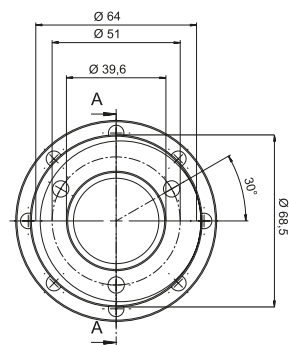
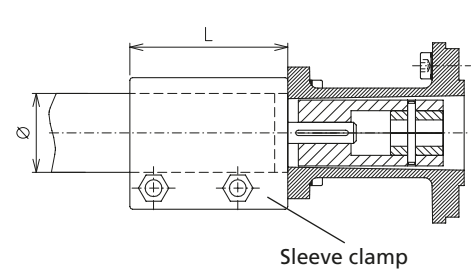
Linear unit connection



EHL connection



Only for linear unit Type E

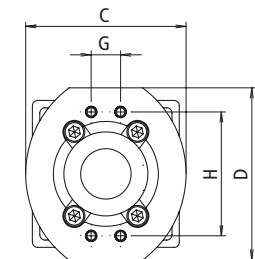
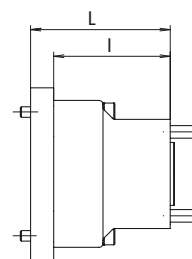
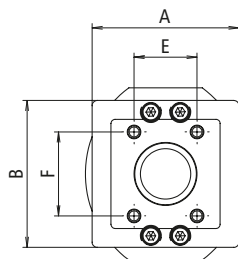


Further adaptors available on request

Code No.	for linear unit	Shaft diam. unit	A	B	C	D	E	F	G	H	L	Diameter
92663	E 30	8	50	50	30	40	30	30	6	67	60	30
92664	E 40	12	60	60	46	46	36	36	7	67	75	40
92665	E 50	12	65	65	46	46	-	-	9	67	90	60
949666	E 60	14	80	80	55	55	46	46	9	67	93	60
92682	E 80	20	80	80	70	70	-	-	6.2	59		80

**Motor adaptor for LZ S/P drive unit**

- Clampable adaptor



Linear unit	LZ S Code No.	LZ P Code No.	Coupling Code No.	A	B	C	D	E	F	G	H	I	L
E 30	949700	949701	9109200810	56	74	76.4	82	-	-	56.5	39.6	65	134
E 40	949702	949703	9114301012	89.2	66	76.4	82	-	-	56.5	39.6	78	129
E 50	949704	949705	9114301012	66	84	76.4	82	-	-	56.5	39.6	78	129
E 60	949706	-	9114301014	80	103	76.4	82	-	-	52.3	52.3	92	143
E 80	on request		9119401020	on request									

# E linear units – Position determination

## Order information:

- Position of scale on 0° or 180° as option

## Scale

- Self-adhesive
- Width: 10 mm
- 4 mm high figures

**Material:** High-performance film, transparent

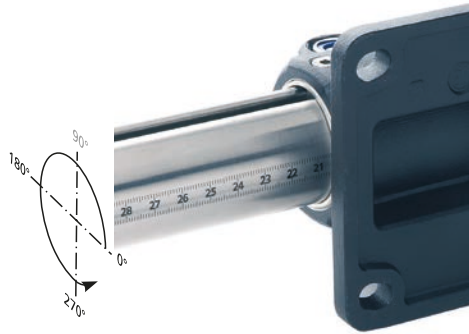


Image shows scale mounted at 0°, to be read from right to left. Standard mounting at 270° (Type 30-60: 90° not technically possible, Type 80: (90° and 180° not technically possible))

Type	Can be read from	Length	Version
30-60*	left to right	0-2000	fitted
	right to left	0-2000	fitted

[mm]

\* Type 18 and 80 available on request.





**Positioning indicator**

- Max ambient temperature +80°C
- Figure height 6 mm
- Reading accuracy  $\pm 0.1$  mm
- If positioning indicators are fitted, the linear units are delivered exclusively with ball bearings

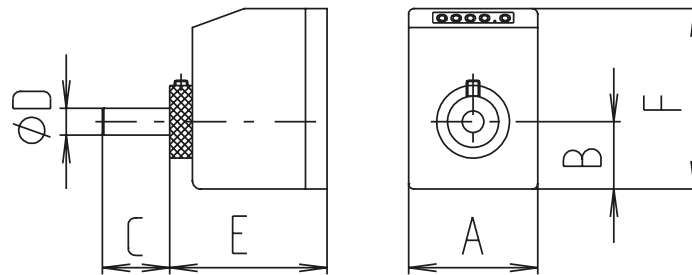
**Material:** Housing polyamide 6 Orange RAL 2004, Steel parts, corrosion protected

**Scope of delivery:** Positioning indicator, clamping ring, shaft extension and fastenings

**Note:** "rising" and "falling" versions refer to the clockwise rotation of the drive shaft.



Installation position: horizontal



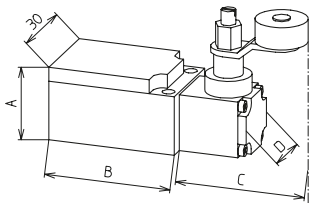
Installation position: vertical

[mm]

Type	Installation position	Code No.	Version	Code No.	Version	A	B	C	D	E	F
18	Horizontal	91001	2 mm rising	910129	4 mm rising	48	29	17	6	60	67
18		91011	2 mm falling	910130	4 mm falling	48	29	17	6	60	67
18	Vertical	91021	2 mm rising	910131	4 mm rising	48	29	17	6	60	67
18		91031	2 mm falling	910132	4 mm falling	48	29	17	6	60	67
30	Horizontal	91043	3 mm rising	91010	6 mm rising	48	25	18	8	59	67
30		91053	3 mm falling	91029	6 mm falling	48	25	18	8	59	67
30	Vertical	91063	3 mm rising	91020	6 mm rising	48	25	18	8	59	67
30		91073	3 mm falling	91019	6 mm falling	48	25	18	8	59	67
40	Horizontal	91004	4 mm rising	91030	8 mm rising	48	25	38	12	59	67
40		91014	4 mm falling	91039	8 mm falling	48	25	38	12	59	67
40	Vertical	91024	4 mm rising	91040	8 mm rising	48	25	38	12	59	67
40		91034	4 mm falling	91041	8 mm falling	48	25	38	12	59	67
50	Horizontal	91045	4 mm rising	91046	8 mm rising	48	25	38	12	59	75
50		91055	4 mm falling	91047	8 mm falling	48	25	38	12	59	75
50	Vertical	91065	4 mm rising	91048	8 mm rising	48	25	38	12	59	75
50		91075	4 mm falling	91049	8 mm falling	48	25	38	12	59	75
60	Horizontal	91006	5 mm rising	91056	10 mm rising	48	25	38	14	60	81
60		91016	5 mm falling	91057	10 mm falling	48	25	38	14	60	81
60	Vertical	91026	5 mm rising	91058	10 mm rising	48	25	38	14	60	81
60		91036	5 mm falling	91059	10 mm falling	48	25	38	14	60	81
80	Horizontal	91101	6 mm rising	910133	12 mm rising	64	29	31	20	60	94
80		91102	6 mm falling	910134	12 mm falling	64	29	31	20	60	94
80	Vertical	91103	6 mm rising	910135	12 mm rising	64	29	31	20	60	94
80		91104	6 mm falling	910136	12 mm falling	64	29	31	20	60	94

# E linear units – Position determination

## Mechanical limit switch



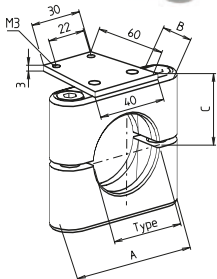
**Material:** Thermoplastic, fully insulated

Type	18-60	80
Max. voltage	250 V AC	230 V AC
Max. switching current	6 A	4 A
Max. starting current	16 A	–
Operating frequency	Max. 6000/h	Max. 5000/h
Mechanical lifetime	10 million switching cycles	20 million switching cycles
Axis lever adjustment	locking at 10° increments	
Protection class	IP 65	IP 67
Ambient temperature	-30°C to +80°C	

[mm]

Code No.	Type	Switching function	A	B	C	D
91905	18-60	NC/NO	26.5	45	45.5	21
91908	80	NC/NO	30	58.5	46	20

## E limit switch holder



- Limit switch can be moved and fixed axially

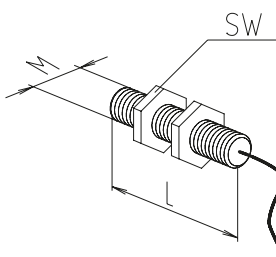
**Scope of delivery:** Holder with limit switch

**Material:** Aluminium

[mm]

Code No.	Type	A	B	C	D	E	F	G	H
92764	30	60	16	28	M4	3	30	60	40
92766	40	75	20	37	M4	3	30	60	40
92768	50	85	20	42.5	M4	3	30	60	40
92769	60	100	22	48	M4	3	30	60	40
927101	80	130	30	71	M4	10	70	70	70

## Inductive limit switch



- Maintenance-free

**Material:** Housing - brass, chrome-plated

Type	18-60	80
Voltage	10 - 30 V DC	
Max. switching current	200 mA	150 mA
Operating distance	4 mm for steel	2 mm for steel
Protection class	IP 67	
Ambient temperature	-25°C to +70°C	
Cable lengths	2m	

[mm]

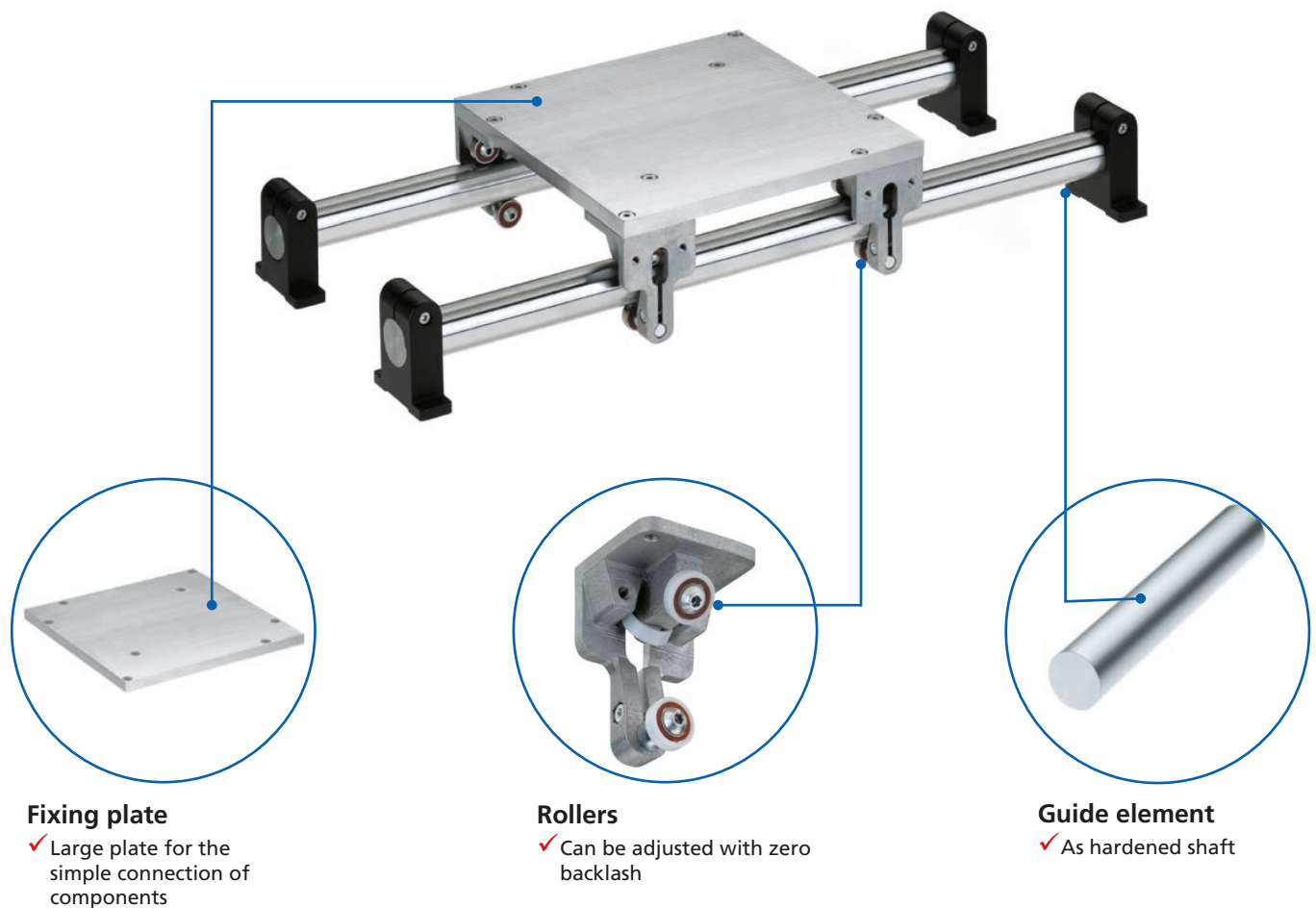
Code No.	Type	Switching function	L	M	Wrench size (SW)
92825	18-60	Changeover	50	12x1	17
92826	80	Changeover	40	8x1	13



Positioning of a labelling machine via a crossing E tubular linear unit

# Twin tube guides – RE

**Robust guide**  
for simple adjustment of medium loads



## Features:

- Simple and robust design
- Cost-effective

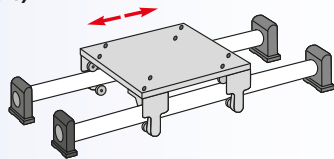
## RE linear guide - Table of contents

### Properties/Technical data

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- Load data..... 79

### Versions

(Dimensions, order numbers)



- RE linear guide ..... 80 - 81

### Accessories

#### Fixing

- Fixing plate..... 82
- FKW shaft bracket..... 82
- Guide shaft ..... 82

#### Drive

- RF/RL roller guide element ..... 83

## General information/operating conditions

Design	Simple and robust twin tube guide unit
Guide	Roller guide, can be adjusted with zero backlash
Installation position	Any position
Max. travel speed	2.5 m/s
Self-locking	No
Ambient temperature	0°C to +60°C

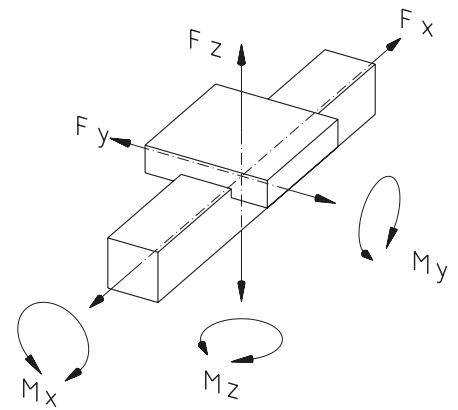


**RE - Technical data**

**Load data**

- F Force [N]
- M Moment [Nm]
- I Geometric moment of inertia [cm<sup>4</sup>]

\* with reference to carriage (deflection of guide element f = 1.0 mm, static, end elements supported)

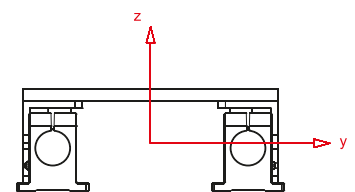


Type	Fy	Fz				Mx	My	Mz
Total length [mm]		1500	2000	2500	3000			
RE 30	330	1600	400	200	125	65	65	20
RE 40	600	2400	1050	650	400	155	155	65

**Geometric moment of inertia**

Type	Iy	Iz
RE 30	8.0	700.0
RE 40	25.1	3348.0

[cm<sup>4</sup>]



# RE – Versions

## Order information:

- Longer travel lengths on request

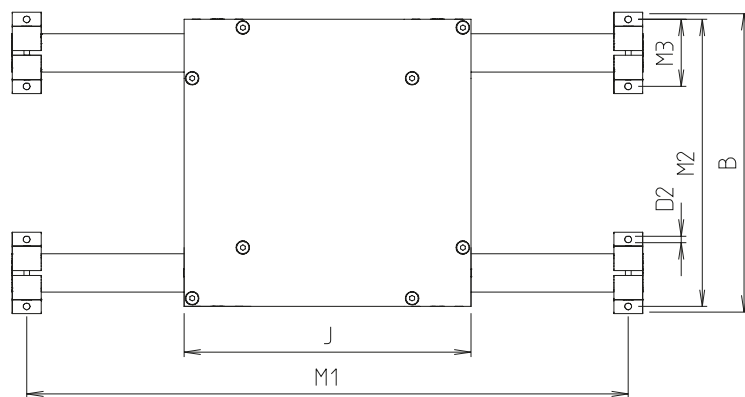
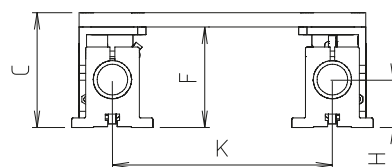
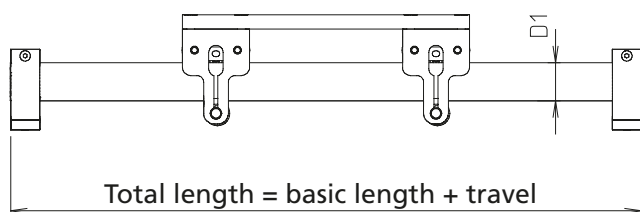
Version ■ Guide



Code No.	Type	Rollers	Guide element	Basic length	B	C	ØD1	ØD2	F	H
MEA3000AA	RE 30	Steel	Shaft, hardened	250	210	98	30	7	86	40
MEA4000AA	RE 40	Steel	Shaft, hardened	360	315	120	40	7	105	50

----- Total length = basic length + travel [mm]





[mm]

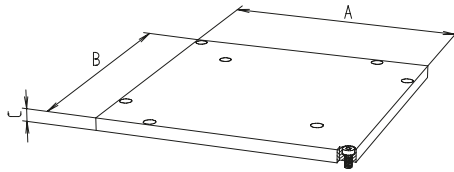
I	J	K	M1	M2	M3	max. travel	Mass [kg]	
							Basic length	per 100 mm travel
200	200	140	225	196	56	3000	5,7	1,1
300	300	230	330	300	70	3000	13,5	2,0

# RE – Fixing/Drive

## Fixing plate

- Connecting plate for roller guide elements

**Material:**  
Al-K100, surface-ground,  
surface roughness  $\approx 2\mu\text{m}$



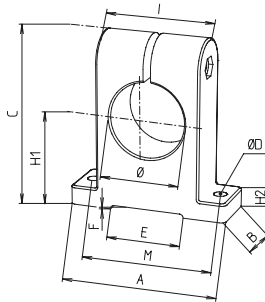
[mm]

Code No.	A $\pm 0.4$	B $\pm 0.4$	C $\pm 0.15$
6821272020	200	200	12
6821272030	200	300	12
6821573030	300	300	15
6821573040	300	400	15

## FKW shaft bracket

- Fixing element for guide shafts/tube

**Material:**  
Body of element, aluminium die casting, black powder-coating,  
VA screws



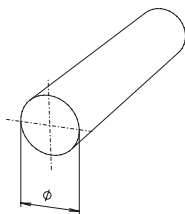
[mm]

Code No.	Type	$\varnothing$ h8	A	B	C	$\varnothing$ D	H1 $\pm 0.1$	H2	I	M
52300013030	FKW 30	30	70	25	72.5	7	40	7	42	56
52400013030	FKW 40	40	85	30	92	7	50	10	56	70

## Guide shaft/guiding tube\*

- Shaft, induction hardened, ground and polished

- Hardness: 62 HRC.
- Roughness value  $R_a \leq 0.35 \mu\text{m}$



[mm]

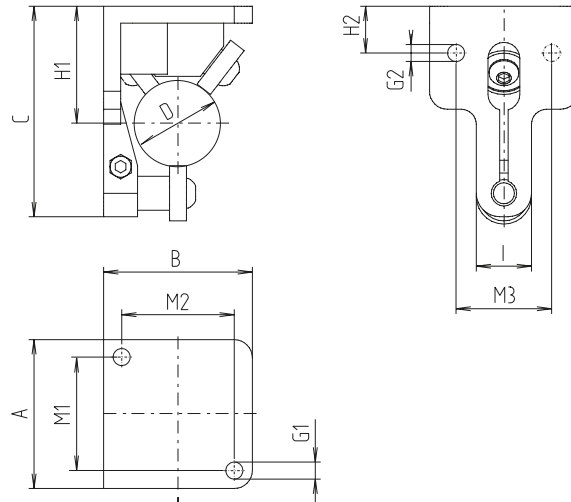
Code No.	Diameter	Material	Tolerance	max. length
<b>Guide shaft</b>				
8030005	30	Cf53 hard chrome-plated	h7	6000
8040005	40	Cf53 hard chrome-plated	h7	6000

\* Cannot be used in conjunction with rollers made of steel

**RF roller guide element  
-fixed bearing-**

- Ready-to-install element
- Can be adjusted with zero backlash
- Steel rollers

**Material:** Body of element, aluminium die casting, vibratory finished  
Steel parts galvanised



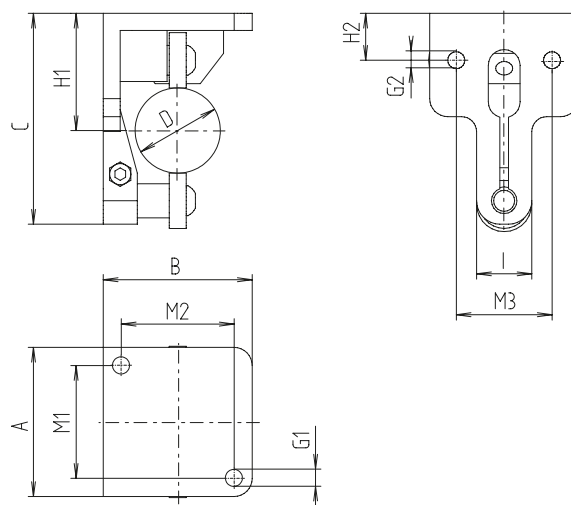
[mm]

Code No.	Type	Rollers	Max. load [N]	A	B	C	D	G1	G2	H1	H2	I	M1	M2	M3
6023014	RF 30	Steel	700	60	60	83	30	M8-8 deep		46	20	22	44	44	38
6024014	RF 40	Steel	1000	70	70	99	40	M8-8 deep		55	22	26	53	53	45

**RL roller guide element  
-floating bearing-**

- Ready-to-install element
- Can be adjusted with zero backlash
- Steel rollers

**Material:** Body of element, aluminium die casting, vibratory finished  
Steel parts galvanised

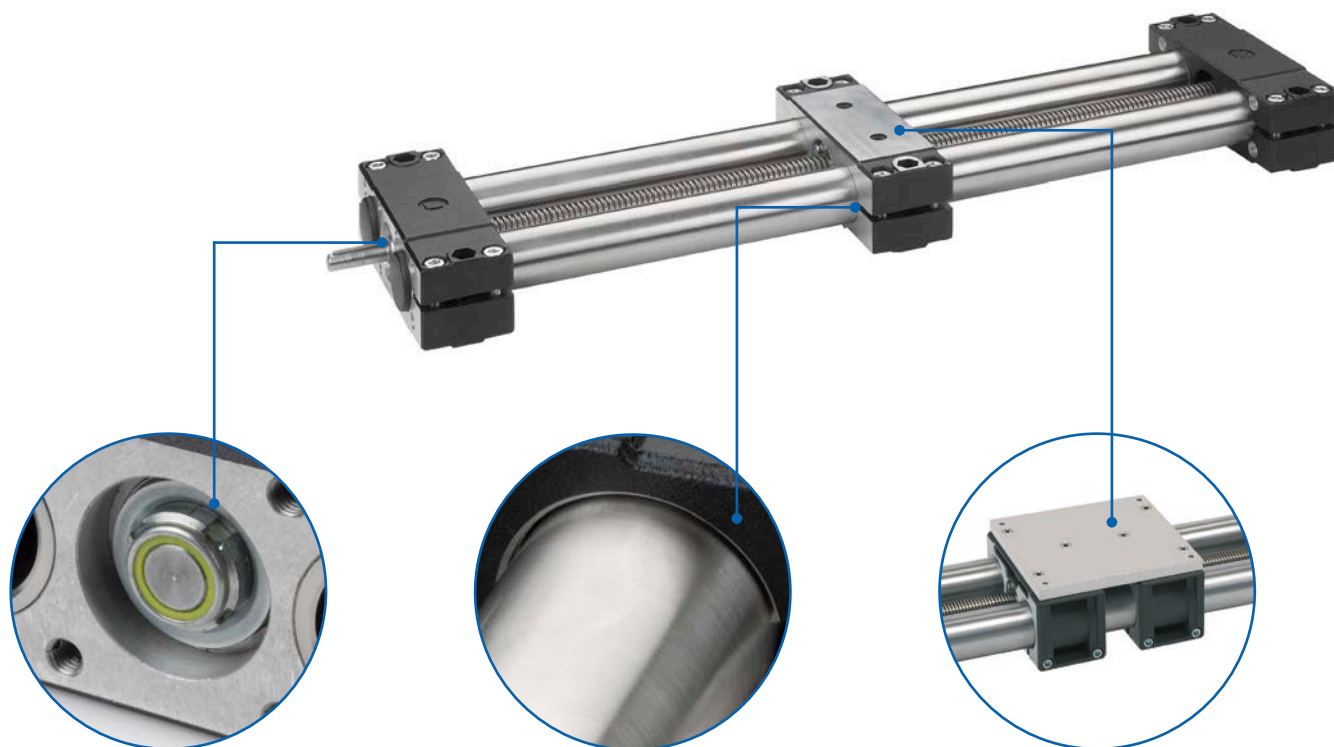


[mm]

Code No.	Type	Rollers	Max. load [N]	A	B	C	D	G1	G2	H1	H2	I	M1	M2	M3
6023024	RL 30	Steel	700	60	60	83	30	M8-8 deep		46	20	22	44	44	38
6024024	RL 40	Steel	1000	70	70	99	40	M8-8 deep		55	22	26	53	53	45

# Twin tube actuator – EP(X)

The robust twin tube unit – compensates for high bending moments during hand and motor-driven adjustments



## Screw with choice of slide bearing or ball bearing

- ✓ Ideal for use in environments with fine dust/abraded particles due to slide bearings

## Carriages available with optional slide bushing

- ✓ Lower input torque at shaft
- ✓ Wear minimised on carriage

## Large fixing plate

- ✓ The EPX version is equipped with two carriages that are connected via a large fixing plate
- ✓ Enables high moments

## Features:

- Enables high moments
- Version available with large fixing plate

## Options:

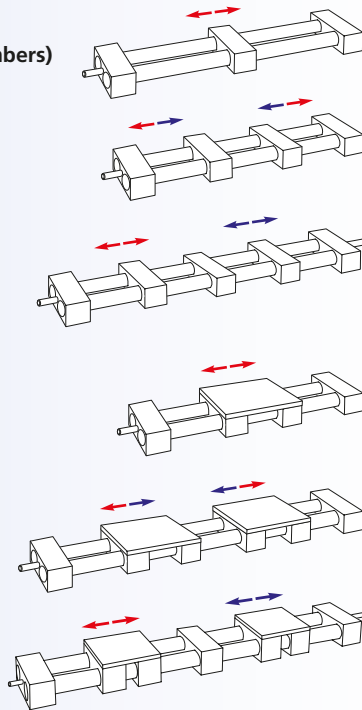
- Corrosion-protected units
- Bellows
- Second not driven carriage

**EP(X) tubular linear unit - Table of contents**
**Properties/Technical data**

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(Dimensions, order numbers)



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- EP right and lefthand thread ..... 90 - 91
- EP *split* screw ..... 92 - 93
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- EPX right or lefthand thread..... 96 - 97
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**Drive**

- Handwheel ..... 100
- Chain wheel..... 100
- Timing-belt pulley/timing belt ..... 101
- Bevel gear set ..... 101
- Angular drive/Adaptor for angular drive ..... 102
- Motor adaptor/coupling..... 104 - 105

**Position determination**

- Scale ..... 106
- Positioning indicator..... 107
- Limit switch ..... 108 - 109

## General information/operating conditions

Design	Twin tube actuator with ACME screw
Guide	Slide guide, optional carriage with slide guide available
Installation position	Any position
Lead accuracy	± 0.2 mm/300 mm stroke
Self-locking	Yes
Ambient temperature	0°C to +60°C

## Screw lead

Type	Screw lead [mm]	Speed with slide bearing [mm/s]	Speed with ball bearing [mm/s]
EP / EPX 18	2	2.7	8.3
EP / EPX 30	3	4	12.5
EP / EPX 40	4	5.3	16.7
EP / EPX 50	4	5.3	16.7
EP / EPX 60	5	6.7	20.8
EP / EPX 80	6	8	25

$$\text{Required screw speed* } n \text{ [rpm]} = \frac{\text{speed [m/min]} \times 1000}{\text{screw lead [mm]}}$$

Max. screw speed      with slide bearing 80 rpm  
                                  with ball bearing 250 rpm

## No-load torque

Type	with ball bearing	with slide bearing	Type	with ball bearing	with slide bearing
EP 18	0.30	*	EPX 18	0.40	*
EP 30	0.60	0.75	EPX 30	0.70	0.75
EP 40	0.70	0.85	EPX 40	0.80	0.85
EP 50	1.10	1.25	EPX 50	1.20	1.25
EP 60	1.40	*	EPX 60	1.50	*
EP 80	1.00	*	EPX 80	1.40	*

\* Type 18, 60 and 80 spindle only available with ball bearing

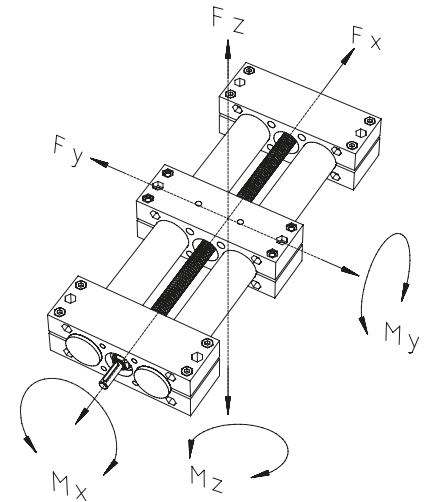


EP(X) - Technical data

Load data\*

- F Force [N]
- M Moment [Nm]
- I Geometric moment of inertia [cm<sup>4</sup>]

\* with reference to carriage (deflection of guide element  $f = 0.5 \text{ mm}$ , static, end elements supported)

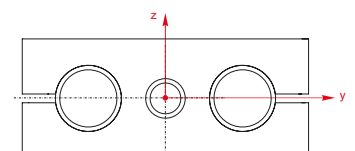


Type	Fx			Fy			Fz			Mx	My	Mz
	Total length [mm]			500	1000	1500	500	1000	1500			
EP 18	400	200	100	-	100	70	-	20	30	35		
EP 30	800	1000	800	500	550	300	100	60	60	75		
EP 40	1000	3500	2600	1300	2000	580	120	120	130	150		
EP 50	1700	3800	2300	2050	3000	670	170	160	200	260		
EP 60	2500	6600	5400	4900	6000	2600	330	300	340	480		
EP 80	4500	11000	9000	7500	8000	4800	700	400	530	620		
EPX 18	400	270	170	-	130	100	-	40	45	70		
EPX 30	800	1400	1200	700	650	450	200	80	110	140		
EPX 40	1000	6000	3100	1800	2200	680	220	160	190	240		
EPX 50	1700	7700	5000	2500	3300	830	310	240	345	510		
EPX 60	2500	11000	9000	7800	7000	2900	580	520	610	910		
EPX 80	4500	14000	11700	10100	9100	3700	750	650	780	1100		

Geometric moment of inertia

[cm<sup>4</sup>]

Type	Iy	Iz
EP(X) 18	1.03	21.39
EP(X) 30	3.47	46.57
EP(X) 40	14.84	198.06
EP(X) 50	30.81	319.84
EP(X) 60	65.88	795.90
EP(X) 80	237.41	3168.98



# EP – Versions

## Order information:

- Corrosion-protected units available on request
- Second free-running carriage available on request
- Bellows version available as optional extra

## Version ■ Right or lefthand thread



Type 18-60  
(image similar)



Type 80

Code No.	Type	Spindle	Basic length	B	C	D1	D2	D3	F	G1**	G2	H	J	L1	L2	M1	M2	M3	M4
72_181_	18	10x2	104	82	29	6	-	16 H7	1	-	M5/5 deep	14.5	28	17	-	-	68	40	18
72_183_							6								17				
72_301_	30	14x3	150	130	54	8	-	30 H8	2	M6 / 12 deep	M6/9 deep	27	50	26	-	40x30	114	70	42
72_303_							8								26				
72_401_	40	20x4	180	180	63	12	-	40 H8	3	M8 / 20 deep	M8/8 deep	31.5	60	38	-	46	160	90	62
72_403_							12								38				
72_501_	50	20x4	216	206	73	12	-	40 H8	1	M8 / 30 deep	M8/8 deep	36.5	72	38	-	46	184	100	62
72_503_							12								38				
72_601_	60	24x5	240	240	88	14	-	50 H8	2	M8 / 20 deep	M10/10 deep	44	80	38	-	55	216	130	74
72_603_							14								38				
72_801_	80	32x6	360	302	143	20	-	70 H7	4.5	M8 / 20 deep	M10/20 deep	71.5	120	31.5	-	64	-	180	-
72_803_							20								31.5				

----- Total length = basic length + travel [mm]

### Bearing:

- 0 = spindle with slide bearing\*
- 1 = spindle with ball bearing
- 2 = spindle with slide bearing\* and carriage with slide bushing
- 3 = spindle with ball bearing and carriage with slide bushing

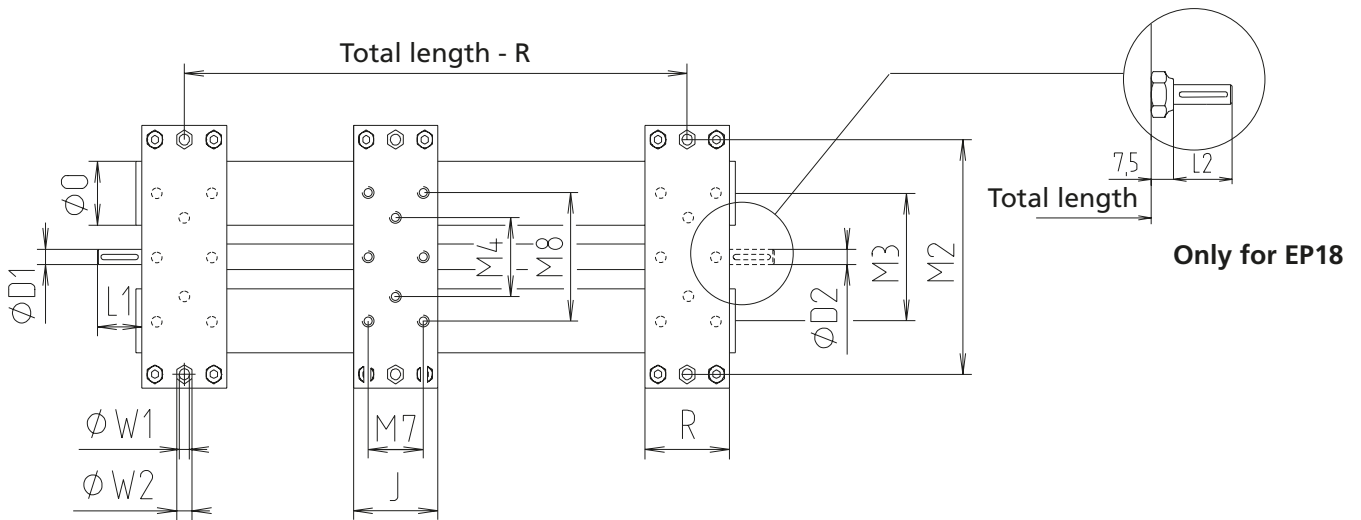
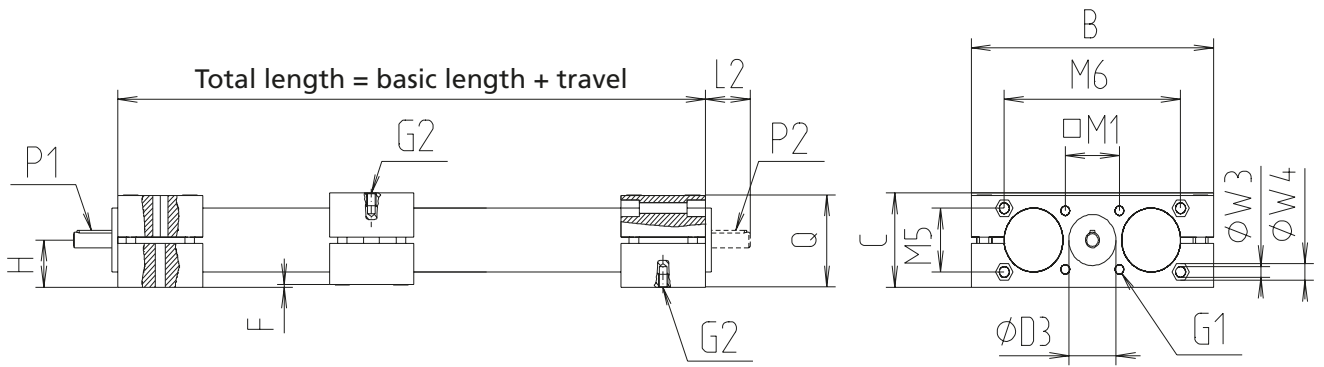
### Version:

- 1 = righthand thread
- 2 = lefthand thread

\* Type 18, 60 and 80 spindle only available with ball bearing

\*\* G1 thread only available on spindle with ball bearing





[mm]

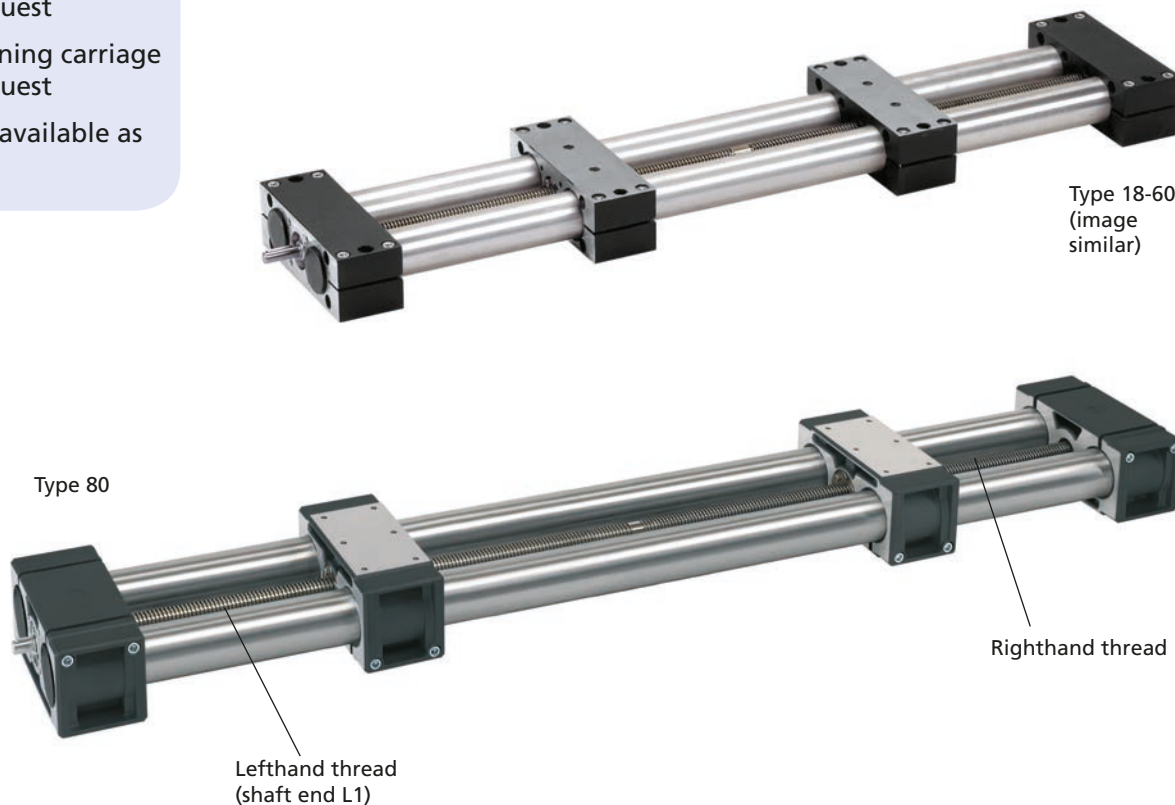
M 5	M 6	M 7	M 8	O	P 1	P 2	Q	R	W 1	W 2	W 3	W 4	Max. travel	Mass [kg]	
														Basic length	per 100 mm travel
-	-	-	-	18	2x2x12	-	28	28	5.5	A/F 8/6.5 deep	-	-	380	0.775	0.447
						2x2x12								360	0.779
35	92	-	-	30	2x2x20	-	52	50	6.5	A/F 10 / 26.5 deep	-	-	1350	2.065	0.330
						2x2x20								1290	2.075
38	132	-	-	40	4x4x32	-	60	60	8.5	A/F 13 / 32 deep	6.5	A/F 11/7 deep	2760	4.925	0.900
						4x4x32								2700	4.960
50	150	-	-	50	4x4x32	-	72	72	8.5	A/F 13 / 37.5 deep	8.5	A/F 13/8.5 deep	2750	7.438	1.100
						4x4x32								2700	7.473
60	185	-	-	60	5x5x32	-	86	80	10.5	A/F 17 / 44.5 deep	8.5	A/F 13/8.5 deep	2690	13.420	1.630
						5x5x32								2650	13.466
-	-	80	180	80	6x6x22	-	138.5	-	-	-	-	-	2600	35.920	3.470
						6x6x22								2600	36.010

# EP – Versions

## Order information:

- Please specify total travel when placing an order
- Corrosion protected units available on request
- Second free running carriage available on request
- Bellows version available as optional extra

## Version ■ Right and lefthand thread



Code No.	Type	Spindle	Basic length	B	C	D 1	D 2	D 3	F	G 1**	G 2	H	J	L 1	L 2	M 1	M 2	M 3	M 4
72318__	18	10x2	132	82	29	6	6	16 <sup>H7</sup>	1	-	M5/5 deep	14.5	28	17	17	-	68	40	18
72330__	30	14x3	200	130	54	8	8	30 <sup>H8</sup>	2	M6/12 deep	M6/9 deep	27	50	26	26	40x30	114	70	42
72340__	40	20x4	240	180	63	12	12	40 <sup>H8</sup>	3	M8 / 20 deep	M8/8 deep	31.5	60	38	38	46	160	90	62
72350__	50	20x4	288	206	73	12	12	40 <sup>H8</sup>	2	M8 / 30 deep	M8/8 deep	36.5	72	38	38	46	184	100	62
72360__	60	24x5	320	240	88	14	14	50 <sup>H8</sup>	2	M8 / 20 deep	M10/20 deep	44	80	38	38	55	216	130	74
72380	80	32x6	480	302	143	20	20	70 <sup>H7</sup>	4.5	M8 / 20 deep	M10/20 deep	71.5	120	31.5	31.5	64	-	180	180

----- Total length = basic length + total travel [mm]

### Bearing:

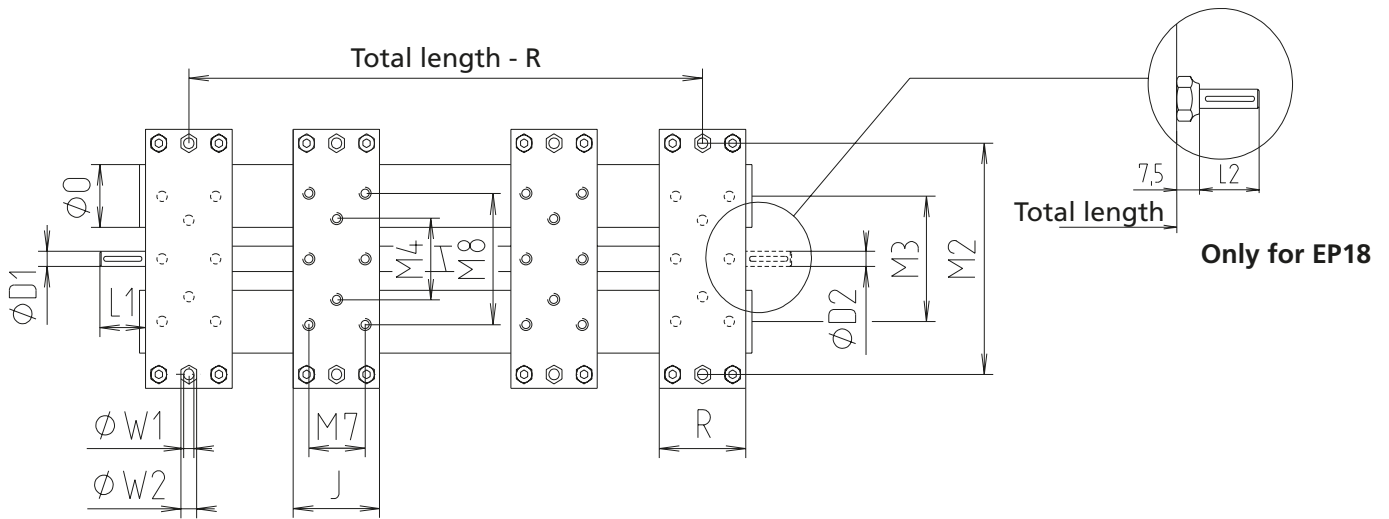
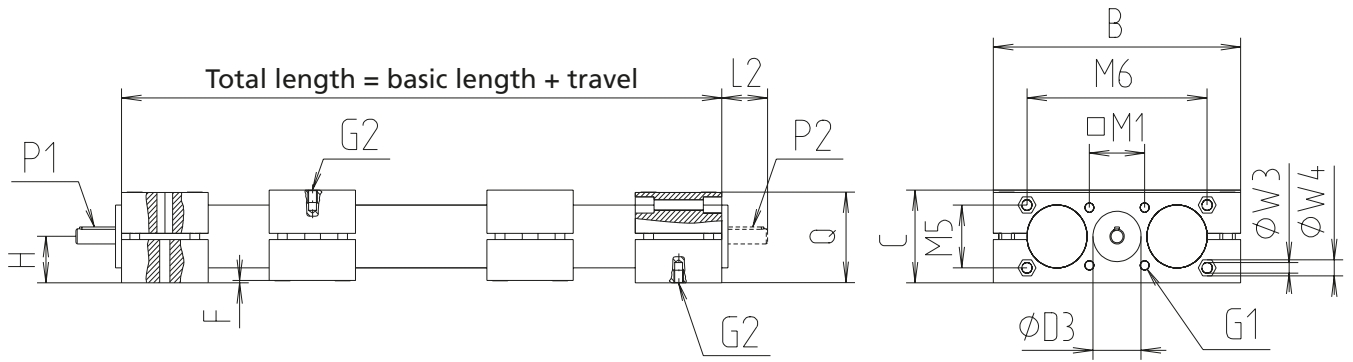
- 0 = spindle with slide bearing\*
- 1 = spindle with ball bearing
- 2 = spindle with slide bearing\* and carriage with slide bushing
- 3 = spindle with ball bearing and carriage with slide bushing

### Version:

- 1 = 1 drive shaft at lefthand thread end
- 2 = 1 drive shaft at righthand thread end
- 3 = 2 drive shafts

\* Type 18, 60 and 80 spindle only available with ball bearing

\*\* G1 thread only available on spindle with ball bearing



[mm]

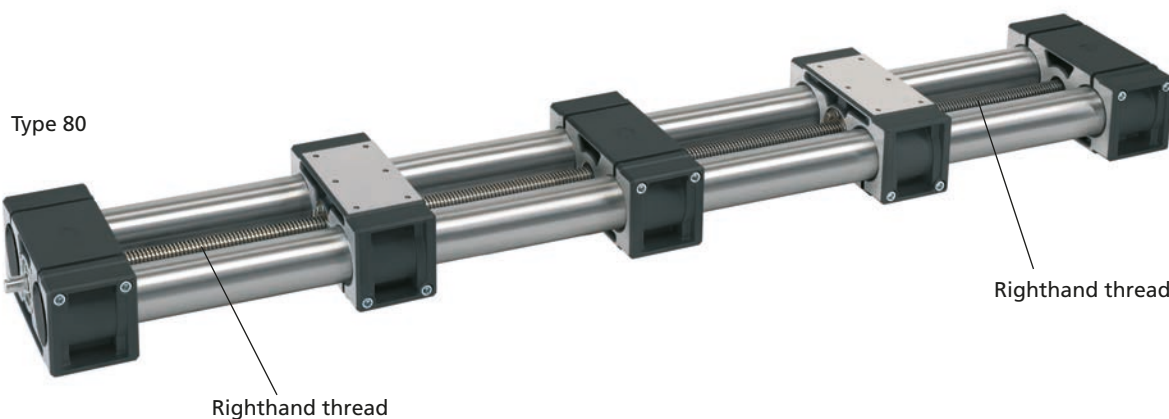
M 5	M 6	M 7	M 8	O	P 1	P 2	Q	R	W 1	W 2	W 3	W 4	Max. travel	Mass [kg]	
														Basic length	per 100 mm travel
-	-	-	-	18	2x2x12	2x2x12	28	28	5.5	A/F 8/6.5 deep	-	-	350	1.014	0.447
35	92	-	-	30	2x2x20	2x2x20	52	50	6.5	A/F 10/26.5 deep	-	-	1270	2.440	0.330
38	132	-	-	40	4x4x32	4x4x32	60	60	8.5	A/F 13/32 deep	6.5	A/F 11/7 deep	2720	5.585	0.900
50	150	-	-	50	4x4x32	4x4x32	72	72	8.5	A/F 13/37.5 deep	8.5	A/F 13/8.5 deep	2670	8.633	1.100
60	185	-	-	60	5x5x32	5x5x32	86	80	10.5	A/F 17/44.5 deep	8.5	A/F 13/8.5 deep	2640	18.182	1.630
-	-	80	180	80	6x6x22	6x6x22	138.5	120	-	-	-	-	2450	48.480	3.470

# EP – Versions

## Order information:

- Please specify total travel when placing an order
- Corrosion-protected units available on request
- Second free-running carriage available on request
- Bellows version available as optional

Version ■ *Split screw*

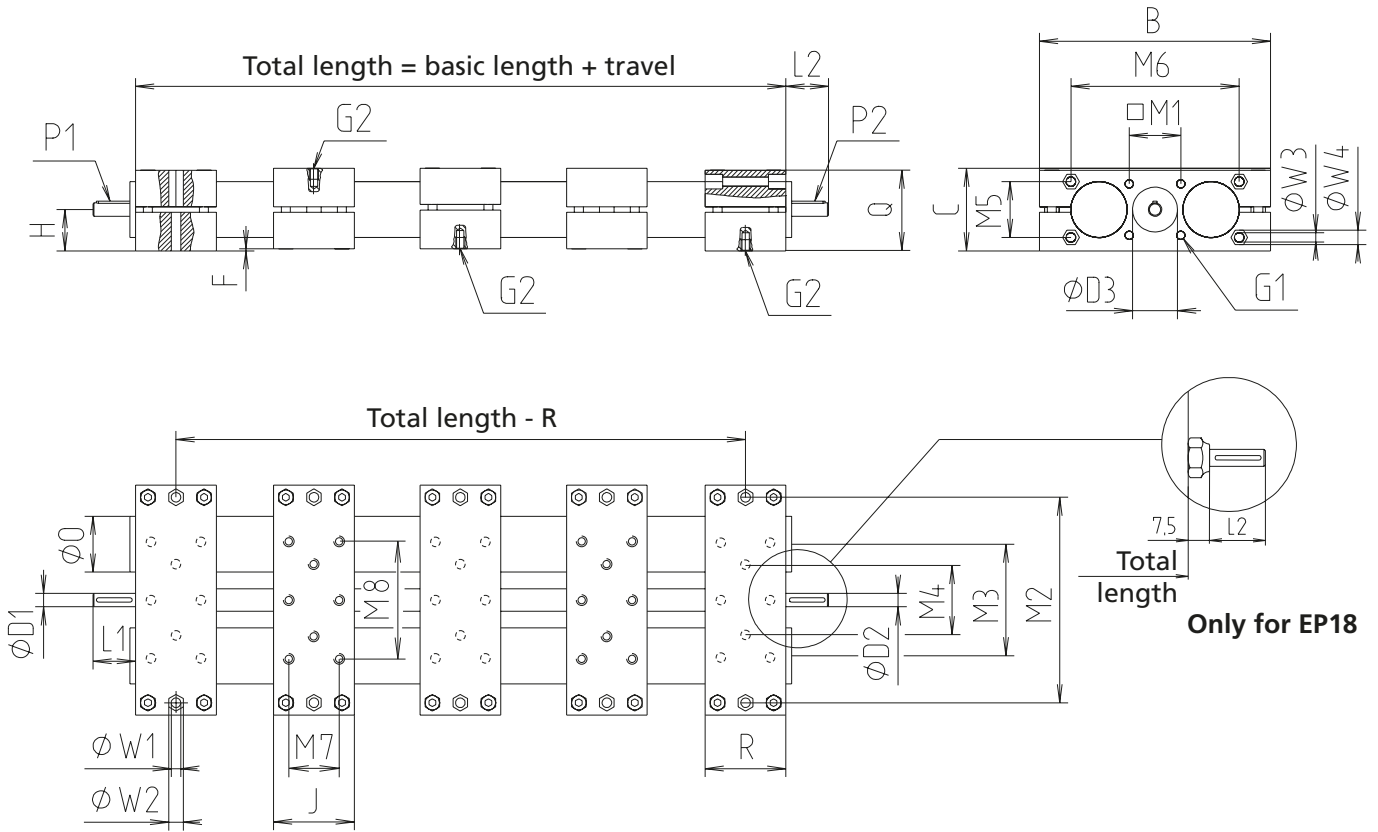


Code No.	Type	Spindle	Basic length	B	C	D 1	D 2	D 3	F	G 1**	G 2	H	J	L 1	L 2	M 1	M 2	M 3	M 4
724183 _	18	10x2	160	82	29	6	6	16 <sup>H7</sup>	1	–	M5 / 5 tief	14.5	28	17	17	–	68	40	18
724303 _	30	14x3	250	130	54	8	8	30 <sup>H8</sup>	2	M6 / 12 deep	M6 / 9 deep	27	50	26	26	40x30	114	70	42
724403 _	40	20x4	300	180	63	12	12	40 <sup>H8</sup>	3	M8 / 20 deep	M8 / 8 deep	31.5	60	38	38	46	160	90	62
724503 _	50	20x4	360	206	73	12	12	40 <sup>H8</sup>	2	M8 / 30 deep	M8 / 8 deep	36.5	72	38	38	46	184	100	62
724603 _	60	24x5	400	240	88	14	14	50 <sup>H8</sup>	2	M8 / 20 deep	M10/10 deep	44	80	38	38	55	216	130	74
724803	80	32x6	600	302	143	20	20	70 <sup>H7</sup>	4.5	M8 / 20 deep	M10/20 deep	71.5	120	31.5	31.5	64	–	180	180

----- Total length = basic length + total travel [mm]

### Bearing:

- 1 = spindle with ball bearing and carriage without slide bushing
- 3 = spindle with ball bearing and carriage with slide bushing



[mm]

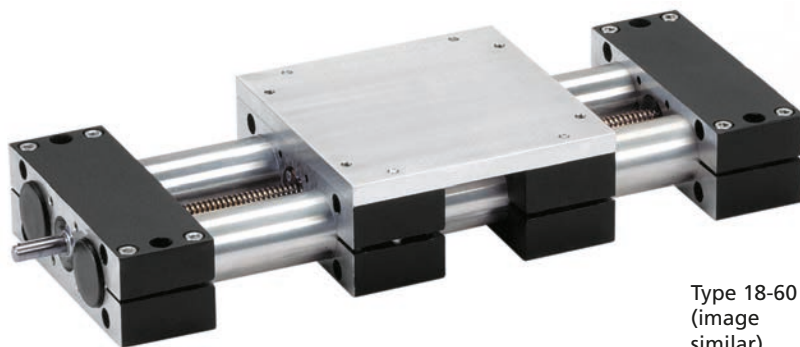
M 5	M 6	M 7	M 8	O	P 1	P 2	Q	R	W 1	W 2	W 3	W 4	Max. travel/end	Mass [kg]	
														Basic length	per 100 mm travel
-	-	-	-	18	2 x 2 x 12	2 x 2 x 12	28	28	5.5	A/F 8/6.5 deep	-	-	400	1.240	0.447
35	92	-	-	30	2 x 2 x 20	2 x 2 x 20	52	50	6.5	A/F 10/26.5 deep	-	-	1340	2.645	0.330
38	132	-	-	40	4x4x32	4x4x32	60	60	8.5	A/F 13/32 deep	6.5	A/F 11/7 deep	2000	8.020	0.900
50	150	-	-	50	4 x 4 x 32	4 x 4 x 32	72	72	8.5	A/F 13/37.5 deep	8.5	A/F 13/8.5 deep	2000	12.760	1.100
60	185	-	-	60	5 x 5 x 32	5 x 5 x 32	86	80	10.5	A/F 17/44.5 deep	8.5	A/F 13/8.5 deep	2000	22.532	1.630
-	-	80	180	80	6 x 6 x 20	6 x 6 x 20	138.5	120	-	-	-	-	1700	60.110	3.470

# EPX – Versions

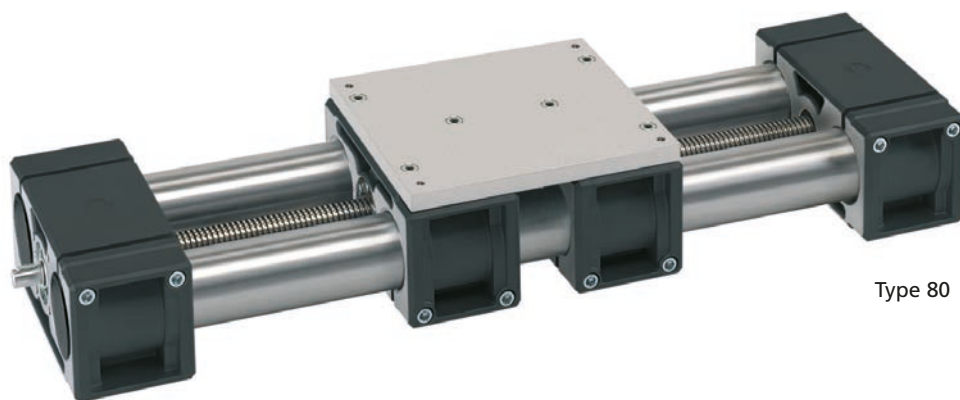
## Order information:

- Corrosion-protected units available on request
- Second free-running carriage available on request
- Bellows version available as optional

Version ■ Right or lefthand thread



Type 18-60  
(image similar)



Type 80

Code No.	Type	Spindle	Basic length	B	C	D 1	D 2	D 3	F	G 1**	G 2	G 3	H 1	H 2	J	L 1	L 2	M 1	M 2	M 3	M 4
72_181_	18	10 x 2	156	82	37	6	–	16 <sup>H7</sup>	1	–	M6	M5/5 deep	14.5	8	80	17	–	–	68	40	18
72_183_	18						6	16 <sup>H7</sup>	1	–	M6	M5/5 deep	14.5	8	80	17	–	–	68	40	18
72_301_	30	14 x 3	230	130	64	8	–	30 <sup>H8</sup>	2	M6/12 deep	M6	M6/9 deep	27	10	130	26	–	40 x 30	114.5	70	42
72_303_	30						8	30 <sup>H8</sup>	2	M6/12 deep	M6	M6/9 deep	27	10	130	26	26	40 x 30	114.5	70	42
72_401_	40	20 x 4	300	180	75	12	–	40 <sup>H8</sup>	3	M8 / 20 deep	M8	M8 / 8 deep	31.5	12	180	38	–	46	160	90	62
72_403_	40						12	40 <sup>H8</sup>	3	M8 / 20 deep	M8	M8 / 8 deep	31.5	12	180	38	38	46	160	90	62
72_501_	50	20 x 4	350	206	88	12	–	40 <sup>H8</sup>	2	M8/30 deep	M8	M8/8 deep	36.5	15	206	38	–	46	184	100	62
72_503_	50						12	40 <sup>H8</sup>	2	M8/30 deep	M8	M8/8 deep	36.5	15	206	38	38	46	184	100	62
72_601_	60	24 x 5	400	240	103	14	–	50 <sup>H8</sup>	2	M8/20 deep	M10	M10/10 deep	44	15	240	38	–	55	216	130	74
72_603_	60						14	50 <sup>H8</sup>	2	M8/20 deep	M10	M10/10 deep	44	15	240	38	38	55	216	130	74
72_801_	80	32 x 6	550	302	162	20	–	70 <sup>H7</sup>	4.5	M8/20 deep	M10	M10/20 deep	71.5	19	310	31.5	–	64	–	180	180
72_803_	80						20	70 <sup>H7</sup>	4.5	M8/20 deep	M10	M10/20 deep	71.5	19	310	31.5	31.5	64	–	180	180

----- Total length = basic length + travel [mm]

### Bearing:

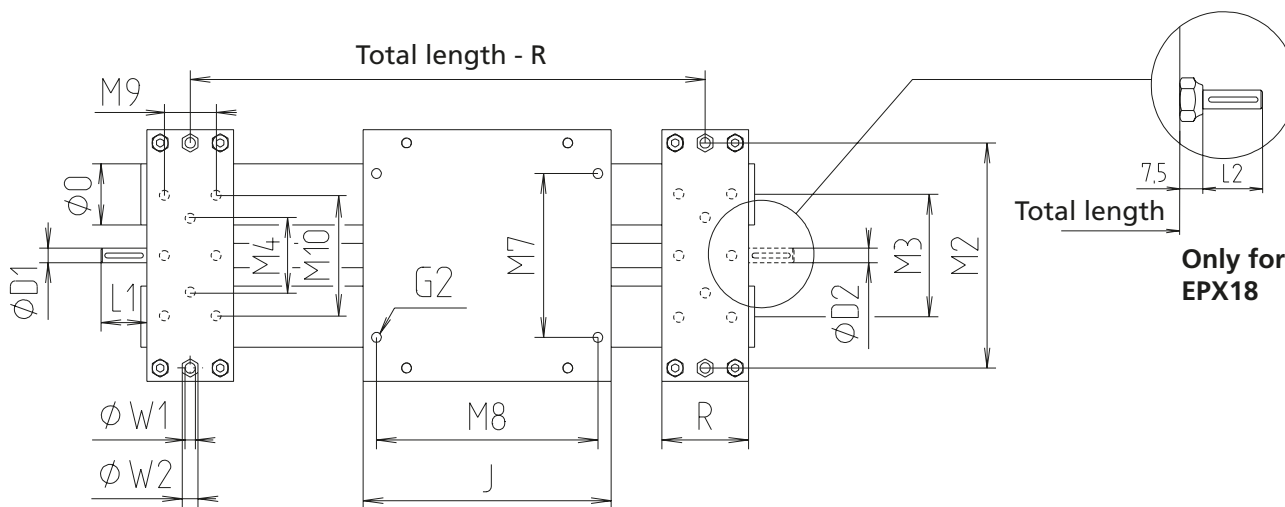
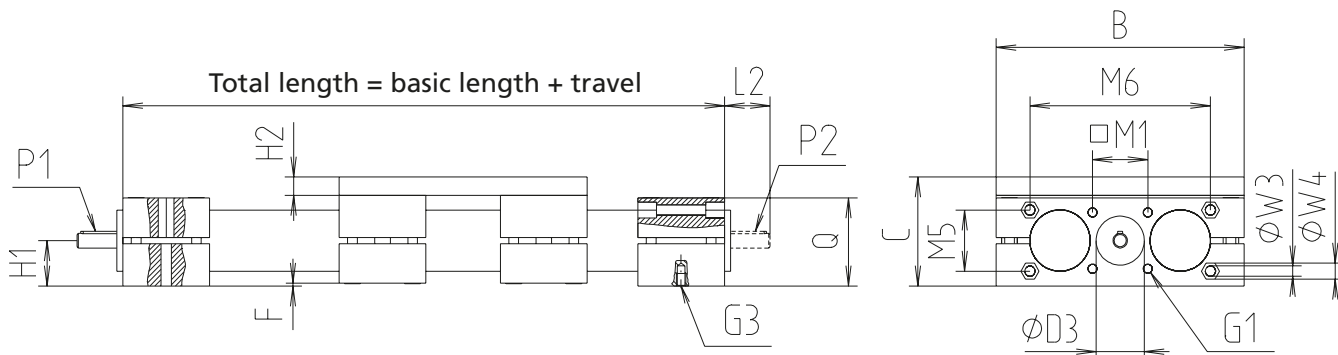
- 0 = spindle with slide bearing\*
- 1 = spindle with ball bearing
- 2 = spindle with slide bearing\* and carriage with slide bushing
- 3 = spindle with ball bearing and carriage with slide bushing

### Version:

- 5 = righthand thread
- 6 = lefthand thread

\* Type 18, 60 and 80 spindle only available with ball bearing

\*\* G1 thread only available on spindle with ball bearing



[mm]

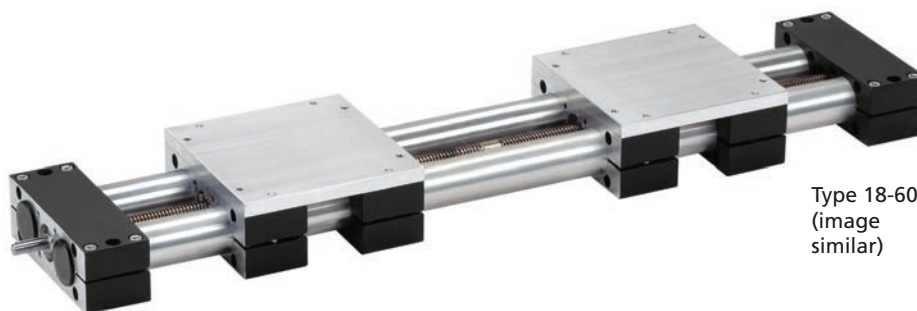
M 5	M 6	M 7	M 8	M 9	M 10	O	P 1	P 2	Q	R	W 1	W 2	W 3	W 4	Max. travel	Mass [kg]	
																Basic length	per 100 mm travel
-	-	56	28	-	-	18	2 x 2 x 12	-	28	28	5.5	A/F 8/6.5 deep	-	-	320	1.261	0.447
								2 x 2 x 12							310	1.265	0.447
35	92	80	114	-	-	30	2 x 2 x 20	-	52	50	6.5	A/F 10/26.5 deep	-	-	1240	3.519	0.330
								2 x 2 x 20							1210	3.529	0.330
38	132	120	160	-	-	40	4 x 4 x 32	-	60	60	8.5	A/F 13/32 deep	6.5	A/F 11 / 7 deep	2660	8.105	0.900
								4 x 4 x 32							2620	8.140	0.900
50	150	134	184	-	-	50	4 x 4 x 32	-	72	72	8.5	A/F 13/37.5 deep	8.5	A/F 13/8.5 deep	2610	12.525	1.100
								4 x 4 x 32							2570	12.560	1.100
60	185	160	216	-	-	60	5 x 5 x 32	-	86	80	10.5	A/F 17/44.5 deep	8.5	A/F 13/8.5 deep	2560	21.426	1.630
								5 x 5 x 32							2520	21.472	1.630
-	-	250	270	80	180	80	6 x 6 x 20	-	138.5	120	-	-	-	-	2340	54.760	3.470
								6 x 6 x 20							2340	54.860	3.470

# EPX – Versions

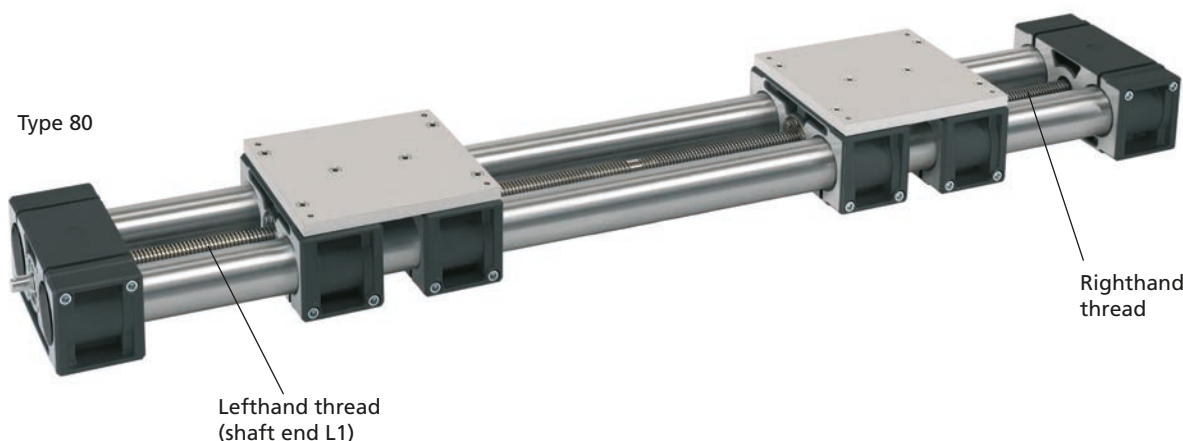
## Order information:

- Please specify total travel when placing an order
- Corrosion-protected units available on request
- Second free-running carriage available on request
- Bellows version available as optional

Version ■ Right and lefthand thread



Type 18-60  
(image similar)



Type 80

Lefthand thread  
(shaft end L1)

Righthand thread

Code No.	Type	Spindle	Basic length	B	C	D 1	D 2	D 3	F	G 1**	G 2	G 3	H 1	H 2	J	L 1	L 2	M 1	M 2	M 3	M 4
72718__	18	10 x 2	236	82	37	6	6	16 <sup>H7</sup>	1	–	M6	M5/5 deep	14.5	8	80	17	17	–	68	40	18
72730__	30	14 x 3	360	130	64	8	8	30 <sup>H8</sup>	2	M6/12 deep	M6	M6/9 deep	27	10	130	26	26	40 x 30	114	70	42
72740__	40	20 x 4	480	180	75	12	12	40 <sup>H8</sup>	3	M8/20 deep	M8	M8 / 8 deep	31.5	12	180	38	38	46	160	90	62
72750__	50	20 x 4	556	206	88	12	12	40 <sup>H8</sup>	2	M8/30 deep	M8	M8/8 deep	36.5	15	206	38	38	46	184	100	62
72760__	60	24 x 5	640	240	103	14	14	50 <sup>H8</sup>	2	M8/20 deep	M10	M10/10 deep	44	15	240	38	38	55	216	130	74
72780	80	32 x 6	860	302	162	20	20	70 <sup>H7</sup>	4.5	M8/20 deep	M10	M10/20 deep	71.5	19	310	31.5	31.5	64	–	180	180

\_\_\_\_\_ Total length = basic length + total travel [mm]

### Bearing:

- 0 = spindle with slide bearing\*
- 1 = spindle with ball bearing
- 2 = spindle with slide bearing\* and carriage with slide bushing
- 3 = spindle with ball bearing and carriage with slide bushing

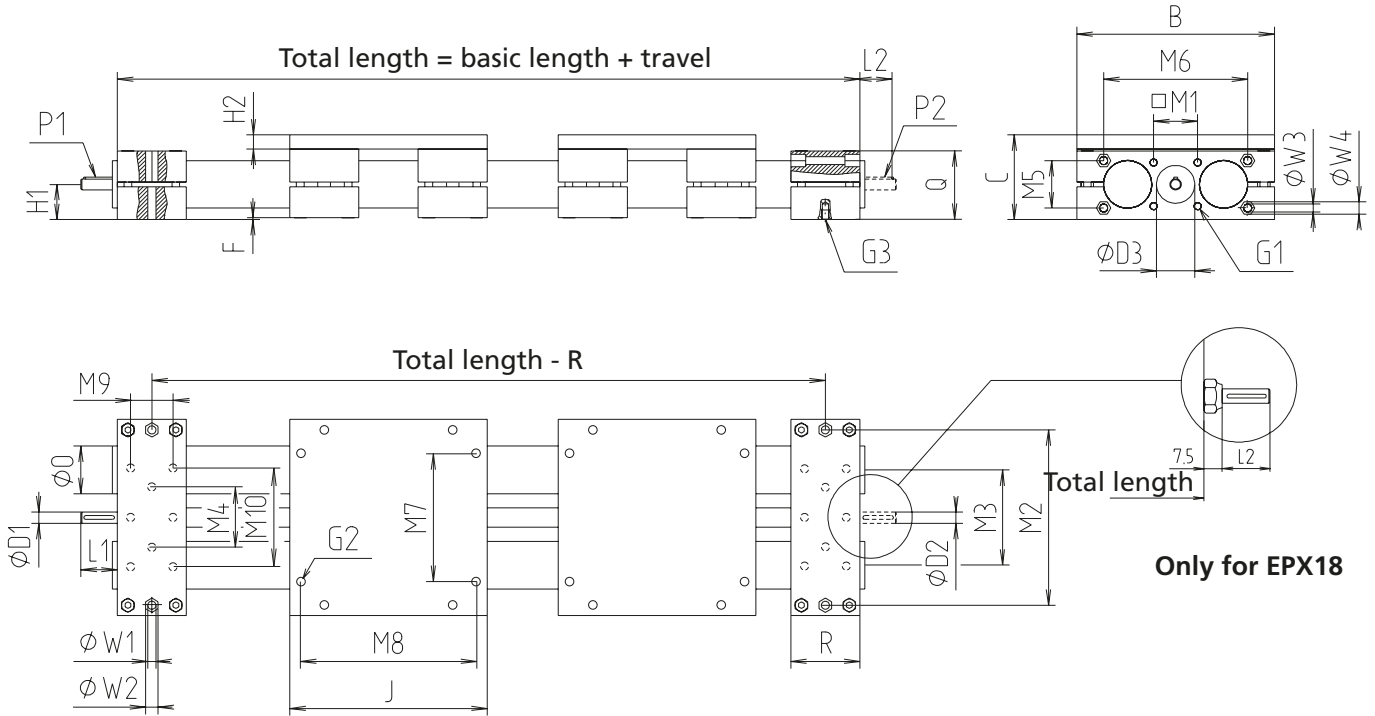
### Version:

- 1 = 1 drive shaft at lefthand thread end
- 2 = 1 drive shaft at righthand thread end
- 3 = 2 drive shafts

\* Type 18, 60 and 80 spindle only available with ball bearing

\*\* G1 thread only available on spindle with ball bearing





[mm]

M 5	M 6	M 7	M 8	M 9	M 10	O	P 1	P 2	Q	R	W 1	W 2	W 3	W 4	Max. travel	Mass [kg]	
																Basic length	per 100 mm travel
-	-	56	28	-	-	18	2 x 2 x 12	2 x 2 x 12	28	28	5.5	A/F 8/6.5 deep	-	-	230	1.983	0.447
35	92	80	114	-	-	30	2 x 2 x 20	2 x 2 x 20	52	50	6.5	A/F 10/26.5 deep	-	-	1080	5.588	0.330
38	132	120	160	-	-	40	4 x 4 x 32	4 x 4 x 32	60	60	6.5	SW 13 / 32 deep	6.5	A/F 11 / 7 deep	2440	13.030	0.900
50	150	134	184	-	-	50	4 x 4 x 32	4 x 4 x 32	72	72	8.5	A/F 13/37.5 deep	8.5	A/F 13/8.5 deep	2360	20.166	1.100
60	185	160	216	-	-	60	5 x 5 x 32	5 x 5 x 32	86	80	10.5	A/F 17/44.5 deep	8.5	A/F 13/8.5 deep	2280	34.244	1.630
-	-	250	270	80	180	80	6 x 6 x 20	6 x 6 x 20	138.5	120	-	-	-	-	2070	86.070	3.470

# EPX – Versions

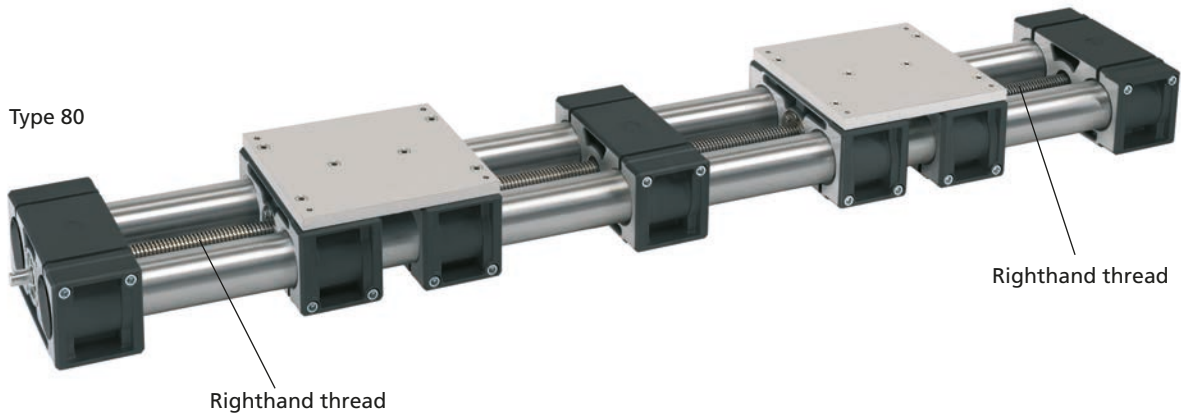
## Order information:

- Please specify total travel when placing an order
- Corrosion-protected units available on request
- Second free-running carriage available on request
- Bellows version available as optional

Version ■ *Split screw*



Type 18-60  
(image similar)



Type 80

Righthand thread

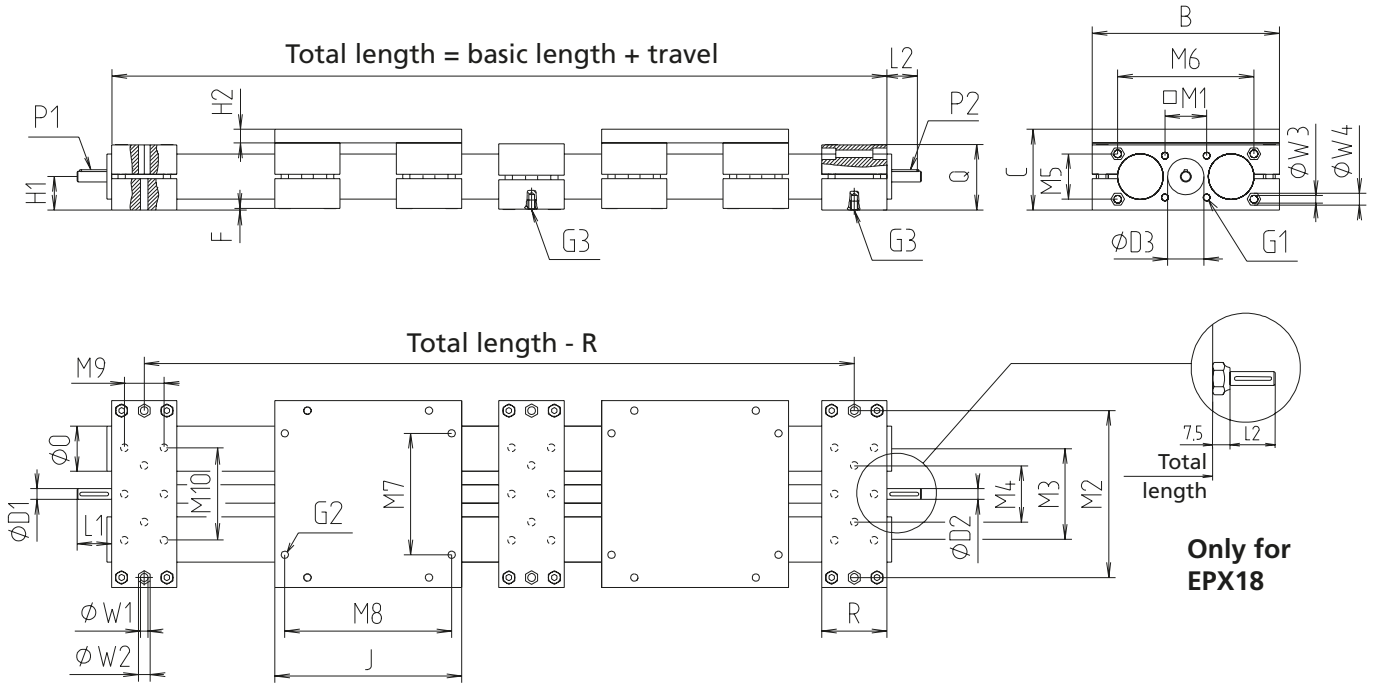
Righthand thread

Code No.	Type	Spindle	Basic length	B	C	D 1	D 2	D 3	F	G 1**	G 2	G 3	H 1	H 2	J	L 1	L 2	M 1	M 2	M 3	M 4
728183_	18	10 x 2	264	82	37	6	6	16 <sup>H7</sup>	1	–	M6	M5/5 deep	14.5	8	80	17	17	–	68	40	18
728303_	30	14 x 3	410	130	64	8	8	30 <sup>H8</sup>	2	M6/12 deep	M6	M6/9 deep	27	10	130	26	26	40 x 30	114	70	42
728403_	40	20 x 4	540	180	75	12	12	40 <sup>H8</sup>	3	M8/20 deep	M8	M8 / 8 deep	31.5	12	180	38	38	46	160	90	62
728503_	50	20 x 4	628	206	88	12	12	40 <sup>H8</sup>	2	M8/30 deep	M8	M8/8 deep	36.5	15	206	38	38	46	184	100	62
728603_	60	24 x 5	720	240	103	14	14	50 <sup>H8</sup>	2	M8/20 deep	M10	M10/10 deep	44	15	240	38	38	55	216	130	74
728803	80	32 x 6	980	302	162	20	20	70 <sup>H7</sup>	4.5	M8/20 deep	M10	M10/20 deep	71.5	19	310	31.5	31.5	64	–	180	180

----- Total length = basic length + total travel [mm]

### Bearing:

- 1 = spindle with ball bearing and carriage without slide bushing
- 3 = spindle with ball bearing and carriage with slide bushing



[mm]

M 5	M 6	M 7	M 8	M 9	M 10	O	P 1	P 2	Q	R	W 1	W 2	W 3	W 4	Max. travel/end	Mass [kg]	
																Basic length	per 100 mm travel
-	-	56	28	-	-	18	2 x 2 x 12	2 x 2 x 12	28	28	5.5	A/F 8/6.5 deep	-	-	360	2.208	0.447
35	92	80	114	-	-	30	2 x 2 x 20	2 x 2 x 20	52	50	6.5	A/F 10/26.5 deep	-	-	1260	6.247	0.330
38	132	120	160	-	-	40	4 x 4 x 32	4 x 4 x 32	60	60	8.5	AF 13/32 deep	6.5	SW 11 / 7 deep	2000	14.620	0.900
50	150	134	184	-	-	50	4 x 4 x 32	4 x 4 x 32	72	72	8.5	A/F 13/37.5 deep	8.5	A/F 13/8.5 deep	2000	22.608	1.100
60	185	160	216	-	-	60	5 x 5 x 32	5 x 5 x 32	86	80	10.5	A/F 17/44.5 deep	8.5	A/F 13/8.5 deep	2000	38.548	1.630
-	-	250	270	80	180	80	6 x 6 x 20	6 x 6 x 20	138.5	120	-	-	-	-	1510	97.700	3.470

# EP(X) – Drive

## Handwheel

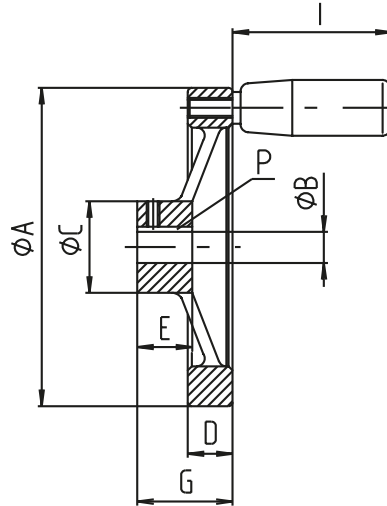
**Material:** Die-cast aluminium  
black powder-coating



Diam. 140-200



Diam. 60-100



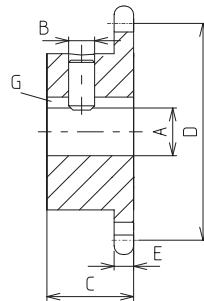
[mm]

Code No.	Type	Diam. A	B	C	D	E	G	P	I
90901	18	60	6	18	13	16	22	2 x 2	28
90913	30	100	8	28	14	17	30	2 x 2	52
90915	40-50	100	12	28	14	17	30	4 x 4	52
90905	40-50	140	12	36	16.5	19.5	36	4 x 4	66
90906	60	140	14	36	16.5	19.5	36	5 x 5	66
90918	60	160	14	36	18	20	39	5 x 5	80
90929	80	200	20	42	20.5	24	45	6 x 6	80

## Chain wheel

■ Other sizes on request

**Material:** Steel 500 N/mm<sup>2</sup>, min.



[mm]

Code No.	Type	A	B	C	D	E	G	No. of teeth	Size
91703	30	8	M6	18	41.1	4.5	2 x 2	10	1/2 x 3/16"
91704	40	12	M6	20	53	4.5	4 x 4	13	1/2 x 3/16"
91705	50	12	M6	20	61	4.5	4 x 4	15	1/2 x 3/16"
91706	60	14	M6	25	85	4.5	5 x 5	21	1/2 x 3/16"
91708	80	20	M6	25	85	4.5	6 x 6	21	1/2 x 3/16"



**HTD timing-belt pulley**

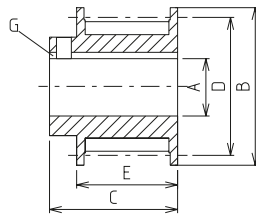


- Suitable for maintenance-free continuous operation

- Excellent accuracy and zero backlash during change of direction

- Can be clamped on feather key

**Material: Steel**



[mm]

Code No.	Type	A	B	C	D	E	G	Pull force	Pitch
92103	30	8	23	20	19.09	14.5	2 x 2	220 N	5
92105	40/50	12	32	26	28.65	20.5	4 x 4	330 N	5
92106	60	14	32	26	28.65	20.5	5 x 5	330 N	5

**Timing-belt (endless)**



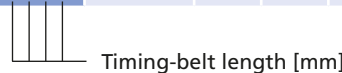
- HTD timing-belt with steel insert
- For pull force, see timing-belt pulley.

- Other lengths available on request.



[mm]

Code No.	Type	A	B	C	D	Timing-belt length			
92204	30	3.81	1.75	5	9	305	550	750	1000
92205	40/50/60	3.81	1.75	5	15	305	565	800	900

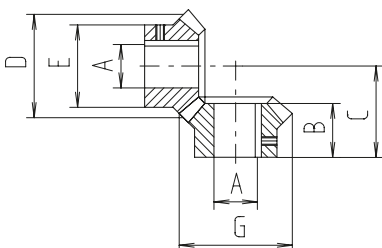


**Bevel gear set**



- Straight toothed
- Pressure angle 20°

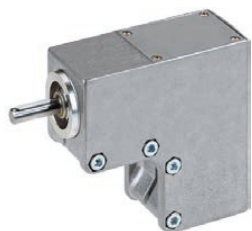
- Shaft angle 90°
- Crowned tooth flanks



[mm]

Code No.	Type	A	B	C	D	E	G	No. of teeth	Module
91603	Set 30	8	15	24	24	18	26.11	16	1.5
91623	Single component 30	8	15	24	24	18	26.11	16	1.5
91604	Set 40	12	19	31	32	26	35	16	2
91664	Single component 40	12	19	31	32	26	35	16	2
91605	Set 50	12	22	37	40	32	44	16	2.5
91625	Single component 50	12	22	37	40	32	44	16	2.5
91606	Set 60	14	22	37	40	32	44	16	2.5
91666	Single component 60	14	22	37	40	32	44	16	2.5

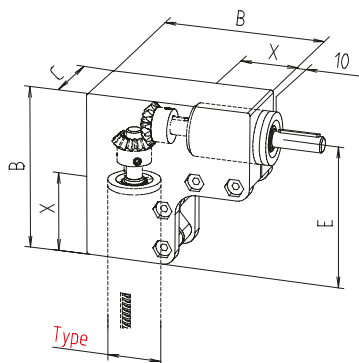
## Angular drive



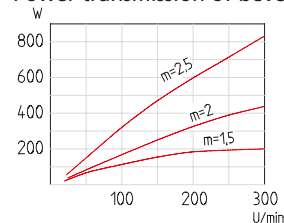
- If angular drives are fitted, the linear units are delivered exclusively with ball bearings

**Scope of delivery:** Housing, bevel gear set and transmission unit

**Material:** Angular drive housing made of die cast aluminium  
Steel parts galvanised



Power transmission of bevel gears



[mm]

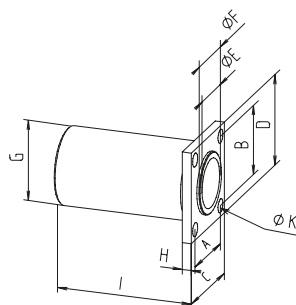
Code No.	Type	i	Module	No. of teeth	Dia-meter	B	C	E	X
91523	30	1:1	1.5	16	8	96	42	75	43
91504	40	1:1	2	16	12	128	54	100	55
91555	50	1:1	2.5	16	12	148	65	115	68
91506	60	1:1	2.5	16	14	170	80	130	80

## Adaptor for EP(X) angular drive



- Connection adaptor for mounting angular drives on EP units
- Spindle with special shaft required
- If angular drives are fitted, the linear units are delivered exclusively with ball bearings

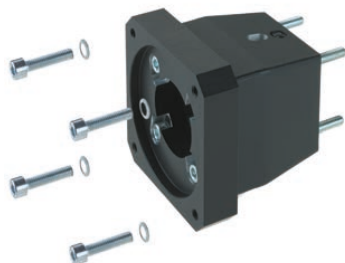
**Material:** AlMgSi, black anodised



[mm]

Code No.	Type	A	B	C	D	E	F	G	H	I	O
91533	30	30	40	50	50	22	30	30	5	55	6.6
91514	40	46	46	60	60	32	40	40	6	83	9
91525	50	46	46	60	60	32	40	50	6	93	9
91516	60	55	55	70	70	42	50	60	8	93	9

**Selection table -  
motor adaptor/coupling**



Type	Servo motors without gear			Three-phase motor	
	RK-AC 118	RK-AC 240	RK-AC 470	90/120W	180/250 W
EP(X) 30	949200	-	-	949623	-
	911430 0811	-	-	911940 0812	-
EP(X) 40	949201	949221	-	949614	949614
	911430 1112	911430 1214	911940 1220	911430 1212	911430 1214
EP(X) 50	949202	949222	-	949614	949414
	911430 1112	911430 1214	-	911430 1212	911430 1214
EP(X) 60	949203	949223	949239	-	949616
	911430 1114	911940 1414	911940 1419	-	911940 1414
EP(X) 80	949901	949903	949905	-	949909
	911940 1120	9111940 1420	911940 1920	-	911940 1420



Code No. Motor adaptor:  
**949903**

Code No. Coupling with  
specification of shaft  
diameter  
1st end = 14 mm  
2nd end = 20 mm:  
**9111940 1420**

**Note:**

For further details on motor versions,  
please refer to the chapter "Motors and  
controls"

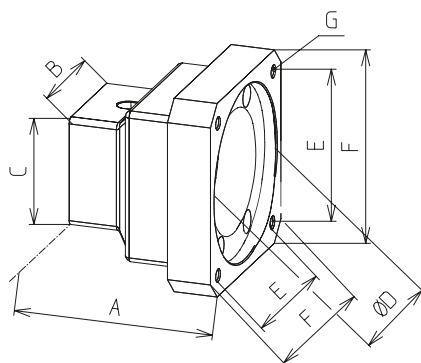
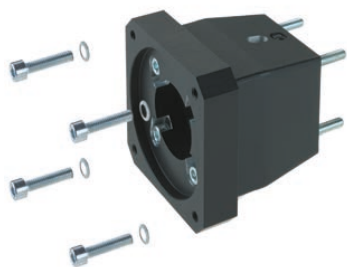
For dimensions and order data for motor  
adaptor and coupling, please refer to next  
page

# EP(X) – Drive

## Motor adaptor

- Simple assembly
- Exact fit due to centering shoulders

**Material:** Aluminium, black



[mm]

Code No.	Type	A	B	C	D	E	F	G
949200	30	64	53.5	53.5	60	53	70	M5
949247	30	66	53.5	53.5	73	70	90	M6
949275	30	71	53.5	53.5	60	53	70	M5
949623	30	64	53.5	53.5	50	65	80	M5
949201	40	74	60	60	60	53	70	M5
949276	40	83	60	60	60	53	70	M5
949221	40	83	60	60	80	70.7	90	M6
949296	40	100	60	60	80	70.7	90	M6
949248	40	83	60	60	73	70	90	M6
949614	40	83	60	60	50	46	80	M5
94914	40	83	60	60	80	100	Ø120	Ø6.6
949202	50	74	60	60	60	53	70	M5
949277	50	83	60	60	60	53	70	M5
949222	50	83	60	60	80	70.7	90	M6
949249	50	83	60	60	73	70	90	M6
949614	50	83	60	60	50	46	80	M5
949414	50	83	60	60	80	100	Ø120	Ø6.6
949203	60	74	80	80	60	53	70	M5
949278	60	86	80	80	60	53	70	M5
949223	60	86	80	80	80	70.7	90	M6
949239	60	96	80	80	95	81.3	115	M8
949250	60	81	80	80	73	70	90	M6
949616	60	86	80	80	80	100	Ø120	Ø6.6
949901	80	74	80	80	60	53	70	M5
949902	80	81	80	80	60	53	70	M5
949903	80	79	80	80	80	70.7	90	M6
949905	80	86	80	80	80	81.3	115	M8
949907	80	79	80	80	73	70	90	M6
949909	80	81	80	80	80	100	Ø120	Ø6.6

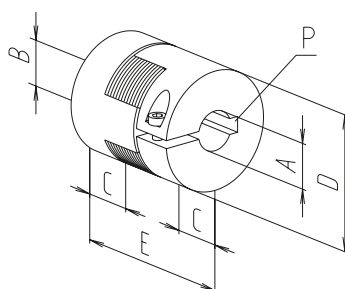


### Coupling

- Small size
- Shaft connection without backlash
- Maintenance-free
- Easy plug-in assembly

**Material:** Hub – aluminium  
Spider ring – polyurethane

To ensure the smooth running of the coupling, a clearance of **D + 3 mm** is required.



[mm]

Code No.	A	B	C	D	E	P	Torque [Nm]	
							with feather key	without feather key
9109200612	6	12	10	22	30	2x2 / 4x4	5	3
9109200895	8	9,5	10	20	30	2x2 / -	5	3
9114300811	8	11	11	30	35	2x2 / 4x4	12	6
9114300816	8	16	11	30	35	2x2 / 5x5	12	6
9114309512	9,5	12	11	30	35	- / 4x4	12	6
9114309514	9,5	14	11	30	35	- / 5x5	12	6
9114301112	11	12	11	30	35	4x4 / 4x4	12	6
9114301114	11	14	11	30	35	4x4 / 5x5	12	6
9114301212	12	12	11	30	35	4x4 / 4x4	12	6
9114301214	12	14	11	30	35	4x4 / 5x5	12	6
9114301216	12	16	11	30	35	4x4 / 5x5	12	6
9119400812	08	12	25	40	65	2x2 / 4x4	17	10
9119401414	14	14	25	40	65	5x5 / 5x5	17	10
9119401416	14	16	25	40	65	5x5 / 6x6	17	10
9119401419	14	19	25	40	65	5x5 / 6x6	17	10
9119401620	16	20	25	40	65	6x6 / 6x6	17	10
9119401920	19	20	25	40	65	6x6 / 6x6	17	10

# EP(X) – Position determination

## Scale

- Self-adhesive
- 4 mm high figures

**Material:**  
Steel band, plastic-coated

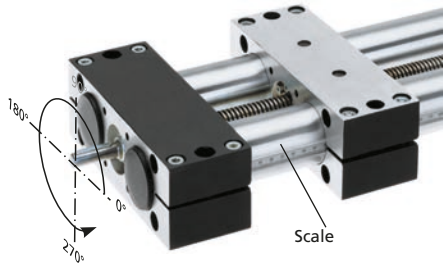


Image shows scale to be read from left to right. Standard mounting at 0° (180° mounting of the left guiding tube, to be read from right to left)

\* In the case of Type 18, a scale can be engraved in the guiding tube if required. Please specify the position on the tube if relevant.  
Type 80 available on request

[mm]

Code No.	Type	Can be read from	Length	B	Version
92040	30*	left to right	0-1000	8	fitted
92041	40-60*	right to left	0-1000	10	fitted
92042		left to right	0-1000	10	fitted
92045		left to right	0-2000	10	fitted
92046		right to left	0-2000	10	fitted



# EP(X) - Position determination

**RK ROSE+KRIEGER**

## Positioning indicator



Installation position: horizontal



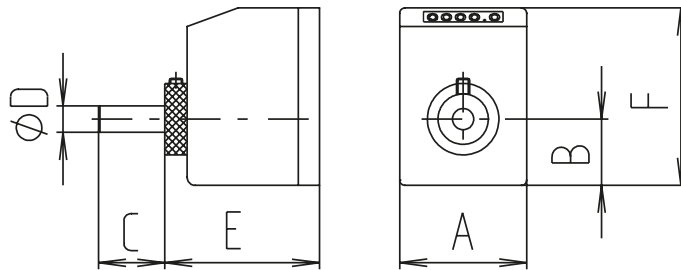
Installation position: vertical

- Permitted ambient temperature +80°C
- Figure height 6 mm
- Indication accuracy  $\pm 0.1$  mm
- If positioning indicators are fitted, the linear units are delivered exclusively with ball bearings

**Material:** Housing polyamide 6 Orange RAL 2004, Steel parts, corrosion-protected

**Scope of delivery:** Positioning indicator, clamping ring, shaft extension and fastenings

**Note:** "rising" and "falling" versions refer to the clockwise rotation of the drive shaft.



[mm]

Type	Installation position	Connection	Code No.	Version	Code No.	Version*	A	B	C	D	E	F	
18	Horizontal	Directly to EP(X) or on angular drive	91061	2 mm rising	91012	4 mm rising	48	29	17	6	60	67	
18			91071	2 mm falling	910137	4 mm falling	48	29	17	6	60	67	
18	Vertical		91081	2 mm rising	910138	4 mm rising	48	29	17	6	60	67	
18			91091	2 mm falling	910139	4 mm falling	48	29	17	6	60	67	
30	Horizontal		Directly to EP(X) or on angular drive	91043	3 mm rising	91010	6 mm rising	48	25	18	8	59	67
30				91053	3 mm falling	91029	6 mm falling	48	25	18	8	59	67
30	Vertical	91063		3 mm rising	91020	6 mm rising	48	25	18	8	59	67	
30		91073		3 mm falling	91019	6 mm falling	48	25	18	8	59	67	
40	Horizontal	Directly to EP(X) or on angular drive		91004	4 mm rising	91030	8 mm rising	48	25	38	12	59	67
40				91014	4 mm falling	91039	8 mm falling	48	25	38	12	59	67
40	Vertical		91024	4 mm rising	91040	8 mm rising	48	25	38	12	59	67	
40			91034	4 mm falling	91041	8 mm falling	48	25	38	12	59	67	
50	Horizontal		Directly to EP(X) or on angular drive	91045	4 mm rising	91046	8 mm rising	48	25	38	12	59	75
50				91055	4 mm falling	91047	8 mm falling	48	25	38	12	59	75
50	Vertical	91065		4 mm rising	91048	8 mm rising	48	25	38	12	59	75	
50		91075		4 mm falling	91049	8 mm falling	48	25	38	12	59	75	
60	Horizontal	Only directly to EP(X)		910120	5 mm rising	910124	10 mm rising	48	25	38	14	60	81
60				910121	5 mm falling	910125	10 mm falling	48	25	38	14	60	81
60	Vertical		910122	5 mm rising	910126	10 mm rising	48	25	38	14	60	81	
60			910123	5 mm falling	910127	10 mm falling	48	25	38	14	60	81	
60	Horizontal		Only on angular drive	91006	5 mm rising	91056	10 mm rising	48	25	38	14	60	81
60				91016	5 mm falling	91057	10 mm falling	48	25	38	14	60	81
60	Vertical	91026		5 mm rising	91058	10 mm rising	48	25	38	14	60	81	
60		91036		5 mm falling	91059	10 mm falling	48	25	38	14	60	81	
80	Horizontal	Directly to EP(X) or on angular drive		91110	6 mm rising	910140	12 mm rising	64	29	31	20	60	94
80				91111	6 mm falling	910141	12 mm falling	64	29	31	20	60	94
80	Vertical		91112	6 mm rising	910142	12 mm rising	64	29	31	20	60	94	
80			91113	6 mm falling	910143	12 mm falling	64	29	31	20	60	94	

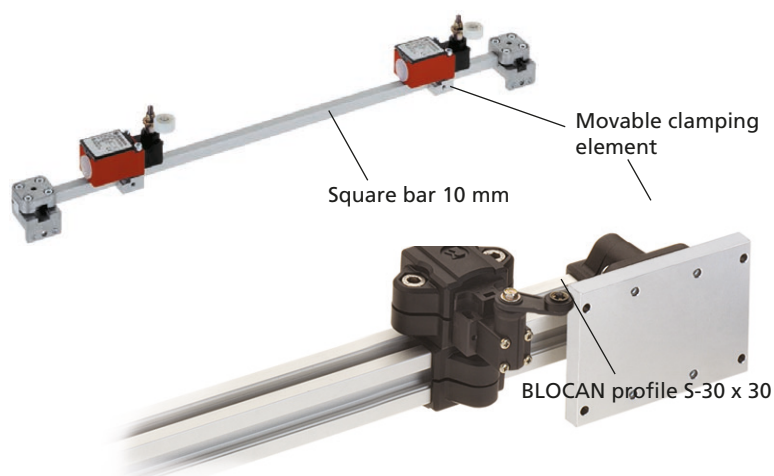
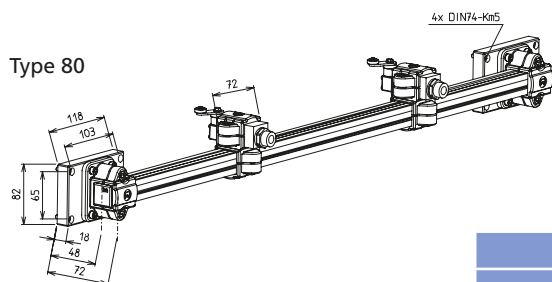
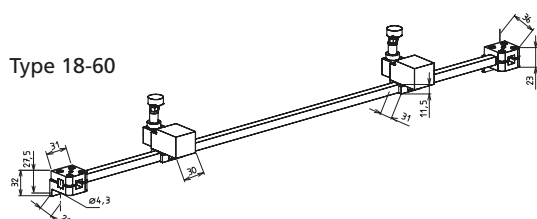
\*Version with double lead e.g. for installation on righthand/lefthand thread screws

# EP(X) – Position determination

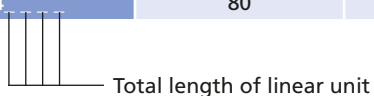
## Holder for mechanical limit switch

- Limit switch can be moved and fixed axially

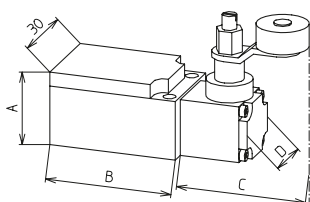
Type	18-60	80
Max. voltage	250 V AC	230 V AC
Max. switching current	6 A	4 A
Max. starting current	16 A	–
Operating frequency	Max. 6000/h	Max. 5000/h
Mechanical lifetime	10 million switching cycles	20 million switching cycles
Axis lever adjustment	locking at 10° increments	
Protection class	IP 65	IP 67
Ambient temperature	-30°C to +80°C	



Code No.	Type	Basic length	Version
92961_ _ _ _	18-60	245	with switch
92962_ _ _ _	18-60	245	without switch
92933_ _ _ _	80	380	with switch
92934_ _ _ _	80	380	without switch



## Mechanical limit switch



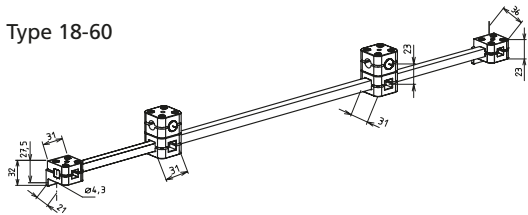
Code No.	Type	Switching function	A	B	C	D
91905	18-60	NC/NO	26.5	45	45.5	21
91908	80	NC/NO	30	58.5	46	20
91907	Clamping element 18-60 for limit switch					
91904	Clamping element 80 for limit switch					

[mm]

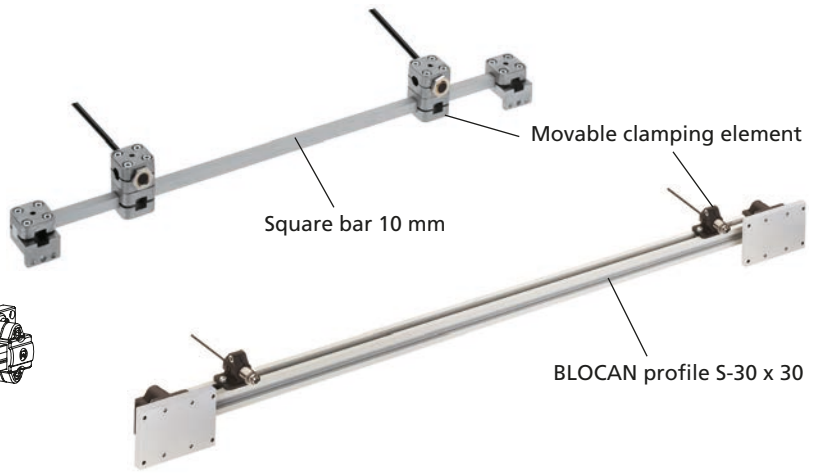
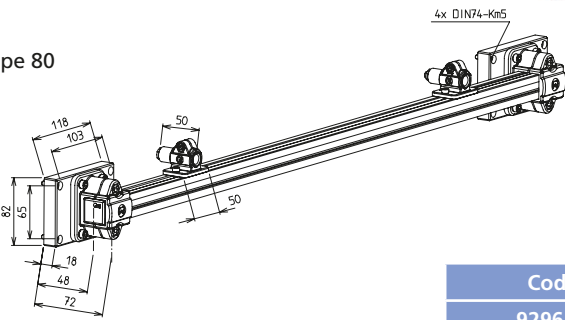
**Holder for inductive limit switch**

- Limit switch can be moved and fixed axially

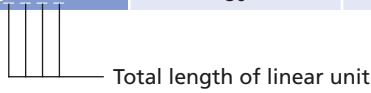
Type 18-60



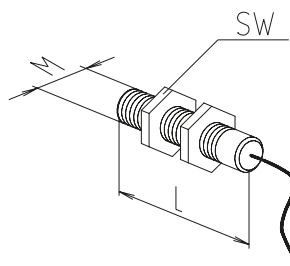
Type 80



Code No.	Type	Basic length	Version
92965 _ _ _ _	18-60	125	without switch
92932	80	336	without switch



**Inductive limit switch**



Type	18-60	80
Voltage	10 - 30 V DC	
Max. switching current	200 mA	150 mA
Operating distance	4 mm for steel	2 mm for steel
Protection class	IP 67	
Ambient temperature	-25°C to +70°C	
Cable lengths	2m	

[mm]

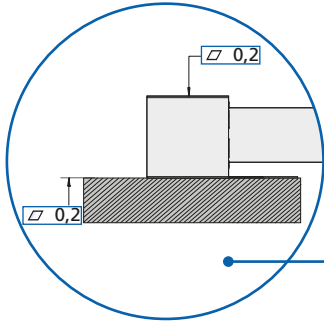
Code No.	Type	Switching function	L	M	Wrench size (SW)
92825	18-60	Changeover	50	12x1	17
92826	80	Changeover	40	8x1	13
92802	Clamping element 18-60 for limit switch				
92804	Clamping element 80 for limit switch				

# EP(X)-II 40 tubular linear unit – Technical data

The latest generation of EP(X)-II 40 twin tube units – compensates for high bending moments during hand and motor-driven adjustments

## Precise / plane mounting surface

✓ Distortion-free installation



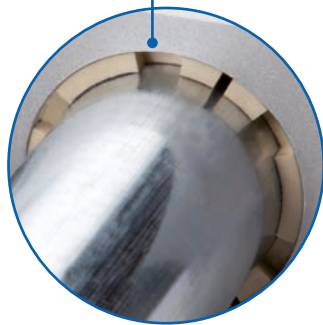
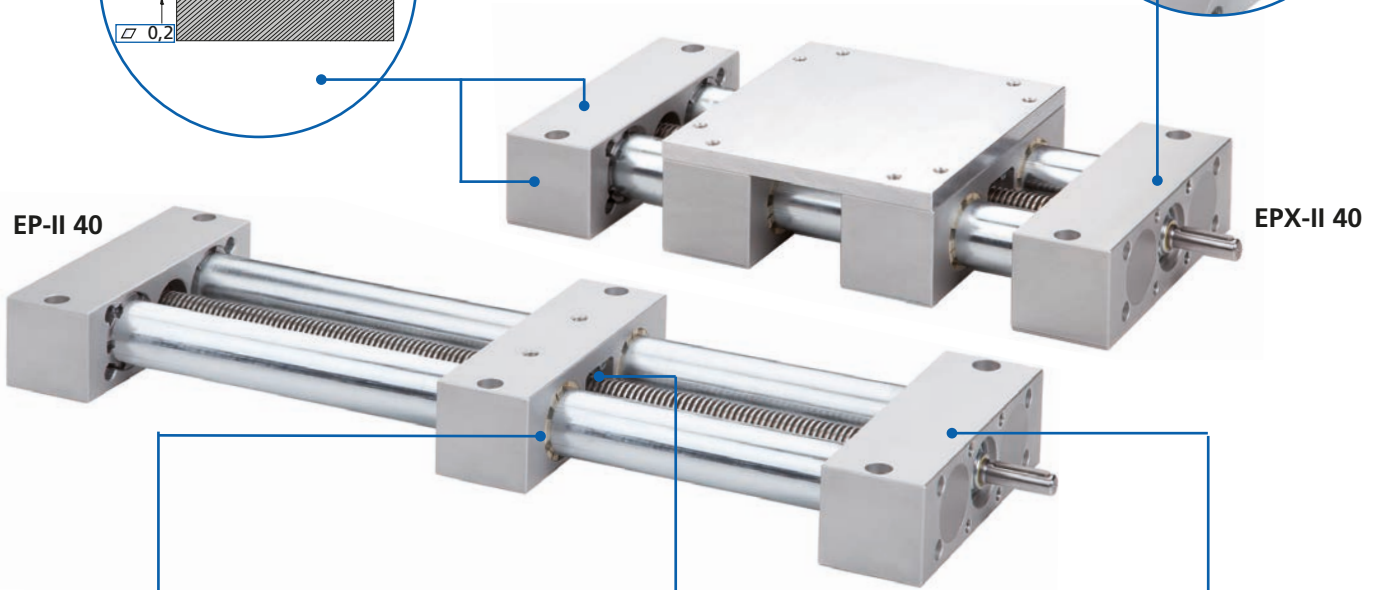
## Integrated spindle clamping

✓ Manual force locking spindle clamping optional



EP-II 40

EPX-II 40



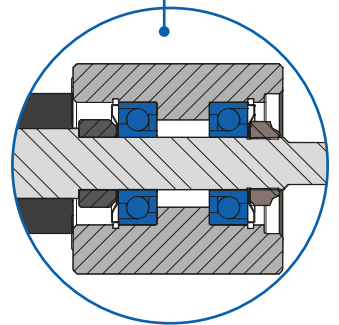
## Carriage with slide bushings as standard

✓ Longer lifetime due sleeves made of high performance material



## New guide nut concept

✓ Split nuts, simple replacement – no need to dismantle the linear unit  
 ✓ Longer lifetime due to high performance materials



## Reduced axial play

✓ Optimised lead screw with fixed bearing in end element

## Features:

- High moment capacity
- Version available with large fixing plate
- Identical connection sizes as previous version

## Versions – size 40

- EP-II 40  
 Right or lefthand thread  
 Right and lefthand thread  
 Split Screw
- EPX-II 40  
 Right or lefthand thread  
 Right and lefthand thread  
 Split Screw

## Options:

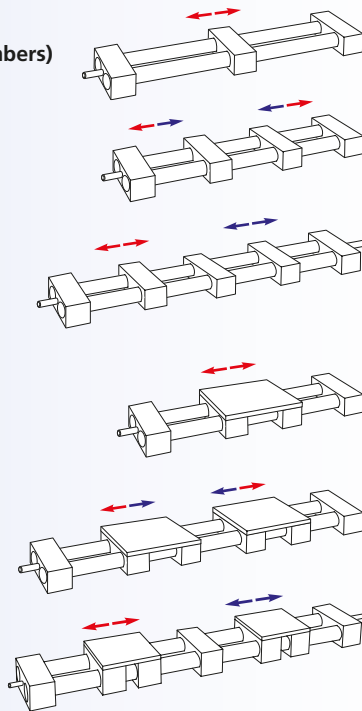
- Corrosion-protected units
- Second free moving
- Protect: with bellows and protection class IP 40
- Spindle clamping only at ball-screw spindle units

**EP(X)-II 40 tubular linear unit – Table of contents**
**Properties/performance data**

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(Dimensions, order numbers)



- EP-II 40 right or lefthand thread..... 114 - 115
- EP-II 40 right and lefthand thread ..... 116 - 117
- EP-II 40 split screw ..... 118 - 119
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**Accessories**
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# EP(X)-II 40 tubular linear unit – Technical data

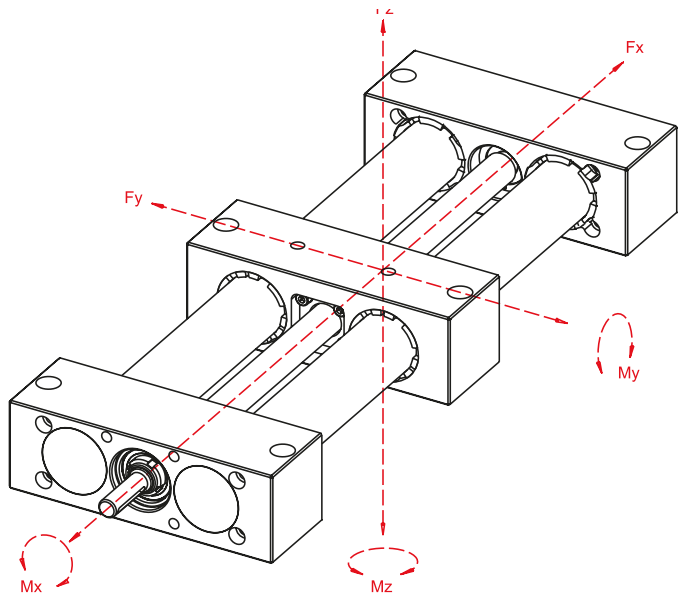
## General information / operating conditions

	EP-II 40	EPX-II 40
Guide	Slide guide	
Installation position	Any position	
Max. speed	0.02 m/s (stroke independent)	
Max. acceleration	3 m/s <sup>2</sup>	
Repeatability	± 0.1 mm	
Max. no-load torque	0.7 Nm	0.8 Nm
Drive	Trapezoidal screw, Ø 20, pitch 4	
Lead accuracy	(± 0.1 / 300 mm)	
Duty cycle	S3, 30%, base 1h	
Ambient temperature	0 to +60°C	
Protection class	Basic: no / Protect: IP 40	



## Static load data\*

- F Force [N]  
M Moment [Nm]  
I Geometric moment of inertia [cm<sup>4</sup>]



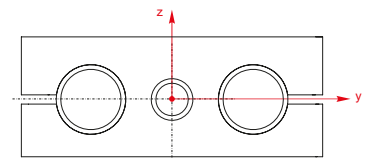
\* with reference to carriage (deflection of guide element  $f = 0.5$  mm, static, end elements supported)

Type	Fx		Fy		Fz			Mx	My	Mz
	500	500	1000	1500	500	1000	1500			
EP-II 40	1000	3500	2600	1300	2000	580	120	120	130	150
EPX-II 40	1000	6000	3100	1800	2200	680	220	160	190	240

## Geometric moment of inertia

Type	$I_y$	$I_z$
EP(X)-II 40	14.84	198.06

[cm<sup>4</sup>]



# EP-II 40 – Dimensions / ordering data

## Order information:

- Corrosion-protected units available on request
- Second non driven carriage available on request
- Scale upon request
- Protect: version with bellows optional (IP 40)

Version ■ **Right or lefthand thread**



Code No.	Type	Spindle	Basic length	B	C	D1	D2	D3	F	G1	G2	H	J	L1	L2	M1	M2	M3	M4
79_401 __ 1 _A ____	40	Tr 20x4	180	180	63	12	-	40 H8	3	M8 / 20 deep	M8 / 8 deep	31.5	60	38	-	46	160	90	62
79_403 __ 1 _A ____	40	Tr 20x4	180	180	63	12	12	40 H8	3	M8 / 20 deep	M8 / 8 deep	31.5	60	38	38	46	160	90	62

\_\_\_\_\_ Total length = basic length + travel [mm] (minimum travel 50 mm)

A = standard

B = c/w angular drive on shaft end L1 (see page 127). (Only with spindle bearing ball bearing)

A = standard

B = c/w integrated spindle clamping (Only with spindle bearing ball bearing)

**Spindle bearing:**

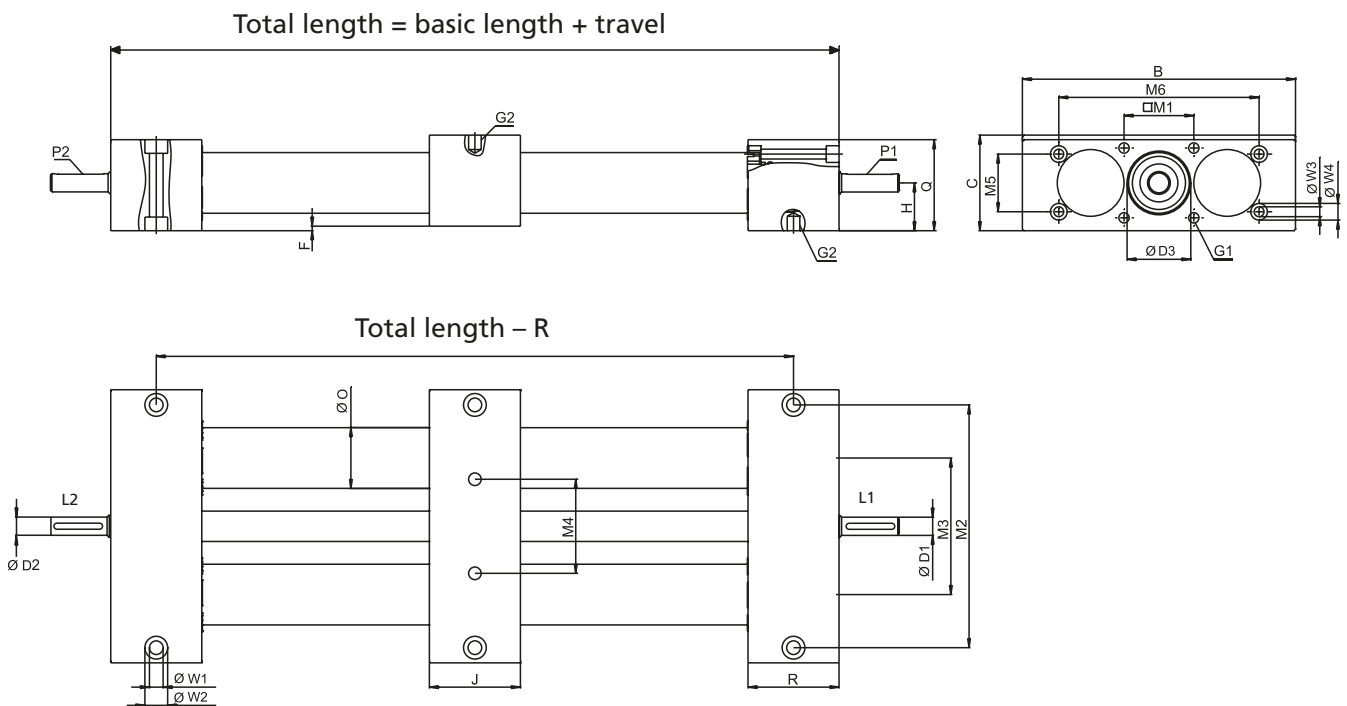
1 = ball bearing

0 = slide bearing

**Spindle version:**

1 = righthand thread

2 = lefthand thread



[mm]

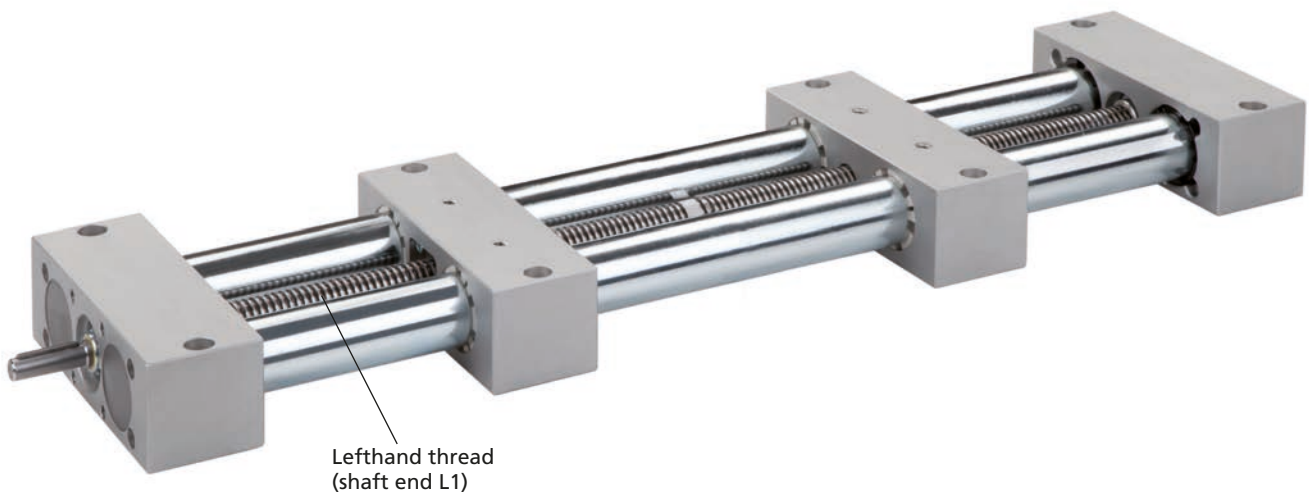
M5	M6	O	P1	P2	Q	R	W1	W2	W3	W4	Max. travel	Mass [kg]	
												Basic length	per 100 mm travel
38	132	40	4x4x32	-	60	60	9	15 / 9 deep	6.5	11 / 8.5 deep	2820	5.53	0.96
38	132	40	4x4x32	4x4x32	60	60	9	15 / 9 deep	6,5	11 / 8.5 deep	2820	5.53	0.96

# EP-II 40 – Dimensions / ordering data

Version ■ **Right and lefthand thread**

**Order information:**

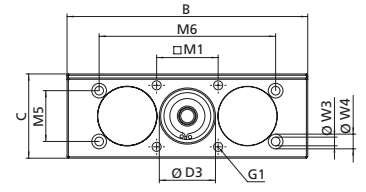
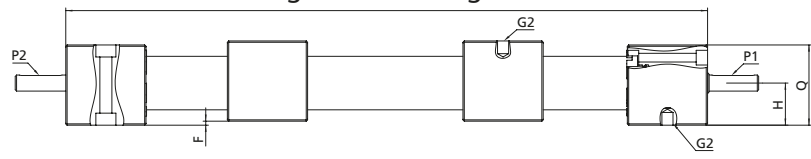
- Please specify basic length and total travel when placing an order
- Corrosion-protected units available on request
- Second non driven carriage available on request
- Scale upon request
- Protect: version with bellows optional (IP 40)



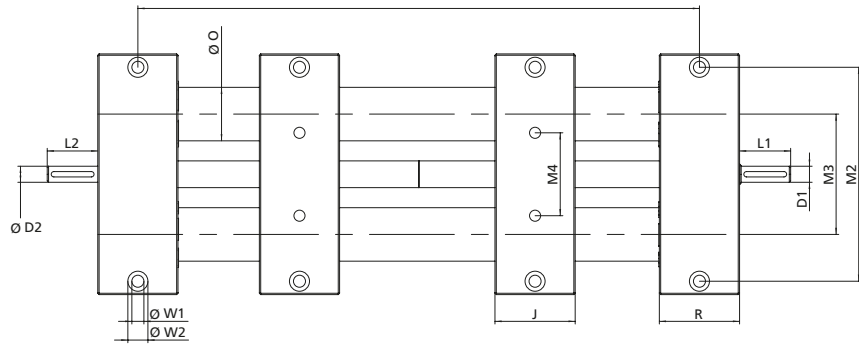
Code No.	Type	Spindle	Basic length	B	C	D1	D2	D3	F	G1	G2	H	J	L1	L2	M1	M2	M3	M4
793401 _ _ 1 _ A _ _ _	40	Tr 20x4	240	180	63	12	-	40 H8	3	M8 / 20 deep	M8 / 8 deep	31.5	60	38	-	46	160	90	62
793403 _ _ 1 _ A _ _ _	40	Tr 20x4	240	180	63	12	12	40 H8	3	M8 / 20 deep	M8 / 8 deep	31.5	60	38	38	46	160	90	62

\_ \_ \_ \_ Total length = basic length + total travel [mm] (**minimum total travel 100 mm**)  
 A = standard  
 B = c/w angular drive on shaft end L1 (see page 127). (Only with spindle bearing ball bearing)  
 A = standard  
 B = c/w integrated spindle clamping (Only with spindle bearing ball bearing)  
**Spindle bearing:**  
 1 = ball bearing  
 0 = slide bearing

Total length = basic length + travel



Total length - R



[mm]

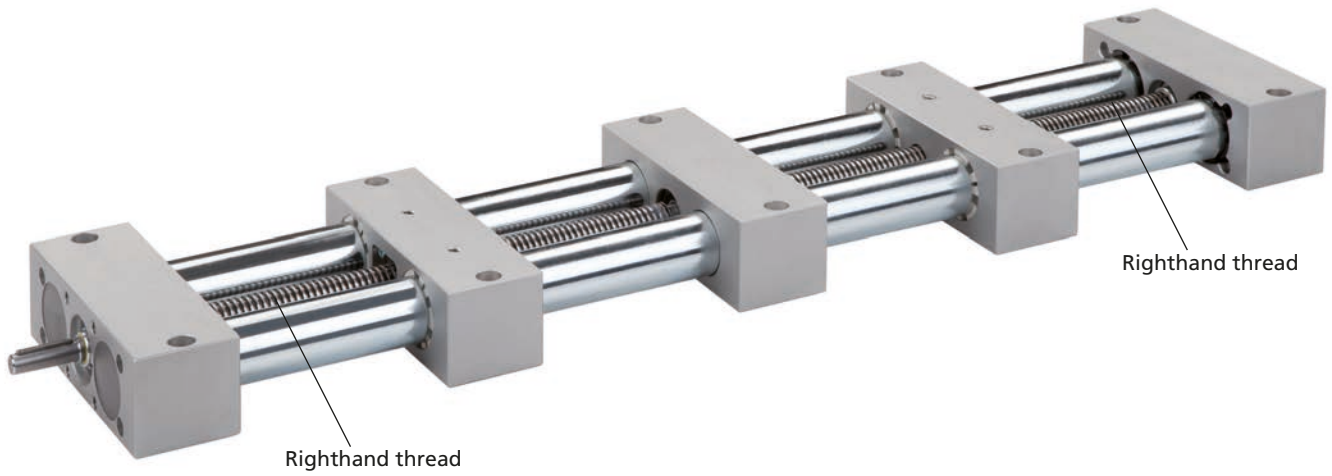
M5	M6	O	P1	P2	Q	R	W1	W2	W3	W4	Max. travel	Mass [kg]	
												Basic length	per 100 mm travel
38	132	40	4x4x32	-	60	60	9	15 / 9 deep	6.5	11 / 8.5 deep	2760	7.73	0.96
38	132	40	4x4x32	4x4x32	60	60	9	15 / 9 deep	6,5	11 / 8.5 deep	2760	7.73	0.96

# EP-II 40 – Dimensions / ordering data

Version ■ Split screw

## Order information:

- Please specify basic length and total travel when placing an order
- Corrosion-protected units available on request
- Second non driven carriage available on request
- Scale upon request
- Protect: version with bellows optional (IP 40)



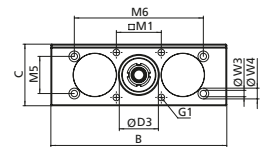
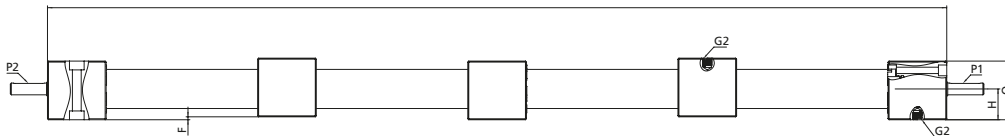
Code No.	Type	Spindle	Basic length	B	C	D1	D2	D3	F	G1	G2	H	J	L1	L2	M1	M2	M3	M4
7944031_1_A_---	40	Tr 20x4	300	180	63	12	12	40 H <sup>8</sup>	3	M8 / 20 deep	M8 / 8 deep	31.5	60	38	38	46	160	90	62

----- Total length = basic length + total travel [mm] (minimum total travel 100 mm)

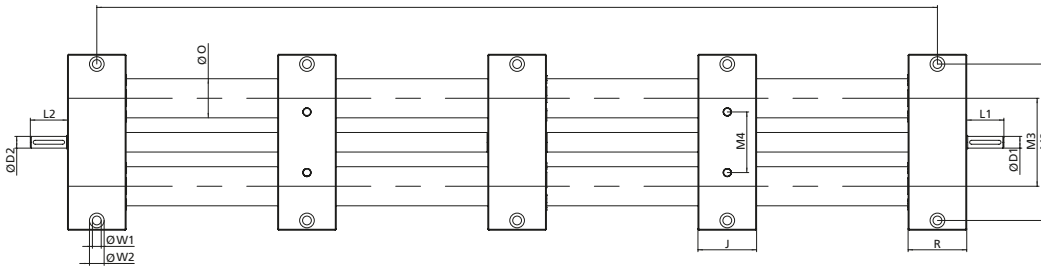
A = standard  
B = c/w angular drive on shaft end L1 (see page 127)

A = standard  
B = c/w integrated spindle clamping

Total length = basic length + travel



Total length – R



[mm]

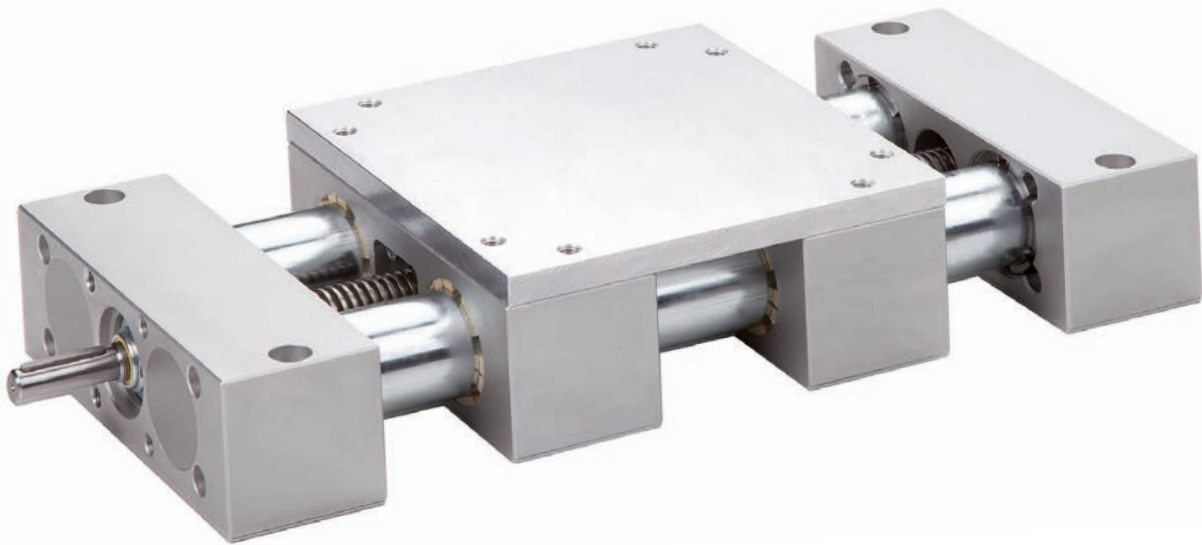
M5	M6	O	P1	P2	Q	R	W1	W2	W3	W4	Max. travel	Mass [kg]	
												Basic length	per 100 mm travel
38	132	40	4x4x32	4x4x32	60	60	9	15 / 9 deep	6,5	11 / 8.5 deep	2700	9.32	0.96

# EPX-II 40 – Dimensions / ordering data

## Order information:

- Corrosion-protected units available on request
- Second non driven carriage available on request
- Scale upon request
- Protect: version with bellows optional (IP 40)

Version ■ Right *or* lefthand thread



Code No.	Type	Spindle	Basic length	B	C	D1	D2	D3	F	G1	G2	G3	H	H2	J	L1	L2	M1	M2
79_401 __ 1 _ A _ _ _	40	Tr 20x4	300	180	75	12	-	40 <sup>H8</sup>	3	M8 / 20 deep	M8	M8 / 8 deep	31.5	12	180	38	-	46	160
79_403 __ 1 _ A _ _ _	40	Tr 20x4	300	180	75	12	12	40 <sup>H8</sup>	3	M8 / 20 deep	M8	M8 / 8 deep	31.5	12	180	38	38	46	160

\_\_\_\_\_ Total length = basic length + travel [mm]

A = standard

B = c/w angular drive on shaft end L1 (see page 127). (Only with spindle bearing ball bearing)

A = standard

B = c/w integrated spindle clamping (Only with spindle bearing ball bearing)

**Spindle bearing:**

1 = ball bearing

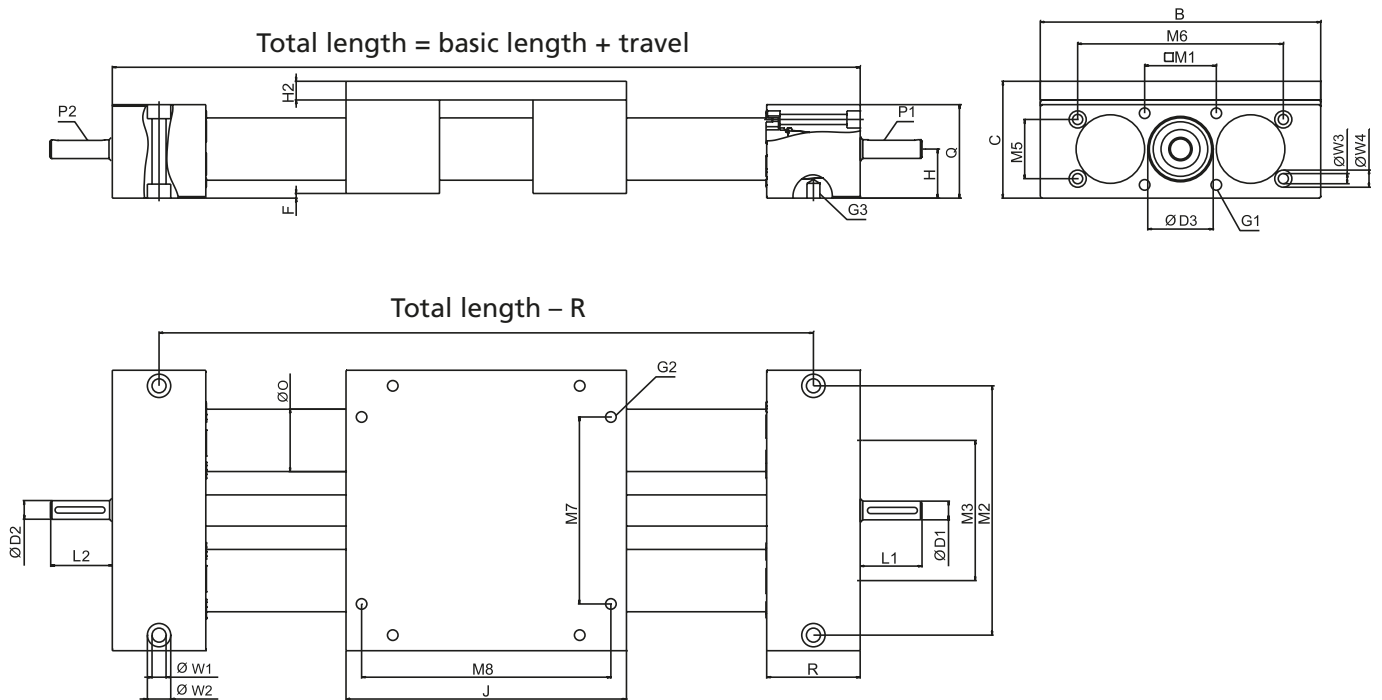
0 = slide bearing

**Spindle version:**

5 = righthand thread

6 = lefthand thread





[mm]

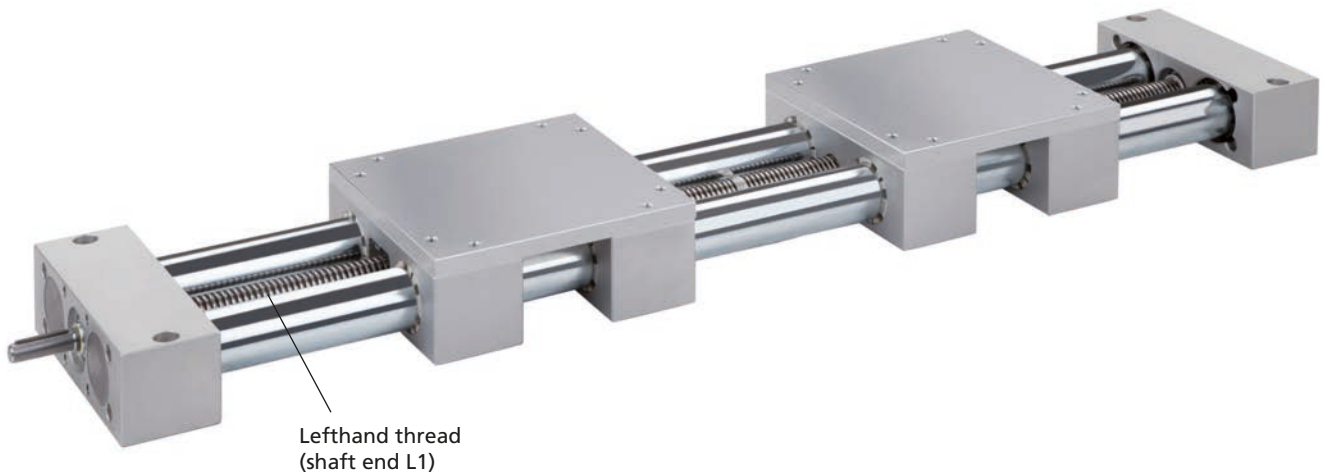
M3	M5	M6	M7	M8	O	P 1	P 2	Q	R	W1	W2	W3	W4	Max. travel	Mass [kg]	
															Basic length	per 100 mm travel
90	38	132	120	160	40	4x4x32	-	60	60	9	15 / 9 deep	6,5	11 / 8.5 deep	2700	8,95	0,96
90	38	132	120	160	40	4x4x32	4x4x32	60	60	9	15 / 9 deep	6,5	11 / 8.5 deep	2700	8,95	0,96

# EPX-II 40 – Dimensions / ordering data

Version ■ **Right and lefthand thread**

## Order information:

- Please specify basic length and total travel when placing an order
- Corrosion-protected units available on request
- Second non driven carriage available on request
- Scale upon request
- Protect: version with bellows optional (IP 40)



Code No.	Type	Spindle	Basic length	B	C	D1	D2	D3	F	G1	G2	G3	H	H2	J	L1	L2	M1	M2	M3
797401 _ _ 1 _ A _ _ _	40	Tr 20x4	480	180	75	12	-	40 <sup>H8</sup>	3	M8 / 20 deep	M8	M8 / 8 deep	31.5	12	180	38	-	46	160	90
797403 _ _ 1 _ A _ _ _	40	Tr 20x4	480	180	75	12	12	40 <sup>H8</sup>	3	M8 / 20 deep	M8	M8 / 8 deep	31.5	12	180	38	38	46	160	90

\_\_\_\_\_ Total length = basic length + travel [mm]

A = standard

B = c/w angular drive on shaft end L1 (see page 127). (Only with spindle bearing ball bearing)

A = standard

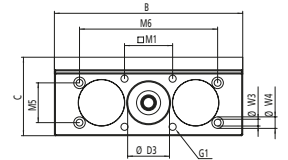
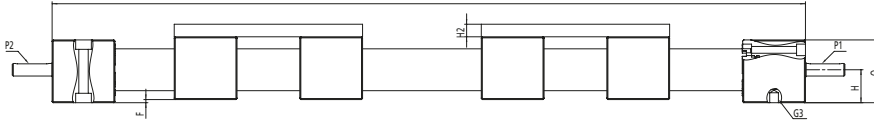
B = c/w integrated spindle clamping (Only with spindle bearing ball bearing)

**Spindle bearing:**

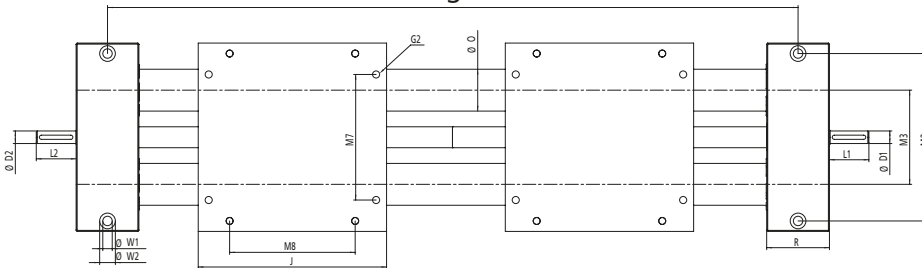
1 = ball bearing

0 = slide bearing

Total length = basic length + travel



Total length – R



[mm]

M3	M5	M6	M7	M8	O	P 1	P 2	Q	R	W1	W2	W3	W4	Max. travel	Mass [kg]	
															Basic length	per 100 mm travel
90	38	132	120	160	40	4x4x32	–	60	60	9	15 / 9 deep	6.5	11 / 8.5 deep	2520	14.17	0.96
90	38	132	120	160	40	4x4x32	4x4x32	60	60	9	15 / 9 deep	6.5	11 / 8.5 deep	2520	14.17	0.96

# EPX-II 40 – Dimensions / ordering data

Version ■ Split screw

## Order information:

- Please specify basic length and total travel when placing an order
- Corrosion-protected units available on request
- Second non driven carriage available on request
- Scale upon request
- Protect: version with bellows optional (IP 40)



Code No.	Type	Spindel	Basic length	B	C	D1	D2	D3	F	G1	G2	G3	H	H2	J	L1	L2	M1	M2
7984031 1 A	40	Tr 20x4	540	180	75	12	12	40 <sup>H8</sup>	3	M8 / 20 deep	M8	M8 / 8 deep	31.5	12	180	38	38	46	160

----- Total length = basic length + travel [mm]

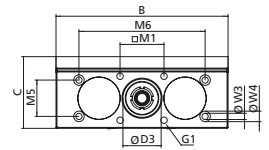
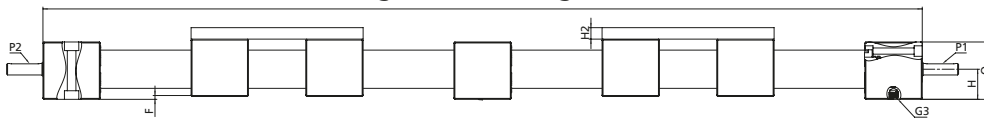
A = standard

B = c/w angular drive on shaft end L1 (see page 127)

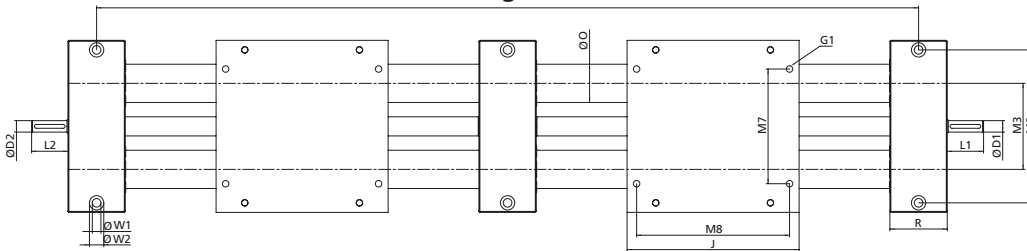
A = standard

B = c/w integrated spindle clamping

Total length = basic length + travel



Total length – R



[mm]

M3	M5	M6	M7	M8	O	P 1	P 2	Q	R	W1	W2	W3	W4	Max. travel	Mass [kg]	
															Basic length	per 100 mm travel
90	38	132	120	160	40	4x4x32	4x4x32	60	60	9	15 / 9 tief	6.5	11 / 8.5 deep	2460	16.16	0.96

# EP(X)-II 40 – Drive

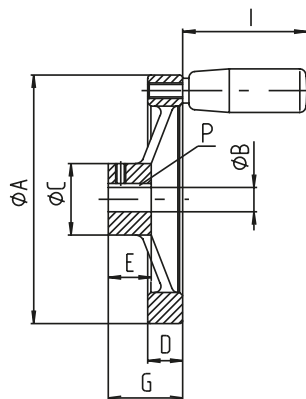
## Handwheel



Diam. 140-200



Diam. 60-100



**Material:** Die-cast aluminium, black powder-coated

Code No.	Type	ØA	B	C	D	E	G	P	I
90915	40	100	12	28	14	17	30	4x4	52
90905	40	140	12	36	16.5	19.5	36	4x4	66

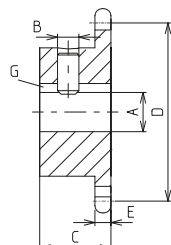
[mm]

## Sprocket



■ Other sizes on request

**Material:** Steel, 500 N/mm<sup>2</sup> min.



Code No.	Type	A	B	C	D	E	G	No. of teeth	Size
91704	40	12	M6	20	53	4.5	4x4	13	1/2 x 3/16"

[mm]

## HTD timing-belt pulley

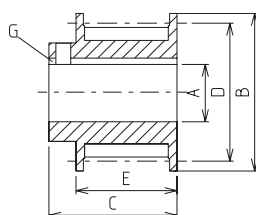


■ Suitable for maintenance-free continuous operation

■ Excellent accuracy and zero backlash during change of direction

■ Clampable on feather key

**Material:** Steel

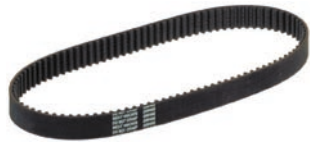


Code No.	Type	A	B	C	D	E	G	Tensile force	Pitch
92105	40	12	32	26	28.65	20.5	4x4	330 N	5

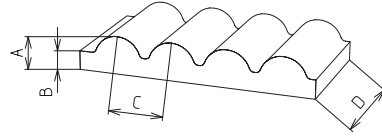
[mm]



**Timing-belt (endless)**



- HTD timing-belt with steel insert
- For tensile force, see timing-belt pulley.
- Other lengths available on request.



[mm]

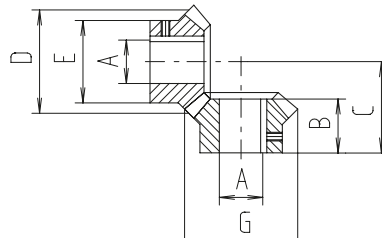
Code No.	Type	A	B	C	D	Timing-belt length			
92205	40	3.81	1.75	5	15	305	565	800	900

Timing-belt length [mm]

**Bevel gear set**



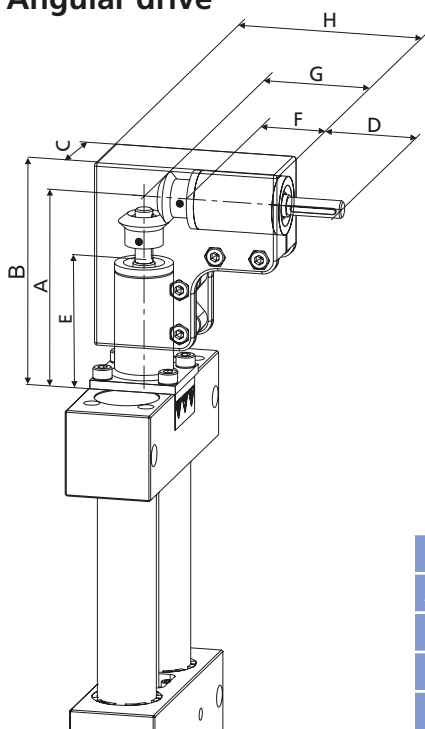
- Straight toothed
- Axial angle 90°
- Contact angle 20°
- Crowned tooth faces



[mm]

Code No.	Type	A	B	C	D	E	G	No. of teeth	Module
91604	Set 40	12	19	31	32	26	35	16	2
91664	Single component 40	12	19	31	32	26	35	16	2

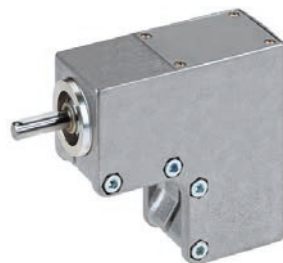
**Angular drive**



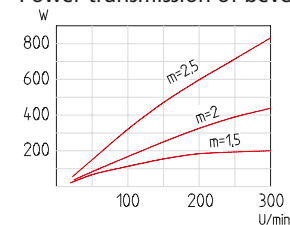
- If angular drives are fitted, the linear units are delivered exclusively with ball bearings

**Delivery contents:** Housing, bevel gear set and transmission unit

**Material:** housing-die-cast aluminium, steel parts-zinc plated



Power transmission of bevel gears



[mm]

Code No.	Type	A	B	C	D	E	F	G	H
<b>Assembled to EP(X)</b>									
p. 114 - 124	40	129,7	157,7	54	39,5	83	65	100	128
<b>Retrofit kit</b>									
91554	40	129,7	157,7	54	39,5	83	65	100	128

# EP(X)-II 40 – Drive

## Selection table – motor adaptor/coupling

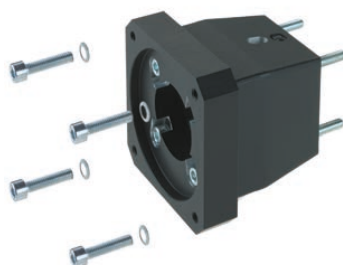
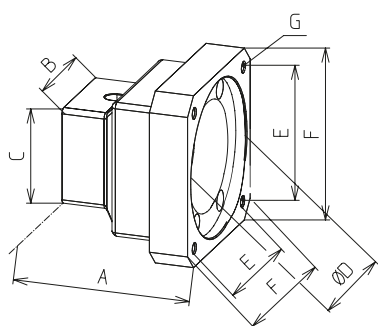
Type	Servo motor		Three-phase A.C. motor	
	RK-AC 118	RK-AC 240	90/120W	180/250 W
EP(X)-II 40	949201	949221	949614	94914
	911430	911430	911430	911430
	1112	1214	1212	1214

Note: For further details on motor versions, please refer to the chapter “Motors and controls” in our main catalogue “Linear Technology”.

### Motor adaptor

- Simple assembly
- Exact fit due to centering shoulders

Material: Aluminium

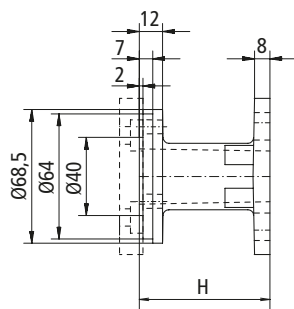
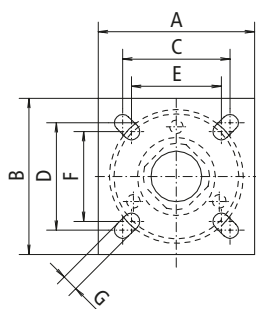


[mm]

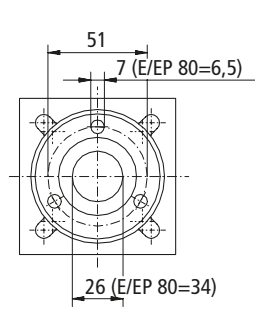
Code No.	Type	A	B	C	D	E	F	G
949201	40	74	60	60	60	53	70	M5
949276	40	83	60	60	60	53	70	M5
949221	40	83	60	60	80	70.7	90	M6
949248	40	83	60	60	73	70	90	M6
949614	40	83	60	60	50	46	80	M5
94914	40	83	60	60	80	100	Ø120	Ø6.6

### Motor adaptor for EHL

#### Linear unit connection



#### EHL connection

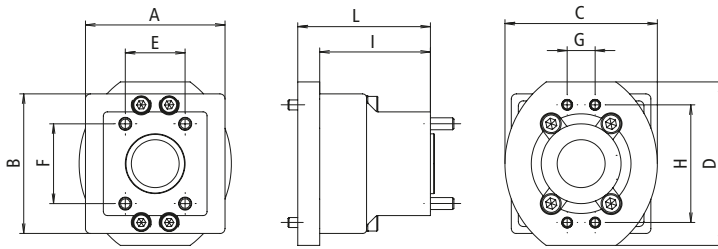


[mm]

Code No.	for linear unit	PinØ unit	A	B	C	D	E	F	G	H	L	Dia-meter
92668	EP 40/COPAS 40	12	60	60	46	46	36	36	7	67	–	–



## Motor adaptor for linear units



[mm]

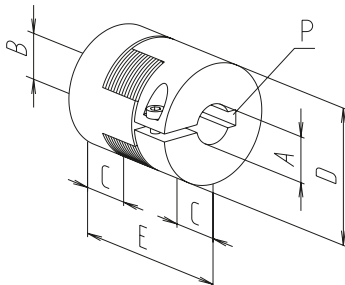
Linear unit	LZ S Code No.	LZ P Code No.	Coupling Code No.	A	B	C	D	E	F	G	H	I	L
EP(X)40	949712	949713	9114301012	70	70	76.4	82	46	46	52.3	52.3	73.5	81.5

## Coupling

- Small size
- Shaft connection without backlash
- Maintenance-free
- Easy plug-in assembly

**Material:** Hub – aluminium  
Gear ring – polyurethane

To ensure the smooth running of the coupling, a clearance of  $D+3$  mm is required.



[mm]

Code No.	A	B	C	D	E	P	Torque [Nm]	
							with feather key	without feather key
9114309512	9.5	12	11	30	35	– / 4x4	12	6
9114301112	11	12	11	30	35	4x4 / 4x4	12	6
9114301212	12	12	11	30	35	4x4 / 4x4	12	6
9114301214	12	14	11	30	35	4x4 / 5x5	12	6
9114301216	12	16	11	30	35	4x4 / 5x5	12	6
9119400812	08	12	25	40	65	2x2 / 4x4	17	10

# EP(X)-II 40 – Drive

## Positioning indicator

- Permitted ambient temperature +80°C
- Figure height 6 mm
- Reading accuracy  $\pm 0.1$  mm
- If positioning indicators are fitted, the linear units are delivered exclusively with ball bearings

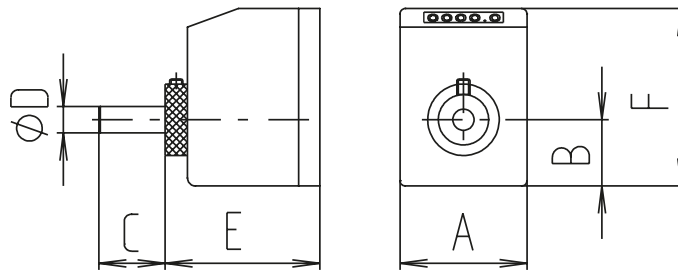
**Material:** Housing polyamide 6 Orange RAL 2004, Steel parts corrosion-protected

**Scope of delivery:** Positioning indicator, clamping ring, shaft extension and fastenings

**Note:** “rising” and “falling” versions refer to the clockwise rotation of the drive shaft.



Installation position: horizontal



Installation position: vertical

\* Version with double lead e.g. for installation on righthand/lefthand thread screws

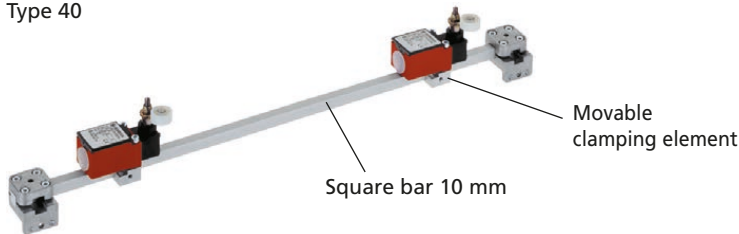
Type	Installation position	Code No.	Version	Code No.	Version*	A	B	C	D	E	F
40	Horizontal	91004	4 mm rising	91030	8 mm rising	48	25	38	12	59	67
40		91014	4 mm falling	91039	8 mm falling	48	25	38	12	59	67
40	Vertical	91024	4 mm rising	91040	8 mm rising	48	25	38	12	59	67
40		91034	4 mm falling	91041	8 mm falling	48	25	38	12	59	67

[mm]

## Holder for inductive limit

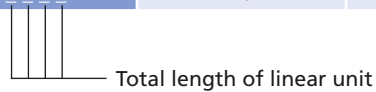
- Limit switch can be moved and fixed axially

Type 40

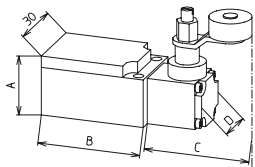


Type	40
Max. voltage	250 V AC
Max. switching current	6 A
Max. starting current	16 A
Lifetime	10 million switching cycles
Axis lever adjustment	locking at 10° increments
Protection rating	IP 65
Ambient temperature	-30°C to +80°C

Code No.	Type	Basic length	Version
92961_ _ _ _	40	245	with switch
92962_ _ _ _	40	245	without switch



## Mechanical limit switch

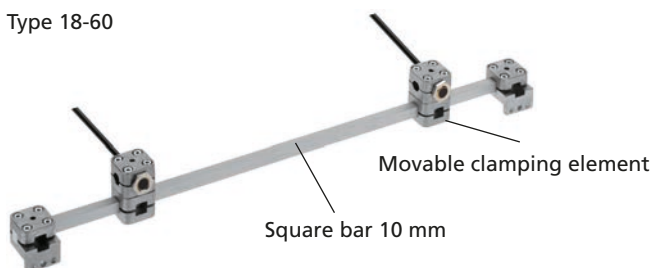


Code No.	Type	Switching function	A	B	C	D
91905	40	NC contact / NO contact	26.5	45	45.5	21

[mm]

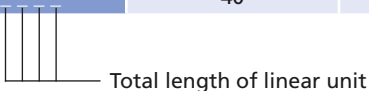
- Limit switch can be moved and fixed axially

Type 18-60

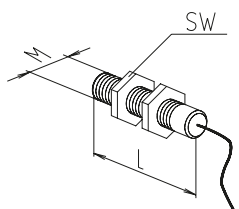


Type	18-60
Voltage	10 - 30 V DC
Max. switching current	200 mA
Operating distance	4 mm for steel
Protection rating	IP 67
Ambient temperature	-25°C to +70°C
Cable lengths	2m

Code No.	Type	Basic length	Version
92965_ _ _ _	40	125	without switch



## Inductive limit switch

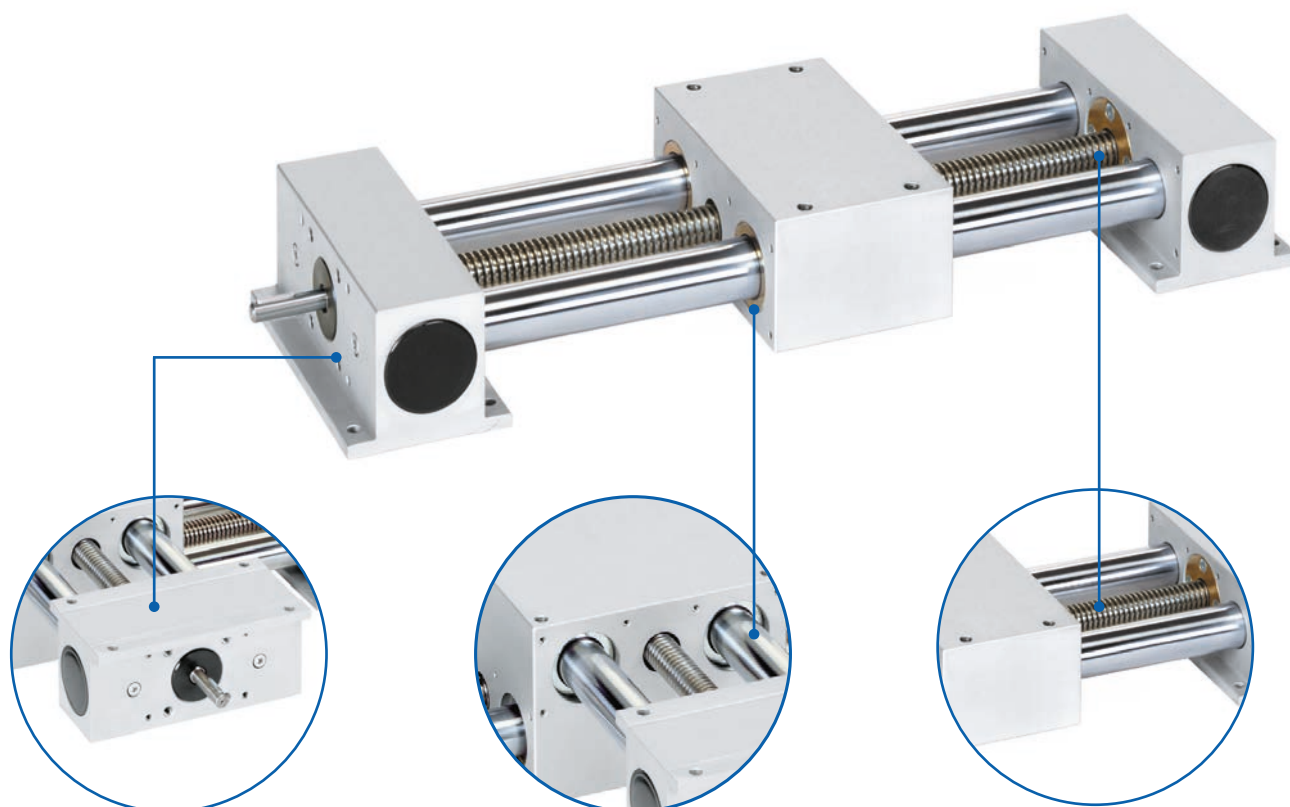


Code No.	Type	Switching function	L	M	Wrench size (SW)
92825	40	Changeover	50	12x1	17

[mm]

# Twin tube guide/actuator – COPAS

Elegant anodised aluminium design ensures precision running even at high load ratings



## Use of high-quality materials

- ✓ Enables high moments
- ✓ Straight, large fastening surfaces
- ✓ Visually attractive

## Ball lining guide

- ✓ Precise and exceptionally quiet running

## Choice of drive screw

- ✓ ACME screw
- ✓ Ball screw

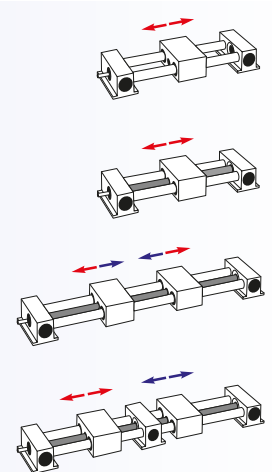
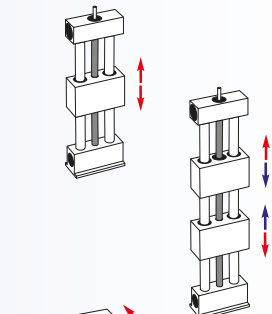
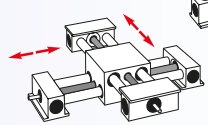
## Features:

- High load ratings
- Free choice of ACME screw or ball screw drive
- Guide shaft made of tempered steel, induction hardened
- High availability due to pre-assembled kits

## Options:

- Corrosion-protected units
- Bellows
- Free-running carriage

**COPAS twin tube actuator - Table of Contents**

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# COPAS – Technical data

## General information/operating conditions

Design	Axis, optional ACME screw or ball screw drive
Guidance system	Ball lining guide
Installation position	Any position
Lead accuracy	ACME screw $\pm 0.15$ mm/300 mm travel, ball screw drive $\pm 0.1$ mm/300 mm travel
Self-locking	on ACME screw
Duty cycle	ACME: S3 30% Basic 1h / Ball screw: S3 100%
Ambient temperature	0°C to +60°C

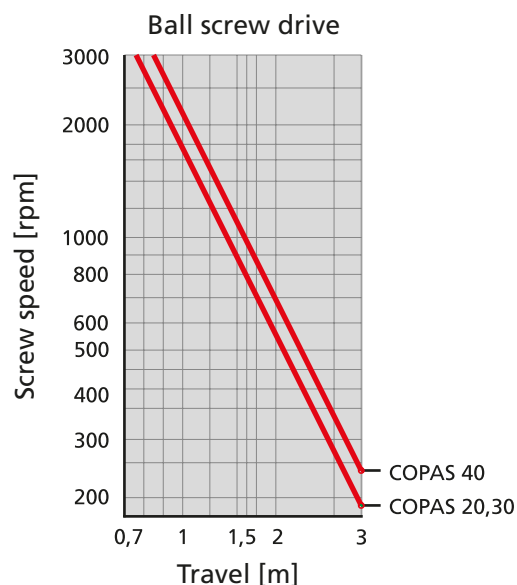
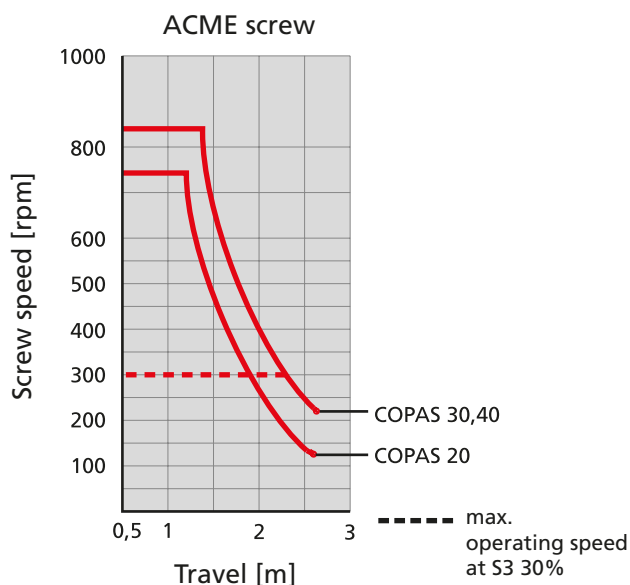
## Screw lead

ACME screw [mm]	
Type	Screw lead
COPAS 20	3
COPAS 30	4
COPAS 40	4

Ball screw drive [mm]	
Type	Screw lead
COPAS 20	5
COPAS 30	5
COPAS 40	5

$$\text{Required screw speed } n \text{ [rpm]} = \frac{\text{speed [m/min]} \times 1000}{\text{screw lead [mm]}}$$

## Critical screw speed



## No-load torque

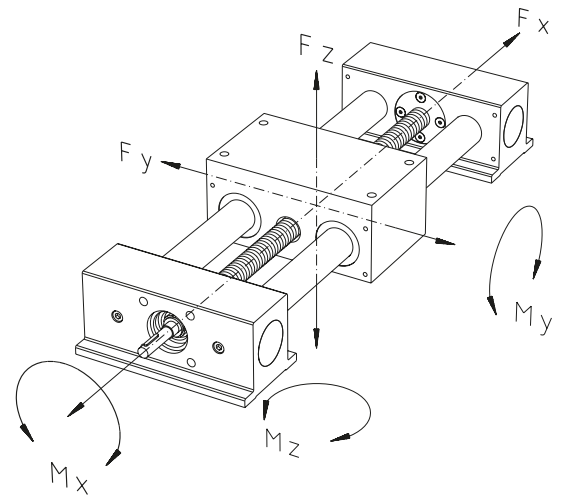
Type	ACME screw [Nm]	Ball screw [Nm]
20	0.30	0.20
30	0.40	0.30
40	0.50	0.40



**Load data\***

- F Force [N]
- M Moment [Nm]
- I Geometric moment of inertia [cm<sup>4</sup>]

\* with reference to carriage (deflection of guide element  $f = 0.5$  mm, static, resting on end elements)

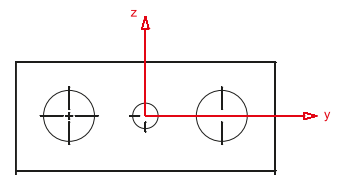


Type	Fx		Fy		Fz		Mx	My	Mz
	ACME screw	Ball screw	500	1000	500	1000			
total length [mm]	500	500	500	1000	500	1000			
COPAS 20	800	1000	700	400	1000	600	30	22	32
COPAS 30	1000	1000	2000	1000	3000	2000	112	99	132
COPAS 40	1000	1600	3500	2400	5200	3200	234	218	294

**Geometric moment of inertia**

[cm<sup>4</sup>]

Type	Iy	Iz
COPAS 20	1.6	202
COPAS 30	8.0	710
COPAS 40	25.1	1820

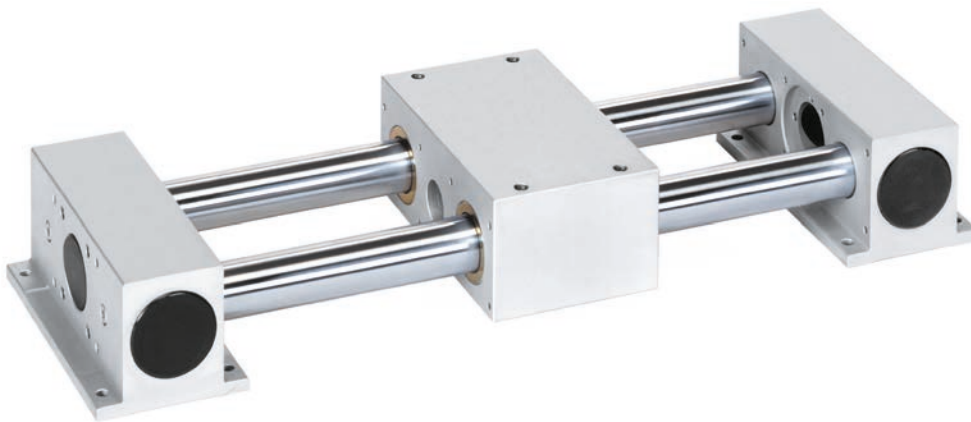


# COPAS RC – Versions

## Order information:

- Second carriage available on request
- Bellows version available as optional extra
- Longer travel lengths on request

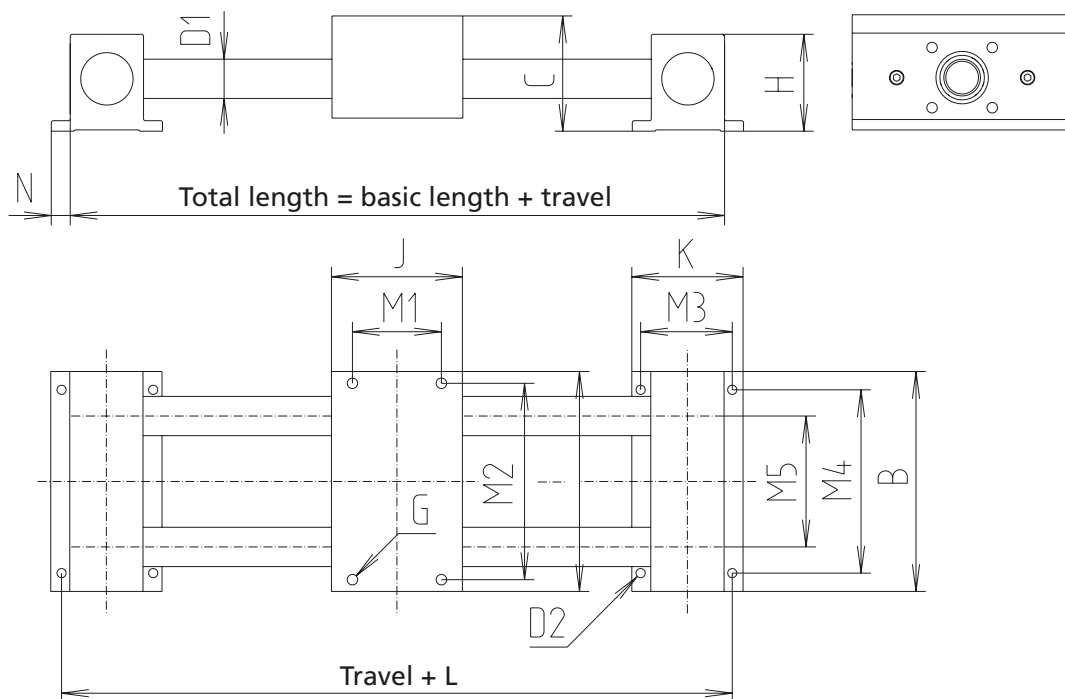
Version ■ Horizontal  
 ■ Guide



Code No.	Type	Basic length	B	C	Ø D1	Ø D2	G	H	I	J
MFA2000CA	RC 20	202	136	60	20	7	M6-16 deep	58	136	90
MFA3000CA	RC 30	241	168	80	30	7	M8-16 deep	74	168	100
MFA4000CA	RC 40	305	204	100	40	9	M8-16 deep	92	204	125

----- Total length = basic length + travel [mm]





[mm]

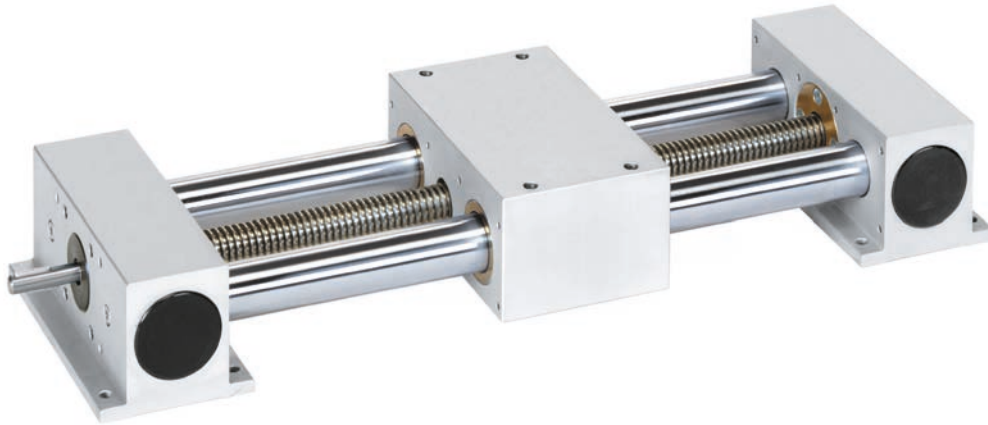
K	L	M1	M2	M3	M4	M5	N	Max. travel	Mass [kg]	
									Basic length	per 100 mm travel
70	216	50	120	56	110	80	14	1300	3.9	0.5
85	256	60	150	70	140	100	14.5	2300	6.5	1.1
110	325	100	170	90	170	120	20	2250	15.1	2.0

# COPAS – Versions

## Order information:

- Second free-running carriage available on request
- Bellows version available as optional extra
- Longer travel lengths on request

- Version**
- Horizontal actuator
  - Right or lefthand thread

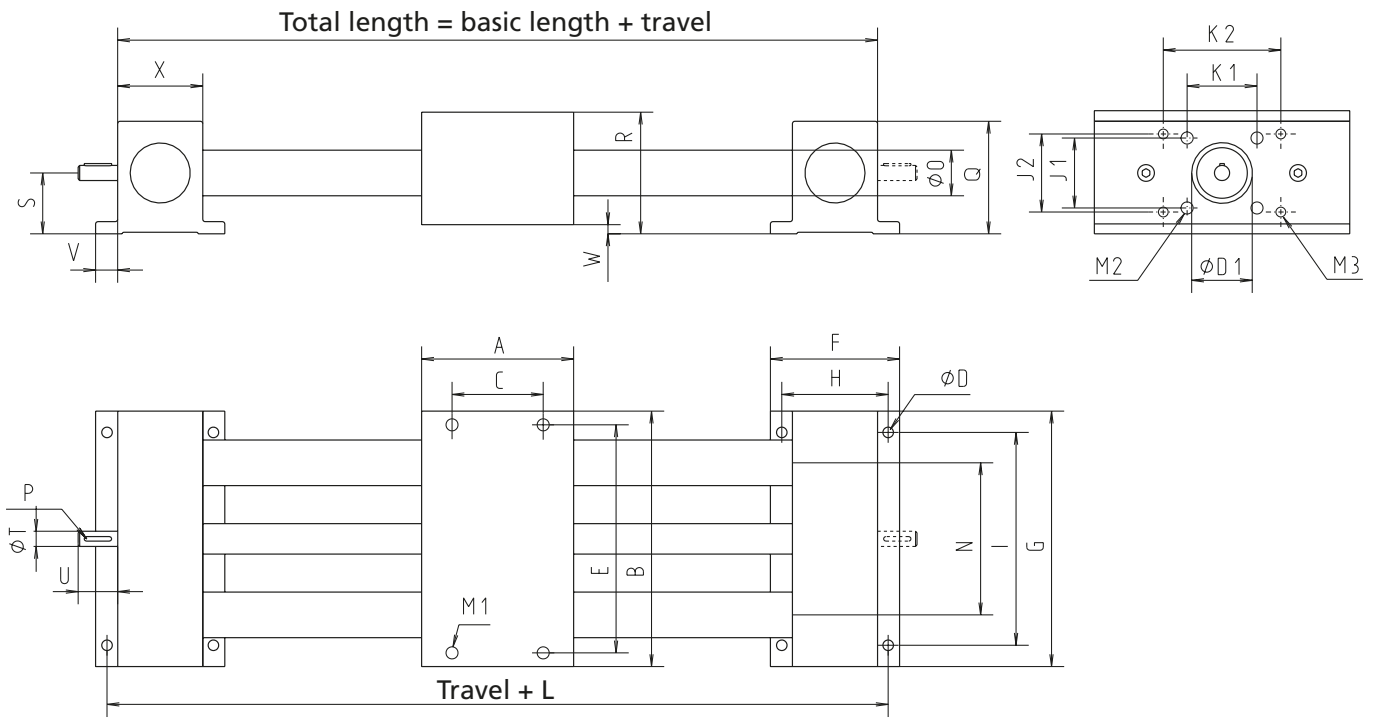


Code No.	Type	Screw	Basic length	A	B	C	Ø D	Ø D1	E	F	G	H	I	J1	J2	K1	K2	L
<b>ACME screw</b>																		
74_20_4	TR-HO 20	14 x 3	202	90	136	50	7	30	120	70	136	56	110	30	37	40	60	216
74_30_4	TR-HO 30	20 x 4	241	100	168	60	7	40	150	85	168	70	140	46	48	46	77	255
74_40_4	TR-HO 40	20 x 4	305	125	204	100	9	40	170	110	204	90	170	46	55	46	87	325
<b>Ball screw</b>																		
75020_4	KG-HO 20	16 x 5	202	90	136	50	7	30	120	70	136	56	110	30	37	40	60	216
75030_4	KG-HO 30	16 x 5	241	100	168	60	7	40	150	85	168	70	140	46	48	46	77	255
75040_4	KG-HO 40	20 x 5	305	125	204	100	9	40	170	110	204	90	170	46	55	46	87	325

----- Total length = basic length + travel [mm]

**Drive shafts:**  
 1 = 1 drive shaft  
 3 = 2 drive shafts

**Version:**  
 0 = righthand thread  
 1 = lefthand thread



[mm]

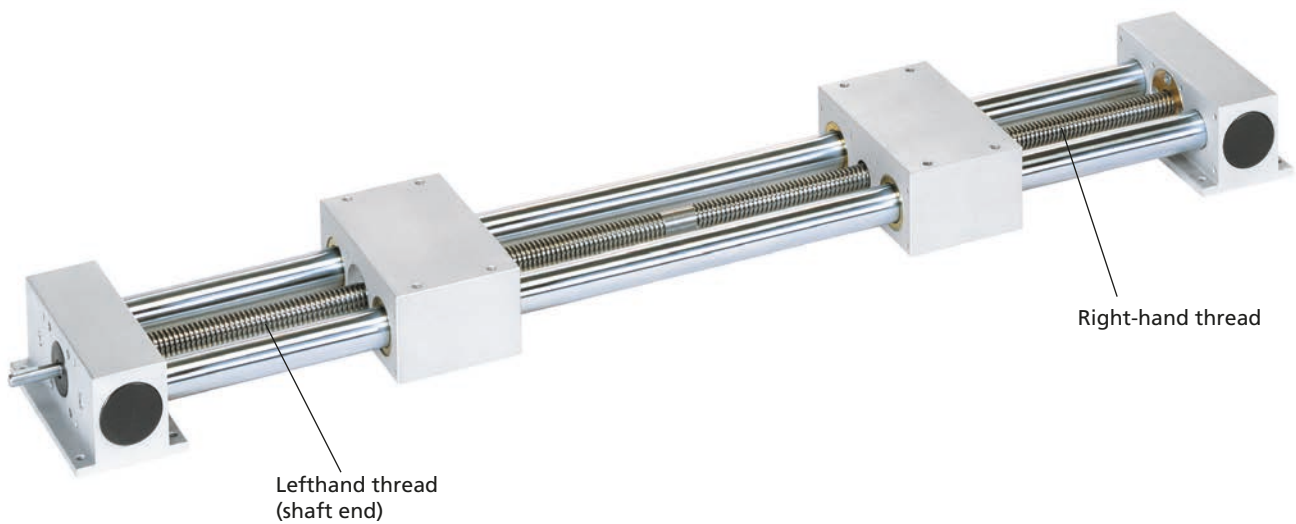
M1	M2	M3	N	Ø O	P	Q	R	S	Ø T	U	V	W	X	Max. travel	Mass [kg]	
															Basic length	per 100 mm travel
M6-16 deep	M6-12 deep	M4-10 deep	80	20	2 x 2 x 20	58	60	30	8	26	14	2	42	1300	4.5	0.59
M8-16 deep	M8-12 deep	M5-12 deep	100	30	3 x 3 x 20	74	80	40	10	38	14.5	10	56	2300	8.5	1.30
M8-16 deep	M8-15 deep	M6-14 deep	120	40	4 x 4 x 25	92	100	50	12	38	20	12	70	2250	16.8	2.16
M6-16 deep	M6-12 deep	M4-10 deep	80	20	2 x 2 x 20	58	60	30	8	26	14	2	42	1800	4.6	0.62
M8-16 deep	M8-12 deep	M5-12 deep	100	30	3 x 3 x 20	74	80	40	10	38	14.5	10	56	1800	8.5	1.23
M8-16 deep	M8-15 deep	M6-14 deep	120	40	4 x 4 x 25	92	100	50	12	38	20	12	70	2250	16.9	2.17

# COPAS – Versions

## Order information:

- Please specify total travel when placing an order
- Second free-running carriage available on request
- Bellows version available as optional extra
- Longer travel lengths on request

- Version**
- Horizontal actuator
  - Right *and* lefthand thread

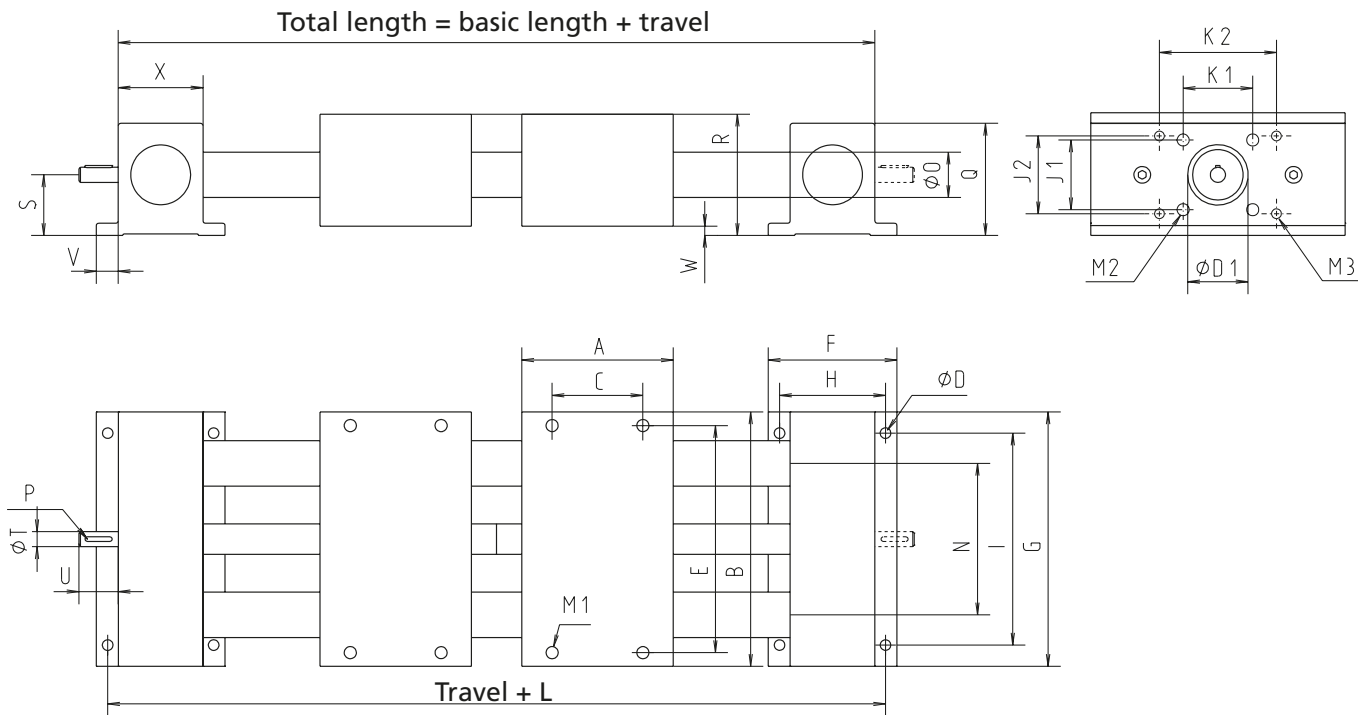


Code No.	Type	Screw	Basic length	A	B	C	Ø D	Ø D1	E	F	G	H	I	J1	J2	K1	K2	L
ACME screw																		
74220_4	TR-HU 20	14 x 3	292	90	136	50	7	30	120	70	136	56	110	30	37	40	60	306
74230_4	TR-HU 30	20 x 4	341	100	168	60	7	40	150	85	168	70	140	46	48	46	77	355
74240_4	TR-HU 40	20 x 4	430	125	204	100	9	40	170	110	204	90	170	46	55	46	87	450

----- Total length = basic length + travel [mm]

**Version:**

- 1 = 1 drive shaft at righthand thread end
- 2 = 1 drive shaft at lefthand thread end
- 3 = 2 drive shafts



[mm]

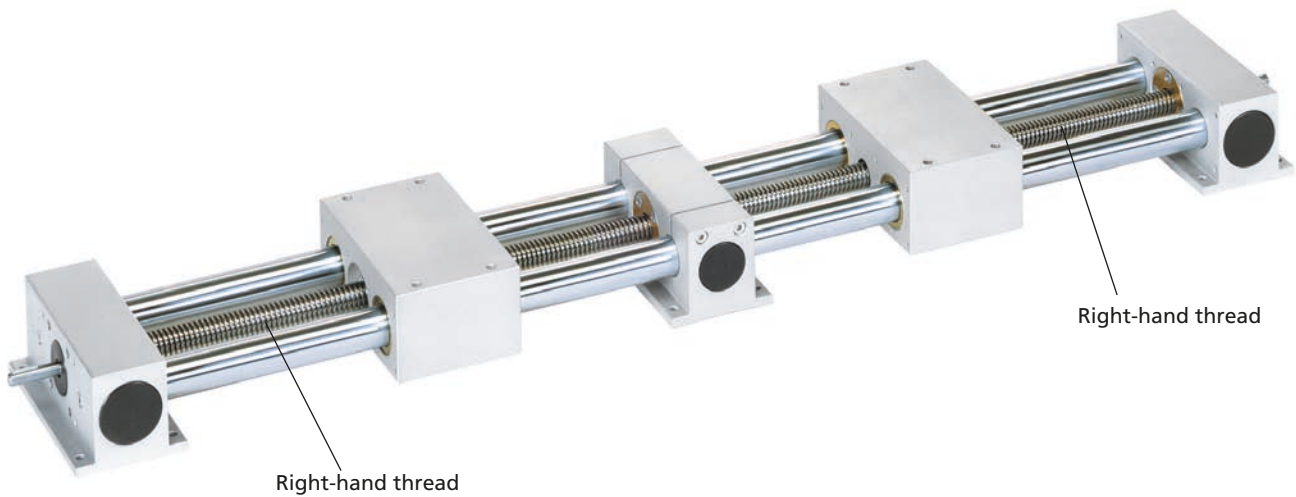
M1	M2	M3	N	ØO	P	Q	R	S	ØT	U	V	W	X	Max. travel	Mass [kg]	
															Basic length	per 100 mm travel
M6-16 deep	M6-12 deep	M4-10 deep	80	20	2 x 2 x 20	58	60	30	8	26	14	2	42	1200	6.7	0.59
M8-16 deep	M8-12 deep	M5-12 deep	100	30	3 x 3 x 20	74	80	40	10	38	14.5	10	56	2200	12.3	1.30
M8-16 deep	M8-15 deep	M6-14 deep	120	40	4 x 4 x 25	92	100	50	12	38	20	12	70	2100	24.2	2.16

# COPAS – Versions

## Order information:

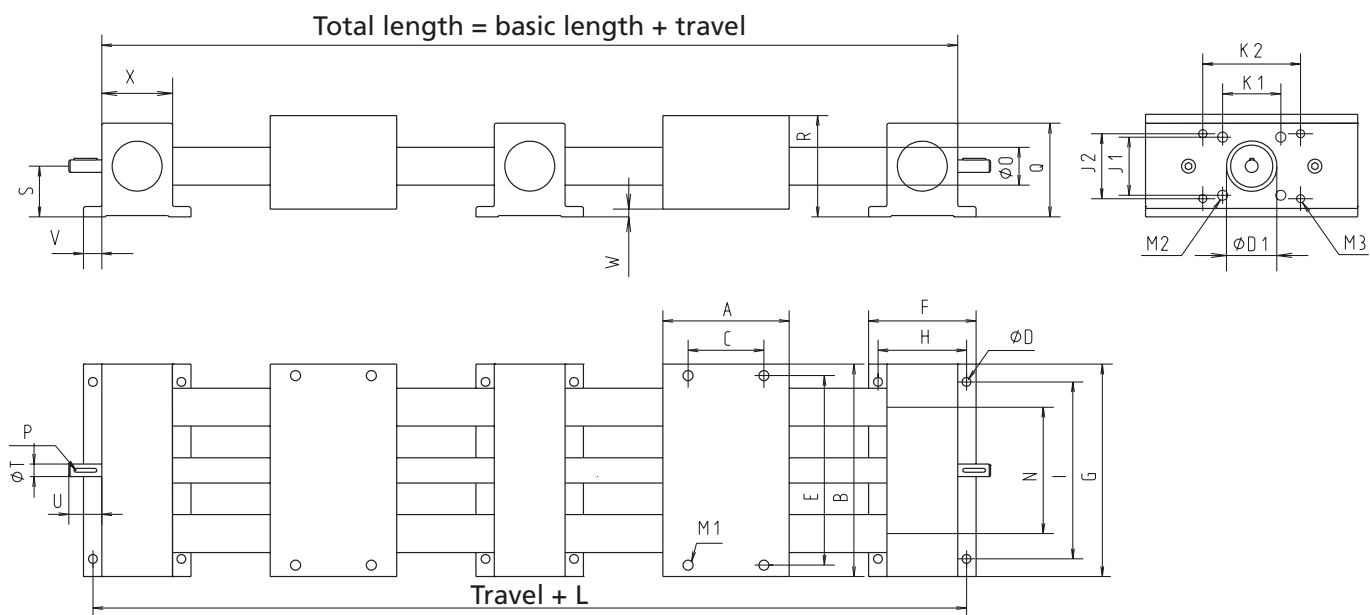
- Please specify total travel when placing an order
- Second free-running carriage available on request
- Bellows version available as optional extra
- Longer travel lengths on request

- Version
- Horizontal actuator
  - *Split screw*



Code No.	Type	Screw	Basic length	A	B	C	Ø D	Ø D1	E	F	G	H	I	J1	J2	K1	K2	L
<b>ACME screw</b>																		
7432034	TR-HG 20	14 x 3	362	90	136	50	7	30	120	70	136	56	110	30	37	40	60	376
7433034	TR-HG 30	20 x 4	426	100	168	60	7	40	150	85	168	70	140	46	48	46	77	440
7434034	TR-HG 40	20 x 4	540	125	204	100	9	40	170	110	204	90	170	46	55	46	87	560
<b>Ball screw</b>																		
7532034	KG-HG 20	16 x 5	362	90	136	50	7	30	120	70	136	56	110	30	37	40	60	376
7533034	KG-HG 30	16 x 5	426	100	168	60	7	40	150	85	168	70	140	46	48	46	77	440
7534034	KG-HG 40	20 x 5	540	125	204	100	9	40	170	110	204	90	170	46	55	46	87	560

----- Total length = basic length + travel [mm]



[mm]

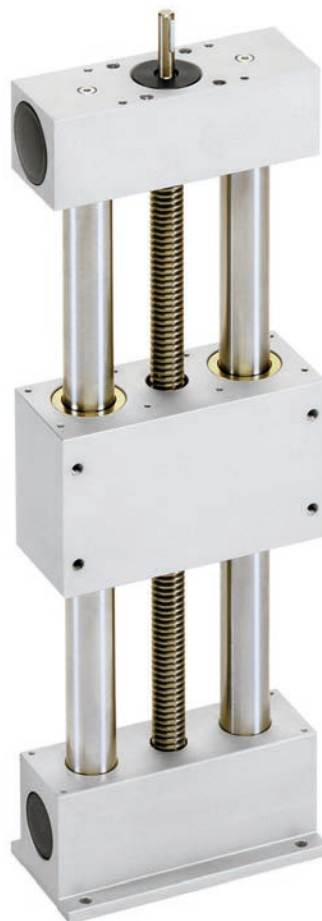
M1	M2	M3	N	Ø O	P	Q	R	S	Ø T	U	V	W	X	Max. travel/end	Mass [kg]	
															Basic length	per 100 mm travel
M6-16 deep	M6-12 deep	M4-10 deep	80	20	2 x 2 x 20	58	60	30	8	26	14	2	42	575	8.2	0.59
M8-16 deep	M8-12 deep	M5-12 deep	100	30	3 x 3 x 20	74	80	40	10	38	14.5	10	56	1075	15.2	1.30
M8-16 deep	M8-15 deep	M6-14 deep	120	40	4 x 4 x 25	92	100	50	12	38	20	12	70	1025	30.0	2.16
M6-16 deep	M6-12 deep	M4-10 deep	80	20	2 x 2 x 20	58	60	30	8	26	14	2	42	825	8.4	0.62
M8-16 deep	M8-12 deep	M5-12 deep	100	30	3 x 3 x 20	74	80	40	10	38	14.5	10	56	825	15.1	1.23
M8-16 deep	M8-15 deep	M6-14 deep	120	40	4 x 4 x 25	92	100	50	12	38	20	12	70	1025	30.0	2.17

# COPAS – Versions

## Order information:

- Second free-running carriage available on request
- Bellows version available as optional extra
- Longer travel lengths on request

- Version
- Vertical actuator
  - Right or lefthand thread

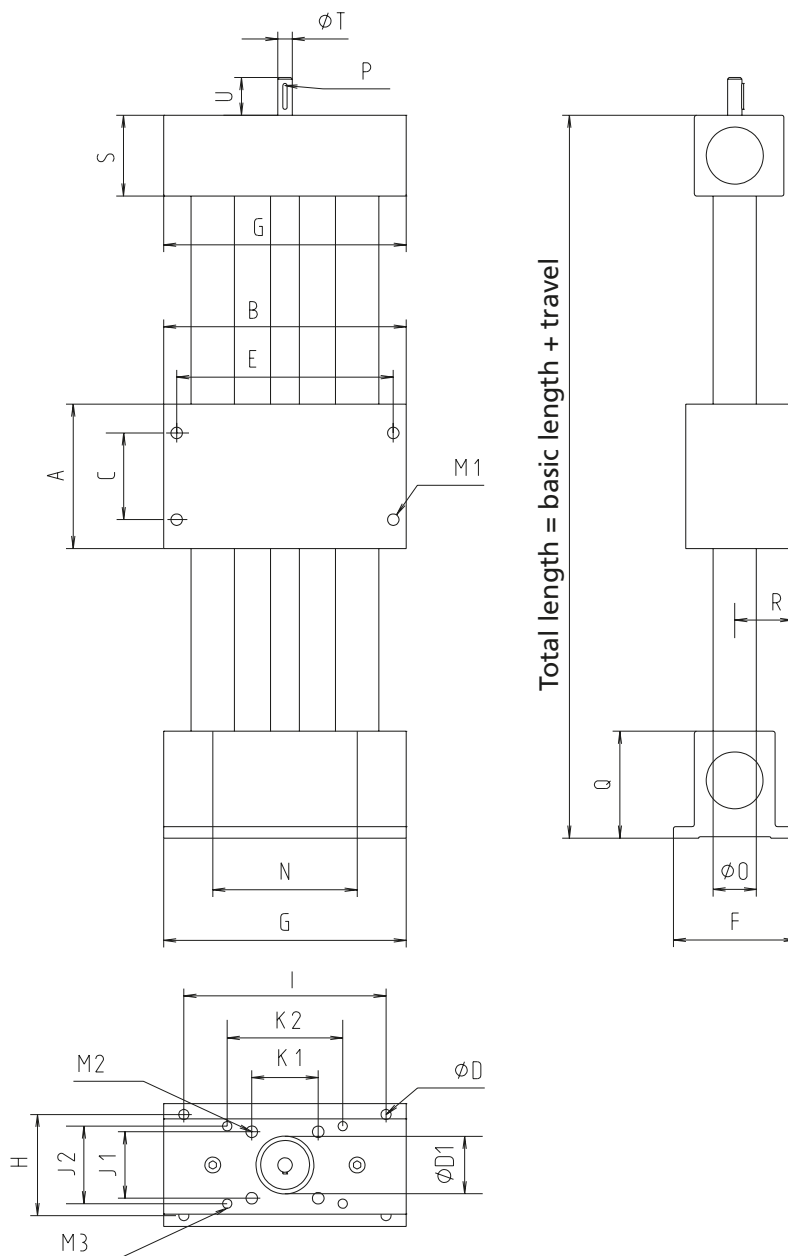


Code No.	Type	Screw	Basic length	A	B	C	Ø D	Ø D1	E	F	G	H	I	J1	J2	K1	K2
<b>ACME screw</b>																	
74_2014	TR-VO 20	14 x 3	190	90	136	50	7	30	120	70	136	56	110	30	37	40	60
74_3014	TR-VO 30	20 x 4	230	100	168	60	7	40	150	85	168	70	140	46	48	46	77
74_4014	TR-VO 40	20 x 4	287	125	204	100	9	40	170	110	204	90	170	46	55	46	87
<b>Ball screw</b>																	
7552014	KG-VO 20	16 x 5	190	90	136	50	7	30	120	70	136	56	110	30	37	40	60
7553014	KG-VO 30	16 x 5	230	100	168	60	7	40	150	85	168	70	140	46	48	46	77
7554014	KG-VO 40	20 x 5	287	125	204	100	9	40	170	110	204	90	170	46	55	46	87

----- Total length = basic length + travel [mm]

**Version:**  
5 = righthand thread  
6 = lefthand thread





[mm]

M1	M2	M3	N	ØO	P	Q	R	S	ØT	U	Max. travel	Mass [kg]	
												Basic length	per 100 mm travel
M6-16 deep	M6-12 deep	M4-10 deep	80	20	2 x 2 x 20	58	30	42	8	26	1300	4.2	0.59
M8-16 deep	M8-12 deep	M5-12 deep	100	30	3 x 3 x 20	74	40	56	10	38	2250	8.2	1.30
M8-16 deep	M8-15 deep	M6-14 deep	120	40	4 x 4 x 25	92	50	70	12	38	2200	16.2	2.16
M6-16 deep	M6-12 deep	M4-10 deep	80	20	2 x 2 x 20	58	30	42	8	26	1800	4.3	0.62
M8-16 deep	M8-12 deep	M5-12 deep	100	30	3 x 3 x 20	74	40	56	10	38	1750	8.2	1.23
M8-16 deep	M8-15 deep	M6-14 deep	120	40	4 x 4 x 25	92	50	70	12	38	2200	16.3	2.17

# COPAS – Versions

## Order information:

- Please specify total travel when placing an order
- Second free-running carriage available on request
- Bellows version available as optional extra
- Longer travel lengths on request

- Version**
- Vertical actuator
  - Right *and* lefthand thread

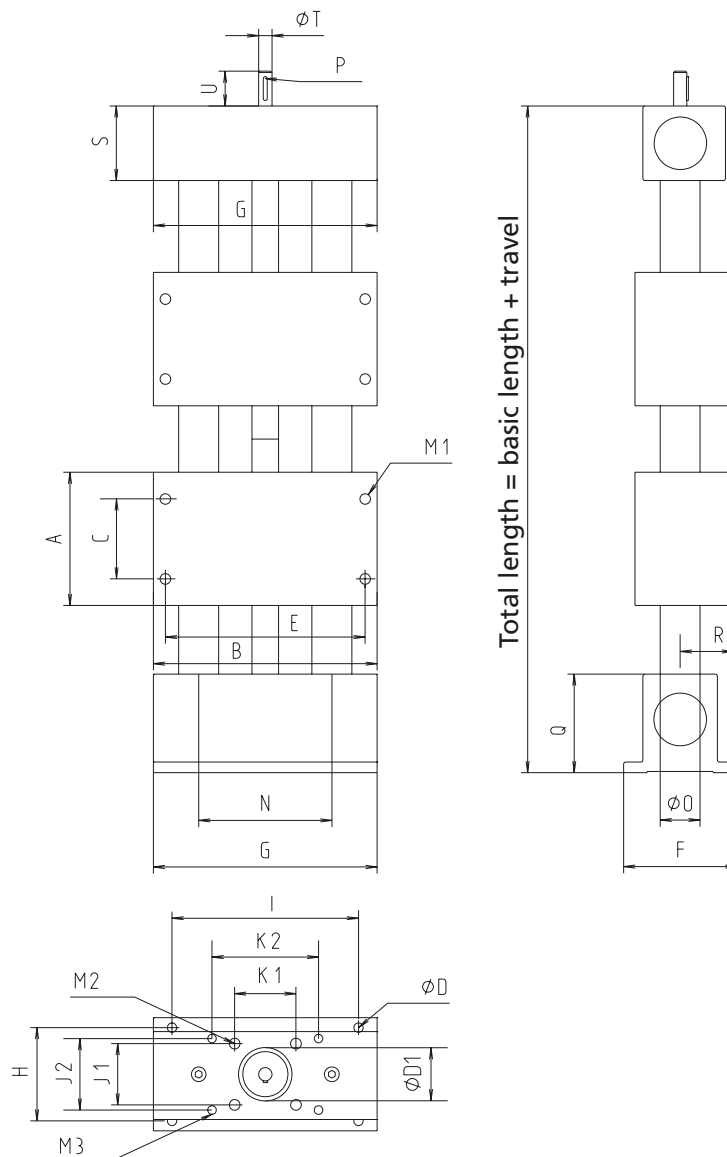


Code No.	Type	Screw	Basic length	A	B	C	Ø D	Ø D1	E	F	G	H	I	J1	J2	K1	K2
<b>ACME screw</b>																	
74720_4	TR-VU 20	14 x 3	280	90	136	50	7	30	120	70	136	56	110	30	37	40	60
74730_4	TR-VU 30	20 x 4	330	100	168	60	7	40	150	85	168	70	140	46	48	46	77
74740_4	TR-VU 40	20 x 4	412	125	204	100	9	40	170	110	204	90	170	46	55	46	87

----- Total length = basic length + travel [mm]

**Version:**

- 1 = 1 drive shaft at righthand thread end
- 2 = 1 drive shaft at lefthand thread end



[mm]

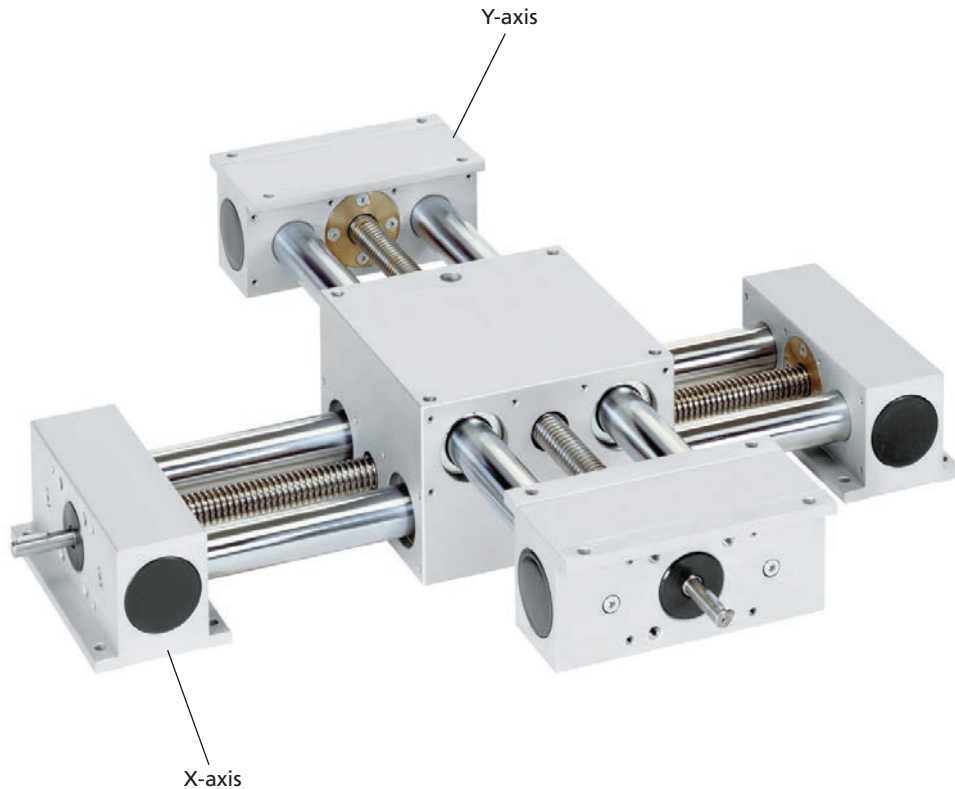
M1	M2	M3	N	Ø O	P	Q	R	S	Ø T	U	Max. travel	Mass [kg]	
												Basic length	per 100 mm travel
M6-16 deep	M6-12 deep	M4-10 deep	80	20	2 x 2 x 20	58	30	42	8	26	1200	5.9	0.59
M8-16 deep	M8-12 deep	M5-12 deep	100	30	3 x 3 x 20	74	40	56	10	38	2150	10.5	1.30
M8-16 deep	M8-15 deep	M6-14 deep	120	40	4 x 4 x 25	92	50	70	12	38	2100	17.2	2.16

# COPAS – Versions

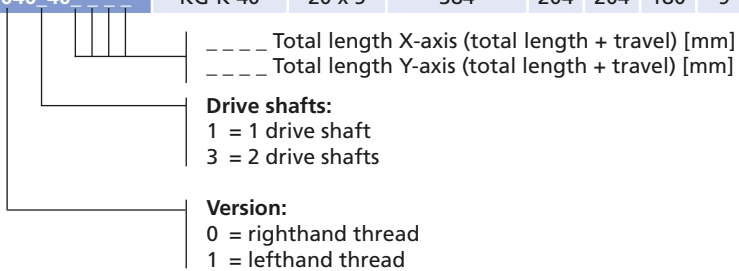
## Order information:

- The Y-axis is a moving axis (the carriage is stationary, the axis is moving!)
- You need to check the moments  $M_y$  for the Y-axis and  $M_x$  for the X-axis (see page 135)

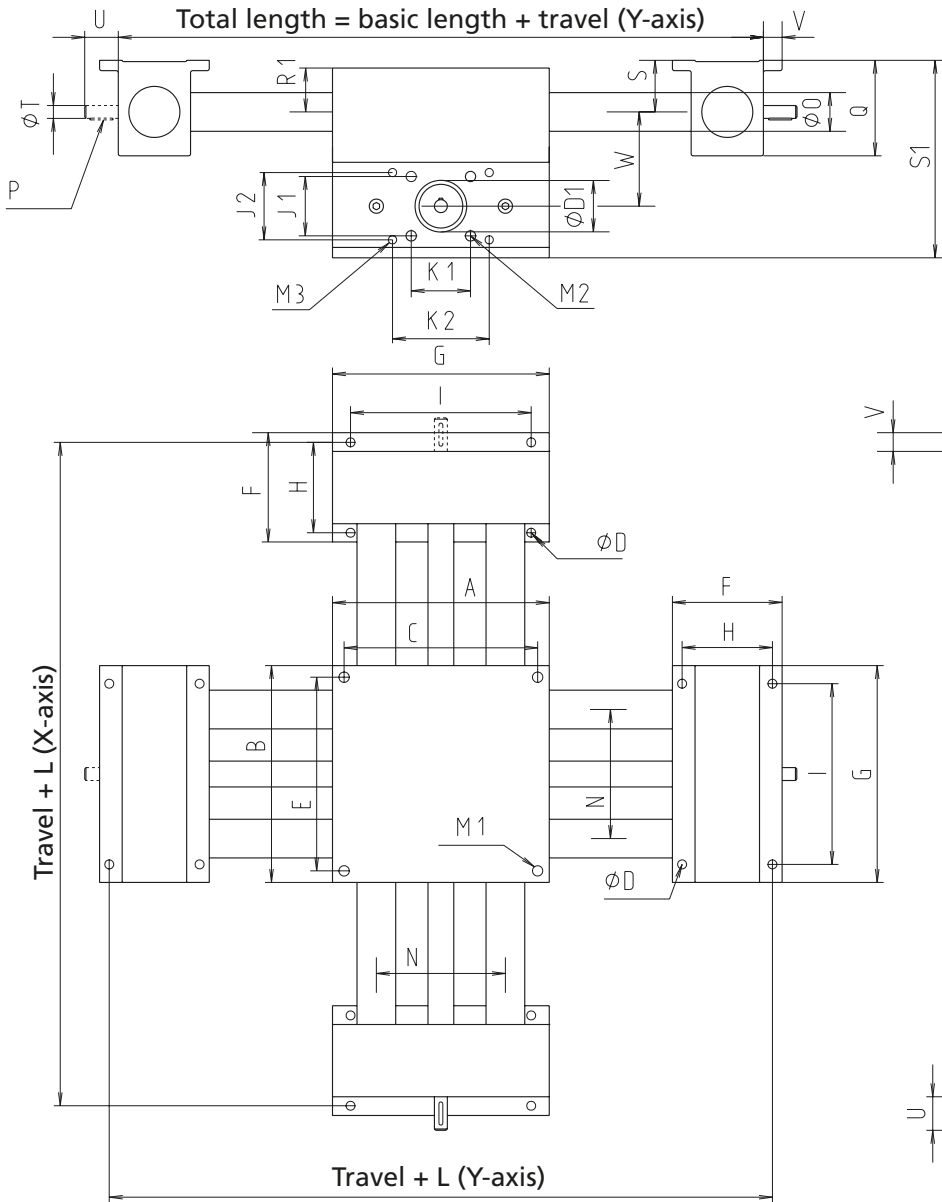
- Version**
- Crossing
  - Horizontal
  - Right or lefthand thread



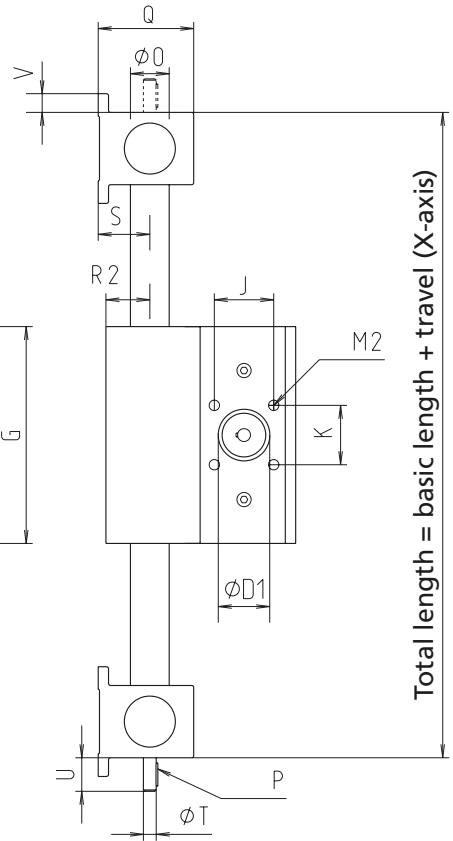
Code No.	Type	Screw	Basic length	A	B	C	Ø D	Ø D1	E	F	G	H	I	J1	J2	K1	K2
<b>ACME screw</b>																	
76_20_40_---	TR-K 20	14 x 3	248	136	136	120	7	30	120	70	136	56	110	30	37	40	60
76_30_40_---	TR-K 30	20 x 4	309	168	168	150	7	40	150	85	168	70	140	46	48	46	77
76_40_40_---	TR-K 40	20 x 4	384	204	204	180	9	40	170	110	204	90	170	46	55	46	87
<b>Ball screw</b>																	
77020_40_---	KG-K 20	16 x 5	248	136	136	120	7	30	120	70	136	56	110	30	37	40	60
77030_40_---	KG-K 30	16 x 5	309	168	168	150	7	40	150	85	168	70	140	46	48	46	77
77040_40_---	KG-K 40	20 x 5	384	204	204	180	9	40	170	110	204	90	170	46	55	46	87



**Note:** Please specify total length of X- and Y-axis when placing an order



**Calculation of total height S1:**  
 S (X-axis)  
 +W (X-axis)  
 + S (Y-axis)  
 = total height S1



[mm]

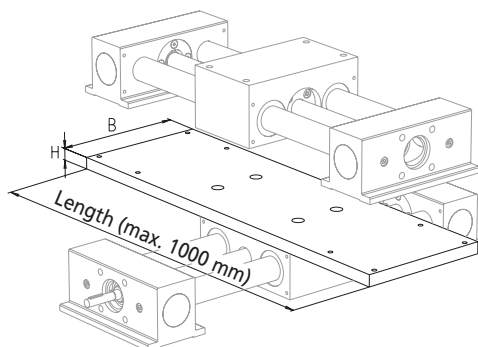
L	M1	M2	M3	N	ØO	P	Q	R1	R2	S	ØT	U	V	W	Mass [kg]	
															Basic length for crossing	per 100 mm travel
262	M6-16 deep	M6-12 deep	M4-10 deep	80	20	2 x 2 x 20	58	28	28	30	8	26	14	45	10.0 for 20/20	0.59
323	M8-16 deep	M8-12 deep	M5-12 deep	100	30	3 x 3 x 20	74	32	32	40	10	38	14.5	50	18.3 for 30/30	1.30
404	M8-16 deep	M8-15 deep	M6-14 deep	120	40	4 x 4 x 25	92	35	38	50	12	38	20	65	34.4 for 40/40	2.16
262	M6-16 deep	M6-12 deep	M4-10 deep	80	20	2 x 2 x 20	58	28	28	30	8	26	14	45	10.0 for 20/20	0.62
323	M8-16 deep	M8-12 deep	M5-12 deep	100	30	3 x 3 x 20	74	32	32	40	10	38	14.5	50	18.3 for 30/30	1.23
404	M8-16 deep	M8-15 deep	M6-14 deep	120	40	4 x 4 x 25	92	35	38	50	12	38	20	65	34.4 for 40/40	2.17

# COPAS – Fixing/Drive

## Connecting plate for cross table

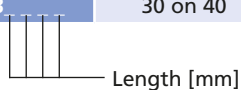
- Connecting plate between two crossing axes
- The Y-axis is a fixed axis (the axis is stationary, the carriage is moving)

**Material:** Aluminium  
Precision-milled surface



[mm]

Code No.	Type	B	H	V
94302_ _ _	20 on 20	136	15	14
94303_ _ _	30 on 30	168	15	14.5
94304_ _ _	40 on 40	204	15	20
94312_ _ _	20 on 30	136	15	14
94322_ _ _	20 on 40	136	15	14
94313	30 on 40	168	15	14.5



**Sample order:**  
COPAS 20 Horizontal  
500 mm travel

Code No. + length (basic length Y-axis + travel + 2 x dimension V)  
94302 + 0730 (202 mm + 500 mm + 2 x 14 mm)

943020730

**Handwheel**

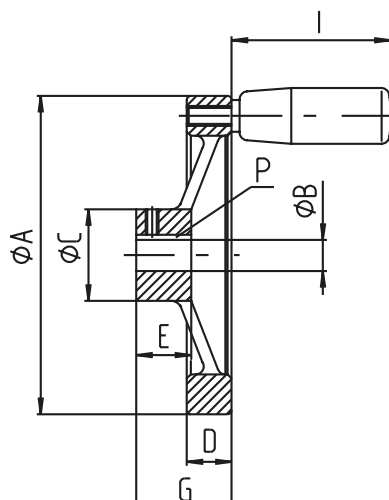
**Material:** Die-cast aluminium  
Black powder-coating



Ø 140

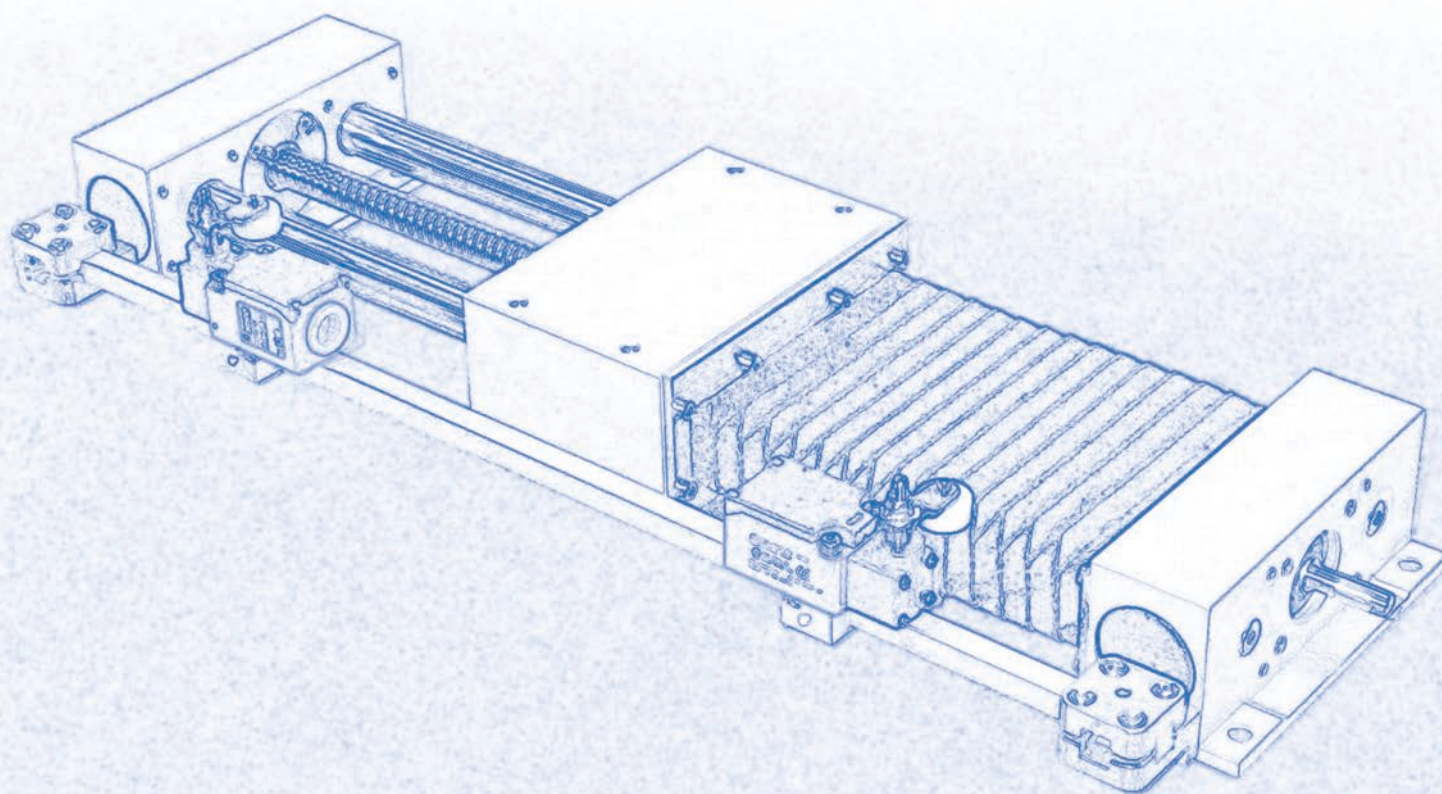


Ø 80-100



[mm]

Code No.	Type	A	B	C	D	E	G	P	I
90903	20	80	8	23	11	17	35	2 x 2	52
90913	20	100	8	28	14	17	30	2 x 2	52
90904	30	100	10	28	14	17	30	3 x 3	52
90915	40	100	12	28	14	17	30	4 x 4	52
90905	40	140	12	36	16.5	19	36	4 x 4	52



## Selection table Motor adaptor/coupling

Type	Servo motors without gear			Three-phase motor	
	RK-AC118	RK-AC240	RK-AC210/470	90/120W	180/250 W
COPAS 20	949218	949328	949327	949623	–
	911430 0811	911940 0814	911940 0819	911940 0812	–
COPAS 30	949220	949238	949084	949614	949048
	911430 1011	911430 1014	911430 1019	911430 1012	911430 1014
COPAS 40	949220	949238	949051	949614	949048
	911430 1112	911430 1214	911940 1920	911430 1212	911430 1214

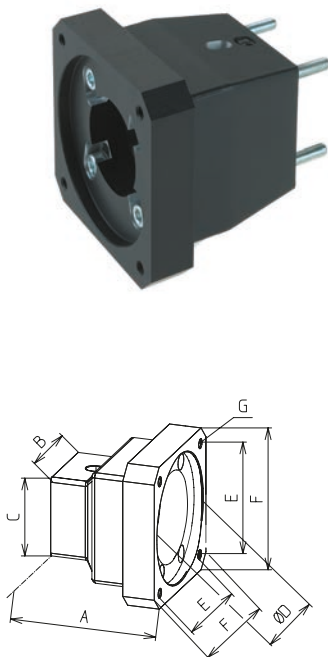
**Note:**

For further details on motor versions, please refer to the chapter “Motors and controls”

### Motor adaptor

- Simple assembly on linear unit and motor
- Exact fit due to centering shoulders

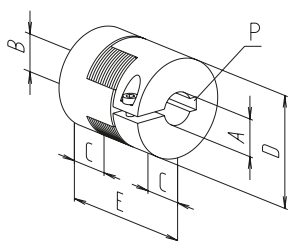
**Material:** Aluminium, black



Code No.	Type	A	B	C	D	E	F	G	[mm]
949218	20	64	53,5	53,5	60	53	70	M5	
949328	20	81	53,5	53,5	80	70,7	90	M6	
949327	20	91	53,5	53,5	95	81,3	115	M8	
949262	20	66	53,5	53,5	73	70	90	M6	
949623	20	79	53,5	53,5	50	65	80	M5	
949220	30	74	60	60	60	53	70	M5	
949238	30	83	60	60	80	70,7	90	M6	
949084	30	91	60	60	95	81,3	115	M8	
949264	30	83	60	60	73	70	90	M6	
949614	30	83	60	60	50	46	80	M5	
949048	30	83	60	60	80	100	Ø120	Ø6,6	
949220	40	74	60	60	60	53	70	M5	
949294	40	83	60	60	60	53	70	M5	
949238	40	83	60	60	80	70,7	90	M6	
949324	40	100	60	60	80	70,7	90	M6	
949051	40	94	60	60	95	81,3	115	M8	
949264	40	83	60	60	73	70	90	M6	
949614	40	83	60	60	50	46	80	M5	
949048	40	83	60	60	80	100	Ø120	Ø6,6	



**Coupling**



[mm]

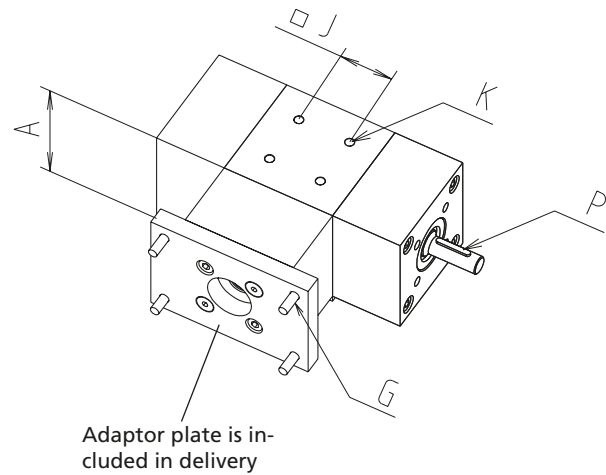
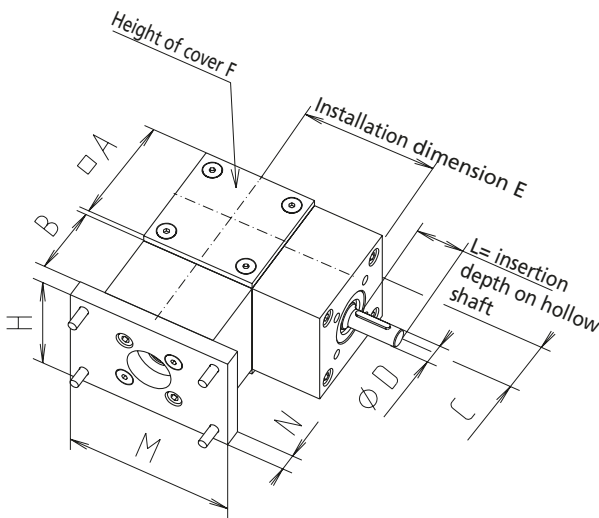
Code No.	ØA	ØB	C	ØD	E	P	Torque [Nm]	
							with feather key	without feather key
9109200895	8	9,5	10	20	30	2x2 / -	5	3
9114300811	8	11	11	30	35	2x2 / 4x4	12	6
9114309510	9,5	10	11	30	35	- / 3x3	12	6
9114309512	9,5	12	11	30	35	- / 4x4	12	6
9114301011	10	11	11	30	35	3x3 / 4x4	12	6
9114301012	10	12	11	30	35	3x3 / 4x4	12	6
9114301014	10	14	11	30	35	3x3 / 5x5	12	6
9114301019	10	19	11	30	35	3x3 / 6x6	12	6
9114301112	11	12	11	30	35	4x4 / 4x4	12	6
9114301212	12	12	11	30	35	4x4 / 4x4	12	6
9114301214	12	14	11	30	35	4x4 / 5x5	12	6
9119400812	8	12	25	40	65	2x2 / 4x4	17	10
9119400814	8	14	25	40	65	2x2 / 5x5	17	10
9119400819	8	19	25	40	65	2x2 / 6x6	17	10
9119401920	19	20	25	40	65	6x6 / 6x6	17	10

## Order information:

- The fitting dimensions of the angular drive and the end elements of the linear units may not be the same.
- Accessories for connection to the angular drive available on request.

## Angular drive

- Choice of helical or straight bevel gears
  - Available with solid or hollow shaft
  - Fastening option due to threads in combination cube
  - Inh and output shaft with ball bearing
  - Long service life\* due to oil lubrication
  - Max speed\*\* 2500 rpm
  - Operating temperature -18°C to +80°C
- Material:** Housing - AlMgSi, Black anodised



Dimensions	COPAS	20	30	40
A		50	64	74
B		36	40	40
C		25	32	37
D		8	10	12
e		61	72	77
F		4	4	4
G		M4-10 deep	M5-12 deep	M6-15 deep
H		47	64	74
J		20	30	30
K		M5-5.5 deep	M5-7.5 deep	M6-10 deep
L		26	28	30
M		70	93	106
N		6	10	10
P		2 x 2 x 20	3 x 3 x 20	4 x 4 x 20
Max. starting torque		3.6 Nm	6.4 Nm	10 Nm
Max. input torque**		1 Nm	3 Nm	4.5 Nm

\* Service life ~10,000 h at 1000 rpm

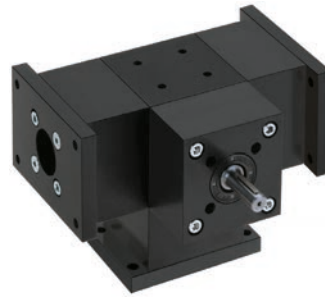
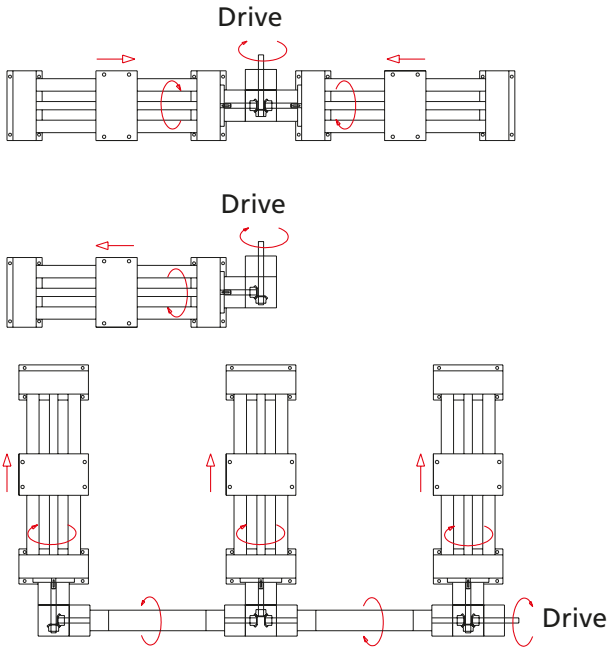
\*\* In the case of gearing up  
i=1:1.5 max. input speed 1600 rpm



# COPAS - Drive

**RK ROSE+KRIEGER**

## Application examples:



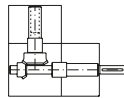
Version K



Version E

Version K and E and other shaft configurations available on request

Version L

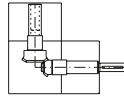


Code No. 9159 \_ 2300 \_

Version

Solid shaft, long/hollow shaft, short input/output direction of rotation are identical

Version L



Code No. 9159 \_ 1300 \_

Solid shaft, short/hollow shaft, short input/output direction of rotation are not identical

Version L



Code No. 9159 \_ 3300 \_

Hollow shaft, short/hollow shaft, short input/output direction of rotation are not identical

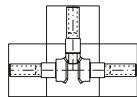
Version L



Code No. 9159 \_ 3400 \_

Hollow shaft, long/hollow shaft, short input/output direction of rotation are identical

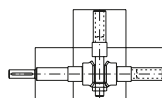
Version T



Code No. 9159 \_ 3330 \_

Hollow shaft, short/hollow shaft, short input/output direction of rotation are not identical

Version T



Code No. 9159 \_ 1340

Solid shaft, short/hollow shaft, short and long input/output direction of rotation are identical

Can be retrofitted on COPAS units manufactured from 12/95 onwards

- Size**
- 2 = 20
  - 3 = 30
  - 4 = 40

**Bevel gear set**

- A = straight toothed,  $i = 1:1.5$
- B = spiral toothed,  $i = 1:1$
- C = straight toothed,  $i = 1:1$
- D = straight toothed,  $i = 1:1.5$
- E = straight toothed,  $i = 1:1.5$

# COPAS – Position determination

## Positioning indicator

- Max. ambient temperature +80°C
- Figure height 6 mm
- Indication accuracy  $\pm 0.1$  mm
- If positioning indicators are fitted, the linear units are delivered exclusively with ball bearings

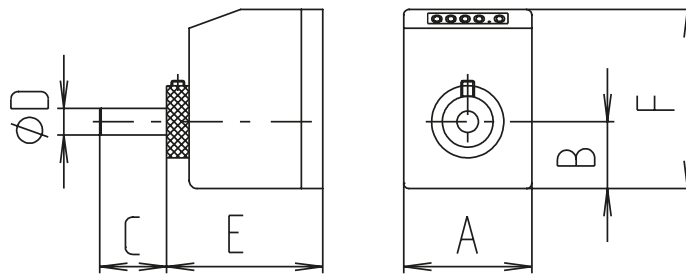
**Material:** housing polyamide 6 Orange RAL 2004, steel parts, corrosion protected

**Scope of delivery:** positioning indicator, clamping ring, shaft extension and fastenings

**Note:** “rising” and “falling” versions refer to the clockwise rotation of the drive shaft.



Installation position: horizontal



Installation position: vertical

[mm]

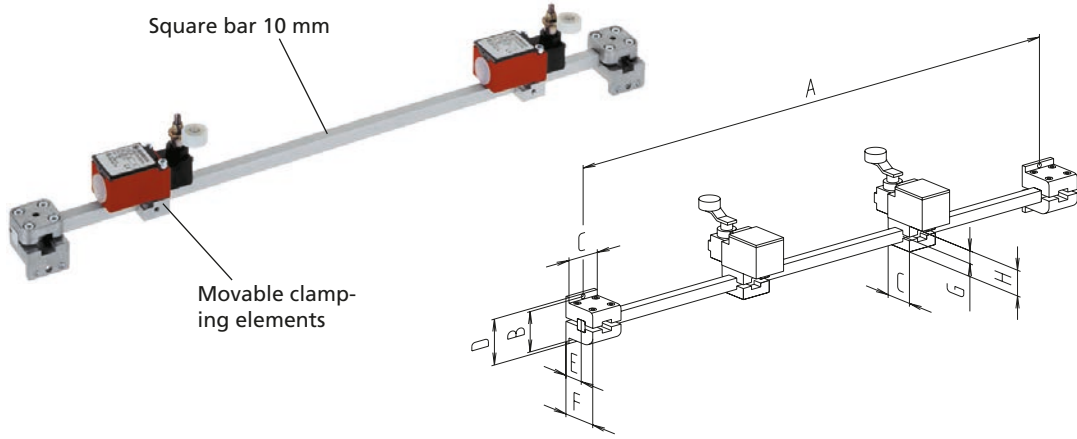
Type	Installation position	Code No.	Version	Code No.	Version*	A	B	C	D	E	F
20	Horizontal	91022	3 mm rising	91060	6 mm rising	33	16.5	26	8	39	45
20		91032	3 mm fall.	910144	6 mm fall.	33	16.5	26	8	39	45
20	Vertical	91042	3 mm rising	910145	6 mm rising	33	16.5	26	8	39	45
20		91052	3 mm fall.	910146	6 mm fall.	33	16.5	26	8	39	45
30	Horizontal	91007	4 mm rising	910147	8 mm rising	48	25	28	10	59	67
30		91017	4 mm fall.	910148	8 mm fall.	48	25	28	10	59	67
30	Vertical	91027	4 mm rising	910149	8 mm rising	48	25	28	10	59	67
30		91037	4 mm fall.	910150	8 mm fall.	48	25	28	10	59	67
40	Horizontal	91004	4 mm rising	91030	8 mm rising	48	25	38	12	59	67
40		91014	4 mm fall.	91039	8 mm fall.	48	25	38	12	59	67
40	Vertical	91024	4 mm rising	91040	8 mm rising	48	25	38	12	59	67
40		91034	4 mm fall.	91041	8 mm fall.	48	25	38	12	59	67

\* Version with double lead e.g. for installation on righthand/lefthand thread screws

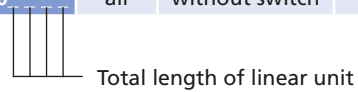
**Bracket for mechanical limit switch**

■ Switch axial adjustable

**Material:** Fixing elements Gk Al Si 12, square bar made of aluminium, clear anodised



Code No.	Type	Version	A min	B	C	D	E	F	G	H
92901_ _ _ _	all	2 x limit switches	93	32	31	41	21	36	11.5	23
929020	all	without switch	93	32	31	41	21	36	11.5	23

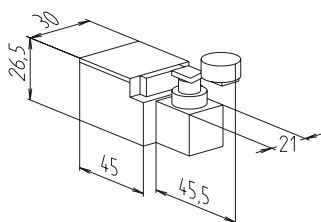


**Mechanical limit switch**

**Material:** Thermoplastic, fully insulated



Max. voltage	250 V AC
Max. switching current	6 A
Max. starting current	16 A
Operating cycles	Max. 6,000/h
Mechanical lifetime	1 x 10 <sup>7</sup> switching cycles
Axis lever adjustment	locking by 360°
Protection class	IP 65
Ambient temperature	-30°C to +80°C



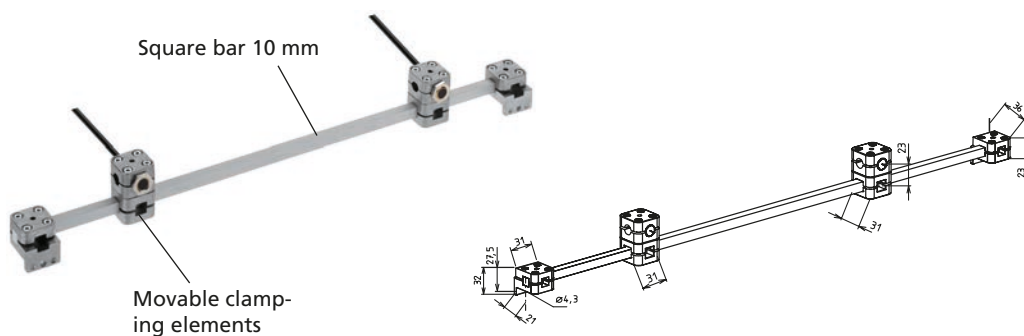
Code No.	Type	Switching function
91905	20/30/40	NC/NO
91907	Clamping element for mech. limit switch	

# COPAS – Position determination

## Bracket for inductive limit switch

- Switch can be moved and fixed axially

**Material:** Fixing elements  
Gk Al Si 12, square bar made of aluminium, clear anodised



[mm]

Code No.	Type	Version	Amin	B	C	D	E	F	G	H
92914_ _ _ _	All	without switch	93	32	31	41	21	36	23	46

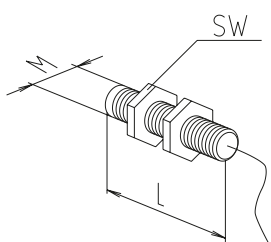
## Inductive limit switch

- Function indicator (LED)
- Maintenance-free

**Material:** housing - brass, chrome-plated

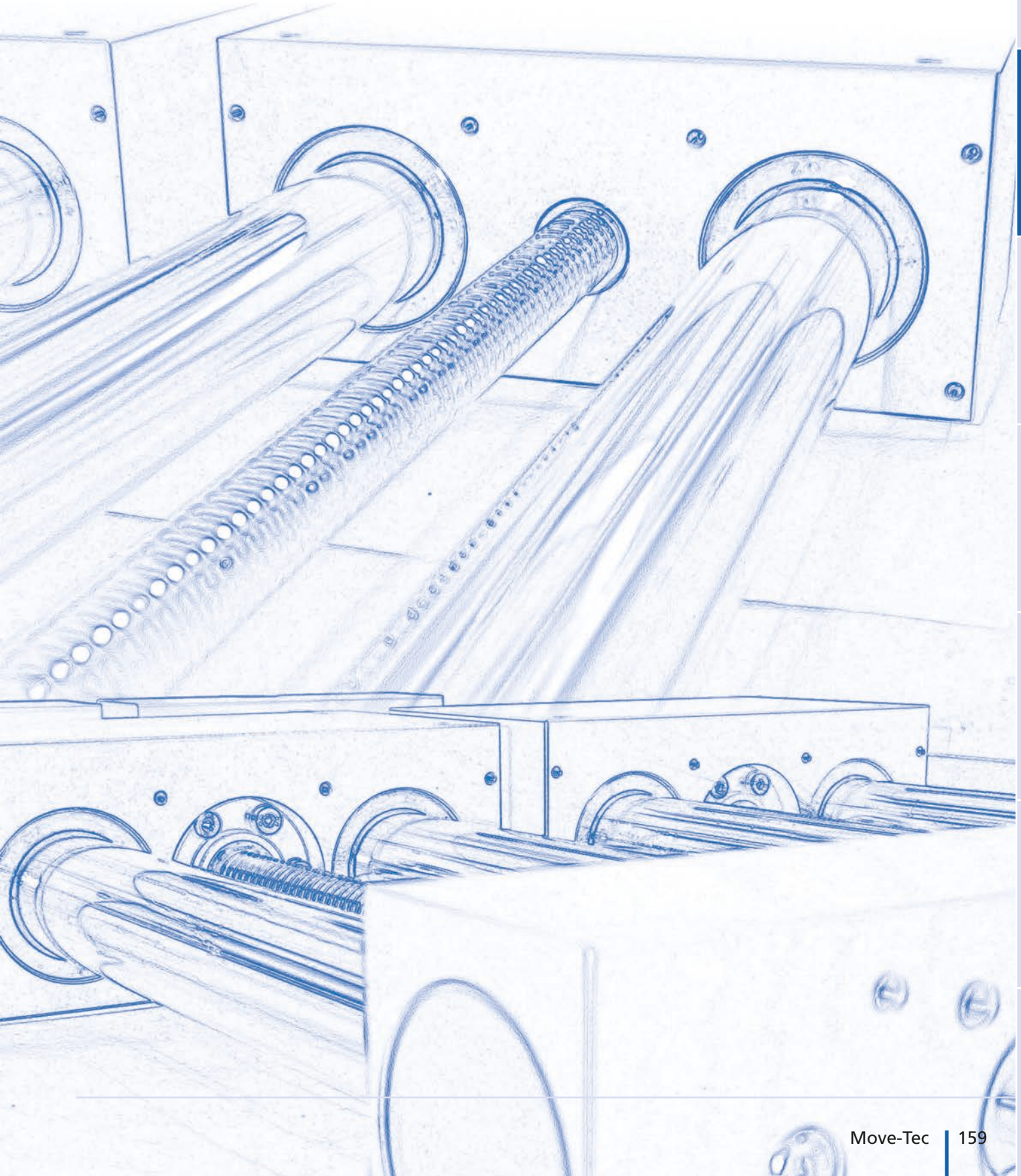


Type	18-60
Voltage	10 - 30 V DC
Max. switching current	200 mA
Operating distance	4 mm for steel
Protection class	IP 67
Ambient temperature	-25°C to +70°C
Cable lengths	2m



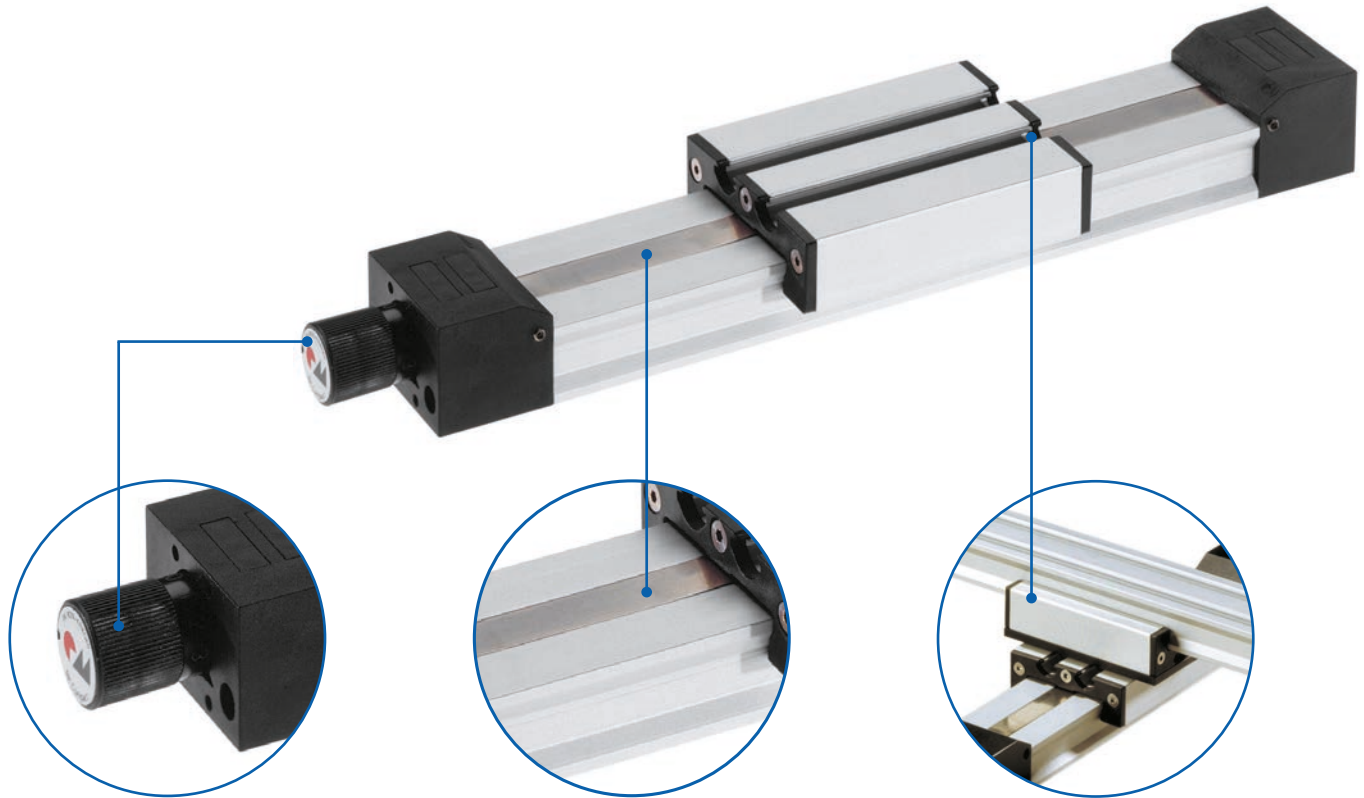
[mm]

Code No.	Type	Switching function	L	M	Wrench size (SW)
92825	All	Changeover	50	M12x1	17
92802	Clamping element for inductive limit switch				



# Profile guide/actuator – PLM

The small range for positioning small loads



## Control knob with vernier

✓ Simple adjustment of carriage

## Screw cover

✓ Protection of drive screw against contamination

## Connecting plates

✓ Simple connection of 2-axis systems

## Features:

- Covered screw
- Sizes can be combined using standard accessories

## Options:

- Second free-running carriage



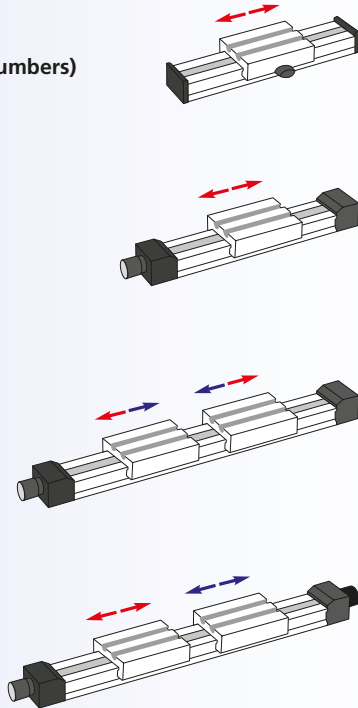
## PLM linear unit - Table of contents

### Properties/Technical data

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- Geometric moments of inertia..... 163

### Versions

(Dimensions, order numbers)



- Guide ..... 164 - 165
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- Right and lefthand thread ..... 168 - 169
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### Accessories

#### Fixing

- Fixing plate..... 172
- Slot stones ..... 172
- Connecting plates ..... 173
- Wing screw ..... 174
- Fixing element..... 174

#### Drive

- Handwheel ..... 175
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#### Position determination

- Positioning indicator..... 176
- Limit switch ..... 178 - 179

## General information/operating conditions

Design	Profile linear unit, steel cover strip
Guide	Adjustable slide guide
Installation position	Any position
Lead accuracy	± 0.1 mm/300 mm travel
Self-locking	Yes
Ambient temperature	0°C to + 60°C

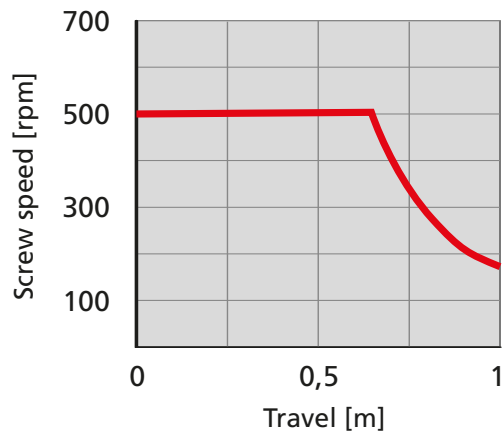
## Screw lead

[mm]

Type	Screw lead
PLM 20 x 20	1
PLM 40 x 20	1

$$\text{Required screw speed } n \text{ [rpm]} = \frac{\text{speed [m/min]} \times 1000}{\text{screw lead [mm]}}$$

## Critical screw speed



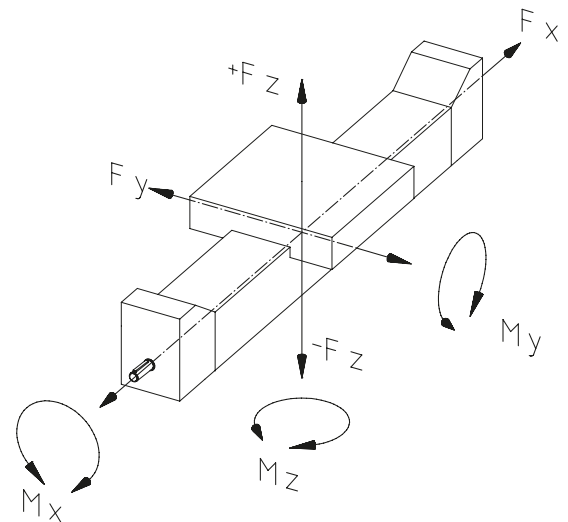
## No-load torque

[Nm]

Type	No-load torque
PLM 20 x 20	0.20
PLM 40 x 20	0.20

**Load data\***

- F Force [N]  
 M Moment [Nm]  
 I Geometric moment of inertia [cm<sup>4</sup>]



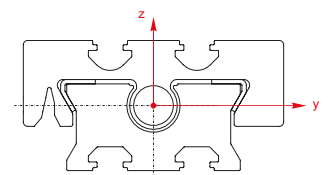
\* With reference to carriage (static values, guide element resting on full surface)

Type	F <sub>x</sub>	F <sub>y</sub>	+F <sub>z</sub>	-F <sub>z</sub>	M <sub>x</sub>	M <sub>y</sub>	M <sub>z</sub>
PLM 20 x 20	125	160	90	180	3	10	10
PLM 40 x 20	125	200	110	220	4	14	14

**Geometric moment of inertia**

 [cm<sup>4</sup>]

Type	I <sub>y</sub>	I <sub>z</sub>
PLM 20 x 20	0.64	0.74
PLM 40 x 20	1.32	5.01



# PLM-G – Versions

## Order information:

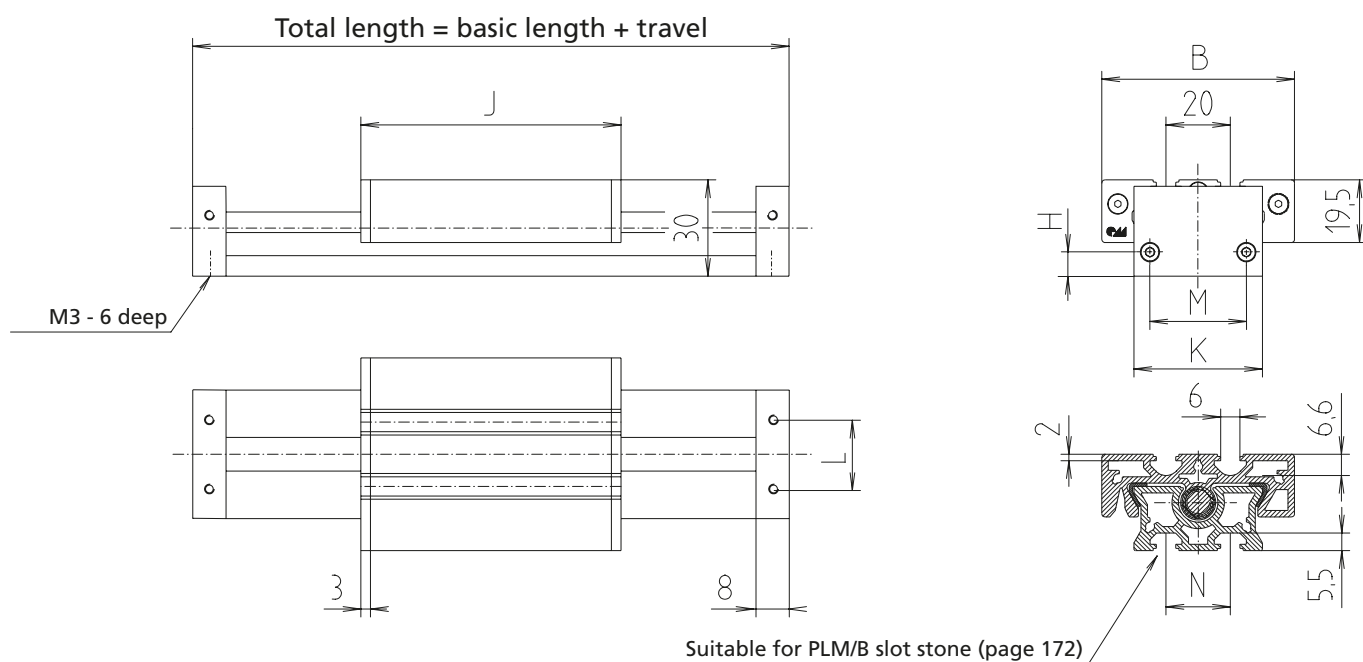
- Longer travel lengths on request
- Second carriage available on request

Version ■ Guide



Code No.	Type	Basic length	B	H	J	K	L	M	N
MKA2020AA	20	77	40	7.5	61	20	0	10	0
MKA4020AA	40 x 20	97	60	7.5	81	40	20	30	20

----- Total length = basic length + travel [mm]



[mm]

Max. travel	Mass [kg]	
	Basic length	per 100 mm travel
2935	0.09	0.03
2915	0.19	0.07

# PLM – Versions

## Order information:

- Longer travel lengths on request

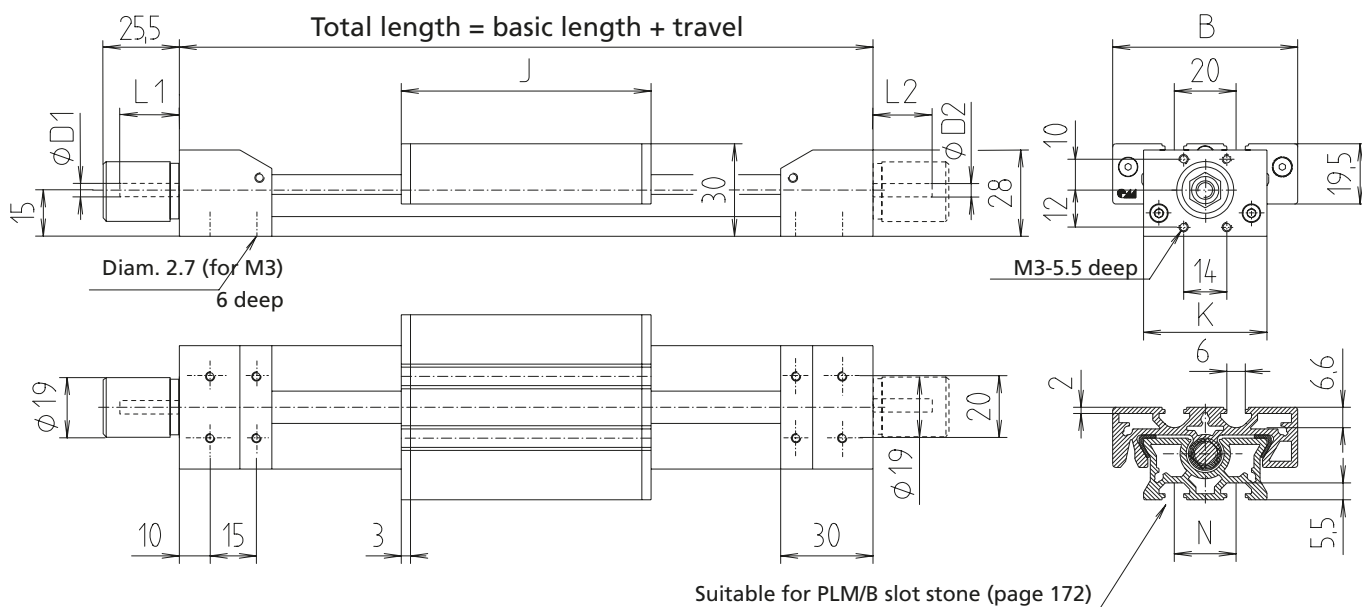
Version ■ Right or lefthand thread actuator



Code No.	Type	Screw	Basic length	B	D1	D2	J	K	L1	L2	N
FP_2020TA	20x20	M 8x1	121	40	5	5	61	20	21	–	0
FP_2020UA	20x20	M 8x1	121	40	5	5	61	20	21	21	0
FP_4020TA	40x20	M 8x1	141	60	5	5	81	40	21	–	20
FP_4020UA	40x20	M 8x1	141	60	5	5	81	40	21	21	20

----- Total length = basic length + travel [mm]

**Version:**  
A = righthand thread  
H = lefthand thread



[mm]

Max. travel	Mass [kg]	
	Basic length	per 100 mm travel
870	0,15	0,06
835	0,15	0,06
850	0,27	0,10
815	0,27	0,10

# PLM – Versions

## Order information:

- Please specify total travel when placing an order
- Longer travel lengths on request

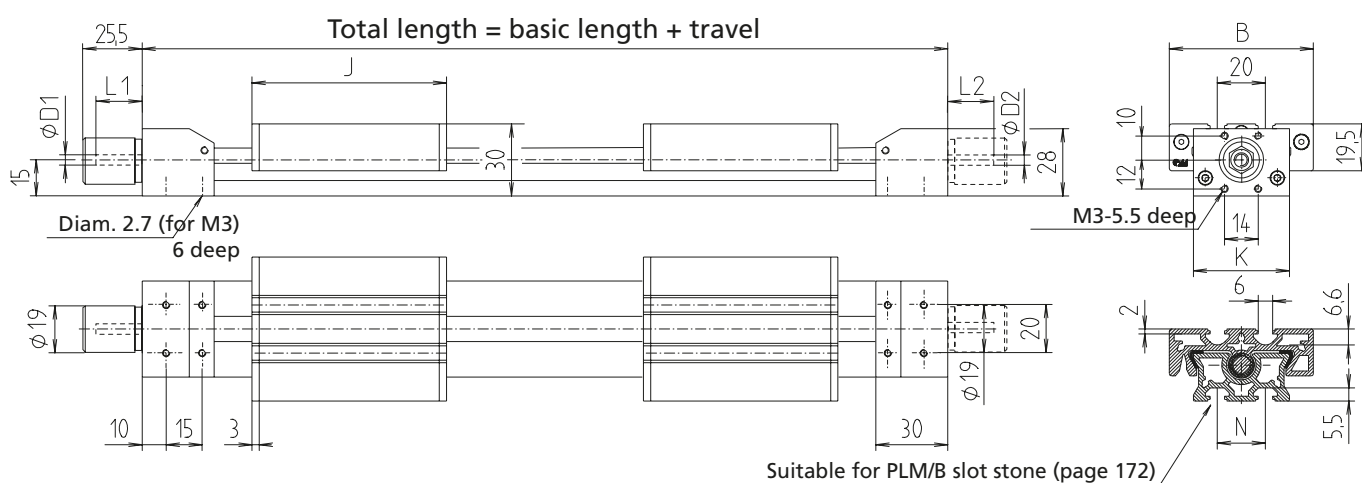
Version ■ Right *and* lefthand thread actuator



Code No.	Type	Screw	Basic length	B	D1	D2	J	K	L1	L2	N
FPC2020SA	20x20	M 8x1	182	40	5	5	61	20	21	–	0
FPC2020TA	20x20	M 8x1	182	40	5	5	61	20	–	21	0
FPC2020UA	20x20	M 8x1	182	40	5	5	61	20	21	21	0
FPC4020SA	40x20	M 8x1	222	60	5	6	81	40	21	–	20
FPC4020TA	40x20	M 8x1	222	60	5	6	81	40	–	21	20
FPC4020UA	40x20	M 8x1	222	60	5	6	81	40	21	21	20

----- Total length = basic length + travel [mm]





[mm]

Max. travel	Mass [kg]	
	Basic length	per 100 mm travel
780	0,32	0,05
780	0,32	0,05
745	0,32	0,05
740	0,41	0,09
740	0,41	0,09
705	0,41	0,09

# PLM – Versions

## Order information:

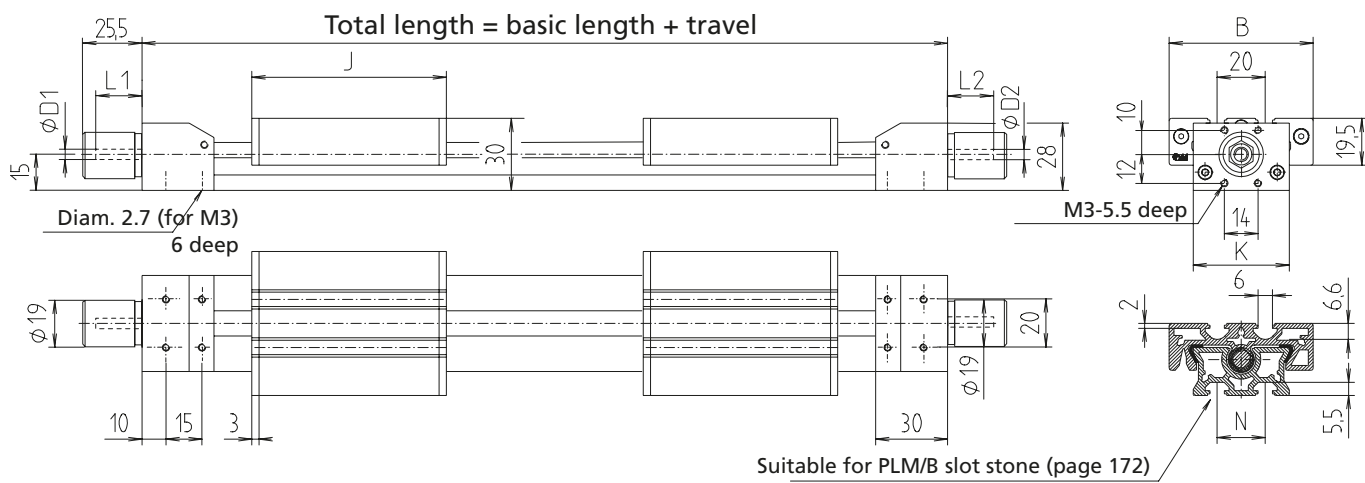
- Please specify total travel when placing an order
- Longer travel lengths on request

Version ■ *Split screw actuator*



Code No.	Type	Screw	Basic length	B	D1	D2	J	K	L1	L2	N
FPD2020UA	20 x 20	M8 x 1	182	40	5	5	61	20	21	21	0
FPD4020UA	40 x 20	M8 x 1	222	60	5	6	81	40	21	21	20

----- Total length = basic length + travel [mm]



[mm]

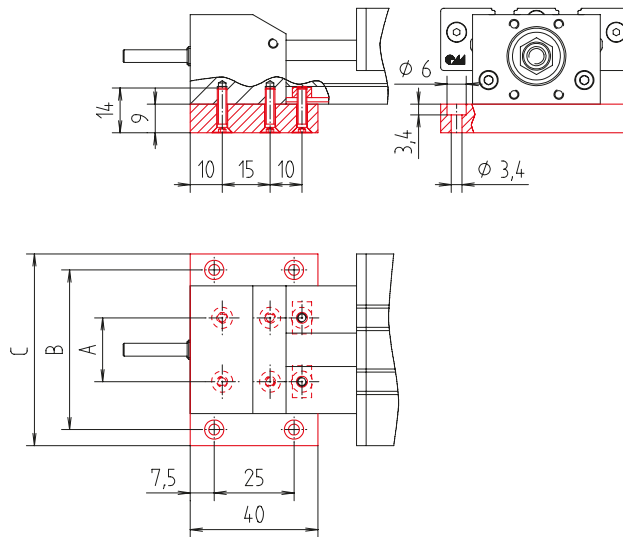
Max. travel	Mass [kg]	
	Basic length	per 100 mm travel
770	0.32	0.05
730	0.41	0.09

## Fixing plate



- Incl. fastenings
- Freewheel for limit switch holder

**Material:** AlMgSi, black anodised



[mm]

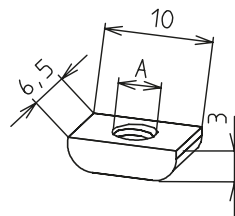
Code No.	Type	A	B	C
94320	PLM 20 x 20	–	30	40
94321	PLM 40 x 20	20	50	60

## Slot stones

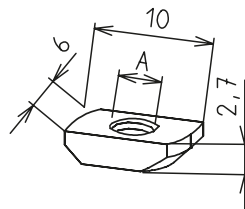
- Slot stones can be inserted and positioned on the guide profile and carriage

**Material:**  
Galvanised steel

**Slot stone -PLM-**  
can be slid into the slot



**Slot stone -B-**  
can be swivelled into the slot



[mm]

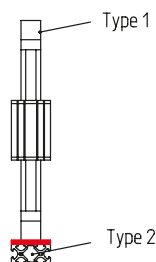
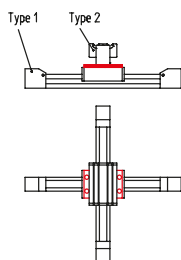
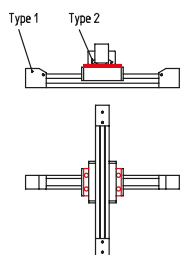
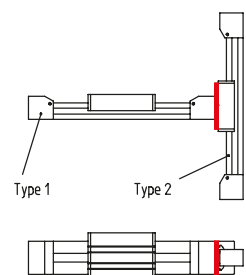
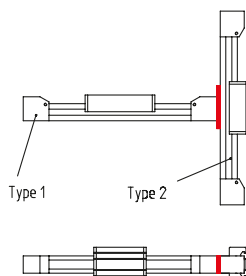
Code No.	Type	A	Pack of
94319	-PLM-	M 3	1
94318	-PLM-	M 4	1
94317	-PLM-	M 5	1
E00017CEH	-B-	M 3	10
E00058CEH	-B-	M 4	10

Connecting plate



- Simple connection of 2-axis systems
- Incl. fastenings
- Thickness of connecting plates: 4 mm

**Material:** AlMgSi, black anodised  
Steel parts galvanised



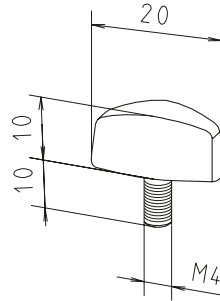
Code No.	Version	Type 1	Type 2
94331	Bearing element on guide profile	PLM 20 x 20	PLM 20 x 20
94330		PLM 40 x 20	PLM 20 x 20
94334		PLM 40 x 20	PLM 40 x 20
94333	Bearing element on carriage	PLM 20 x 20	PLM 20 x 20
94332		PLM 40 x 20	PLM 20 x 20
94335		PLM 40 x 20	PLM 40 x 20
94340	Carriage on carriage	PLM 20 x 20	PLM 20 x 20 PLM-G 20 x 20
94344		PLM 40 x 20	PLM 20 x 20 PLM-G 20 x 20
94342		PLM 40 x 20	PLM 40 x 20 PLM-G 40 x 20
94341	Carriage on guide profile	PLM 20 x 20	PLM 20 x 20 PLM-G 20 x 20
94345		PLM 40 x 20	PLM 20 x 20 PLM-G 20 x 20
94343		PLM 40 x 20	PLM 40 x 20 PLM-G 40 x 20
94350	Bearing element on guide profile	PLM 20 x 20	F-20 x 20
94351		PLM 20 x 20	F-40 x 20
94352		PLM 40 x 20	F-40 x 20

# PLM – Fixing/Drive

## Wing screw

- Slide clamp for PLM 20 x 20 and 40 x 20

**Material:** Polyamide  
Galvanised thread



[mm]

Code No.	Type
90291	PLM 20 x 20/40 x 20

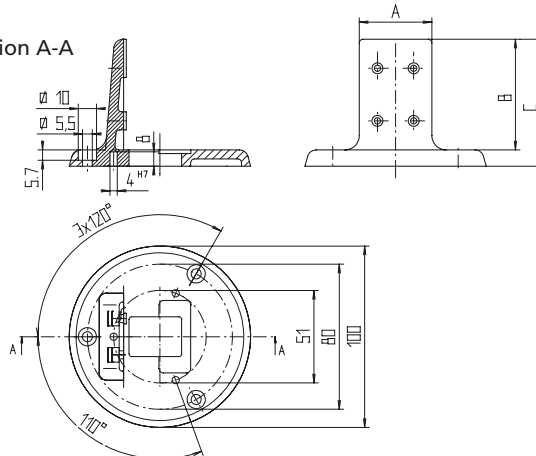
## Fixing element

- Element for vertical installation of PLM
- Fastenings for mounting on carriage is included in delivery

**Material:** Gk-AISI 12 (Cu)  
black powder-coating



Section A-A



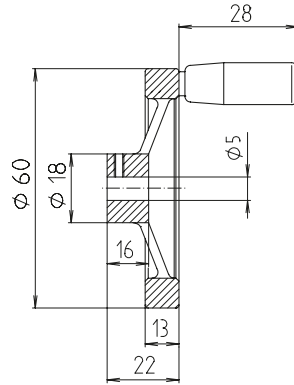
[mm]

Code No.	Type	A	B	C
95520	PLM 20 x 20	40	61	70
95542	PLM 40 x 20	60	81	90



**Handwheel**

**Material:** Aluminium die casting  
Wheel body, plastic-coated



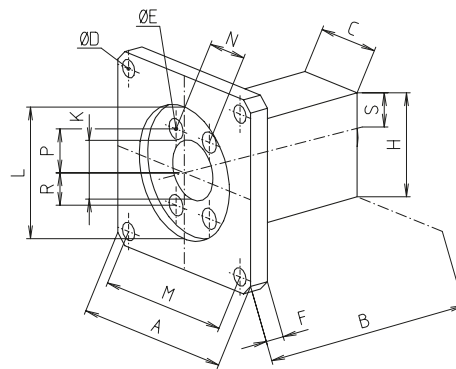
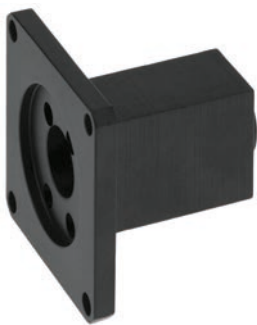
Code No.	Type
909200	PLM 20/40 x 20

[mm]

**Motor adaptor/coupling**

- Motor adaptor for PD 42 stepper motor (see chapter "Controls and Motors")

**Material:** Aluminium, black anodised  
Galvanised screws



Code No.	Type/motor	□A	B	C	D	E	F	H	K	L	□M	N	P	R	S
<b>Motor adaptor</b>															
91462	PLM/PD42/ NEMA 17	41	55,5	22	3,5	3,5 / 6	6	30	17	22 <sup>H7/3</sup> deep	31	14	10	12	14
91472	PLM/ NEMA 23	56	52	22	5,2	3,5 / 6	6	30	17	38,1 <sup>3</sup> deep	47	14	10	12	14
<b>Coupling</b>															
9107140505	For motor PD42, NEMA 17, diam. 5/diam. 5														
9107140506	For motor acc. to NEMA 23, diam. 5/diam. 6.3														

[mm]

# PLM – Position determination

## Positioning indicator

- Max ambient temperature +80°C
- Figure height 6 mm
- Reading accuracy  $\pm 0.1$  mm

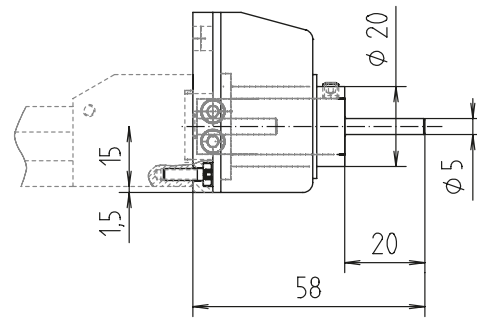
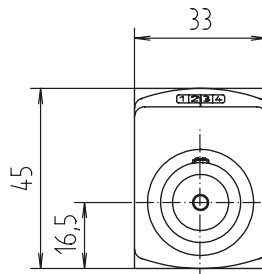
**Material:** Housing made of polyamide 6  
Orange RAL 2004  
Steel parts galvanised

**Scope of delivery:** Positioning indicator, clamping ring, shaft extension and fastenings

**Note:** "rising" and "falling" versions refer to the clockwise rotation of the drive shaft.



Installation position:  
horizontal



Installation position:  
vertical

Code No.	Type	Version	Installation position
9101000	PLM 20 x 20/40 x 20	1 mm rising	Horizontal
9101010		1 mm falling	Horizontal
9101020		1 mm rising	Vertical
9101030		1 mm falling	Vertical





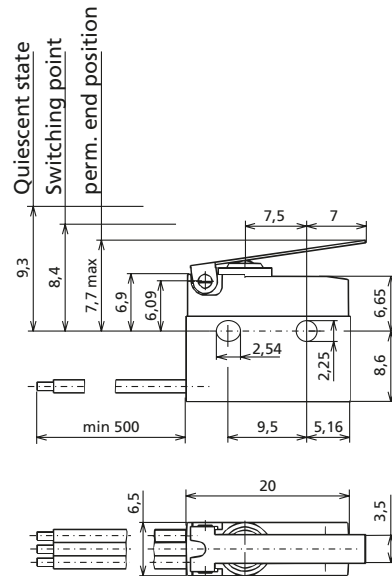
# PLM – Position determination

## Mechanical limit switch



- Single-pole changeover contact
- Compact design

**Material:** Housing, thermoplastic



Max. voltage	24 V (12 V)
Max. switching current	3 A (6 A)
Mechanical lifetime	1 x 10 <sup>6</sup> switching cycles
Protection class	IP 67
Ambient temperature	-40°C to +85°C
Connecting leads	0.75 mm <sup>2</sup> , encapsulated in the switch

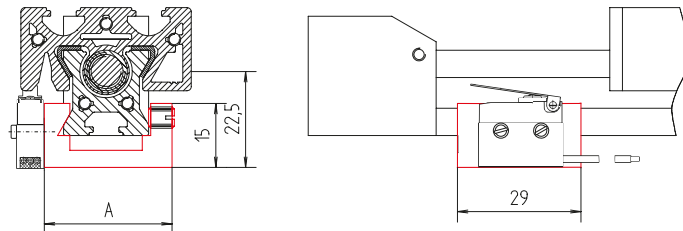
Code No.	Version
91923	PLM

## Limit switch holder

- Holder for guide profile
- Can be moved and fixed axially

**Material:** AlMgSi, black anodised  
Steel parts galvanised

**Note:** The Order No. does not include the limit switch!



Code No.	Type	A
92940	PLM 20 x 20	30
92941	PLM 40 x 20	50

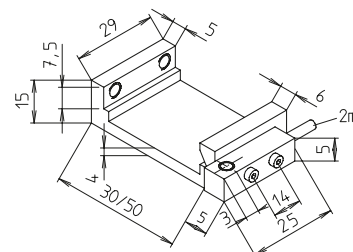
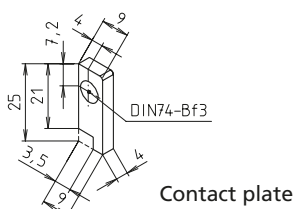
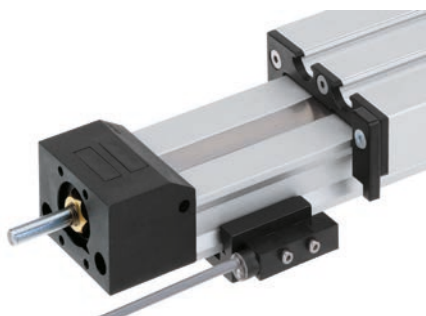
[mm]

**Inductive limit switch**

- The holder can be moved along the guide profile and fixed

**Material:** Holder and contact plate made of black anodised aluminium  
Galvanised fastenings

**Scope of delivery:** 1 limit switch with complete holder, contact plate and fastenings



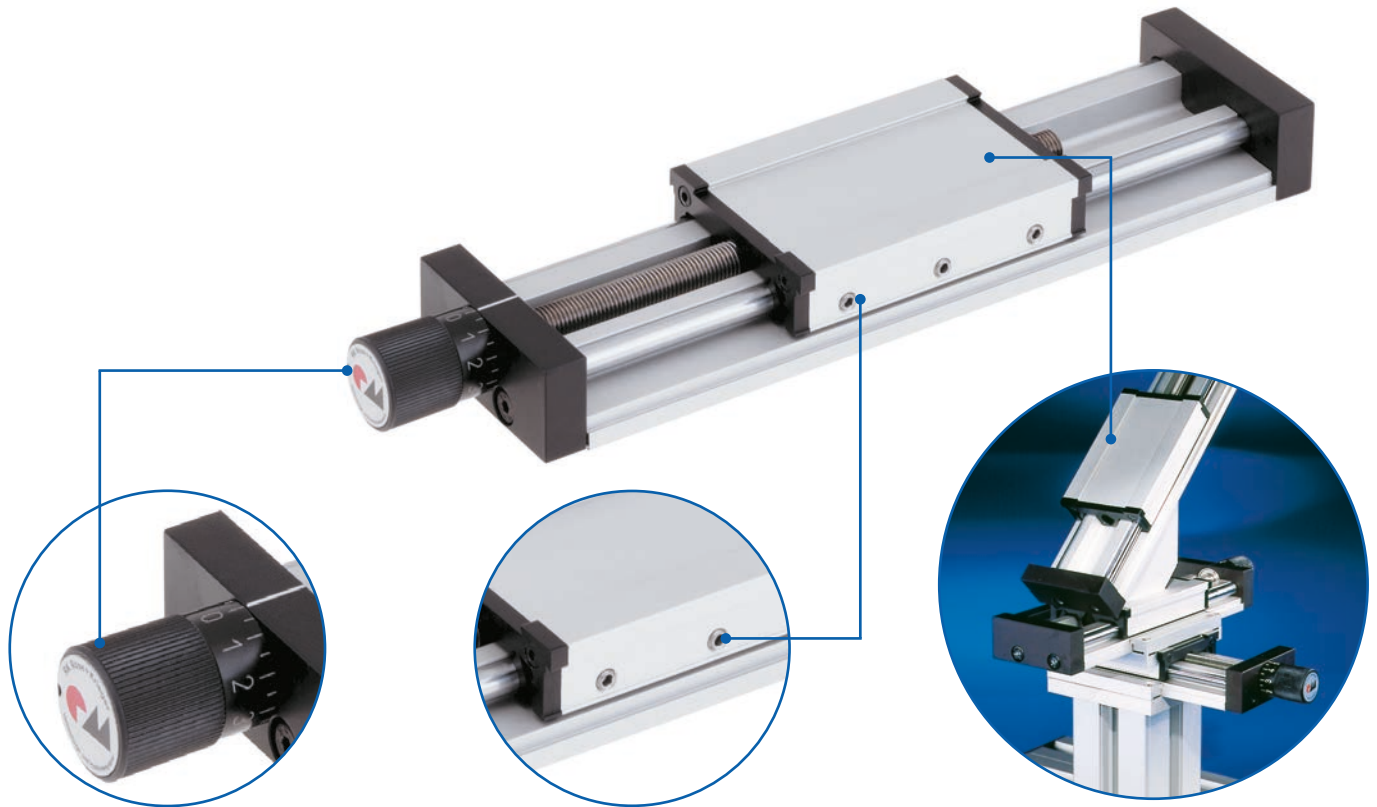
Operating distance	2 mm
Voltage range:	10/-30 V DC
Current consumption:	< 18 mA
Max. switching frequency:	5 khz
Output:	PNP NC contact
Ambient temperature:	-25°C to +75°C

Code No.	Type	Version
92812	PLM 20 x 20	Right
92822	PLM 20 x 20	Left
928142	PLM 40 x 20	Right
928242	PLM 40 x 20	Left



# Profile guide/actuator – RK Compact

**Slimline short-stroke linear actuator  
for hand adjustment – with excellent price-performance ratio**



## Control knob with vernier

✓ Simple adjustment of carriage

✓ Backlash of carriage adjustable

## Multiple axis combinations

✓ Standard accessories support the simple configuration of multiple axis combinations

Standard strokes

**48 h**  
ready for delivery

## Features:

- Wide range of accessories for combining multiple axes
- Standard version with control knob
- Standard strokes ex warehouse

## Options:

- Longer stroke lengths
- Second free-running carriage

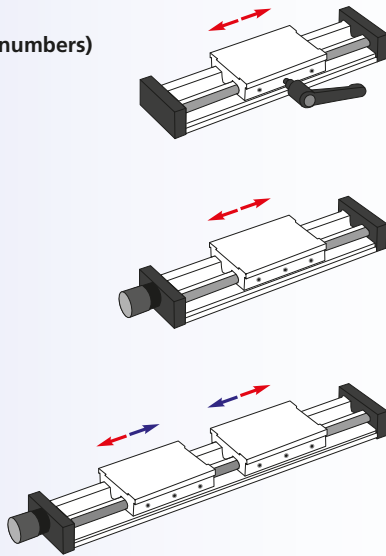
## RK Compact linear unit - Table of contents

### Properties/Technical data

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(Dimensions, order numbers)



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### Accessories

#### Fixing

- Clamping lever ..... 190
- Clamping brackets ..... 191
- Combination angle ..... 192
- Combination plate ..... 192
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#### Drive

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- Positioning indicator..... 195

# RK Compact – Technical data

## General information/operating conditions

Design	Profile linear unit with extruded guide profile/carriage
Guide	Adjustable slide guide
Installation position	Any position
Lead accuracy	Threaded screw $\pm 0.1$ mm/300 mm travel, ball screw drive $\pm 0.05$ mm/300 mm travel
Self-locking	Yes, for threaded screw. No, for ball screw drive
Ambient temperature	0°C to +60°C

## Screw lead

Threaded screw		Ball screw drive	
Type	Screw lead	Type	Screw lead
RK Compact 30	0.5	RK Compact 80-120	1
RK Compact 50-120	1		

$$\text{Required screw speed } n \text{ [rpm]} = \frac{\text{speed [m/min]} \times 1000}{\text{screw lead [mm]}}$$

\* max. screw speed with threaded screw 500 rpm  
with ball screw drive 1000 rpm

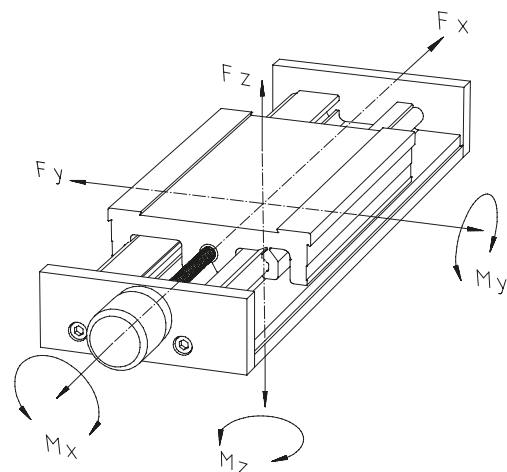
## No-load torque

Type	No-load torque
RK Compact	0.20

**Load data\***

- F Force [N]
- M Moment [Nm]
- I Geometric moment of inertia [cm<sup>4</sup>]

\* With reference to carriage (static values, guide element resting on full surface)

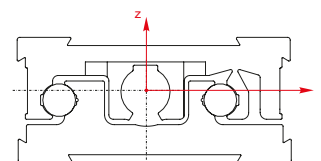


Type	Fx	Fy	Fz	Mx	My	Mz
RK Compact 30	50	160	160	3	3	3
RK Compact 50	125	350	350	6	7.5	7.5
RK Compact 80	215	600	600	12	18	18
RK Compact 120	215	1150	1150	32	59	59

**Geometric moment of inertia**

[cm<sup>4</sup>]

Type	Iy	Iz
RK Compact 30	0.09	0.90
RK Compact 50	0.46	7.44
RK Compact 80	3.68	47.14
RK Compact 120	9.85	214.84



# RK Compact-G – Versions

## Order information:

- Standard strokes in stock!  
Take advantage of our fast delivery times and lower prices
- Longer travel lengths on request

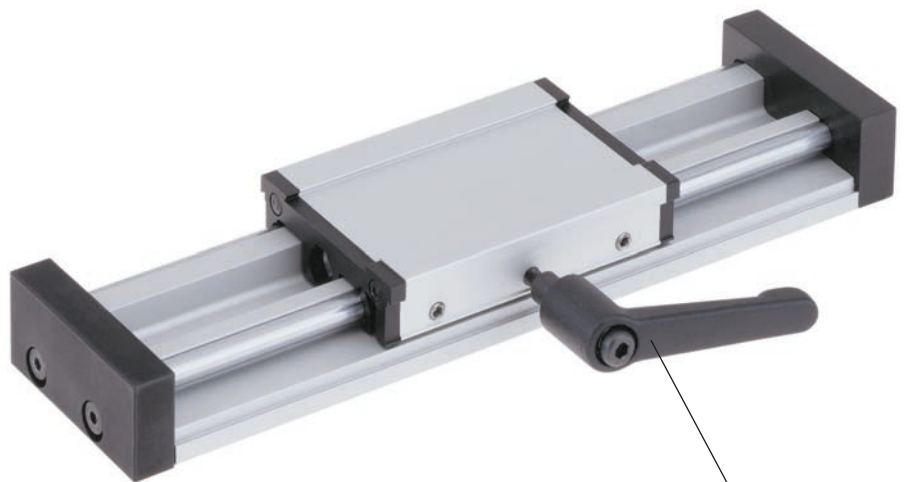
Version

■ Guide

**48h**  
ready for delivery

### For standard strokes

- Type 30: 10, 20, 30, 50 mm
- Type 50-120: 25, 50, 75, 100 mm

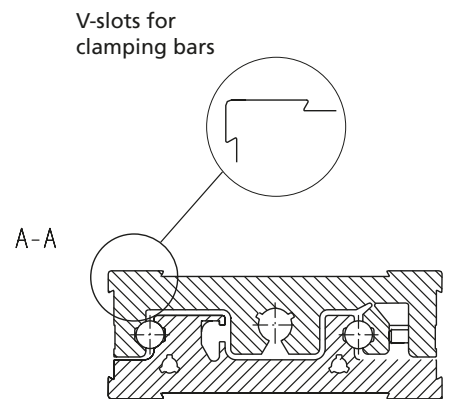
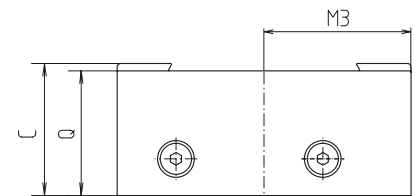
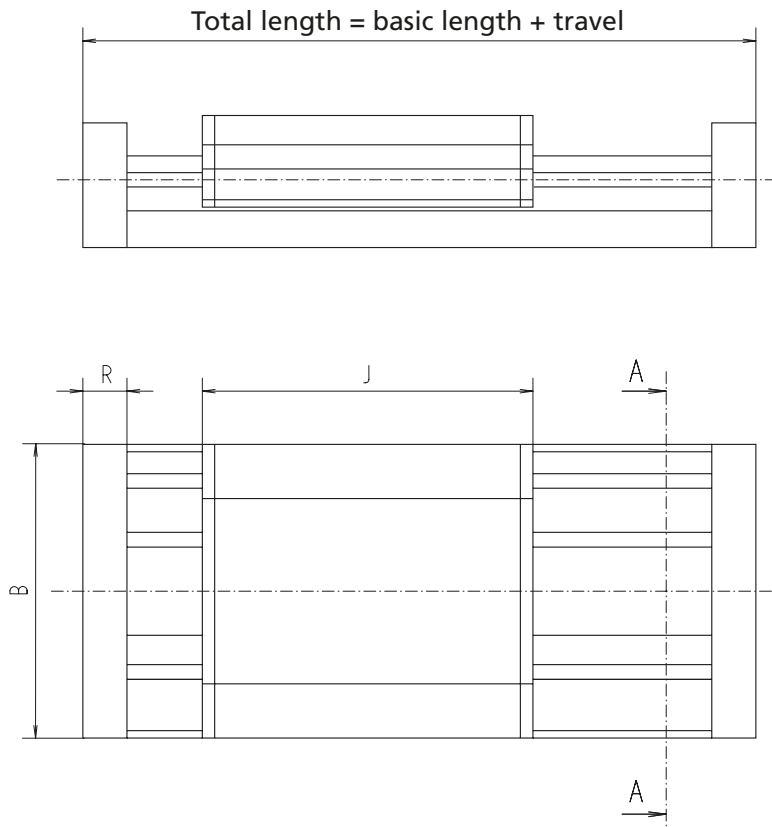


Clamping lever for sizes 50-120 is included with

Code No.	Type	Basic length	Standard stroke	B	C	J
MLA3017AA	30	59	10, 20, 30, 50	30	17	45
MLA5023AA	50	95	25, 50, 75, 100	50	23	75
MLA8036AA	80	144		80	36	120
MLA1246AA	120	204		120	46	180

----- Total length = basic length + travel [mm]





[mm]

M3	Q	R	Max. travel	Mass [kg]	
				Basic length	per 100 mm travel
17.1	16	7	300	0.06	0.07
26.5	21.5	10	350	0.27	0.14
40	34	12	350	0.29	0.29
60	44	12	400	2.62	0.63

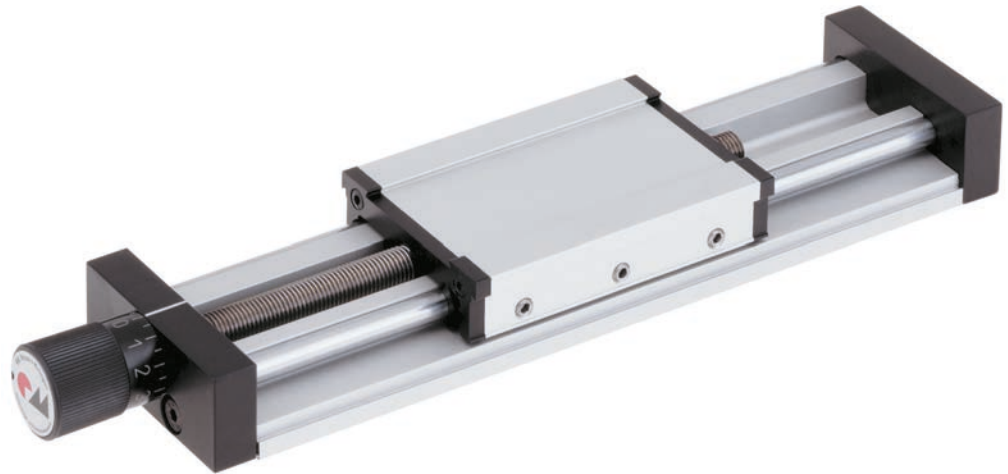
# RK Compact – Versions

## Order information:

- Standard strokes in stock!  
Take advantage of our fast delivery times and lower prices
- Longer travel lengths on request
- Slide clamp page 190

## Version

- Right or lefthand thread



## For standard strokes

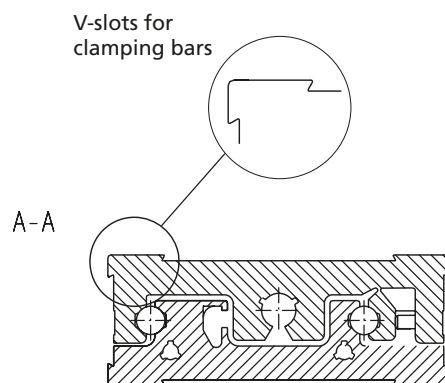
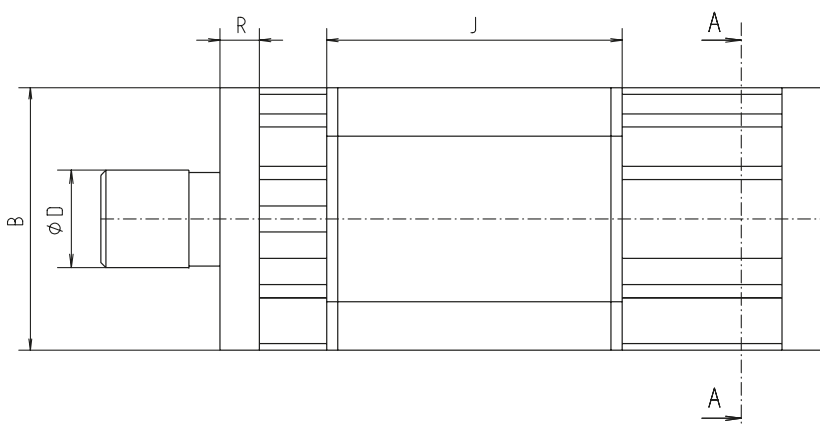
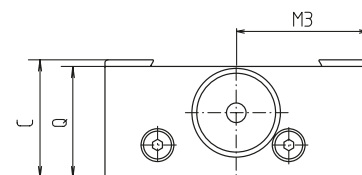
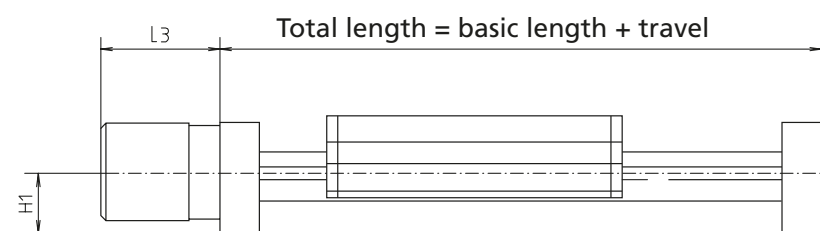
- Righthand threaded screw
- Type 30: 10, 20, 30, 50 mm
- Type 50-120: 25, 50, 75, 100 mm

Code No.	Type	Spindle	Basic length	Standard stroke	B	C	D	H1
<b>Threaded screw</b>								
FN_3017 TA	30	M5 x 0.5	59	10,20,30,50	30	17	13.5	8
FN_5023 TA	50	8 x 1	95	25	50	23	19	13
FN_8036 TA	80	8 x 1	144	50	80	36	27	20.5
FN_1246 TA	120	8 x 1	204	75	120	46	35	26.5
				100				
<b>Ball screw drive</b>								
FO_8036 TA	80	8 x 1	144	–	80	36	27	20.5
FO_1246 TA	120	8 x 1	204	–	120	46	35	26.5

----- Total length = basic length + travel [mm]

### Version:

A = righthand thread  
H = lefthand thread



[mm]

J	C	M3	Q	R	Max. travel	Mass [kg]	
						Basic length	per 100 mm travel
45	21	17.1	16	7	130	0.08	0.07
75	22.5	26.5	21.5	10	350	0.29	0.18
120	30.5	40	34	12	350	0.99	0.33
180	35.5	60	44	12	400	2.76	0.67
120	30.5	40	34	12	199	0.99	0.33
180	35.5	60	44	12	199	2.76	0.67

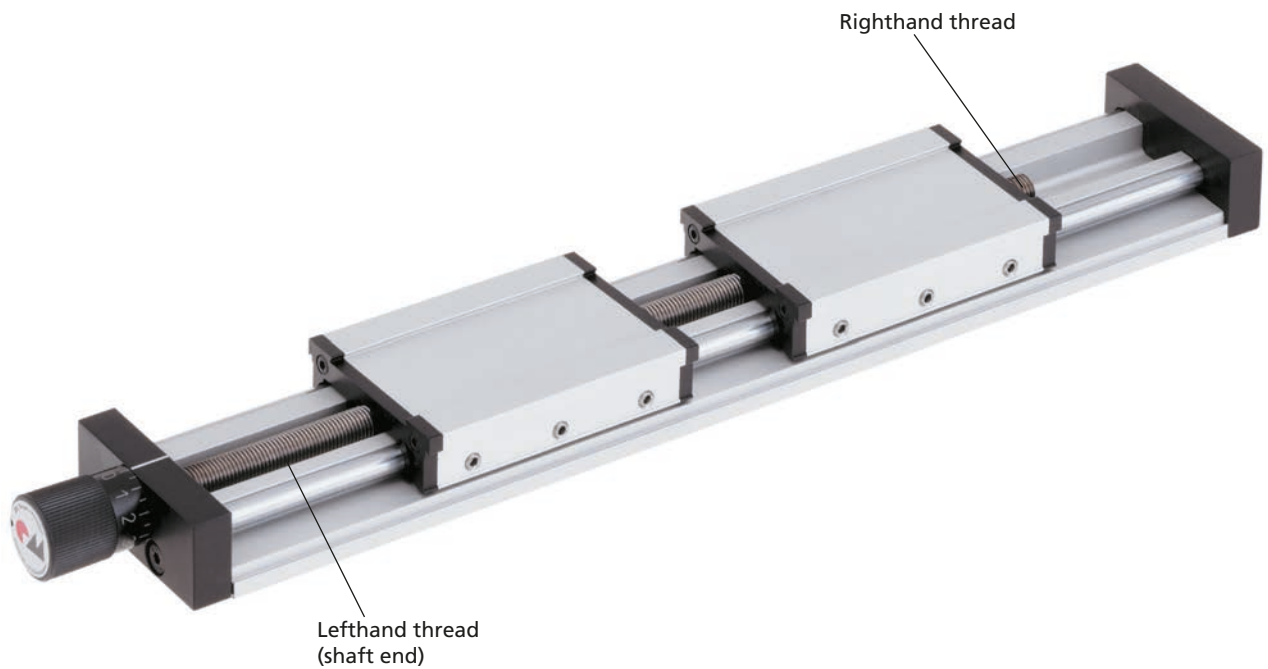
# RK Compact – Versions

## Order information:

- Standard strokes in stock!  
Take advantage of our fast delivery times and lower prices
- Longer travel lengths on request
- Slide clamp  
page 190

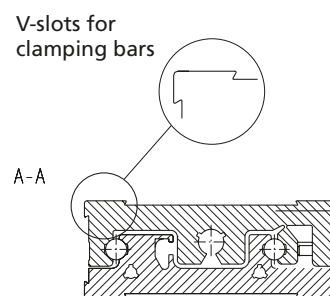
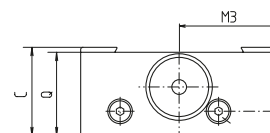
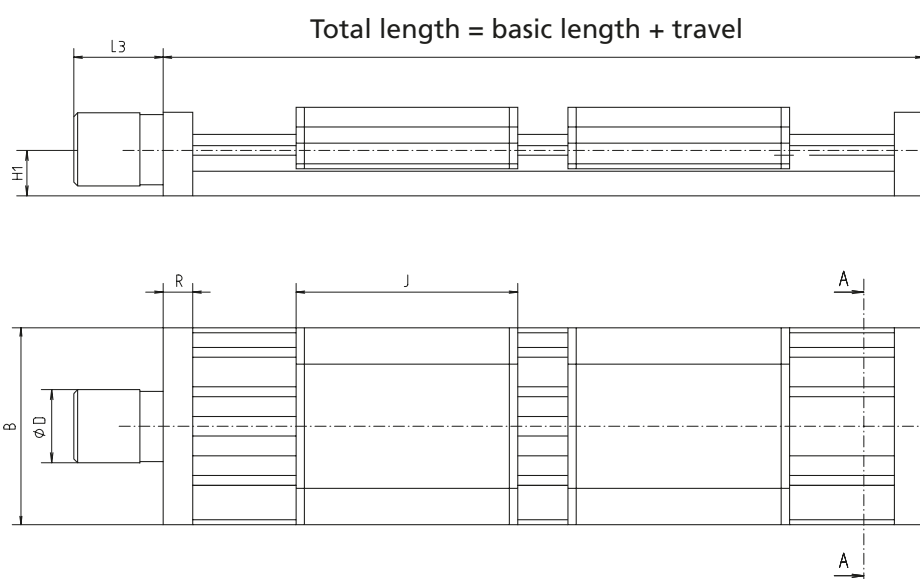
## Version

- Right and lefthand thread



Code No.	Type	Spindle	Basic length	B	C	D	H1
Threaded screw							
FNC 3017 TA	30	M5 x 0.5	104	30	17	13.5	8
FNC 5023 TA	50	8 x 1	170	50	23	19	13
FNC 8036 TA	80	8 x 1	264	80	36	27	20.5
FNC 1246 TA	120	8 x 1	384	120	46	35	26.5

----- Total length = basic length + total travel [mm]



[mm]

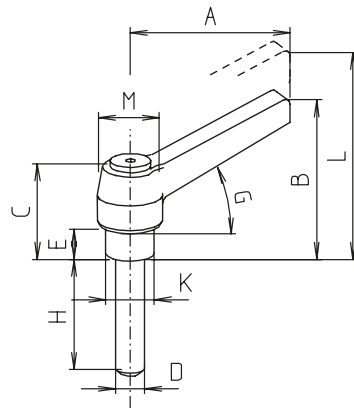
J	C	M3	Q	R	Max. travel	Mass [kg]	
						Basic length	per 100 mm travel
45	21	17.1	16	7	85	0.13	0.08
75	25.5	26.5	21.5	10	275	0.29	0.18
120	30.5	40	34	12	230	0.99	0.33
180	35.5	60	44	12	220	2.76	0.67

# RK Compact – Fixing

## Clamping lever

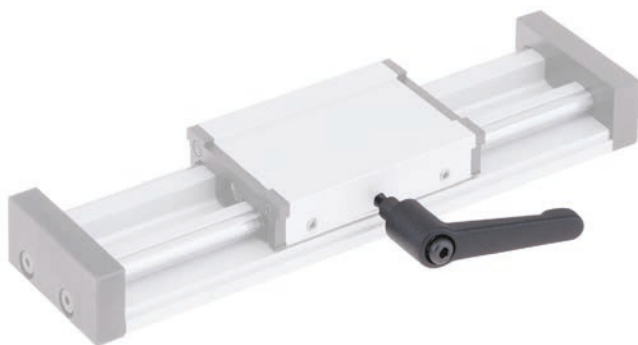
■ For the equipping of fixing elements and carriages

**Material:** Handle made of die cast zinc, plastic-coated



[mm]

Code No.	Type	A	B	C	D	E	G	H	K	L	M
90292	50	45	40	25	M4	7.5	25°	10	7	43	13
90293	80	45	35	22	M5	4	25°	12	10	38	13
90294	120	45	35	22	M6	4	25°	20	10	38	13

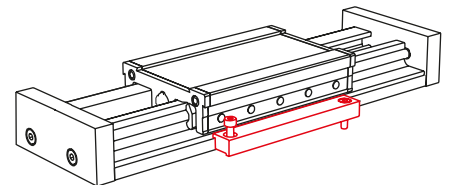
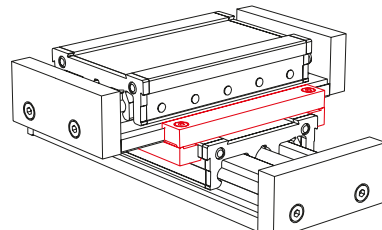


### Clamping brackets

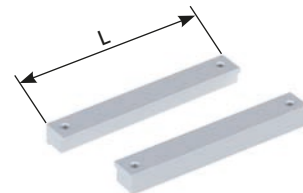
- Complete set for mounting on cross table
- Fixing of linear unit on an existing design
- Fixing of auxiliary devices and tools to the carriage

**Material:** Aluminium clear anodised  
Galvanised fastenings

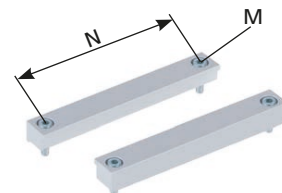
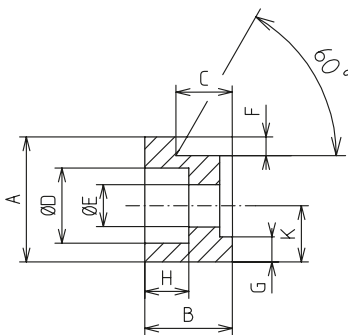
**Scope of delivery:** 1 set contains 2 clamping bars. Version with counterbore includes fixing screws



Version: crossing, complete



Version: with thread



Version: with counterbore

Code No.	Type	Version	A	B	C	D	E	F	G	H	K	L	M	N
91879	30	with counterbore	6.6	4.2	3	5	2.9	1	0.9	2.9	2.9	41.2	M2,5 x 6	35.4
91880	30	with thread	6.6	4.2	3	-	M2.5	1	0.9	-	2.9	41.2	M2,5 x 6	35.4
91881	30	crossing, complete												
91882	30/50	crossing, complete												
91845	50	with counterbore	10	7	4.5	6	3.4	1.5	2	4	4.5	67	M3 x 10	58
91846	50	with thread	10	7	4.5	-	M3	1.5	2	-	4.5	67	-	58
91847	50	crossing, complete												
91857	50/80	crossing, complete												
91848	80	with counterbore	14.5	10	8	8	4.5	2	2.5	5	6.5	105	M4 x 14	92
91849	80	with thread	14.5	10	8	-	M4	2	2.5	-	6.5	105	-	92
91850	80	crossing, complete												
91858	80/120	crossing, complete												
91851	120	with recess	14.5	10	8	10	5.5	2	2.5	5.7	6.5	145	M5 x 14	132
91852	120	with thread	14.5	10	8	-	M5	2	2.5	-	6.5	145	-	132
91853	120	crossing, complete												

[mm]

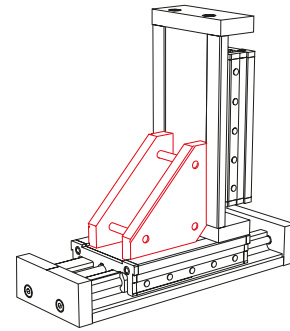
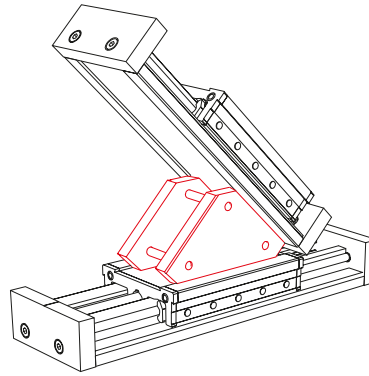
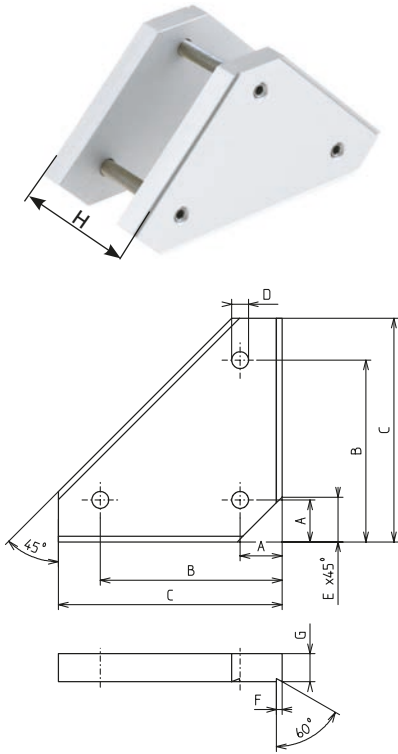
# RK Compact – Fixing

## Combination angle

- Combination angle for the creation of 2-axis combinations below 45° and 90°
- Simple assembly and centring due to prism geometry

**Material:** Aluminium, clear anodised  
Stainless-steel set screws

**Scope of delivery:**  
2 angled halves (1 x with thread, 1 x without thread)  
3 set screws



[mm]

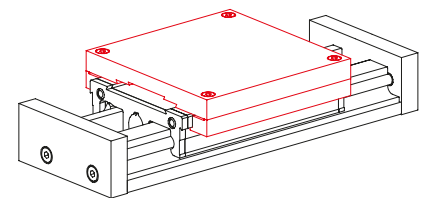
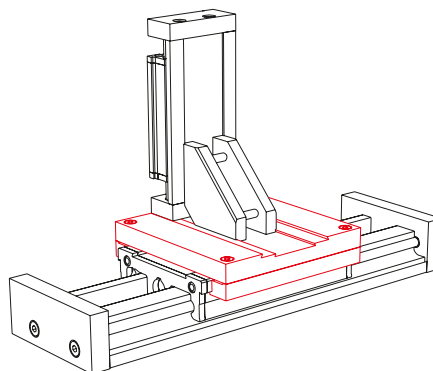
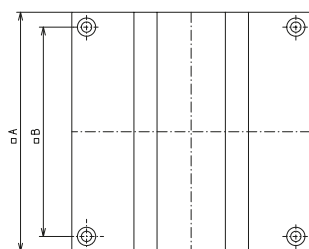
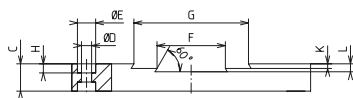
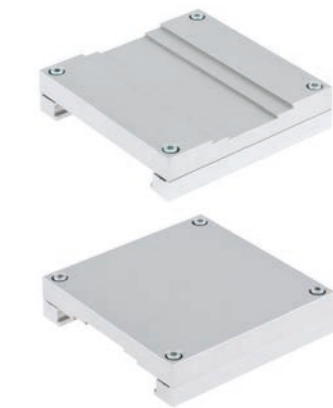
Code No.	Type	A	B	C	D	E	F	G	H
91883	30	7	21	25	M4	9.3	1	4	17.2
91854	50	11	40	50	M5	13	1.5	8	31.7
91855	80	15	65	80	M6	16	2	10	52.3
91856	120	18	100	120	M8	16	2	12	82.3

## Combination plate

- The combination plate enables the drilling of holes for the fixing of a superstructure
- Used together with the combination angle, it allows the combination of different sizes and movement of the axes by 90°

**Material:** Aluminium, clear anodised  
Galvanised fastenings

**Scope of delivery:**  
1 combination plate  
1 set of clamping bars (thread)  
Fastenings



[mm]

Code No.	Type	A	B	C	D	E	F	G	H	K	L
94365	30	41.2	35.4	5	2.9	5 (90°)	16	-	-	1	-
94362	50	67	58	8	3.4	6	30	-	2.5	1.5	-
94363	80	105	92	12	4.5	8	30	50	4	2	3.5
94364	120	145	132	15	5.5	10	50	80	4.5	2	4

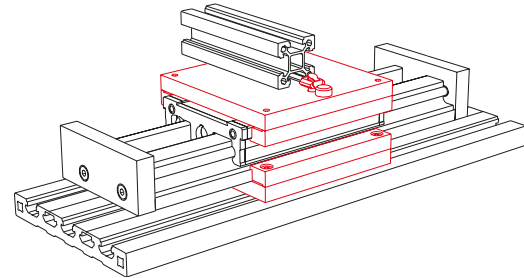
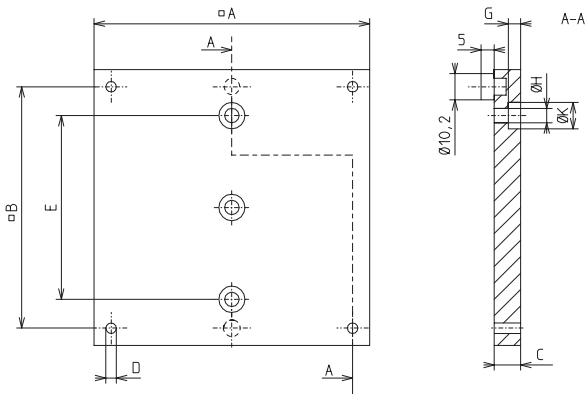


## Fixing plate for BLOCAN® profiles

- For connecting a linear unit to a design made of BLOCAN® profiles
- Centring pins facilitate the assembly and alignment of the profiles

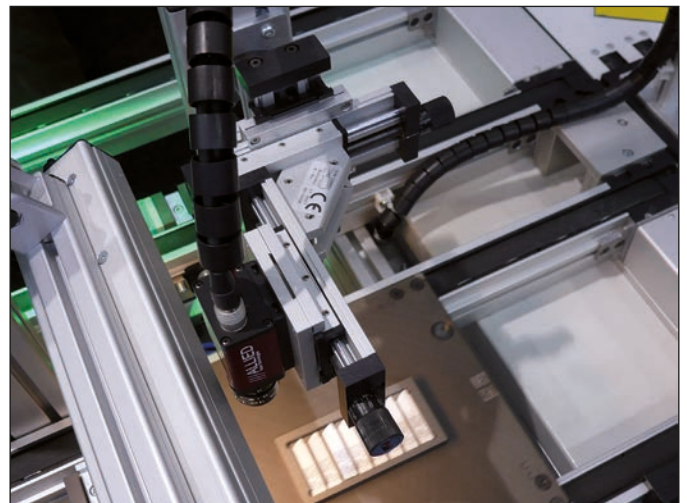
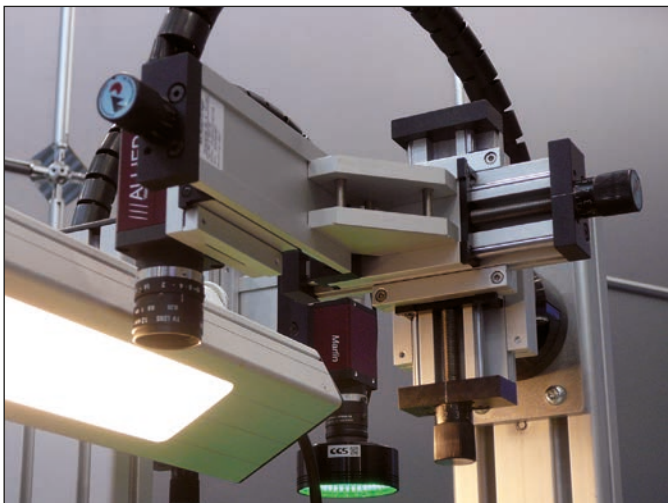
**Material:** Aluminium, clear anodised,  
Centring pins, polyamide  
Galvanised fastenings

**Scope of delivery:**  
1 fixing plate  
2 centring pins  
1 set of clamping bars with clamping  
2 or 3 slot stones -F-  
Fastenings



[mm]

Code No.	Type	Version	A	B	C	D	E	G	H	K
94356	50	up to S/F-30	67	58	8	M3	34	3.9	4.5	8
94357	50	from S/F-40	67	58	8	M3	34	3.9	4.5	8
94358	80	up to S/F-30	105	92	10	M4	70	4.7	5.5	10
94359	80	from S/F-40	105	92	10	M4	70	4.7	5.5	10
94360	120	up to S/F-30	145	132	12	M5	110	4.9	6.6	11
94361	120	from S/F-40	145	132	12	M5	110	4.9	6.6	11



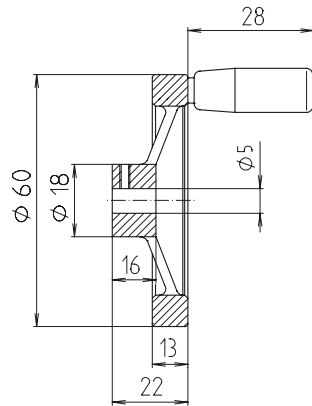
Camera adjustment via RK Compact 3-axis system, fixing via standard accessories

# RK Compact – Drive/Position determination

## Handwheel

- Rotating cylindrical grip
- Fully turned wheel rim
- Machined hub

**Material:** Aluminium die casting. Wheel body, completely plastic-coated

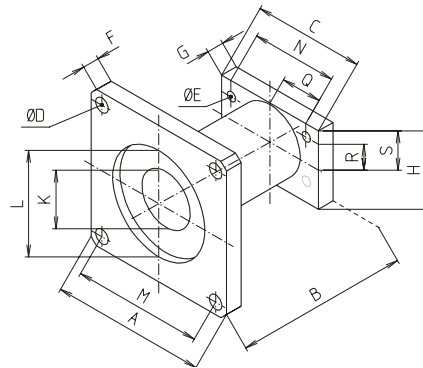


Code No.	Type
909200	50/80/120

## Motor adaptor

- Motor adaptor for PD 42 stepper motor (see chapter "Controls and Motors")

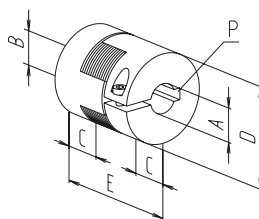
**Material:** Aluminium, black anodised, Galvanised fastenings



[mm]

Code No.	Type	□ A	B	C	D	E	F	G	H	K	L	□ M	N	Q	R	S
91301	RK Compact 80/PD42/ NEMA 17	41	55,5	70	3,5	5,5	6	6	34	20	22 <sup>H7</sup> /3deep	31	40	16	10	20,5
91302	RK Compact 80/ NEMA 23	56	52	70	5,2	5,5	6	6	34	20	38,1/3deep	47	40	16	10	20,5
91303	RK Compact 120/PD42/ NEMA 17	41	55,5	90	3,5	6,6	6	6	34	20	22 <sup>H7</sup> /3deep	31	61	-	12	26,5
91309	RK Compact 120/ NEMA 23	56	52	90	5,2	6,6	6	6	34	20	38,1/3deep	47	61	23	12	26,5

## Coupling



Code No.	Type
9107140505	Coupling for motor PD42, NEMA 17, Ø5 / Ø5
9107140506	Coupling for motor acc. to NEMA 23, Ø5 / Ø6,3



## RK Compact - Position determination

**RK ROSE+KRIEGER**

### Positioning indicator

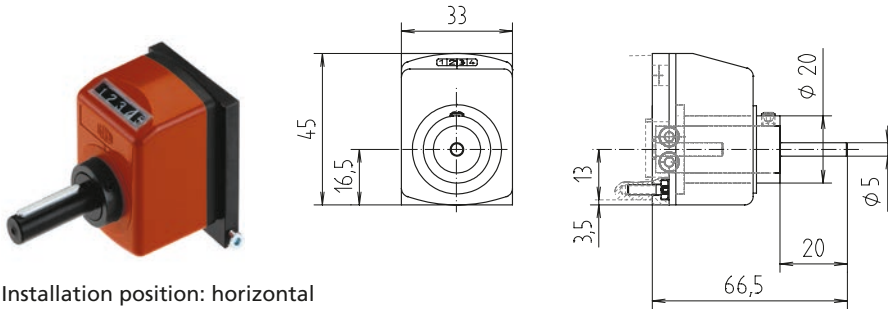
- Permitted ambient temperature +80°C
- Figure height 6 mm
- Reading accuracy ± 0.1 mm

**Material:** Housing made of polyamide 6  
Orange RAL 2004  
Steel parts galvanised

**Scope of delivery:** Positioning indicator, clamping ring, shaft extension and fastenings

**Note:** If using a positioning indicator, the rotary knob delivered with the RK Compact must be replaced with the handwheel shown on the left.

"Rising" and "falling" versions refer to the clockwise rotation of the drive shaft.



Installation position: horizontal



Installation position: vertical

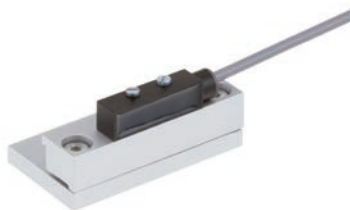
Code No.	Type	Version	Installation position
910031	50	1 mm rising	Horizontal
910032		1 mm falling	Horizontal
910033		1 mm rising	Vertical
910034		1 mm falling	Vertical
910035	80	1 mm rising	Horizontal
910036		1 mm falling	Horizontal
910037		1 mm rising	Vertical
910038		1 mm falling	Vertical
910039	120	1 mm rising	Horizontal
910040		1 mm falling	Horizontal
910041		1 mm rising	Vertical
910042		1 mm falling	Vertical

### Inductive limit switch

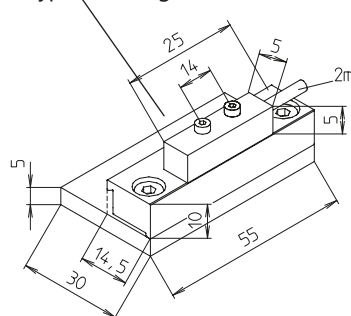
- The holder can be moved along the guide profile and fixed

**Material:** Holder made of aluminium, clear anodised  
Galvanised fastenings

**Scope of delivery:** 1 limit switch with complete holder and fastenings



Additional spacer for Type 120, height 9.5 mm

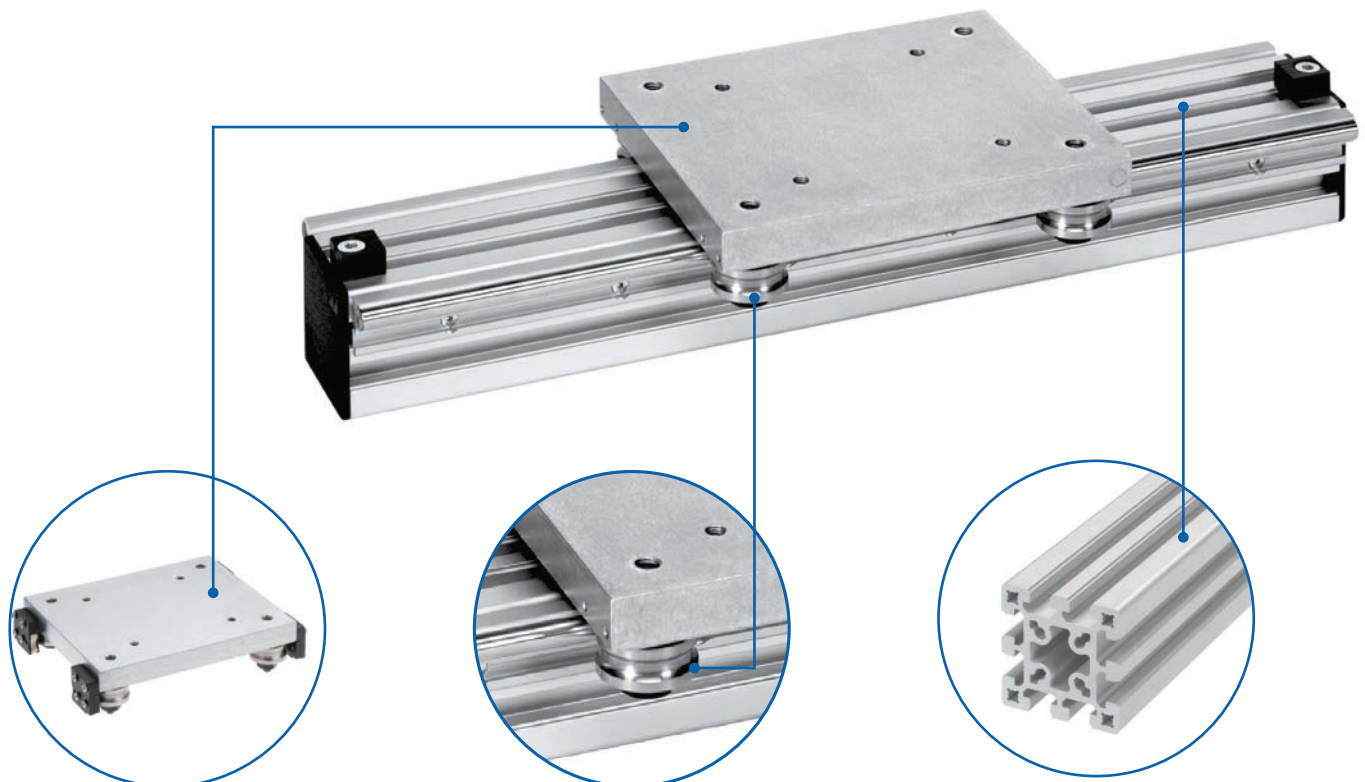


Code No.	Type
92818	RK Compact 80
928112	RK Compact 120

<b>Voltage</b>	10 - 30 V DC
<b>Max. switching current</b>	200 mA
<b>Max. starting current</b>	2 A for approx. 2 ms
<b>Operating frequency</b>	700 Hz DIN EN 50010
<b>Mechanical lifetime</b>	independent of operating cycles
<b>Operating distance</b>	4 mm for steel
<b>Protection class</b>	IP 67
<b>Ambient temperature</b>	-25°C to +80°C

# Profile guide – SQL

Low-cost guide  
for medium to heavy loads



## Large carriage

✓ Simple connection

## Adjustable rollers

✓ Simple adjustment with zero backlash

## BLOCAN basic profile

✓ Quick and easy fixing thanks to profile slots

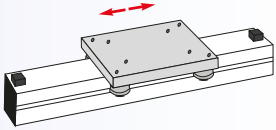
## Features:

- Guide profile made using BLOCAN® slot geometry
- Large, slimline carriage

## Options:

- Longer stroke lengths
- Second carriage

SQL linear guide - Table of contents

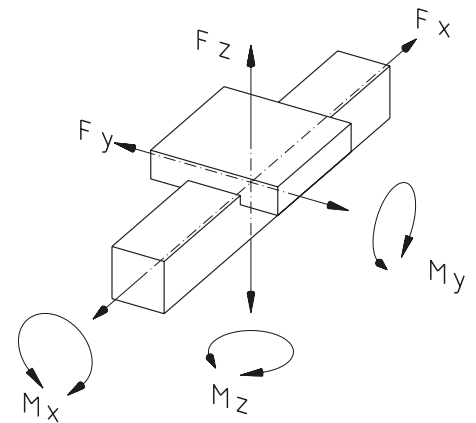
<p><b>Properties/Technical data</b></p>	<ul style="list-style-type: none"> <li>■ General information/operating conditions ... 198</li> <li>■ Load data..... 199</li> </ul>
<p><b>Versions</b> (Dimensions, order numbers)</p> 	<ul style="list-style-type: none"> <li>■ SQL linear guide..... 200 - 201</li> </ul>
<p><b>Accessories</b></p> <p style="text-align: right;"><b>Drive</b></p>	<ul style="list-style-type: none"> <li>■ Carriage ..... 202</li> <li>■ Wiper set ..... 202</li> </ul>

## General information/operating conditions

Design	Guide element made using BLOCAN® profile, slimline carriage
Guide	Adjustable roller guide
Installation position	Any position
Ambient temperature	0°C to +60°C

**SQL - Technical data**
**Load data\***

- F Force [N]
- M Moment [Nm]
- I Geometric moment of inertia [cm<sup>4</sup>]



\* With reference to carriage (static values, guide element resting on full surface)

Type	Fy	Fz	Mx	My	Mz
SQL 40	1500	1000	50	70	140
SQL 40 x 80	1500	1000	50	70	140
SQL 60	2500	1500	66	95	169
SQL 60 x 120	2500	1500	66	95	169
SQL 80 x 40	2500	1500	82	88	200
SQL 80	2500	1500	82	113	200
SQL 80 x 160	2500	1500	82	113	200
SQL 120 x 60	2500	1500	100	121	243
SQL 160 x 80	2500	1500	134	82	243

**Geometric moment of inertia**

 [cm<sup>4</sup>]

Type	Iy	Iz
SQL 40	11,9	11,9
SQL 40 x 80	19.4	76.0
SQL 60	51.2	51.2
SQL 60 x 120	94.7	372.3
SQL 80 x 40	76.0	19.4
SQL 80	155.3	155.3
SQL 80 x 160	292.4	1090.0
SQL 120 x 60	372.3	94.7
SQL 160 x 80	1090.0	292.4

# SQL – Versions

## Order information:

- Longer travel lengths on request

Version

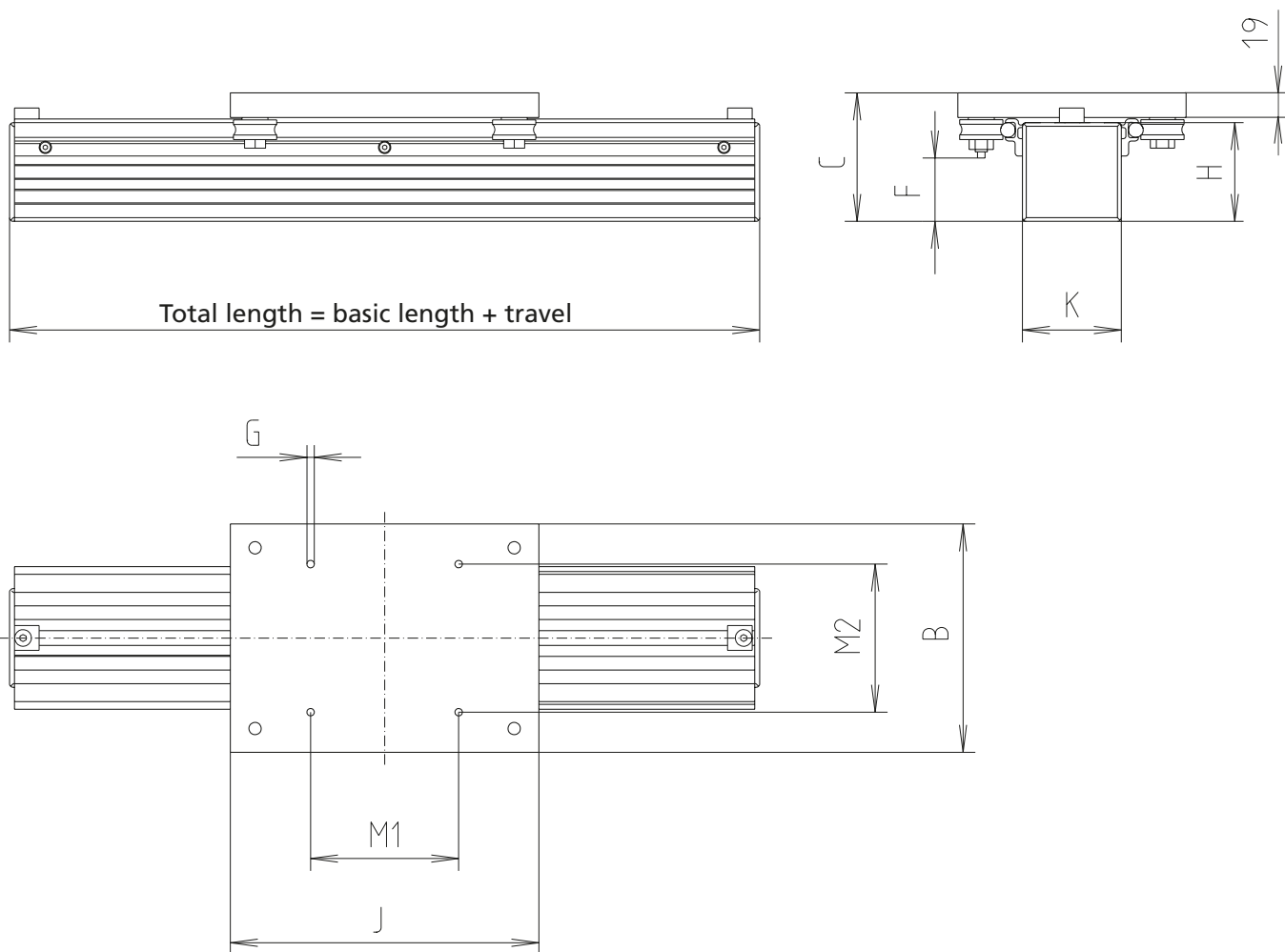
■ Guide



Code No.	Type	Basic length	B	C	F	G	H
MCA4040AA	SQL 40 x 40	250	145	63	11	M8-20 deep	40
MCA4080AA	SQL 40 x 80	250	145	103	51	M8-20 deep	80
MCA6060AA	SQL 60	250	165	83	31	M8-20 deep	60
MCA6012AA	SQL 60 x 120	250	165	143	91	M8-20 deep	120
MCA8040AA	SQL 80 x 40	300	185	63	11	M8-20 deep	40
MCA8080AA	SQL 80	300	185	103	51	M8-20 deep	80
MCA8016AA	SQL 80 x 160	300	185	183	131	M8-20 deep	160
MCA1260AA	SQL 120 x 60	350	225	83	31	M8-20 deep	60
MCA1680AA	SQL 160 x 80	400	265	103	51	M8-20 deep	80

----- Total length = basic length + travel [mm]





[mm]

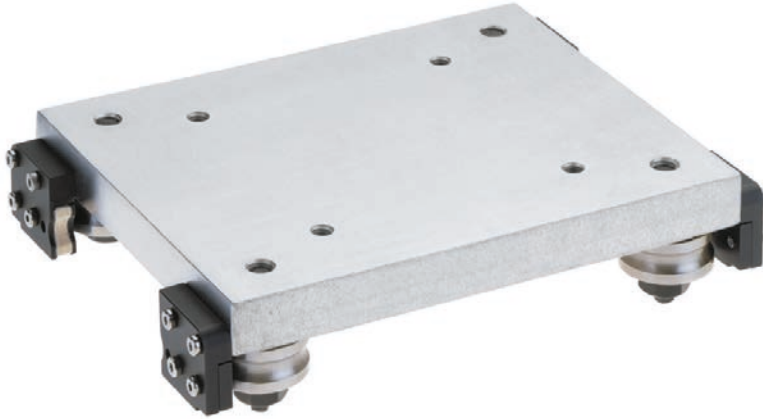
J	O	M1	M2	Max. travel	Mass [kg]	
					Basic length	per 100 mm travel
200	40	80	80	5750	3.61	0.41
200	40	80	80	5750	4.00	0.58
200	60	100	100	5750	4.18	0.72
200	60	100	100	5750	5.07	1.06
250	80	120	120	5700	4.63	0.65
250	80	120	120	5700	5.94	1.00
250	80	120	120	5700	7.50	1.52
300	120	245	160	5650	5.07	1.06
350	160	285	200	5600	7.50	1.52

## Carriage

- Suitable for SQL manufactured from 03/96 onwards

**Material:** Al Mg Si, vibratory finished

**Scope of delivery:** Complete with mounting screws, wipers and rollers



Code No.	Type
94451	SQL 40/40 x 80
94452	SQL 60/60 x 120
94453	SQL 80 x 40
94454	SQL 80/80 x 160
94455	SQL 120 x 60
94456	SQL 160 x 80

## Wiper set

- Complete upgrade kit for SQL carriage.
- The wipers can be screwed to the existing carriage without the need for any modification (on devices manufactured from 06/96 onwards).

**Scope of delivery:** Complete set for one carriage, 2 x left wipers, 2 x right wipers with fastenings

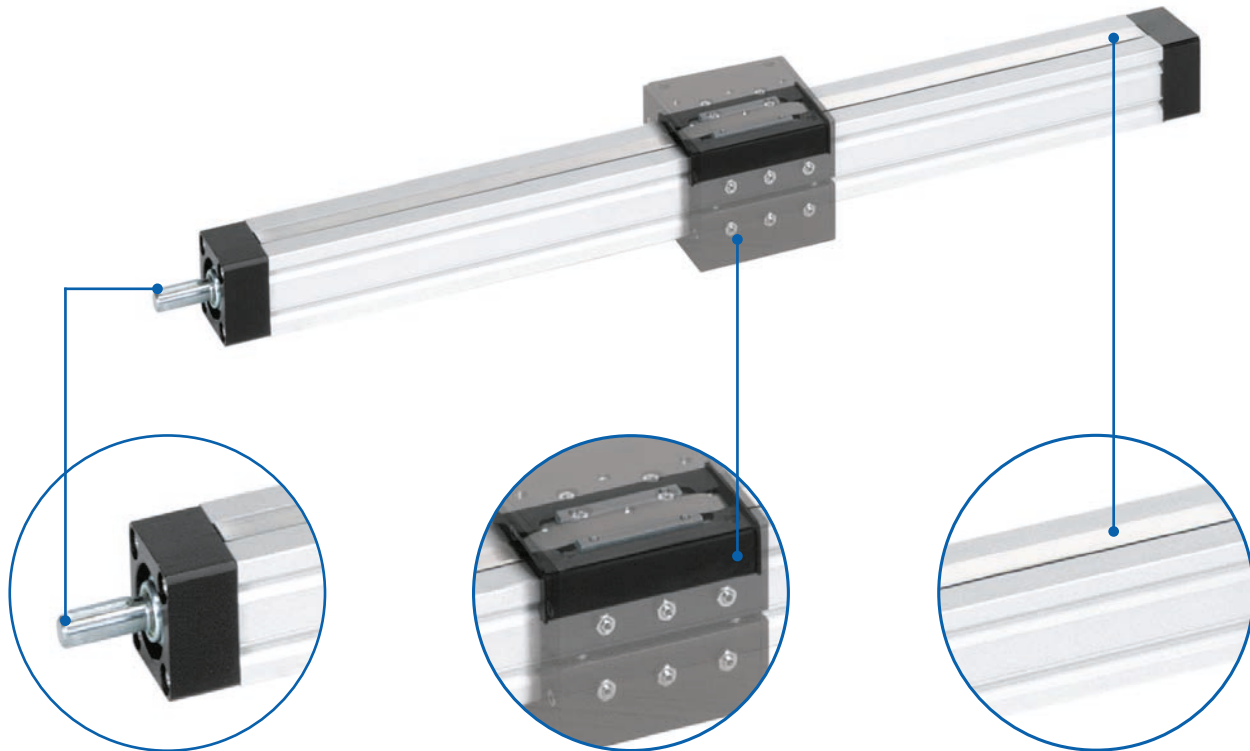


Code No.	Type
93921	All SQL



# Profile actuator – quad® EV

Compact and versatile linear actuator  
for motor-driven and manual adjustment of medium loads



## Shafts

- ✓ Choice of 1 or 2 ball-bearing shafts

## Choice of carriages

- ✓ Wide range of models supports optimum integration in existing designs
- ✓ Adjustable slide guide

## Cover strip

- ✓ The drive screw is protected against contamination

## Features:

- Screw covered by steel band
- Wide range of carriage and fixing elements
- Comprehensive range of accessories

## Options:

- Second free-running carriage
- Longer stroke lengths

quad® EV profile actuator - Table of contents

<b>Properties/Technical data</b>		<ul style="list-style-type: none"> <li>■ General information/operating conditions... 206</li> <li>■ Load data..... 207</li> </ul>
<p><b>Versions</b> (Dimensions, order numbers)</p> 		<ul style="list-style-type: none"> <li>■ EV right or lefthand thread..... 208 - 209</li> <li>■ EV right <i>and</i> lefthand thread..... 210 - 211</li> <li>■ EV <i>split</i> screw ..... 212 - 213</li> </ul>
<b>Accessories</b>	<b>Fixing</b>	<ul style="list-style-type: none"> <li>■ Carriage ..... 214 - 217</li> <li>■ Fixing elements/clamping lever..... 218 - 221</li> </ul>
	<b>Drive</b>	<ul style="list-style-type: none"> <li>■ Handwheel ..... 222</li> <li>■ Chain wheel/HTD timing belt pulley timing-belt (endless) ..... 223</li> <li>■ Angular drive/bevel gear set ..... 224</li> <li>■ Combination flange/combination cube..... 225</li> <li>■ Connecting and transmission unit ..... 226</li> <li>■ Motor adaptor/coupling..... 227 - 229</li> </ul>
	<b>Position determination</b>	<ul style="list-style-type: none"> <li>■ Scale/positioning indicator ..... 230</li> <li>■ Limit switch ..... 232 - 233</li> </ul>

## General information/operating conditions

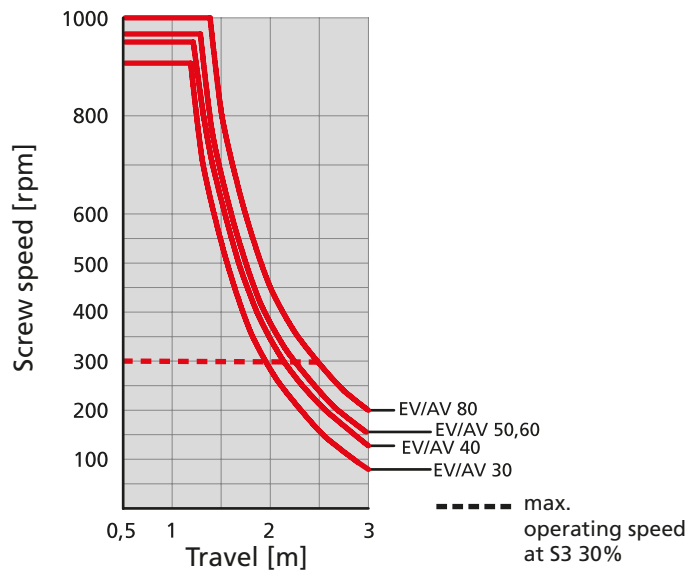
Design	Linear actuator with extruded guide profile, choice of carriage models
Guide	Adjustable slide guide
Installation position	Any position
Lead accuracy	± 0.15 mm/300 mm travel
Self-locking	Yes
Duty cycle	S3 30% Basic 1h
Ambient temperature	0°C to +60°C

## Screw lead

Type	Screw lead [mm]
EV 30	3
EV 40	4
EV 50	4
EV 60	4
EV 80	5

$$\text{Required screw speed } n \text{ [rpm]} = \frac{\text{speed [m/min]} \times 1000}{\text{screw lead [mm]}}$$

## Critical screw speed



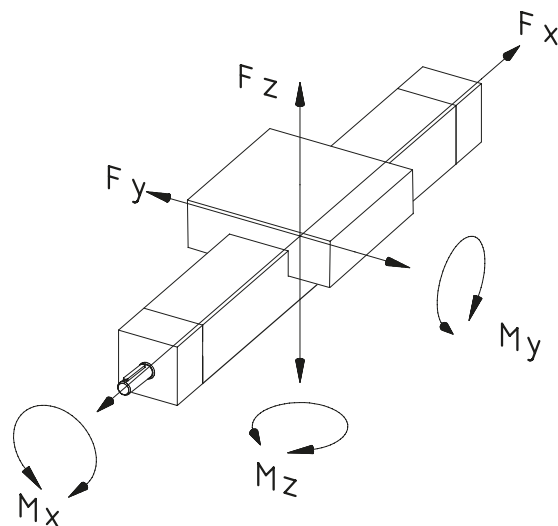
## No-load torque

Type	"Open" carriage [Nm]	"Closed" carriage [Nm]
EV 30	0.30	0.45
EV 40	0.45	0.55
EV 50	0.50	0.60
EV 60	0.65	0.75
EV 80	0.80	0.90

**Load data\***

- F Force [N]
- M Moment [Nm]
- I Geometric moment of inertia [cm<sup>4</sup>]

\* referring to the "closed" guide table  
(guide element deflection f= 0,5 mm,  
static, end elements supported)

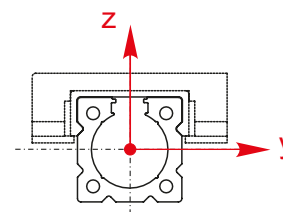


Total length [mm]	Fx		Fy		Fz			Mx	My	Mz
	500	500	1000	1500	500	1000	1500			
Type										
EV 30	800	600	70	–	600	70	–	6	11	8
EV 40	1200	1500	110	35	1480	110	33	25	45	30
EV 50	1800	2220	550	140	2300	550	135	55	74	50
EV 60	2100	4070	1350	400	4090	1350	390	65	100	60
EV 80	2500	6000	2300	720	6000	2300	715	80	140	85

**Geometric moment of inertia**

[cm<sup>4</sup>]

Type	Iy	Iz
EV 30	4.13	4.71
EV 40	13.33	13.79
EV 50	33.72	34.31
EV 60	64.22	60.33
EV 80	200.00	192.72

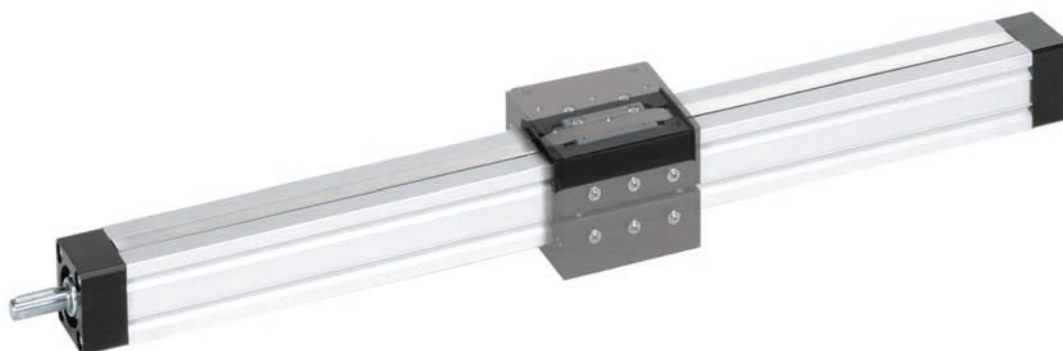


# quad<sup>®</sup> EV – Versions

## Order information:

- Choice of carriage - this must be ordered separately
- Second free-running carriage available on request

Version ■ Right or lefthand thread

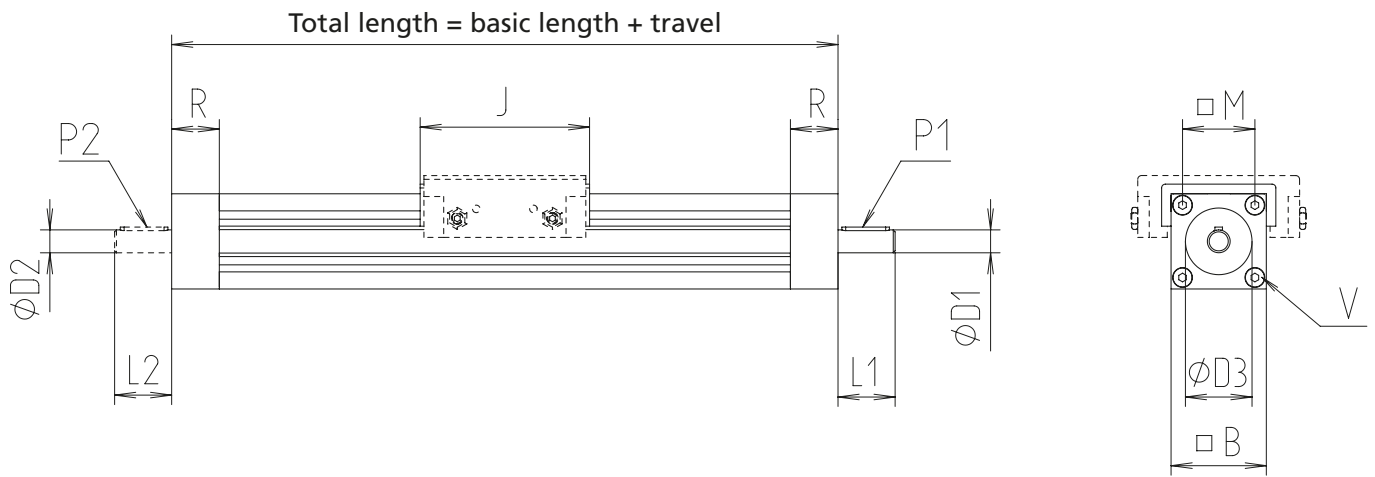


Code No.	Type	Spindle	Basic length	B	D 1	D 2	D 3	J
30_3000	30	14 x 3	96	30	8	–	22 H7	60
30_3002	30	14 x 3	96	30	8	8	22 H7	60
30_4000	40	18 x 4	115	40	10	–	28 J6	71
30_4002	40	18 x 4	115	40	10	10	28 J6	71
30_5000	50	20 x 4	140	50	12	–	35 J6	90
30_5002	50	20 x 4	140	50	12	12	35 J6	90
30_6000	60	20 x 4	199	60	12	–	35 J6	115
30_6002	60	20 x 4	199	60	12	12	35 J6	115
30_8000	80	24 x 5	218	80	14	–	50 H7	136
30_8002	80	24 x 5	218	80	14	14	50 H7	136

----- Total length = basic length + travel [mm]

**Version:**  
 1 = righthand thread  
 2 = lefthand thread





[mm]

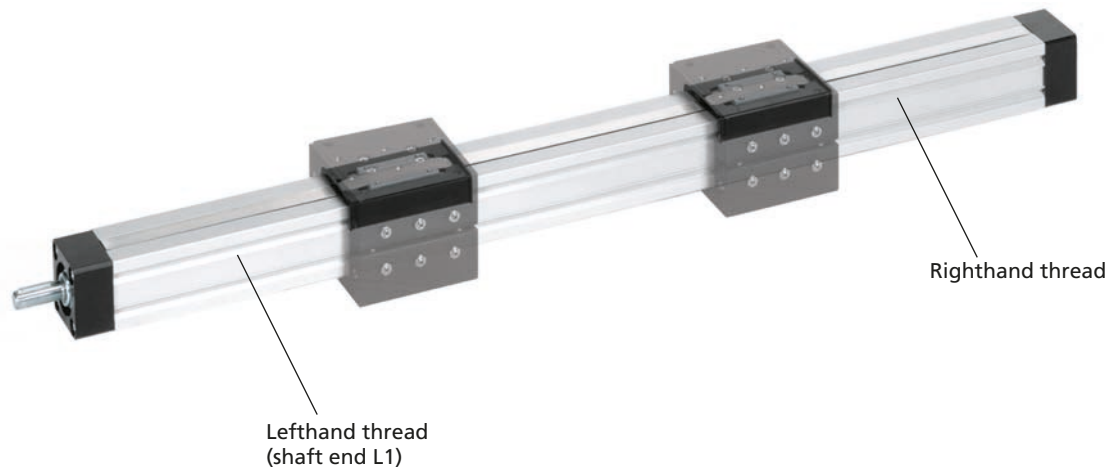
L 1	L 2	M	P 1	P 2	R	V	Max. travel	Mass [kg]	
								Basic length	per 100 mm travel
25	–	21	2 x 2 x 20	–	18	M4 x 25	1479	0.300	0.220
25	25	21	2 x 2 x 20	2 x 2 x 20	18	M4 x 25	1454	0.310	0.220
28	–	29	3 x 3 x 20	–	22	M5 x 30	3157	0.690	0.400
28	28	29	3 x 3 x 20	3 x 3 x 20	22	M5 x 30	3129	0.705	0.400
30	–	38	4 x 4 x 25	–	25	M6 x 30	3130	1.410	0.530
30	30	38	4 x 4 x 25	4 x 4 x 25	25	M6 x 30	3100	1.445	0.530
30	–	43	4 x 4 x 25	–	42	M6 x 55	3071	2.023	0.605
30	30	43	4 x 4 x 25	4 x 4 x 25	42	M6 x 55	3041	2.083	0.605
38	–	64	5 x 5 x 32	–	41	M8 x 60	3044	4.250	1.000
38	38	64	5 x 5 x 32	5 x 5 x 32	41	M8 x 60	3006	4.300	1.000

# quad<sup>®</sup> EV – Versions

## Order information:

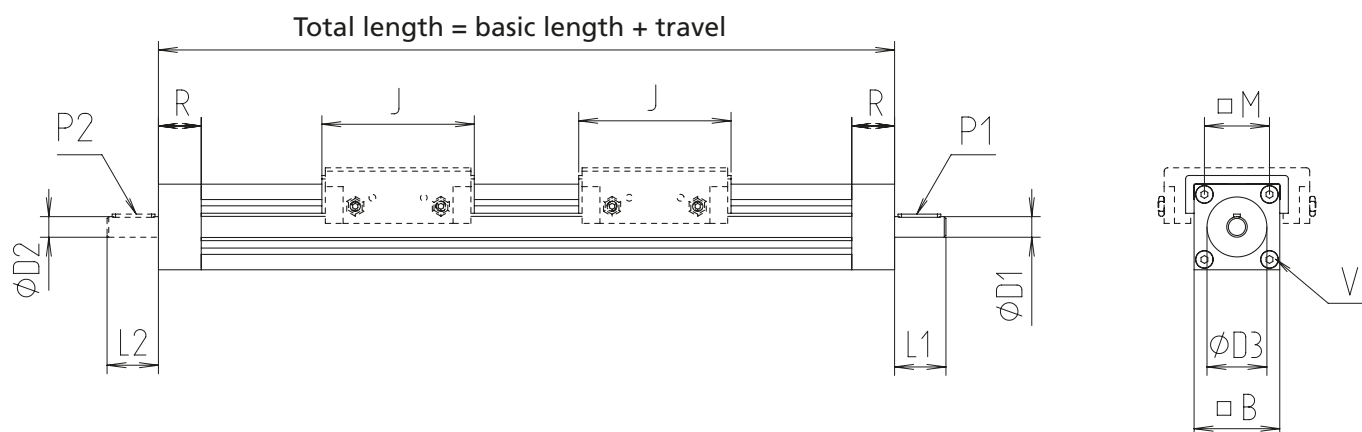
- Choice of carriage - this must be ordered separately

Version ■ *Right and lefthand thread*



Code No.	Type	Spindle	Basic length	B	D 1	D 2	D 3	J
3033000	30	14 x 3	156	30	8	–	22 <sup>H7</sup>	60
3033001	30	14 x 3	156	30	–	8	22 <sup>H7</sup>	60
3033002	30	14 x 3	156	30	8	8	22 <sup>H7</sup>	60
3034000	40	18 x 4	186	40	10	–	28 <sup>J6</sup>	71
3034001	40	18 x 4	186	40	–	10	28 <sup>J6</sup>	71
3034002	40	18 x 4	186	40	10	10	28 <sup>J6</sup>	71
3035000	50	20 x 4	230	50	12	–	35 <sup>J6</sup>	90
3035001	50	20 x 4	230	50	–	12	35 <sup>J6</sup>	90
3035002	50	20 x 4	230	50	12	12	35 <sup>J6</sup>	90
3036000	60	20 x 4	314	60	12	–	35 <sup>J6</sup>	115
3036001	60	20 x 4	314	60	–	12	35 <sup>J6</sup>	115
3036002	60	20 x 4	314	60	12	12	35 <sup>J6</sup>	115
3038000	80	24 x 5	354	80	14	–	50 <sup>H7</sup>	136
3038001	80	24 x 5	354	80	–	14	50 <sup>H7</sup>	136
3038002	80	24 x 5	354	80	14	14	50 <sup>H7</sup>	136

----- Total length = basic length + total travel [mm]



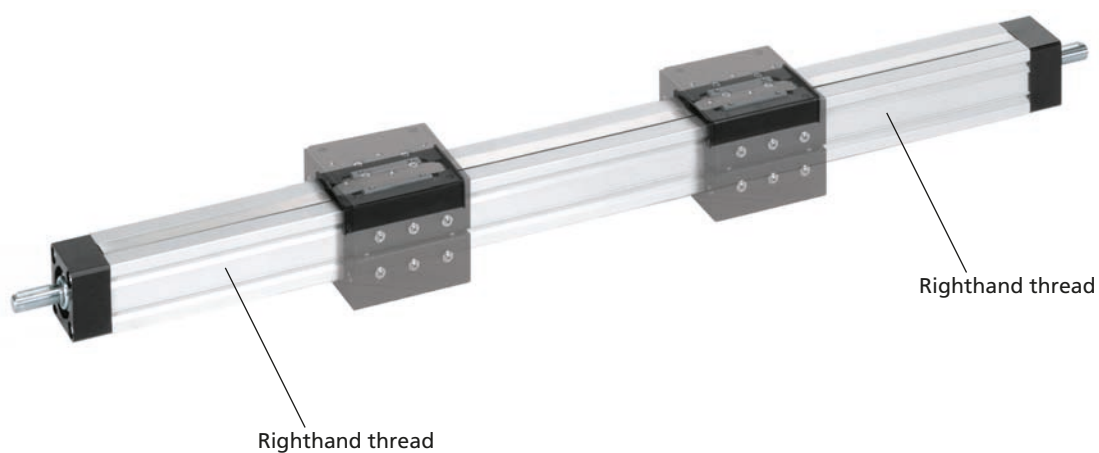
L 1	L 2	M	P 1	P 2	R	V	Max. travel	Mass [kg]	
								Basic length	per 100 mm travel
25	-	21	2 x 2 x 20	-	18	M4 x 25	1846	0.330	0.220
-	25	21	-	2 x 2 x 20	18	M4 x 25	1846	0.330	0.220
25	25	21	2 x 2 x 20	2 x 2 x 20	18	M4 x 25	1846	0.330	0.220
28	-	29	3 x 3 x 20	-	22	M5 x 30	2814	0.740	0.400
-	28	29	-	3 x 3 x 20	22	M5 x 30	2814	0.740	0.400
28	28	29	3 x 3 x 20	3 x 3 x 20	22	M5 x 30	2814	0.755	0.400
30	-	38	4 x 4 x 25	-	25	M6 x 30	2786	1.460	0.530
-	30	38	-	4 x 4 x 25	25	M6 x 30	2786	1.460	0.530
30	30	38	4 x 4 x 25	4 x 4 x 25	25	M6 x 30	2786	1.495	0.530
30	-	43	4 x 4 x 25	-	42	M6 x 55	2702	2.856	0.605
-	30	43	-	4 x 4 x 25	42	M6 x 55	2702	2.856	0.605
30	30	43	4 x 4 x 25	4 x 4 x 25	42	M6 x 55	2702	2.916	0.605
38	-	64	5 x 5 x 32	-	41	M8 x 60	2646	4.320	1.000
-	38	64	-	5 x 5 x 32	41	M8 x 60	2646	4.320	1.000
38	38	64	5 x 5 x 32	5 x 5 x 32	41	M8 x 60	2646	4.370	1.000

# quad<sup>®</sup> EV – Versions

## Order information:

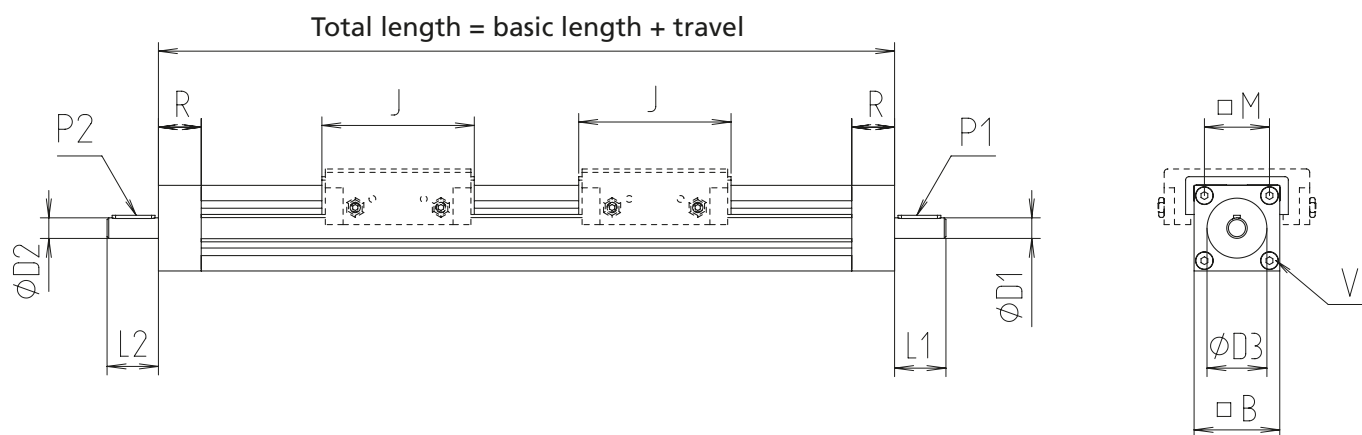
- Choice of carriage - this must be ordered separately

Version ■ Split screw



Code No.	Type	Spindle	Basic length	B	D 1	D 2	D 3	J
3043002	30	14 x 3	156	30	8	8	22 H7	60
3044002	40	18 x 4	186	40	10	10	28 J6	71
3045002	50	20 x 4	230	50	12	12	35 J6	90
3046002	60	20 x 4	314	60	12	12	35 J6	115
3048002	80	24 x 5	354	80	14	14	50 H7	136

----- Total length = basic length + total travel [mm]



[mm]

L 1	L 2	M	P 1	P 2	R	V	Max. travel/end	Mass [kg]	
								Basic length	per 100 mm travel
25	25	21	2 x 2 x 20	2 x 2 x 20	18	M4 x 25	1422	0.380	0.220
28	28	29	3 x 3 x 20	3 x 3 x 20	22	M5 x 30	1500	0.820	0.400
30	30	38	4 x 4 x 25	4 x 4 x 25	25	M6 x 30	1885	1.560	0.530
30	30	43	4 x 4 x 25	4 x 4 x 25	42	M6 x 55	1885	3.096	0.605
38	38	64	5 x 5 x 32	5 x 5 x 32	41	M8 x 60	1885	4.655	1.000

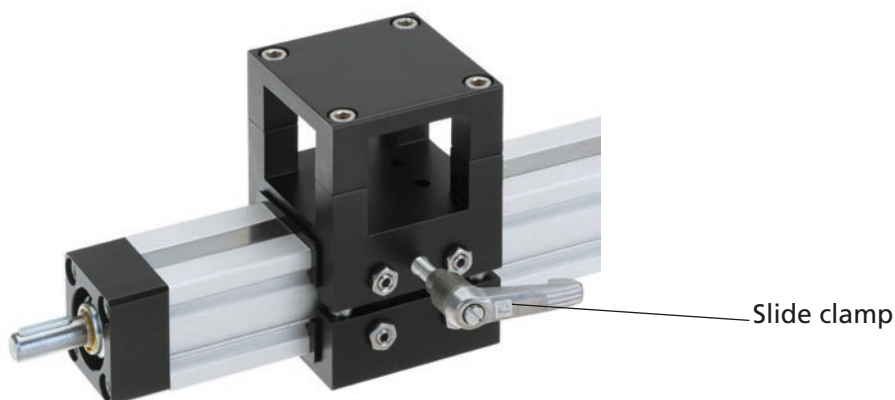
# quad<sup>®</sup> EV – Fixing

## Order information:

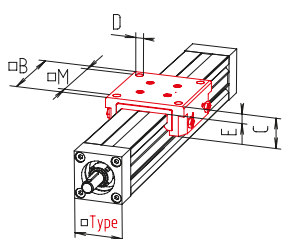
- Choice of carriage - this must be ordered separately
- Second free-running carriage available on request

**Carriage** ■ A range of different versions facilitate mounting

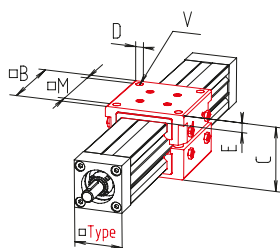
**Material:** Al Mg Si, black anodised



## V-O



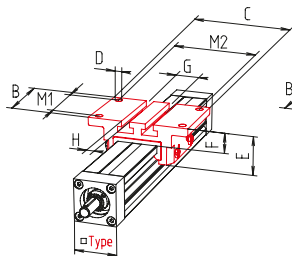
## V-G



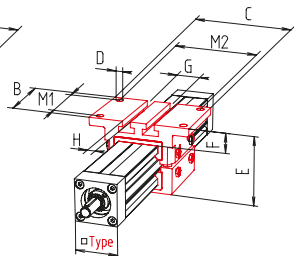
									[mm]
Code No.	Version	Type	B	C	D	E	M	V	
5301_0	V-O	30	56	20	M 6	7	42	–	
5302_0	V-G	30	56	44	M 6	7	42	M6 x 30	
5401_0	V-O	40	68	26	M 6	8	54	–	
5402_0	V-G	40	68	56	M 6	8	54	M6 x 35	
5501_0	V-O	50	85	33	M 8	10	67	–	
5502_0	V-G	50	85	70	M 8	10	67	M8 x 45	
5601_0	V-O	60	105	45	M 8	17.3	85	–	
5602_0	V-G	60	105	94.5	M 8	17.3	85	M8 x 60	
5801_0	V-O	80	126	52	M10	16	105	–	
5802_0	V-G	80	126	112	M10	16	105	M10 x 70	

**Slide clamp  
Equipment:**  
0 = screws  
1 = 1 lever  
2 = 2 levers

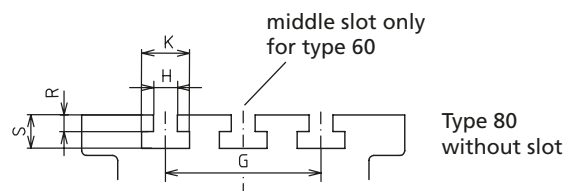
## FKV-O



## FKV-G



															[mm]
Code No.	Version	Type	B	C	D	E	F	G	H	K	M1	M2	R	S	V
5303_0	FKV-O	30	56	84	7	29	16	20	6	10	40	70	4.5	9	–
5304_0	FKV-G	30	56	84	7	51	16	20	6	10	40	70	4.5	9	M6 x 30
5403_0	FKV-O	40	68	97	7	38	20	28	10	15	54	83	6.5	13	–
5404_0	FKV-G	40	68	97	7	68	20	28	10	15	54	83	6.5	13	M6 x 35
5503_0	FKV-O	50	85	125	9	48	25	30	10	20	65	105	7	14	–
5504_0	FKV-G	50	85	125	9	85	25	30	10	20	65	105	7	14	M8 x 45
5603_0	FKV-O	60	105	145	9	59	31.3	65	10	20	80	120	7	14	–
5604_0	FKV-G	60	105	145	9	108.5	31.3	65	10	20	80	120	7	14	M8 x 60
5803_0	FKV-O	80	126	170	11	68	31	–	–	19	100	148	8	20	–
5804_0	FKV-G	80	126	170	11	127	31	–	–	19	100	148	8	20	M10 x 70



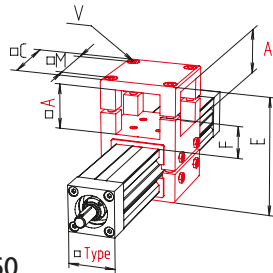
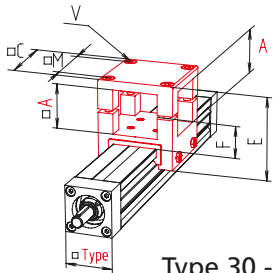
**Slide clamp  
Equipment:**  
0 = screws  
1 = 1 lever  
2 = 2 levers



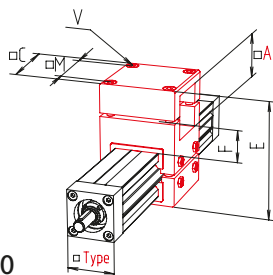
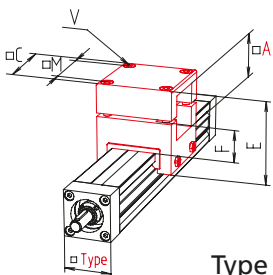
### Carriage

#### KV-O

#### KV-G



Type 30 - 60



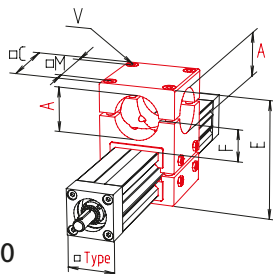
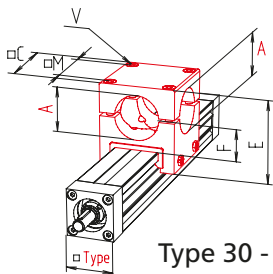
Type 80

[mm]

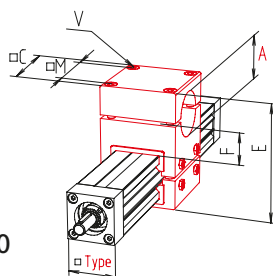
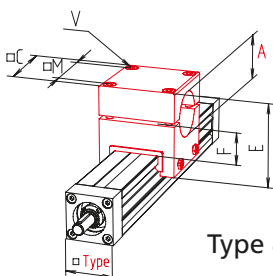
Code No.	Version	Type	A	C	E	F	M	V
5305_0	KV-O	30	30.2	56	56	22	42	M6 x 30
5306_0	KV-G	30	30.2	56	78	22	42	M6 x 30
5405_0	KV-O	40	40.4	68	75	28	54	M6 x 35
5406_0	KV-G	40	40.4	68	104	28	54	M6 x 35
5505_0	KV-O	50	50.4	85	94	35	67	M8 x 45
5506_0	KV-G	50	50.4	85	130	35	67	M8 x 45
5605_0	KV-O	60	60.4	105	117.5	48.3	85	M8 x 60
5606_0	KV-G	60	60.4	105	174	48.3	85	M8 x 60
5805_0	KV-O	80	80.4	126	165	72	100	M10 x 70
5806_0	KV-G	80	80.4	126	224	72	100	M10 x 70

#### KVR-O

#### KVR-G



Type 30 - 60



Type 80

[mm]

Code No.	Version	Type	A	C	E	F	M	V
5307_0	KVR-O	30	30.1	56	56	22	42	M6 x 30
5308_0	KVR-G	30	30.1	56	78	22	42	M6 x 30
5407_0	KVR-O	40	40.2	68	75	28	54	M6 x 35
5408_0	KVR-G	40	40.2	68	104	28	54	M6 x 35
5507_0	KVR-O	50	50.3	85	94	35	67	M8 x 45
5508_0	KVR-G	50	50.3	85	130	35	67	M8 x 45
5607_0	KVR-O	60	60.3	105	117.5	48.3	85	M8 x 60
5608_0	KVR-G	60	60.3	105	174	48.3	85	M8 x 60
5807_0	KVR-O	80	80.6	126	165	72	100	M10 x 70
5808_0	KVR-G	80	80.6	126	224	72	100	M10 x 70

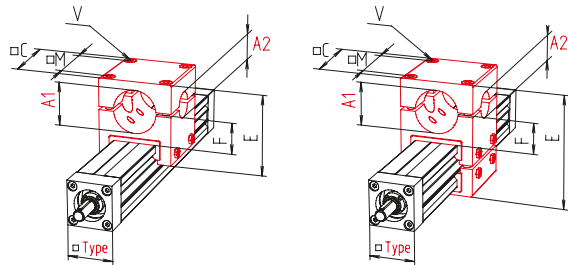
Slide clamp  
Equipment:  
0 = screws  
1 = 1 lever  
2 = 2 levers

# quad® EV – Fixing

## Carriage

### KRD-O

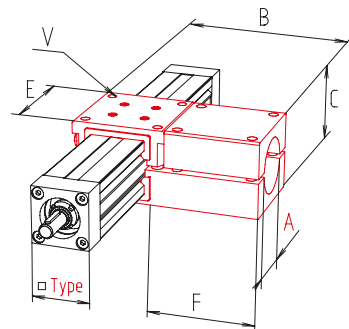
### KRD-G



[mm]

Code No.	Version	Type	A1	A2	C	E	F	M	V
5409_0	KRD-O	40 x 30	40	30.1	68	74.4	28	54	M6 x 35
5410_0	KRD-G	40 x 30	40	30.1	68	104	28	54	M6 x 35
5509_0	KRD-O	50 x 30	50	30.1	85	93	35	67	M6 x 35
5510_0	KRD-G	50 x 30	50	30.1	85	130	35	67	M6 x 35
5609_0	KRD-O	60 x 30	60	30.1	105	118	42	85	M8 x 60
5610_0	KRD-G	60 x 30	60	30.1	105	196	42	85	M8 x 60

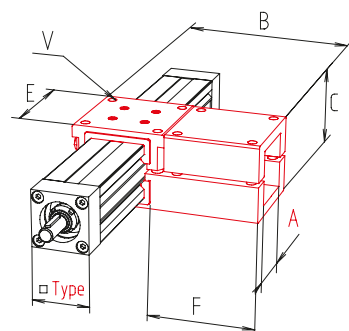
### WVR-G



[mm]

Code No.	Version	Type	A	B	C	E	F	V
5311_0	WVR-G	30	30.1	112	44	56	67	M6 x 25
5411_0	WVR-G	40	40.2	136	56	68	82	M6 x 35
5511_0	WVR-G	50	50.1	170	70	85	100	M8 x 45
5611_0	WVR-G	60	60.3	220	95.8	105	137.5	M8 x 60

### WV-G



[mm]

Code No.	Version	Type	A	B	C	E	F	V
5312_0	WV-G	30	30.2	112	44	56	67	M6 x 30
5412_0	WV-G	40	40.2	136	56	68	82	M6 x 35
5512_0	WV-G	50	50.4	170	70	85	100	M8 x 45
5612_0	WV-G	60	60.4	220	95.8	105	137.5	M8 x 60

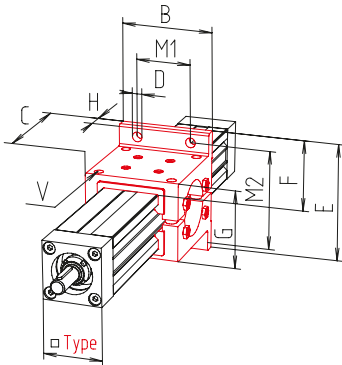
Slide clamp  
Equipment:  
0 = screws  
1 = 1 lever  
2 = 2 levers





## Carriage

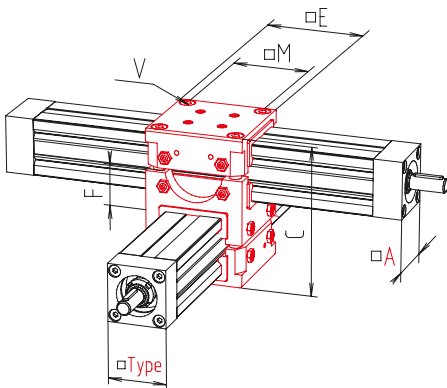
### FV-G



[mm]

Code No.	Version	Type	B	C	D	E	F	G	H	M1	M2	V
531300	FV-G	30	56	58	7	70	18	42	6	28	56	M4 x 40
541300	FV-G	40	68	74	7	85	23	56	8	40	70	M6 x 35
551300	FV-G	50	84	92	9	110	30	70	10	50	90	M8 x 45
561300	FV-G	60	105	112	9	135.5	37.8	95.5	11.5	80	120	M8 x 60
581300	FV-G	80	126	142	11	156	73.8	112	16	80	135	M10 x 70

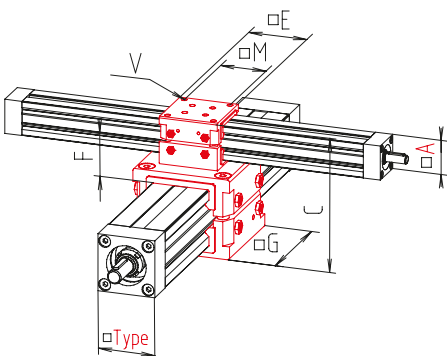
### EK-G



[mm]

Code No.	Version	Type	A	C	E	F	M	V
5314_0	EK-G	30	30	81	56	22	42	M6 x 30
5414_0	EK-G	40	40	104	68	26.5	54	M6 x 40
5514_0	EK-G	50	50	130	85	35	67	M8 x 45
5614_0	EK-G	60	60	179	105	54.5	85	M8 x 60
5814_0	EK-G	80	80	224	126	72	105	M10 x 70

### EKD-G



[mm]

Code No.	Version	Type	A	C	E	F	G	M	V
5515_0	EKD-G50/30	50	30	114	56	33	85	42	M6 x 25
5815_0	EKD-G80/40	80	40	168	68	84	126	54	M6 x 35

Slide clamp  
Equipment:  
0 = screws  
1 = 1 lever  
2 = 2 levers

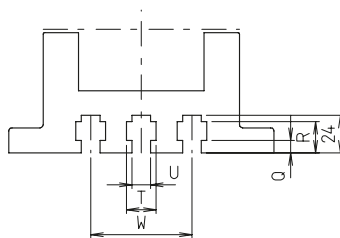
## Fixing elements

- Clamping elements for the simple fixing of EV units
- For further elements, please refer to the catalogue "Connecting Technology"

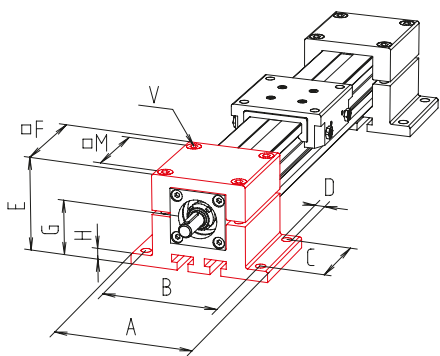
**Material:** Al Mg Si 0,5 F25, clear anodised  
DIN 912 screws

For further dimensions, please refer to the catalogue "Connecting Technology"

## FKV



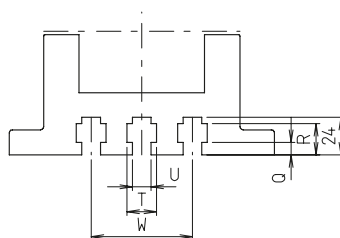
Centre slot only on types 60 and 80



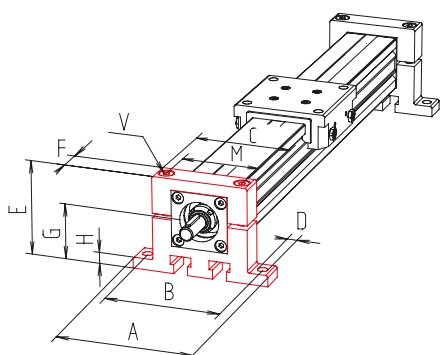
[mm]

Code No.	Version	Type	A	B	C	D	E	F	G	H	M	Q	R	T	U	W	V
52300005030	FKV	30	84	70	40	7	51	56	30	6	42	4.5	9	10	6	20	M6 x 25
52400005030	FKV	40	97	83	54	7	68	68	40	8	54	6.5	13	15	10	28	M6 x 35
52500005030	FKV	50	125	105	65	9	85	85	50	10	67	7	14	20	10	30	M8 x 45
52600005030	FKV	60	145	120	80	9	111	105	62.5	12	80	7	14	20	10	65	M8 x 60
52800005030	FKV	80	170	148	100	11	136	126	80	16	100	8	20	19	12	65	M10 x 70

## FKVH



Centre slot only on types 60 and 80



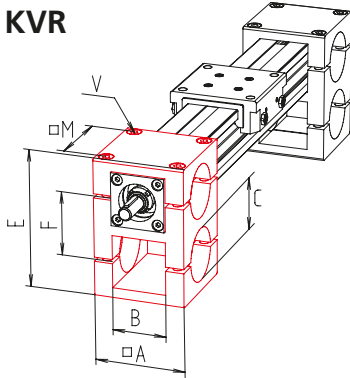
[mm]

Code No.	Version	Type	A	B	C	D	E	F	G	H	M	Q	R	T	U	W	V
52300010030	FKVH	30	84	70	56	7	51	16	30	6	42	4.5	9	10	6	20	M6 x 25
52400010030	FKVH	40	97	83	68	7	68	18	40	8	54	6.5	13	15	10	28	M6 x 35
52500010030	FKVH	50	125	105	85	9	85	20	50	10	67	7	14	20	10	30	M8 x 45
52600010030	FKVH	60	145	120	105	9	111	22	62.5	12	80	7	14	20	10	65	M8 x 60
52800010030	FKVH	80	170	148	126	11	136	24	80	16	100	8	20	19	12	65	M10 x 70



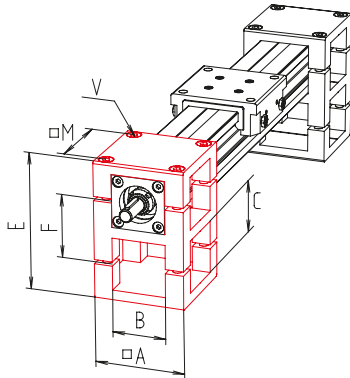
**Fixing elements**

**KVR**



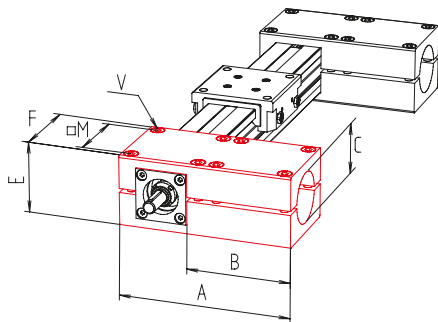
Code No.	Version	Type	A	B	C	E	F	M	V
503000040300	KVR	30	56	30.1	30.1	78	36	42	M6 x 25
504000040300	KVR	40	68	40.2	40.2	104	48	54	M6 x 35
505000040300	KVR	50	85	50.3	50.3	130	60	67	M8 x 45
506000040300	KVR	60	105	60.4	60.3	169	72	85	M8 x 60

**KV**



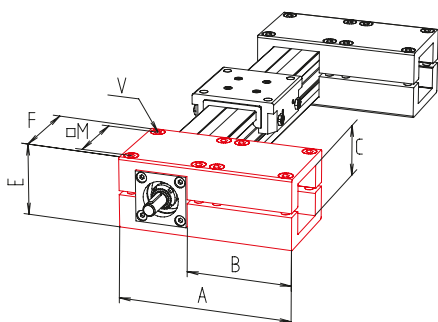
Code No.	Version	Type	A	B	C	E	F	M	V
503000050300	KV	30	56	30.2	30.2	78	36	42	M6 x 25
504000050300	KV	40	68	40.4	40.4	104	48	54	M6 x 35
505000050300	KV	50	85	50.4	50.4	130	60	67	M8 x 45
506000050300	KV	60	105	60.4	60.4	169	72	85	M8 x 60

**WVR**



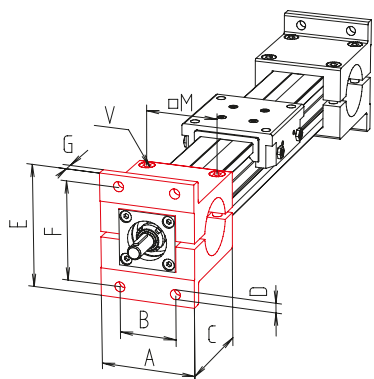
Code No.	Version	Type	A	B	C	E	F	M	V
513000150300	WVR	30	112	69	30.2	42	56	42	M6 x 25
514000150300	WVR	40	136	82	40.2	56	68	54	M6 x 35
515000150300	WVR	50	170	102	50.4	70	85	67	M6 x 35
516000150300	WVR	60	210	127	60.3	97	105	85	M8 x 60

**WV**



Code No.	Version	Type	A	B	C	E	F	M	V
513000050300	WV	30	112	69	30.2	42	56	42	M6 x 25
514000050300	WV	40	136	82	40.4	56	68	54	M6 x 35
515000050300	WV	50	170	102	50.4	70	85	67	M8 x 45
516000050300	WV	60	210	127	60.4	97	105	85	M8 x 60

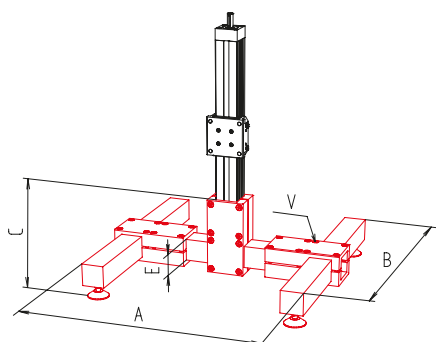
## FV



[mm]

Code No.	Version	Type	A	B	C	D	E	F	G	M	V
53300005030	Z	30	56	28	58	7	70	56	6	42	M6 x 25
53400005030	Z	40	68	40	74	7	85	70	8	54	M6 x 35
53500005030	Z	50	84	50	92	9	110	90	10	64	M8 x 45
53600005030	Z	60	105	80	112.5	9	137	120	12	85	M8 x 60
53800005030	Z	80	126	80	142	11	156	135	16	100	M10 x 70

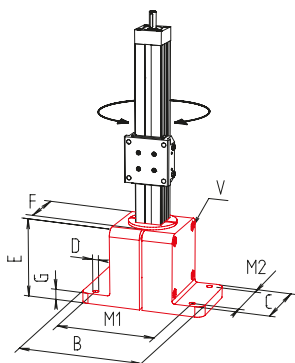
## FHV



[mm]

Code No.	Version	Type	A	B	C	E	V
53300008030	FHV	30	350	350	114	30	M6 x 25
53400008030	FHV	40	400	400	137	40	M6 x 35
53500008030	FHV	50	500	500	127	50	M8 x 45
53600008030	FHV	60	600	600	220	60	M8 x 60

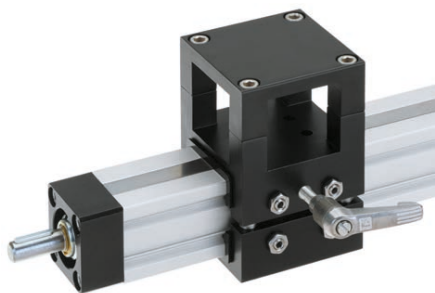
## FRS



[mm]

Code No.	Version	Type	B	C	D	E	F	G	M1	M2	V
53300018030	FRS	30	110	84	9	92	70	10	90	50	M8 x 45
53500018030	FRS	50	156	126	11	142	126	16	135	80	M10 x 70

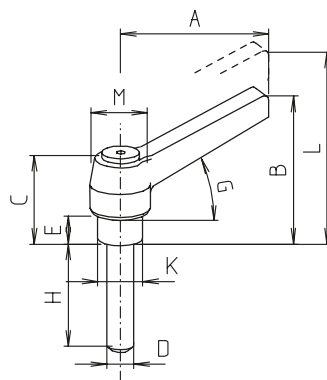
## Clamping levers



For slide clamp



For component clamp



[mm]

Code No. galvanised	Code No. VA	Type	A	B	C	D	E	G	H	K	L	M
<b>For slide clamp</b>												
90293	93020	30	40	33.5	27	M5	5.5	20°	15	8.5	37.5	13.5
90212	93001	40/50	40	33.5	27	M6	6.5	20°	25	10	37.5	13.5
90249	93019	60	45	35	22	M6	4	25°	20	10	38	13
90222	93012	80	65	45	31	M8	8.5	20°	25	13	48	18
<b>For component clamp</b>												
90247	93018	30	40	27	27	M6	6.5	20°	30	10	31	13.5
90213	93014	40	40	33.4	27	M6	6.5	20°	35	10	37.5	13.5
90225	93004	50	65	45	31	M8	8.5	20°	45	13	49	18
90228	93011	60	65	45	31	M8	8.5	20°	60	13	49	18
90245	93008	80	92	62	42	M10	10	20°	70	16	66	-

## Handwheel

- Rotating cylindrical grip
- Fully turned wheel rim
- Machined hub

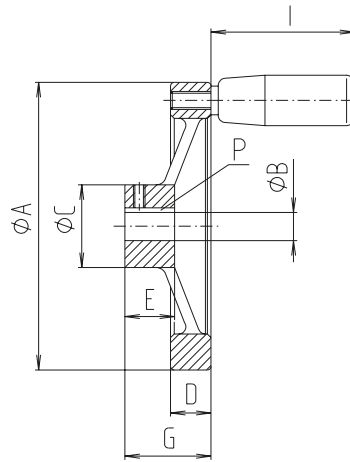
**Material:** Aluminium die cast, black powder-coated



Ø 140-200

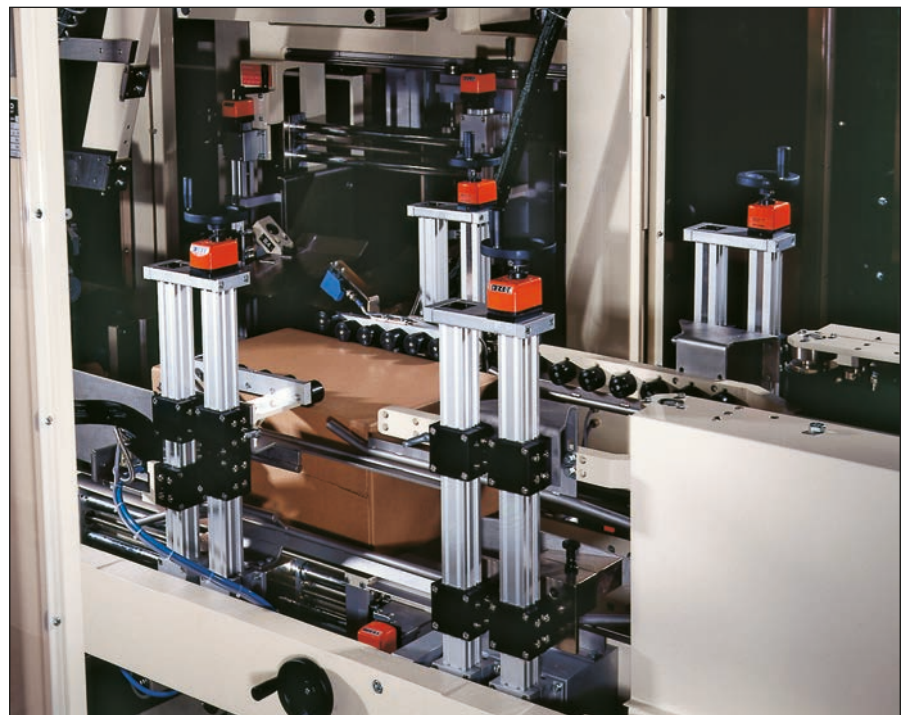


Ø 80-100



[mm]

Code No.	Type	A	B	C	D	E	G	P	I
90903	30	80	8	23	11	17	35	2 x 2	42
90904	40	100	10	28	14	17	30	3 x 3	52
90915	50/60	100	12	28	14	17	30	4 x 4	52
90905	50/60	140	12	36	16.5	19	36	4 x 4	66
90906	80	140	14	36	16.5	19	36	5 x 5	66
90918	80	160	14	36	18	20	39	5 x 5	80
90928	80	200	14	43	20	24	44	5 x 5	80



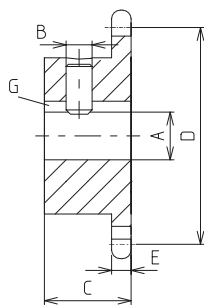
Format adjustment of a packaging system by means of quad EV linear unit

### Chain wheel



■ Other sizes on request

Material: Steel, 500 N/mm<sup>2</sup> min.



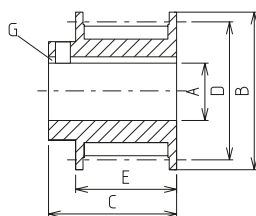
[mm]

Code No.	Type	A	B	C	D	E	G	No. of teeth	Size
91703	30	8	M6	18	41.1	4.5	2 x 2	10	1/2 x 3/16"
91714	40	10	M6	20	53	4.5	3 x 3	13	1/2 x 3/16"
91705	50/60	12	M6	20	61	4.5	4 x 4	15	1/2 x 3/16"
91706	60	14	M6	25	85	4.5	5 x 5	21	1/2 x 3/16"

### HTD timing-belt pulley

- Suitable for maintenance-free continuous operation
- Excellent accuracy and zero backlash during change of direction
- Can be clamped on feather key

Material: Steel

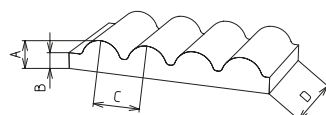


[mm]

Code No.	Type	A	B	C	D	E	G	Pull force	Pitch
92103	30	8	23	20	19.09	14.5	2x2	220 N	5
92104	40	10	28	20	23.87	14.5	3x3	220 N	5
92105	50	12	32	26	28.65	20.5	4x4	330 N	5
92106	60	14	32	26	28.65	20.5	5x5	330 N	5

### Timing-belt (endless)

- HTD timing-belt with steel insert
- For pull force, see lock pulley. Other lengths available on request.



[mm]

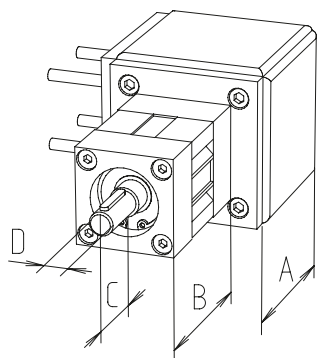
Code No.	Type	A	B	C	D	Timing-belt length			
92204	30/40	3.81	1.75	5	9	305	550	750	1000
92205	50/60	3.81	1.75	5	15	305	565	800	900



Timing-belt length [mm]

## Angular drive

- Simple assembly
- Self-centring

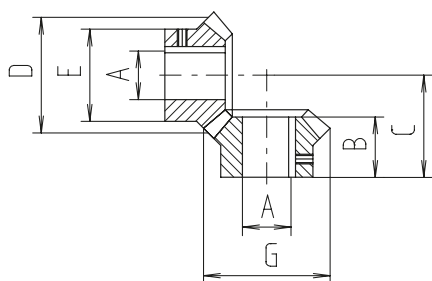


[mm]

Code No.	Type	A	B	C	D	Ratio	Module	No. of teeth	Max. torque	Max. speed
91503	30	50	60	25	8	1:1	1.5	16	5.5 Nm	560 rpm
91513	30	50	60	25	8	1:1.5	1.5	16/24	5 Nm	373/560 rpm
91534	40	60	80	28	10	1:1	1.5	16	5.5 Nm	560 rpm
91524	40	60	80	28	10	1:1.5	1.5	16/24	5 Nm	373/560 rpm
91505	50	78	80	30	12	1:1	2.5	16	16 Nm	560 rpm
91515	50	78	80	30	12	1:1.5	2	16/24	10 Nm	373/560 rpm
91507	60	88	125	30	12	1:1	2.5	16	16 Nm	560 rpm
91517	60	88	125	30	12	1:1.5	2	16/24	10 Nm	373/560 rpm
91508	80	108	140	38	14	1:1	2.5	22	28 Nm	560 rpm
91518	80	108	140	38	14	1:1.5	2.5	16/24	23 Nm	373/560 rpm

## Bevel gear set

- Straight toothed
  - Pressure angle 20°
  - Shaft angle 90°
  - Crowned tooth faces
  - Can be clamped on feather key
- Material: Steel C45**



[mm]

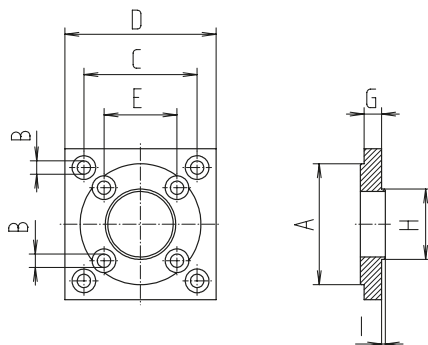
Code No.	Type	A	B	C	D	E	G	Ratio	No. of teeth	Module
91603	Set 30	8	15	24	24	18	26.11	1:1	16	1.5
91613	Set 30	8	17/17.5	30/27	24/36	18/18	26.49/37.67	1:1.5	16/24	1.5
91623	Single component 30	8	15	24	24	18	26.11	1:1	16	1.5
91663	Single component 30	8	17	30	24	18	26.49	1:1.5	16	1.5
91673	Single component 30	8	17.5	27	36	18	37.67	1:1.5	24	1.5
91614	Set 40	10	16	27	28.5	24	30.62	1:1	19	1.5
91624	Set 40	10	17/17.5	30/27	24/36	20/26	26.49/37.67	1:1.5	16/24	1.5
91674	Single component 40	10	16	27	28.5	24	30.62	1:1	19	1.5
91684	Single component 40	10	17	30	24	20	26.49	1:1.5	16	1.5
91694	Single component 40	10	17.5	27	36	26	37.67	1:1.5	24	1.5
91605	Set 50	12	22	37	40	32	43.5	1:1	16	2.5
91615	Set 50	12	21/23	38/35	32/48	26/35	35.3/50.2	1:1.5	16/24	2
91625	Single component 50	12	22	37	40	32	43.5	1:1	16	2.5
91665	Single component 50	12	21	38	32	26	35.3	1:1.5	16	2
91645	Single component 50	12	23	35	48	35	50.2	1:1.5	24	2
91605	Set 60	12	22	37	40	32	43.5	1:1	16	2.5
91615	Set 60	12	21/23	38/35	32/48	26/35	35.3/50.2	1:1.5	16/24	2
91625	Single component 60	12	22	37	40	32	43.5	1:1	16	2.5
91665	Single component 60	12	21	38	32	26	35.3	1:1.5	16	2
91645	Single component 60	12	23	35	48	35	50.2	1:1.5	24	2
91608	Set 80	14	28	48	55	40	58.53	1:1	22	2.5
91618	Set 80	14	25/27	46/42	40/60	32/42	44.16/62.77	1:1.5	16/24	2.5
91648	Single component 80	14	28	48	55	40	58.53	1:1	22	2.5
91678	Single component 80	14	25	46	40	32	44.16	1:1.5	16	2.5
91668	Single component 80	14	27	42	60	42	62.77	1:1.5	24	2.5



### Combination flange

- Simple assembly with linear units and combination cubes
- Exact fit due to centering shoulders

Material: AlMgSi, black anodised



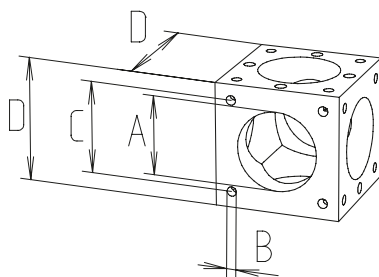
[mm]

Code No.	Type	A	B	C	D	E	G	H	I
92303	30	38 <sub>f7</sub>	4.3	36	50	21	6	22 <sub>f7</sub>	2
92304	40	48 <sub>f7</sub>	5.3	45	60	29	7	28 <sub>f7</sub>	1.5
92305	50	50 <sub>f7</sub>	6.6	58	78	38	8	35 <sub>f7</sub>	2
92307	60	60 <sub>f7</sub>	6.4	68	88	43	8	35 <sub>f7</sub>	2
92308	80	80 <sub>f7</sub>	9	88	108	46	9	50 <sub>f7</sub>	3

### Combination cube

- Connecting or transmission module
- Machined all-round

Material: AlMgSi, black anodised



[mm]

Code No.	Type	A	B	C	D
92403	30	38 <sup>H7</sup>	M 4	36	50
92404	40	48 <sup>H7</sup>	M 5	45	60
92405	50	50 <sup>H7</sup>	M 6	58	78
92407	60	60 <sup>H7</sup>	M 6	68	88
92408	80	80 <sup>H7</sup>	M 8	88	108

### Cap for combination cube

- For contact-free mounting surfaces

Material: PE, black



[mm]

Code No.	Type	Cap thickness
92413	30	2
92414	40	3
92415	50	3
92417	60	3
92418	80	4

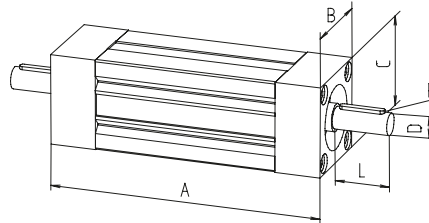
## Connecting and transmission unit

- For the transmission of torques with shaft or as a connecting unit without shaft for parallel linear units

**Material:** End elements, AlMgSi, black anodised  
Profile, AlMgSi, clear anodised



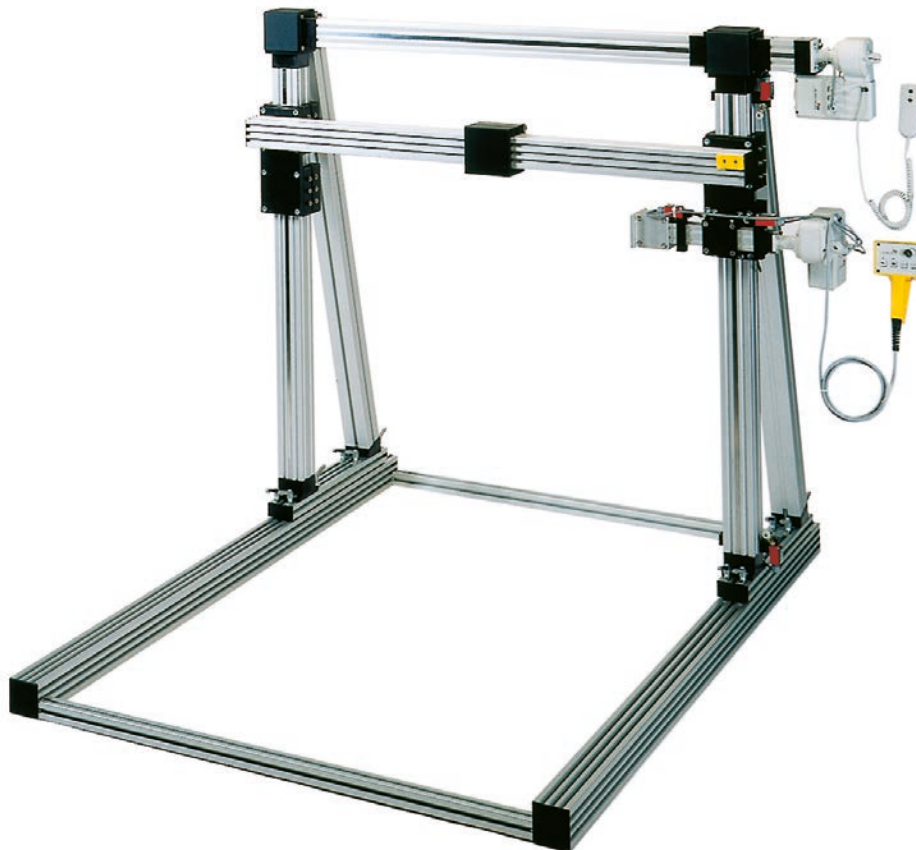
Transmission unit



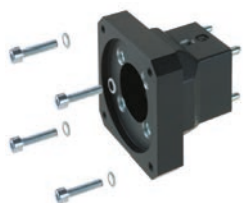
Connecting unit

[mm]

Code No.	Type	Version	A (basic length)	B	C	D	L	P
92503_ _ _ _	30	with shaft	60	30	30	8	25	2 x 2 x 20
92513_ _ _ _	30	without shaft	60	30	30	-	-	-
92504_ _ _ _	40	with shaft	80	40	40	10	28	3 x 3 x 20
92514_ _ _ _	40	without shaft	80	40	40	-	-	-
92505_ _ _ _	50	with shaft	80	50	50	12	30	4 x 4 x 25
92515_ _ _ _	50	without shaft	80	50	50	-	-	-
92507_ _ _ _	60	with shaft	125	60	60	12	30	4 x 4 x 25
92517_ _ _ _	60	without shaft	125	60	60	-	-	-
92508_ _ _ _	80	with shaft	140	80	80	14	38	5 x 5 x 32
92518_ _ _ _	80	without shaft	140	80	80	-	-	-



**Selection table**  
**Motor adaptor/EV coupling**



Type	Servomotor without gear			Three-phase motor	
	RK-AC 118	RK-AC 240	RK-AC 470	90/120W	180/250 W
EV 30	949204	–	–	949603	
	911430 0811	–	–	910920 0812	
EV 40	949205	949280	–	94937	94916
	911430 1011	911430 1014	–	911430 1012	911430 1014
EV 50	949206	949225	–	949605	94935
	911430 1112	911430 1214	–	911940 1212	911430 1214
EV 60	949052	949087	949080	94976	949077
	911430 1112	911940 1214	911940 1219	911940 1212	911430 1214
EV 80	949401	949226	949240	94958	94940
	911430 1114	911940 1414	911940 1419	911940 1214	911940 1414

↓

Code No. Motor adaptor: <b>949226</b>
Code No. Coupling with specification of shaft diameter 1st end = 14 mm 2nd end = 14 mm: <b>911940 1414</b>

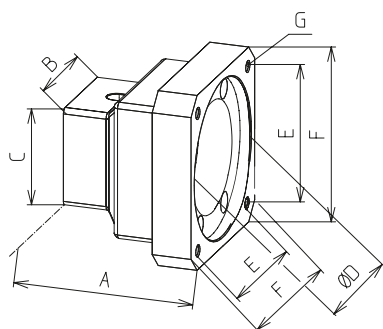
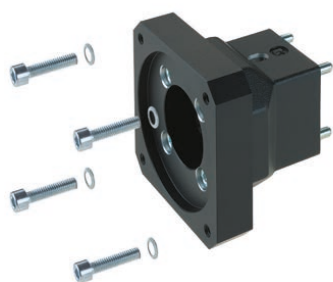
**Note:**  
For further details on motor versions,  
please refer to the chapter "Motors and  
controls"

For dimensions and order data for motor adaptor and coupling,  
please refer to next page

## Motor adaptor

- Simple assembly
- Exact fit due to centering shoulders

**Material:** Aluminium, black anodised



[mm]

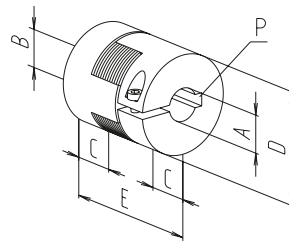
Code No.	Type	A	B	C	D	E	F	G
949204	30	63	40	40	60	53	70	M5
949402	30	65	40	40	73	70	90	M6
949603	30	65	40	40	50	46	80	M5
949205	40	65	50	50	60	53	70	M5
949280	40	73	50	50	80	70,7	90	M6
949403	40	73	50	50	73	70	90	M6
94937	40	73	50	50	50	46	80	M5
94916	40	73	50	50	80	100	Ø120	Ø6,6
949206	50	66	52	52	60	53	70	M5
949225	50	73	52	52	80	70,7	90	M6
949330	50	73	52	52	73	70	90	M6
949605	50	73	52	52	50	65	80	M5
94935	50	73	52	52	80	100	Ø120	Ø6,6
949052	60	66	60	60	60	53	70	M5
949087	60	81	60	60	80	70,7	90	M6
949080	60	91	60	60	95	81,3	115	M8
949078	60	75	60	60	73	70	90	M6
94976	60	85	60	60	50	65	80	M5
949077	60	75	60	60	80	100	Ø120	Ø6,6
949401	80	74	80	80	60	53	70	M5
949226	80	86	80	80	80	70,7	90	M6
949240	80	96	80	80	95	81,3	115	M8
949326	80	86	80	80	73	70	90	M6
94958	80	86	80	80	50	46	80	M5
94940	80	86	80	80	80	100	Ø120	Ø6,6

## Coupling

- Small size
- Shaft connection without backlash
- Maintenance-free
- Easy plug-in assembly

**Material:** Hub – aluminium  
Spider ring – polyurethane

To ensure the smooth running of the coupling, a clearance of **D + 3 mm** is required.



Code No.	A	B	C	D	E	P	Torque [Nm]	
							with feather key	without feather key
9109200808	8	8	10	20	30	2x2 / 2x2	5	3
9109200895	8	9,5	10	20	30	2x2 / –	5	3
9109200810	8	10	10	20	30	2x2 / 3x3	5	3
9109200812	8	12	10	22	30	2x2 / 4x4	5	3
9114300811	8	11	11	30	35	2x2 / 4x4	12	6
9114309510	9,5	10	11	30	35	– / 3x3	12	6
9114309512	9,5	12	11	30	35	– / 4x4	12	6
9114301010	10	10	11	30	35	3x3 / 3x3	12	6
9114301011	10	11	11	30	35	3x3 / 4x4	12	6
9114301012	10	12	11	30	35	3x3 / 4x4	12	6
9114301014	10	14	11	30	35	3x3 / 5x5	12	6
9114301112	11	12	11	30	35	4x4 / 4x4	12	6
9114301114	11	14	11	30	35	4x4 / 5x5	12	6
9114301212	12	12	11	30	35	4x4 / 4x4	12	6
9114301214	12	14	11	30	35	4x4 / 5x5	12	6
9114301219	12	19	11	30	35	4x4 / 6x6	12	6
9119409514	9,5	14	25	40	65	– / 5x5	17	10
9119401212	12	12	25	40	65	4x4 / 4x4	17	10
9119401214	12	14	25	40	65	4x4 / 5x5	17	10
9119401414	14	14	25	40	65	5x5 / 5x5	17	10
9119401419	14	19	25	40	65	5x5 / 6x6	17	10

[mm]

# quad® EV – Position determination

## Scale

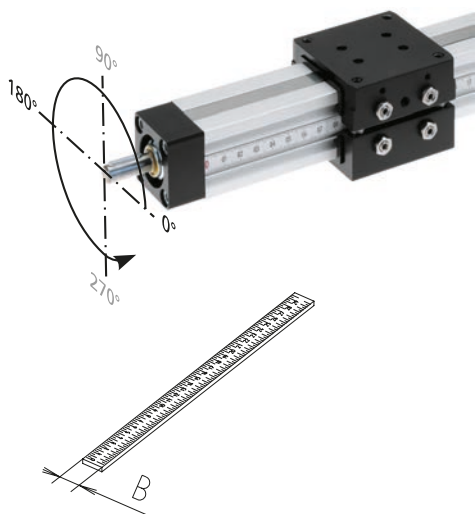


Image shows scale - to be read from left to right. Standard installation at 0° (90° and 270° not technically possible)

- Self-adhesive
- Can be retrofitted
- 4 mm font size

**Material:** Steel band, plastic-coated

Code No.	Type	Can be read from	Length	B	Version
92005	30	left to right	0-1000	8	fitted
92015		left to right	0-1000	8	not fitted
92001	40-80	right to left	0-1000	10	fitted
92021		right to left	0-1000	10	not fitted
92011		left to right	0-1000	10	fitted
92031		left to right	0-1000	10	not fitted
92003		left to right	0-2000	10	fitted
92013		left to right	0-2000	10	not fitted
92023		right to left	0-2000	10	fitted
92033		right to left	0-2000	10	not fitted

[mm]

## Positioning indicator



Installation position: horizontal



Installation position: vertical

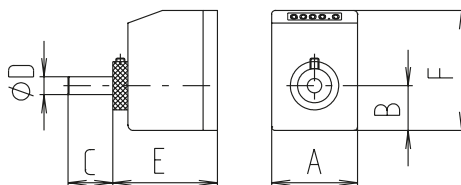
\* Version with double lead e.g. for installation on righthand/lefthand thread screws

- Permitted ambient temperature +80°C
- Figure height 6 mm
- Reading accuracy ± 0.1 mm
- Simple assembly

**Material:** Housing made of polyamide 6, Orange RAL 2004  
Steel parts galvanised

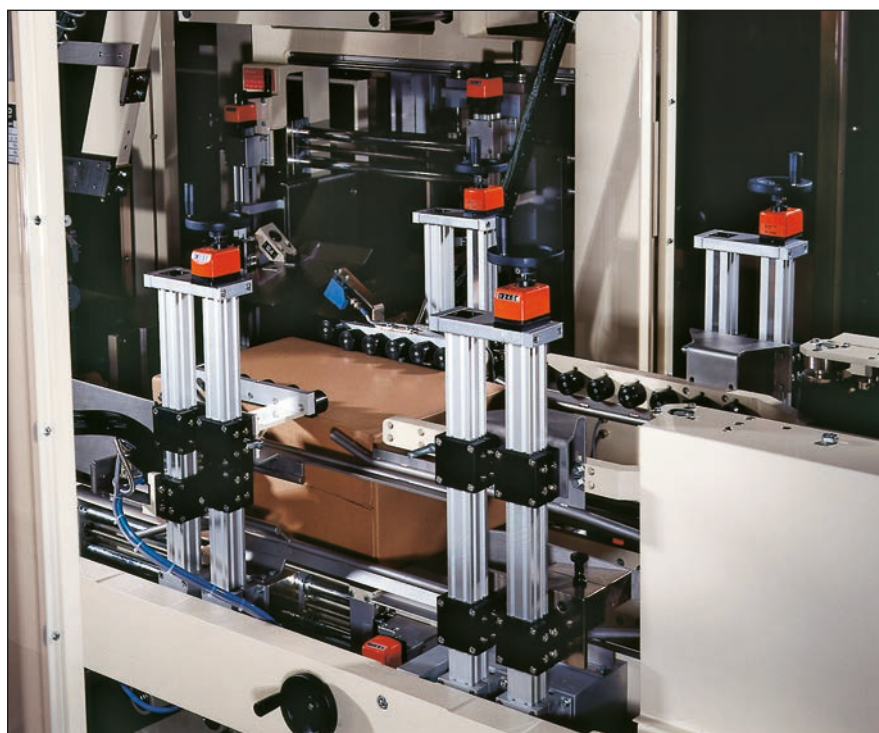
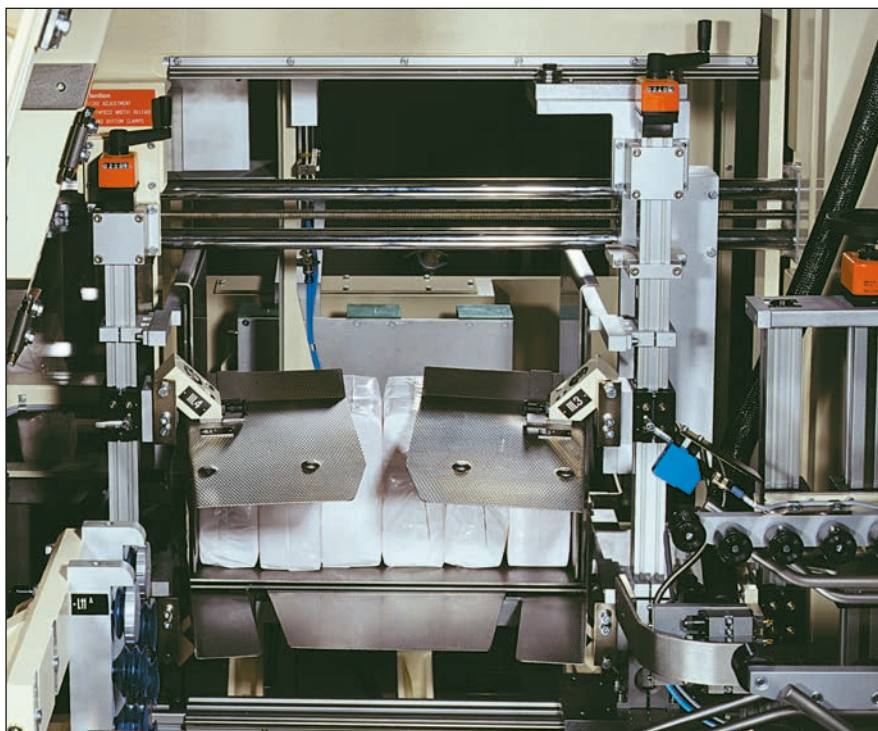
**Scope of delivery:** Positioning indicator, clamping ring, shaft extension and fastenings

**Note:** "rising" and "falling" versions refer to the clockwise rotation of the drive shaft.



[mm]

Type	Installation position	Code No.	Version	Code No.	Version*	A	B	C	D	E	F
30	Horizontal	91003	3 mm rising	91086	6 mm rising	48	25	25	8	59	67
30	Horizontal	91013	3 mm falling	91087	6 mm falling	48	25	25	8	59	67
30	Vertical	91023	3 mm rising	91088	6 mm rising	48	25	25	8	59	67
30	Vertical	91033	3 mm falling	91089	6 mm falling	48	25	25	8	59	67
40	Horizontal	91054	4 mm rising	91069	8 mm rising	48	25	28	10	59	67
40	Horizontal	91064	4 mm falling	91066	8 mm falling	48	25	28	10	59	67
40	Vertical	91044	4 mm rising	91067	8 mm rising	48	25	28	10	59	67
40	Vertical	91074	4 mm falling	91068	8 mm falling	48	25	28	10	59	67
50/60	Horizontal	91005	4 mm rising	91076	8 mm rising	48	25	38	12	59	67
50/60	Horizontal	91015	4 mm falling	91077	8 mm falling	48	25	38	12	59	67
50/60	Vertical	91025	4 mm rising	91078	8 mm rising	48	25	38	12	59	67
50/60	Vertical	91035	4 mm falling	91079	8 mm falling	48	25	38	12	59	67
80	Horizontal	91008	5 mm rising	91082	10 mm rising	48	25	38	14	59	67
80	Horizontal	91018	5 mm falling	91083	10 mm falling	48	25	38	14	59	67
80	Vertical	91028	5 mm rising	91084	10 mm rising	48	25	38	14	59	67
80	Vertical	91038	5 mm falling	91085	10 mm falling	48	25	38	14	59	67



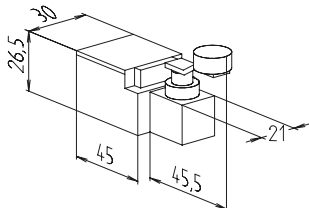
EV units enable simple format adjustment of a packaging machine

# quad® EV – Position determination

## Mechanical limit switch

- Limit switch with angle lever
- Compact design

**Material:** Thermoplastic, fully insulated



Max. voltage	250 V AC
Max. switching current	6 A
Max. starting current	16 A
Operating frequency	Max. 6000/h
Mechanical lifetime	1 x 10 <sup>7</sup> switching cycles
Axis lever adjustment	locking by 360°
Protection class	IP 65
Ambient temperature	-30°C to +80°C

Code No.	Type	Switching function
91905	30-80	NC/NO

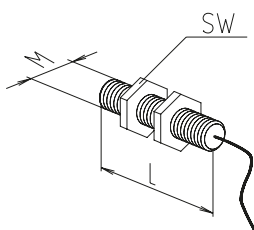
## Inductive limit switch

- Maintenance-free

**Material:** Housing - brass, chrome-plated



Type	30/40	50/80
Voltage	10 - 30 V DC	
Max. switching current	150 mA	200 mA
Operating distance	2 mm for steel	4 mm for steel
Protection class	IP 67	
Ambient temperature	-25°C to +70°C	
Cable lengths	2m	



Code No.	Type	Switching function	L	M	Wrench size (SW)
92826	30/40	Changeover	40	8x1	13
92825	50/80	Changeover	50	12x1	17

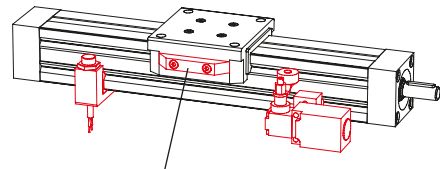
[mm]





**quad® EV - Position determination**

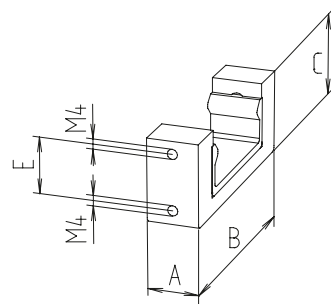
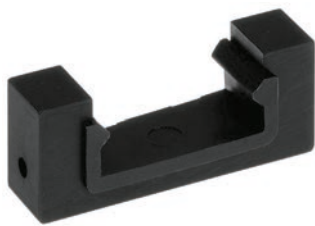
**Holder for limit switch mechanical and inductive**



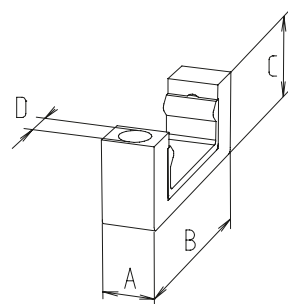
Limit switch cam only on EV30 and 50 with closed carriage

- Can be moved in the V-slots of the guide profile and fixed using a set screw
- Using a limit switch reduces the stroke by 25 mm (open elements) or 50 mm (closed elements)
- The limit switch holder cannot be used in conjunction with closed carriages. This version is available on request.

**Material:** AlMgSi, clear anodised



for limit switch



for limit switch

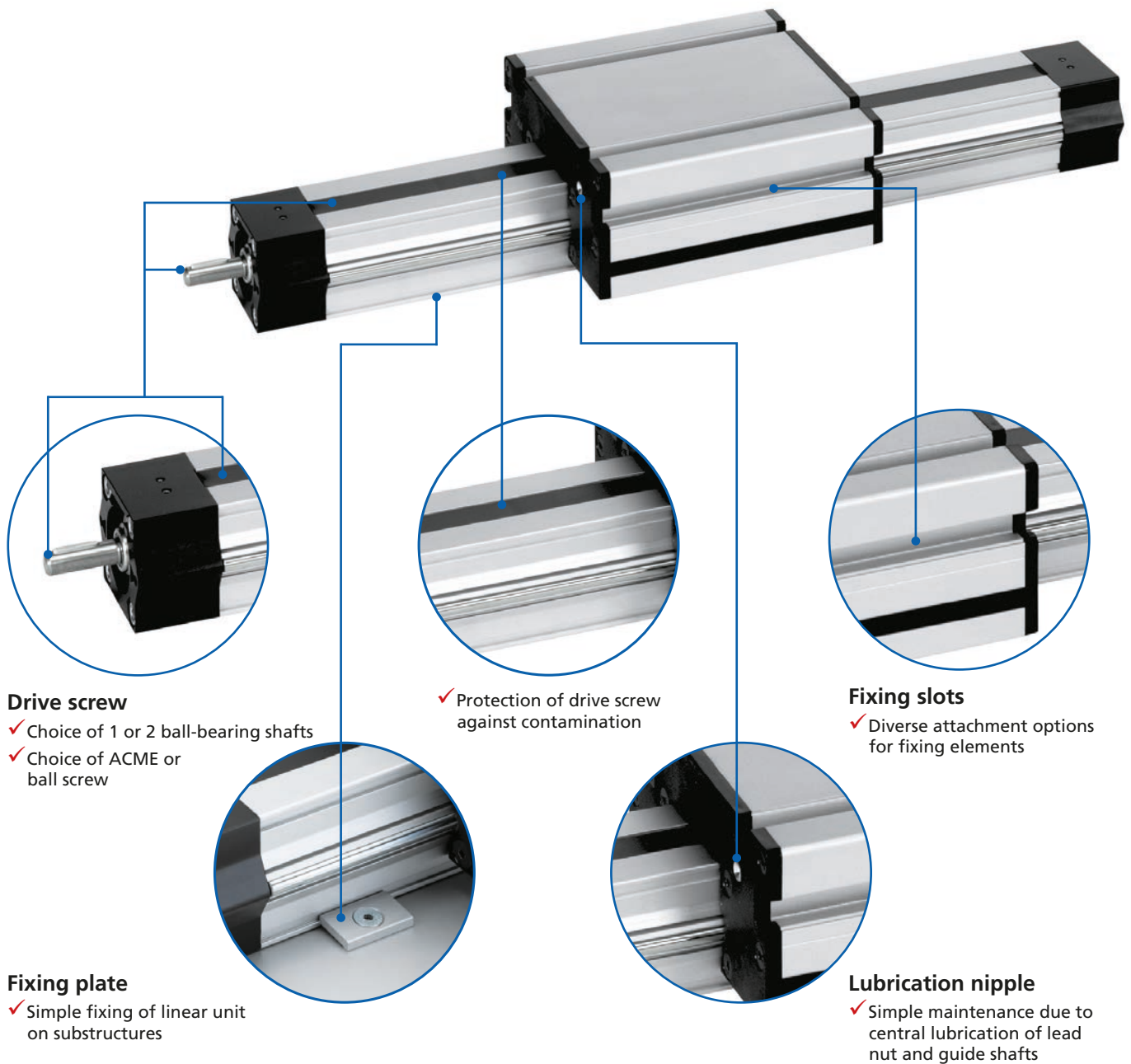
\* with flange plate  
\*\* limit switch cam included in delivery

[mm]

Code No.	Type	A	B	C	D	E
<b>Holder for mechanical limit switch</b>						
92703	30*	16	56	20	–	22
92704	40*	16	76	26.5	–	22
92705	50	20	85	33	–	22
92736	60	26	105	40	M12 x 1	22
92708	80	26	126	53	M12 x 1	22
92713	30	Holder with limit switch				
92793	30	Holder with limit switch, closed carriage**				
92714	40	Holder with limit switch				
92715	50	Holder with limit switch				
92795	50	Holder with limit switch, closed carriage**				
92746	60	Holder with limit switch				
92718	80	Holder with limit switch				
<b>Holder for inductive limit switch</b>						
92903	30	16	56	20	M8 x 1	–
92904	40	16	68	26.5	M8 x 1	–
92905	50	20	85	33	M12 x 1	–
92736	60	26	105	40	M12 x 1	22
92908	80	26	126	53	M12 x 1	22
92913	30	Holder with limit switch NC contact				
92923	30	Holder with limit switch NO contact				
92924	40	Holder with limit switch NC contact				
92934	40	Holder with limit switch NO contact				
92915	50	Holder with limit switch NC contact				
92925	50	Holder with limit switch NO contact				
92956	60	Holder with limit switch NC contact				
92966	60	Holder with limit switch NO contact				
92918	80	Holder with limit switch NC contact				
92928	80	Holder with limit switch NO contact				

# Profile guide/actuator - PL/PLS II

Motor-driven or manual adjustment of medium to heavy loads – easy for the PLS profile linear unit



## Drive screw

- ✓ Choice of 1 or 2 ball-bearing shafts
- ✓ Choice of ACME or ball screw

- ✓ Protection of drive screw against contamination

## Fixing slots

- ✓ Diverse attachment options for fixing elements

## Fixing plate

- ✓ Simple fixing of linear unit on substructures

## Lubrication nipple

- ✓ Simple maintenance due to central lubrication of lead nut and guide shafts

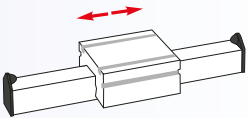
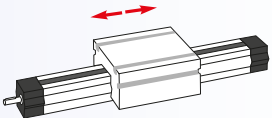
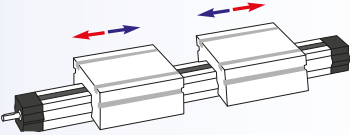
## Features:

- Choice of ACME screw or ball screw drive
- Cover strip protects screw against contamination
- Adjustable roller guide
- External lubrication

## Options:

- Longer stroke lengths
- Second free-running carriage
- Extended carriage

**PL/PLS II - Table of contents**

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## General information/operating conditions

Design	Profile linear unit with extruded carriage/guide profile
Guide	Adjustable roller guide
Installation position	Any position
Lead accuracy	± 0.1 mm/300 mm travel
Self-locking	Yes, for threaded screw, no, for ball screw drive
Duty cycle	ACME: S3 30% Basic 1h / Ball screw: S3 100%
Ambient temperature	0°C to +60°C

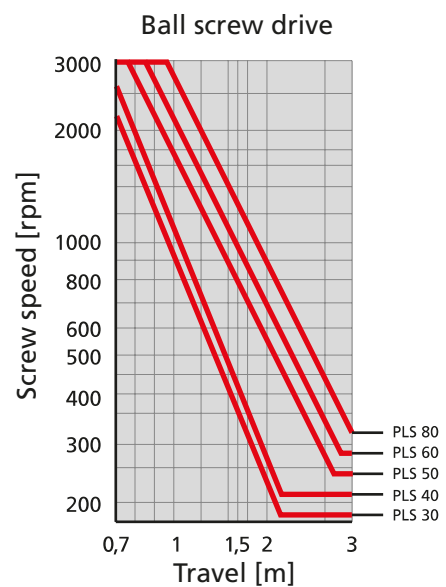
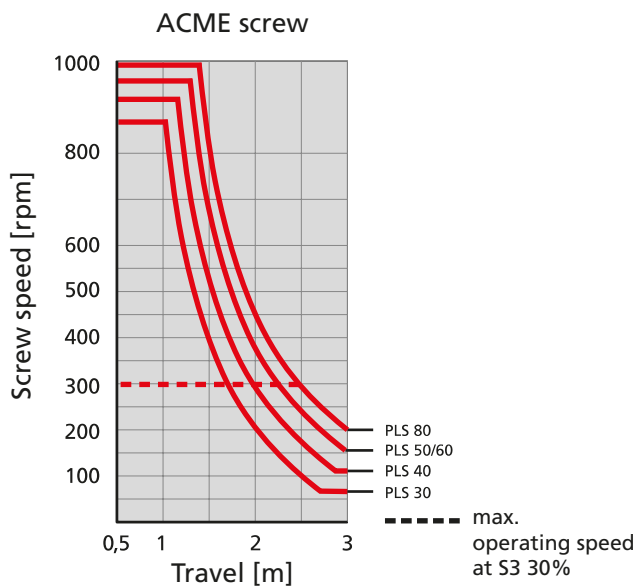
## Screw lead

ACME screw		[mm]
Type	Screw lead	
PLS 30	3	
PLS 40	4	
PLS 50	4	
PLS 60	4	
PLS 80	5	

Ball screw drive		[mm]
Type	Screw lead	
PLS 30	3	
PLS 40	4	
PLS 50	5	
PLS 60	5	
PLS 80	5	
PLS 80	10	

$$\text{Required screw speed } n \text{ [rpm]} = \frac{\text{speed [m/min]} \times 1000}{\text{screw lead [mm]}}$$

## Critical screw speed



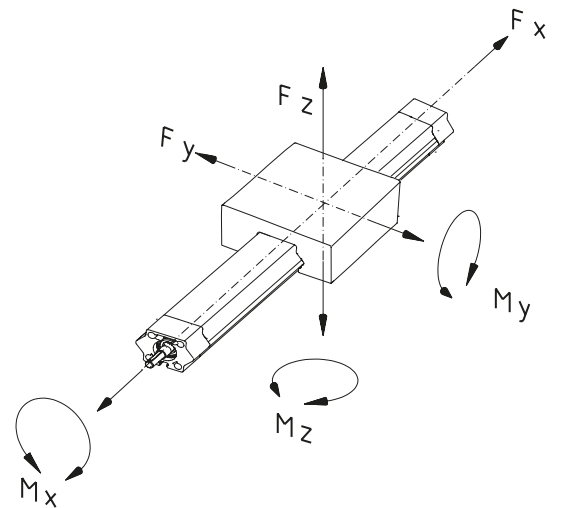
## No-load torque

Type	ACME screw	Ball screw drive	[Nm]
PLS 30	0.10	0.10	
PLS 40	0.20	0.15	
PLS 50	0.25	0.20	
PLS 60	0.30	0.25	
PLS 80	0.40	0.35	

**Load data\***

- F Force [N]
- M Moment [Nm]
- I Geometric moment of inertia [cm<sup>4</sup>]

\* With reference to carriage (static values, guide element resting on full surface)

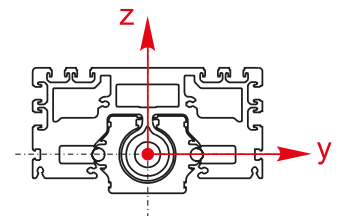


Type	F <sub>x</sub>	F <sub>y</sub>	F <sub>z</sub>	M <sub>x</sub>	M <sub>y</sub>	M <sub>z</sub>
PLS 30	340	790	790	14	20	22
PLS 40	1675	1020	1020	23	33	33
PLS 50	1900	1020	1020	28	49	49
PLS 60	2400	2550	2550	99	143	143
PLS 80	3050	2550	2550	124	168	169

**Geometric moment of inertia**

 [cm<sup>4</sup>]

Type	I <sub>y</sub>	I <sub>z</sub>
PLS 30	4.30	6.36
PLS 40	14.36	19.85
PLS 50	35.45	44.27
PLS 60	77.28	111.53
PLS 80	201.86	280.73



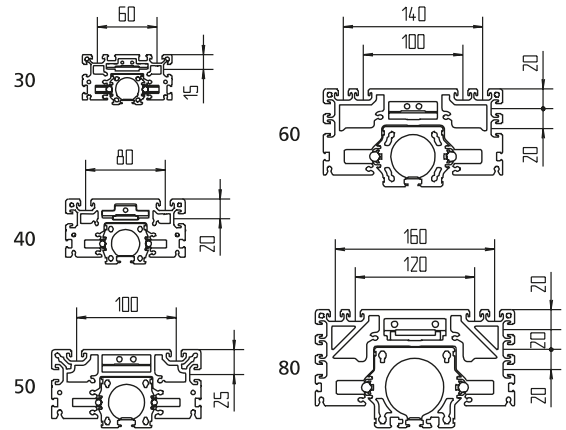
# PL - Versions

## Order information:

- Longer travel lengths on request
- Second or extended carriage available on request

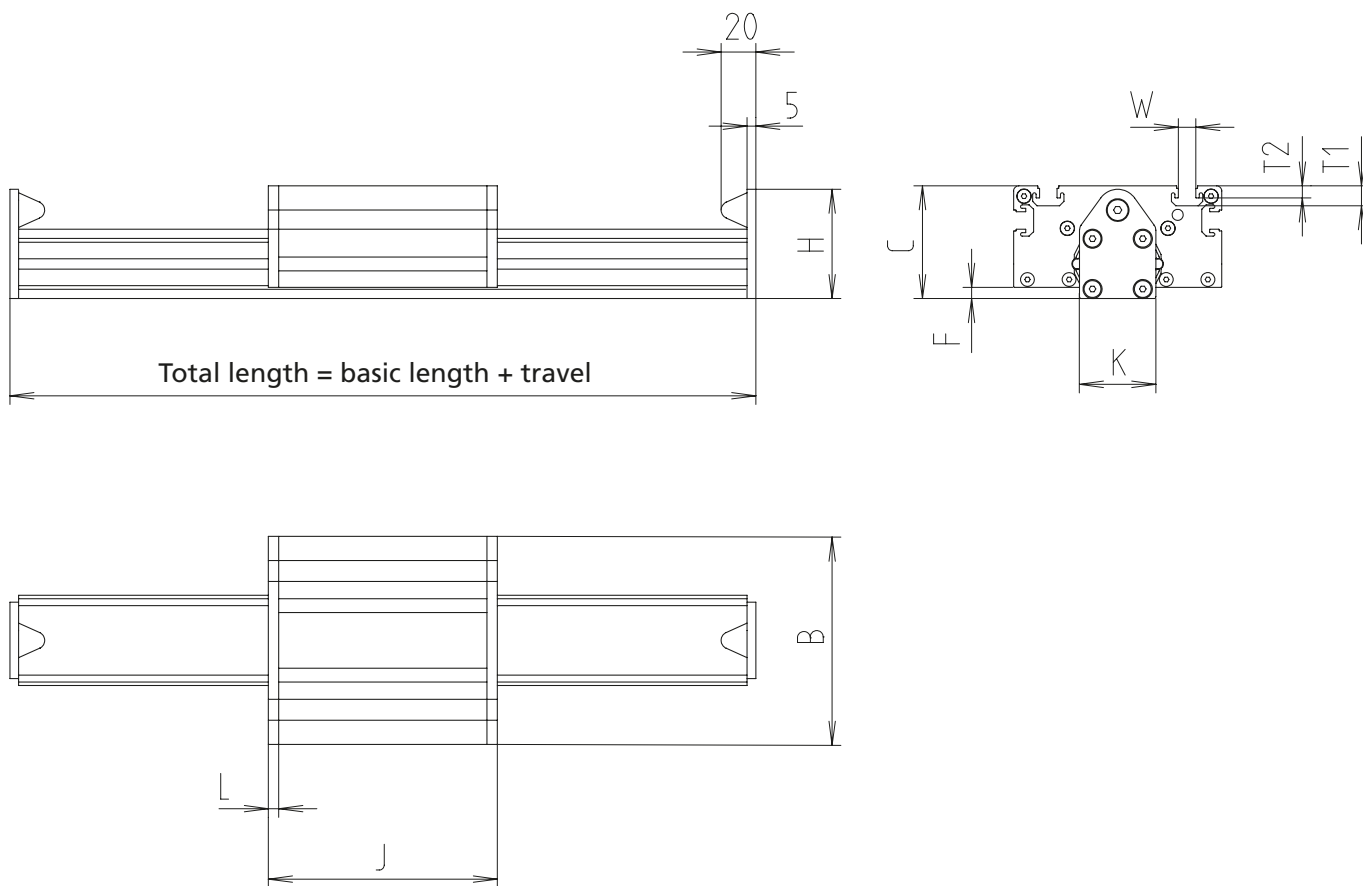
## Version

## ■ Guide



Code No.	Type	Basic length	B	C	F	H	J	K
MMA3030AA	PL-II 30	142	90	50	4.5	50	102	34
MMA4040AA	PL-II 40	172	120	65	6.5	63	132	44
MMA5050AA	PL-II 50	202	150	78	9.0	74	162	54
MMA6060AA	PL-II 60	232	180	98	11.5	84	192	72
MMA8080AA	PL-II 80	252	200	118	21.5	104	212	92

----- Total length = basic length + travel [mm]



[mm]

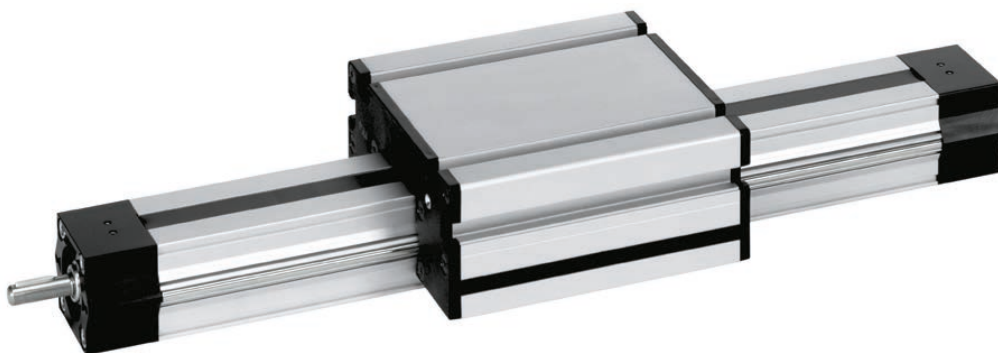
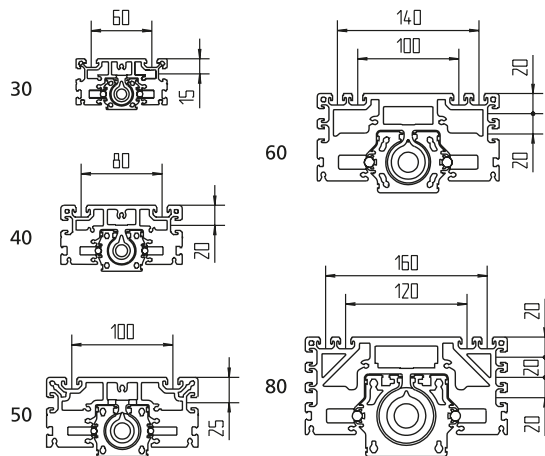
L	T1	T2	W	Max. travel	Mass [kg]	
					Basic length	per 100 mm travel
6	8.5	4.5	10.1	5860	1.0	0.16
6	11.5	7	10.1	5830	1.9	0.28
6	11.5	7	10.1	5800	3.5	0.41
6	11.5	7	10.1	5770	5.9	0.60
6	11.5	7	10.1	5750	7.9	0.90

# PLS - Versions

## Order information:

- Longer travel lengths on request
- Second free-running carriage available on request
- Extended carriage available on request

## Version ■ Right or lefthand thread



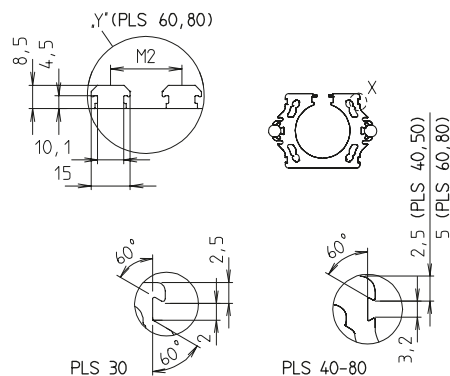
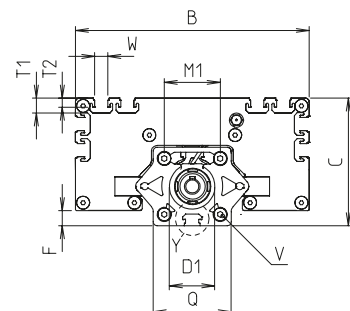
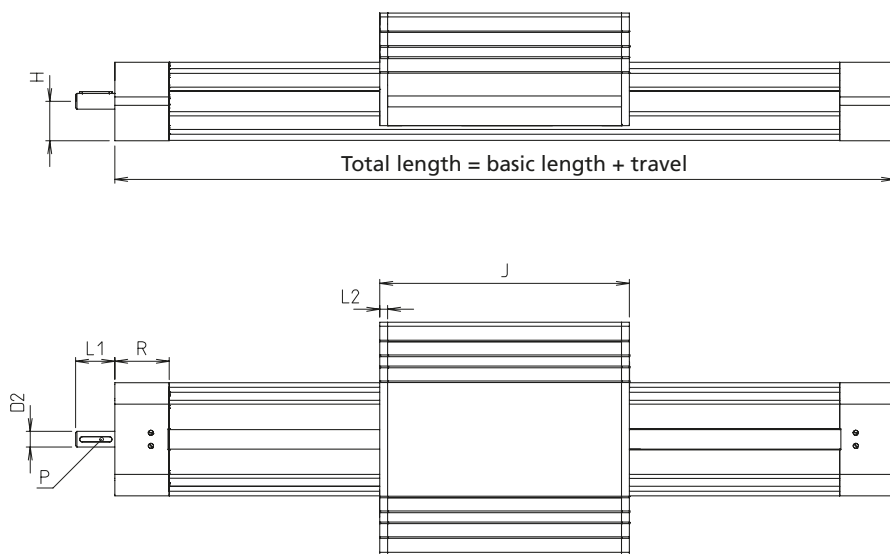
Code No.	Type	Spindle	Basic length	B	C	D1	D2	F	G	H	J
PLS with ACME screw											
FX_3030_A	PLS 30	12 x 3	162	90	50	22 <sup>J6</sup>	6	4.5	M5	15	102
FX_4040_A	PLS 40	16 x 4	204	120	65	30 <sup>J6</sup>	8	6.5	M5	20	132
FX_5050_A	PLS 50	20 x 4	238	150	78	35 <sup>J6</sup>	10	9	M5	25	162
FX_6060_A	PLS 60	20 x 4	276	180	98	35 <sup>J6</sup>	12	11.5	M5	30	192
FX_8080_A	PLS 80	24 x 5	308	200	118	50 <sup>H7</sup>	14	21.5	M5	40	212
PLS with ball screw drive											
FY A 3030_A	PLS 30	10 x 3	162	90	50	22 <sup>J6</sup>	6	4.5	M5	15	102
FY A 4040_A	PLS 40	12 x 4	204	120	65	30 <sup>J6</sup>	8	6.5	M5	20	132
FY A 5050_A	PLS 50	16 x 5	238	150	78	35 <sup>J6</sup>	10	9	M5	25	162
FY A 6060_A	PLS 60	20 x 5	276	180	98	35 <sup>J6</sup>	12	11.5	M5	30	192
FY A 8080_H	PLS 80	25 x 5	308	200	118	50 <sup>H7</sup>	14	21.5	M5	40	212
FY A 8080_A	PLS 80	25 x 10	308	200	118	50 <sup>H7</sup>	14	21.5	M5	40	212

----- Total length = basic length + travel [mm]

**Drive shafts:**  
T = 1 drive shaft  
U = 2 drive shafts

**Version:**  
A = righthand thread  
H = lefthand thread





[mm]

L1	L2	M1	M2	P	Q	R	T1	T2	V	W	Max. travel	Mass [kg]	
												Basic length	per 100 mm travel
25	6	21	-	2 x 2 x 20	30	30	8.5	4.5	M4	10.1	830	1.12	0.27
28	6	29	-	2 x 2 x 20	40	36	11.5	7	M5	10.1	2800	2.20	0.44
30	6	38	-	3 x 3 x 20	50	37	11.5	7	M6	10.1	3000	4.51	0.64
30	6	43	0	4 x 4 x 25	60	42	11.5	7	M6	10.1	2964	6.34	0.95
38	6	64	20	5 x 5 x 32	80	48	11.5	7	M6	10.1	2916	9.91	1.25
25	6	21	-	2 x 2 x 20	30	30	8.5	4.5	M4	10.1	830	1.09	0.26
28	6	29	-	2 x 2 x 20	40	36	11.5	7	M5	10.1	1840	2.12	0.40
30	6	38	-	3 x 3 x 20	50	37	11.5	7	M6	10.1	1702	4.50	0.60
30	6	43	0	4 x 4 x 25	60	42	11.5	7	M6	10.1	2664	6.18	0.90
38	6	64	20	5 x 5 x 32	80	48	11.5	7	M6	10.1	2664	9.59	1.19
38	6	64	20	5 x 5 x 32	80	48	11.5	7	M8	10.1	2664	9.59	1.19

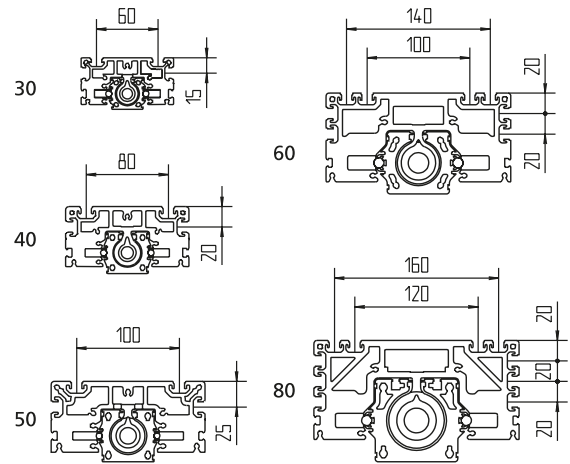
# PLS - Versions

## Order information:

- Please specify total travel when placing an order
- Longer travel lengths on request
- Extended carriage available on request

## Version

## ■ Right and lefthand thread

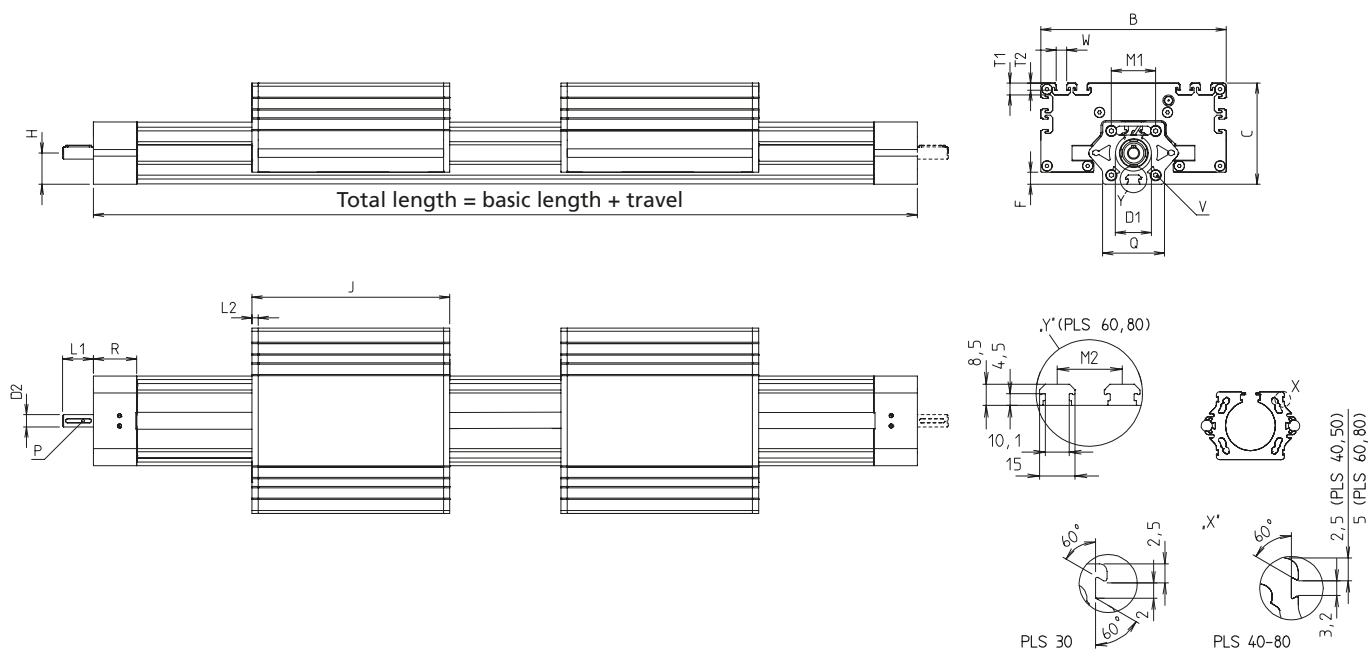


Code No.	Type	Spindle	Basic length	B	C	D1	D2	F	G	H	J
PLS with ACME screw											
FXC 3030 _ A	PLS 30	12 x 3	264	90	50	22J6	6	4.5	M5	15	102
FXC 4040 _ A	PLS 40	16 x 4	336	120	65	30J6	8	6.5	M5	20	132
FXC 5050 _ A	PLS 50	20 x 4	400	150	78	35J6	10	9	M5	25	162
FXC 6060 _ A	PLS 60	20 x 4	468	180	98	35J6	12	11.5	M5	30	192
FXC 8080 _ A	PLS 80	24 x 5	520	200	118	50H7	14	21.5	M5	40	212

--- Total length = basic length + travel [mm]

### Version:

- S = 1 drive shaft at lefthand thread end
- T = 1 drive shaft at righthand thread end
- U = 2 drive shafts



[mm]

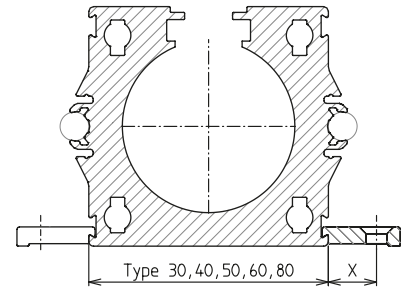
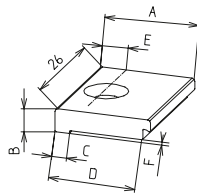
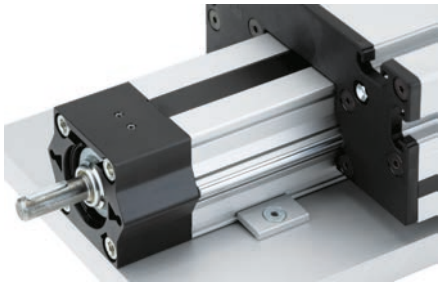
L1	L2	M1	M2	P	Q	R	T1	T2	V	W	Max. travel	Mass [kg]	
												Basic length	per 100 mm travel
25	6	21	–	2 x 2 x 20	30	30	8.5	4.5	M4	10.1	728	1.95	0.27
28	6	29	–	2 x 2 x 20	40	36	11.5	7	M5	10.1	2868	4.08	0.44
30	6	38	–	3 x 3 x 20	50	37	11.5	7	M6	10.1	2838	7.75	0.64
30	6	43	0	4 x 4 x 25	60	42	11.5	7	M6	10.1	2772	10.99	0.95
38	6	64	20	5 x 5 x 32	80	48	11.5	7	M6	10.1	2704	16.66	1.25

# PLS – Fixing/Drive

## Fixing plate

- Plate for fixing the linear unit to a substructure
- The fixing plates can also be retrofitted and moved axially

**Scope of delivery:** Pack of 10 without screws



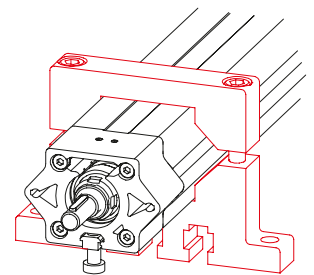
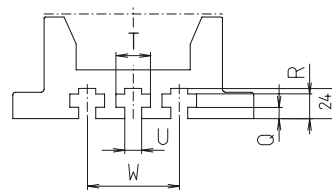
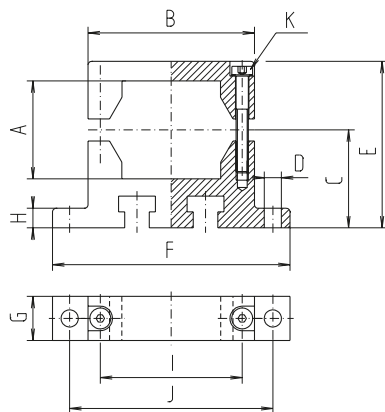
Code No.	Type	Version	A	B	C	D	E	F	X
95510	PL/PLS 30, 40, 50	Counterbore for M5 screw, DIN 79911	16.3	4	2.5	15	7	0.5	8
95511	PL/PLS 60, 80	Counterbore for M6 screw, DIN 7984	23.8	7.5	3.5	22.5	12.5	1	10

[mm]

## Fixing element

- Element for clamping the PLS to the guide profile or end element

**Material:** AlMgSi, clear, anodised  
Steel parts galvanised



Code No.	Type	A	B	C	D	E	F	G	H	I	J	K	Q	R	T	U	W
95503	PLS 30	30	56	30	7	51	84	16	6	47	70	M5 x 30	4.5	9	10	6	20
95504	PLS 40	40	68	40	7	68	97	18	8	58	83	M5 x 40	6.5	13	15	10	28
95505	PLS 50	50	85	50	7	85	125	20	10	69	105	M6 x 45	7	14	20	10	30
95506	PLS 60	60	126	69.7	11	115.4	170	24	16	106	148	M10 x 60	8	20	19	12	65
95508	PLS 80	80	126	80	11	136	170	24	16	113	148	M6 x 70	8	20	19	12	65

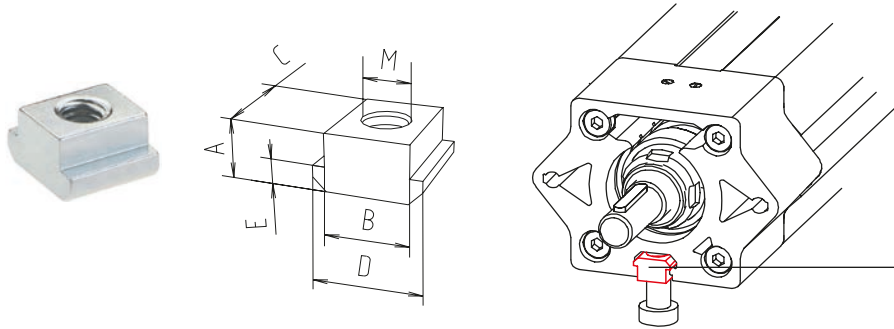
[mm]



### Slot stone -N-

- Slot stone for lateral insertion in the carriage
- For further slot stone versions, please refer to the catalogue BLOCAN® profile systems

**Material:** Steel, galvanised



\* **Note:** Please use flat slot stones 30 for fixing in the end elements (only available for sizes 60 and 80).

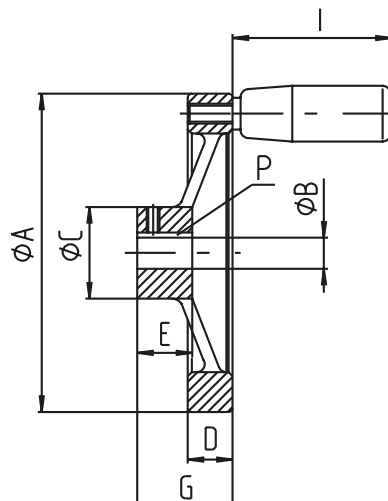
[mm]

Code No.	Type	Version	A	B	C	D	E	M	F [N]
4006201	PLS 30	M5	5	10	13	13	3	M5	4000
4006203	PLS 30	M6	5	10	13	13	3	M6	4000
4006202	PLS 30	M8	5	10	13	13	3	M8	4000
4026207	PLS 40-80*	M5	8	10	13	15	4	M5	4000
4026203	PLS 40-80*	M6	8	10	13	15	4	M6	9000
4026206	PLS 40-80*	M8	8	10	13	15	4	M8	9000

### Handwheel

- Rotating cylindrical grip
- Fully turned wheel rim
- Hub machined

**Material:** Die-cast aluminium black powder-coating



[mm]

Code No.	Type	A	B	C	D	E	G	P	I
90901	30	60	6	18	13	16	22	2 x 2	28
90903	40	80	8	23	11	17	35	2 x 2	42
90904	50	100	10	28	14	17	30	3 x 3	52
90905	60	140	12	36	16.5	19	36	4 x 4	66
90918	80	160	14	36	18	20	36	5 x 5	80
90928	80	200	14	43	20	24	44	5 x 5	80

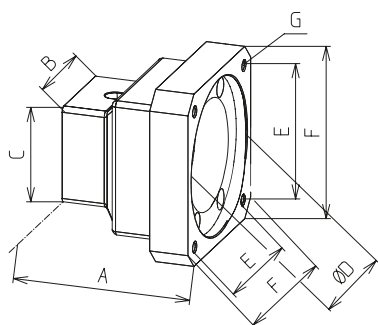
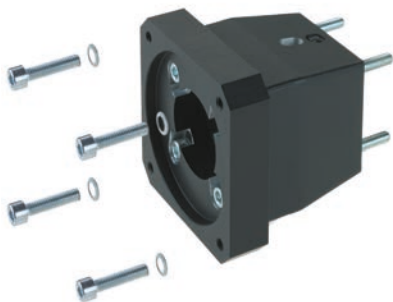
## Selection table Motor adaptor/coupling

Type	Servo motors without gear			Three-phase motor	
	RK-AC 118	RK-AC 240	RK-AC 470	90/120W	180/250 W
PLS 30	949207	–	–	94981	–
	911430 0611	–	–	910920 0612	–
PLS 40	949208	949227	–	949100	949101
	911430 0811	911430 0814	–	911430 0812	911430 0814
PLS 50	949209	949228	–	949605	94935
	911430 1011	911430 1014	–	911430 1012	911430 1014
PLS 60	949210	949229	949241	949107	949108
	911430 1112	911940 1214	911940 1219	911430 1212	911430 1214
PLS 80	949404	949230	949242	94958	94940
	911430 1114	911940 1414	911940 1419	911940 1214	911940 1414

**Note:**

For further details on motor versions, please refer to the chapter "Motors and controls"

### Motor adaptor



- Simple assembly on linear unit and motor
- Exact fit due to centering shoulders

**Material:** Aluminium, black anodised

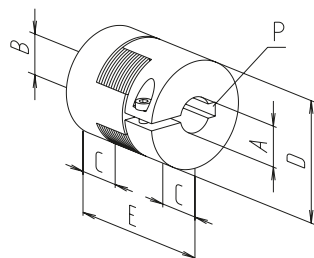
[mm]

Code No.	Type	A	B	C	D	E	F	G
949207	30	63	40	40	60	53	70	M5
94981	30	65	40	40	50	46	80	M5
949208	40	65	50	50	60	53	70	M5
949227	40	73	50	50	80	70,7	90	M6
949100	40	73	50	50	50	46	80	M5
949101	40	73	50	50	80	100	Ø120	Ø6,6
949209	50	66	52	52	60	53	70	M5
949228	50	73	52	52	80	70,7	90	M6
949605	50	73	52	52	50	65	80	M5
94935	50	73	52	52	80	100	Ø120	Ø6,6
949210	60	66	60	60	60	53	70	M5
949229	60	81	60	60	80	70,7	90	M6
949241	60	91	60	60	95	81,3	115	M8
949107	60	75	60	60	50	65	80	M5
949108	60	75	60	60	80	100	Ø120	Ø6,6
949404	80	74	80	80	60	53	70	M5
949230	80	86	80	80	80	70,7	90	M6
949242	80	96	80	80	95	81,3	115	M8
94958	80	86	80	80	50	46	80	M5
94940	80	86	80	80	80	100	Ø120	Ø6,6

**Coupling**

- Small size
- Shaft connection without backlash
- Maintenance-free
- Easy plug-in assembly

**Material:** Aluminium



[mm]

Code No.	ØA	ØB	C	ØD	E	P	Torque [Nm]	
							with feather key	without feather key
9109200695	6	9,5	10	20	30	2x2 / -	5	3
9109200612	6	12	10	22	30	2x2 / 3x3	5	3
9114300611	6	11	11	30	35	2x2 / 4x4	12	6
9114300895	8	9,5	11	30	35	2x2 / -	12	6
9114300811	8	11	11	30	35	2x2 / 4x4	12	6
9114300812	8	12	11	30	35	2x2 / 4x4	12	6
9114300814	8	14	11	30	35	2x2 / 5x5	12	6
9114309510	9,5	10	11	30	35	- / 3x3	12	6
9114309512	9,5	12	11	30	35	- / 4x4	12	6
9114301011	10	11	11	30	35	3x3 / 4x4	12	6
9114301012	10	12	11	30	35	3x3 / 4x4	12	6
9114301014	10	14	11	30	35	3x3 / 5x5	12	6
9114301112	11	12	11	30	35	4x4 / 4x4	12	6
9114301114	11	14	11	30	35	4x4 / 5x5	12	6
9114301212	12	12	11	30	35	4x4 / 4x4	12	6
9114301214	12	14	11	30	35	4x4 / 5x5	12	6
9119409514	9,5	14	25	40	65	- / 5x5	17	10
9119401214	12	14	25	40	65	4x4 / 5x5	17	10
9119401219	12	19	25	40	65	4x4 / 6x6	17	10
9119401414	14	14	25	40	65	5x5 / 5x5	17	10
9119401419	14	19	25	40	65	5x5 / 6x6	17	10

# PLS – Drive

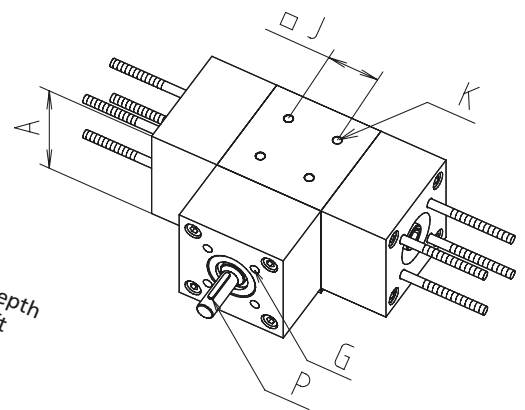
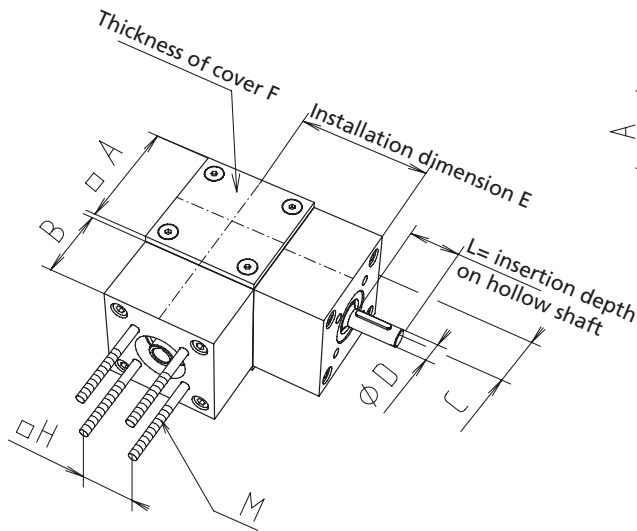
## Order information:

- The fitting dimensions of the angular drives and the end elements of the linear units may not be the same.
- Accessories for connection to the angular drives available on request.

## Angular drive

- Choice of helical or straight bevel gears
- Available with solid or hollow shaft
- Good fastening options due to thread in combination cube
- Drive and output shaft with roller bearing
- Long lifetime\* due to oil lubrication
- Max. speed\*\* 2500 rpm
- Operating temperature from -18°C to +80°C

**Material:** Housing AlMgSi, black anodised



[mm]



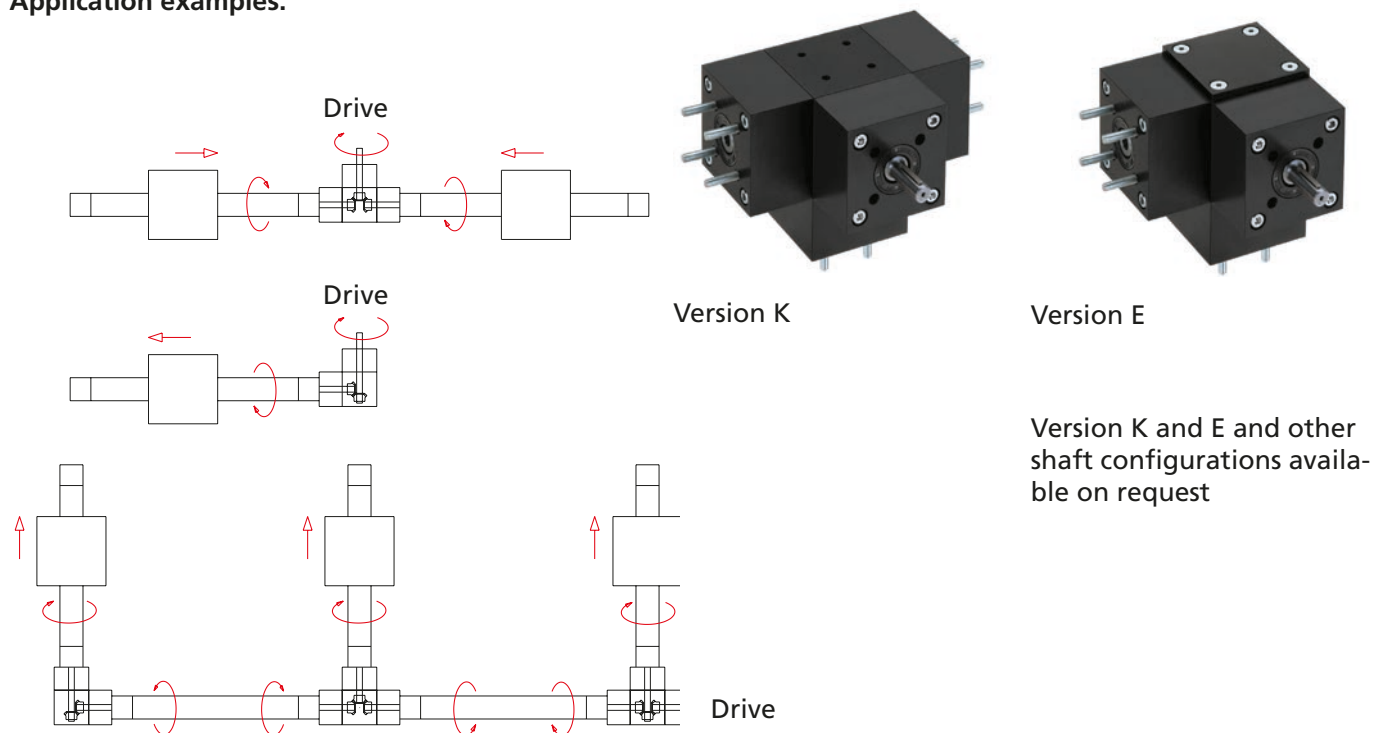
Dimensions \ PLS	30	40	50	60	80
A	50	64	74	84	108
B	36	40	40	50	67
C	25	32	37	42	54
D	8	10	12	14	16
e	61	72	77	92	121
F	4	4	4	5	6
G	M4-10 deep	M5-12 deep	M6-15 deep	M6-15 deep	M8 x 16 deep
H	21	29	38	43	64
J	20	30	30	40	50
K	M5-5.5 deep	M5-7.5 deep	M6-10 deep	M6-10 deep	M8-12 deep
L	25	28	30	30	38
M	M4 x 80 DIN 912	M5-85 DIN 912	M6 x 80 DIN 912	M6 x 110 DIN 912	M8 x 130 DIN 912
P	2 x 2 x 20	3 x 3 x 20	4 x 4 x 20	5 x 5 x 25	5 x 5 x 32
Max. starting torque	3.6 Nm	6.4 Nm	10 Nm	15.4 Nm	25.4 Nm
Max. input torque**	1 Nm	3 Nm	4.5 Nm	6.5 Nm	11 Nm

\* Service life ~10,000 h at 1,000 rpm

\*\* In the case of gearing up  
i=1:1.5 max. input speed 1600 rpm



Application examples:



Version K and E and other shaft configurations available on request

	Code No.	Version
Version L	9158 _ 2300 _	Solid shaft, long/hollow shaft, short input/output direction of rotation are identical
Version L	9158 _ 1300 _	Solid shaft, short/hollow shaft, short input/output direction of rotation are not identical
Version L	9158 _ 3300 _	Hollow shaft, short/hollow shaft, short input/output direction of rotation are not identical
Version L	9158 _ 3400 _	Hollow shaft, long/hollow shaft, short input/output direction of rotation are identical
Version T	9158 _ 3330 _	Hollow shaft, short/hollow shaft, short input/output direction of rotation are not identical
Version T	9158 _ 1340	Solid shaft, short/hollow shaft, short & long input/output direction of rotation are identical

- Size**  
 3 = 30  
 4 = 40  
 5 = 50  
 6 = 60  
 8 = 80

**Bevel gear set**

- A = straight toothed,  $i = 1:1.5$
- B = spiral toothed,  $i = 1:1$
- C = straight toothed,  $i = 1:1$
- D = straight toothed,  $i = 1:1.5$
- E = straight toothed,  $i = 1:1.5$

# PLS – Position determination

## Positioning indicator

- Permitted ambient temperature +80°C
- Figure height 6 mm
- Reading accuracy  $\pm 0.1$  mm

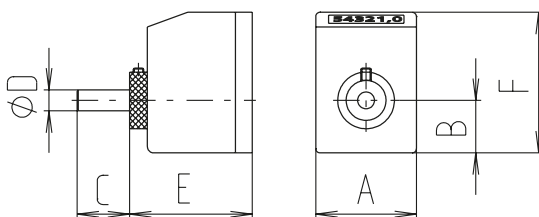
**Material:** Housing made of polyamide 6  
Orange RAL 2004  
Steel parts galvanised

**Scope of delivery:** Positioning indicator, clamping ring, shaft extension and fastenings

**Note:** "rising" and "falling" versions refer to the clockwise rotation of the drive shaft.



Installation position:  
horizontal



Installation position:  
vertical

[mm]

Type	Installation position	Code No.	Version	Code No.	Version*	A	B	C	D	E	F
30	Horizontal	91090	3 mm rising	910151	6 mm rising	48	25	25	6	59	67
30		91093	3 mm falling	910152	6 mm falling	48	25	25	6	59	67
30	Vertical	910110	3 mm rising	910153	6 mm rising	48	25	25	6	59	67
30		910111	3 mm falling	910154	6 mm falling	48	25	25	6	59	67
40	Horizontal	91094	4 mm rising	910155	8 mm rising	48	25	28	8	59	67
40		91095	4 mm falling	910156	8 mm falling	48	25	28	8	59	67
40	Vertical	910112	4 mm rising	910157	8 mm rising	48	25	28	8	59	67
40		910113	4 mm falling	910158	8 mm falling	48	25	28	8	59	67
50	Horizontal	91096	4 mm rising	910159	8 mm rising	48	25	30	10	59	67
50		91097	4 mm falling	910160	8 mm falling	48	25	30	10	59	67
50	Vertical	910114	4 mm rising	910161	8 mm rising	48	25	30	10	59	67
50		910115	4 mm falling	910162	8 mm falling	48	25	30	10	59	67
60	Horizontal	91098	4 mm rising	910163	8 mm rising	48	30	38	12	59	73
60		91099	4 mm falling	910164	8 mm falling	48	30	38	12	59	73
60	Vertical	910116	4 mm rising	910165	8 mm rising	48	30	38	12	59	73
60		910117	4 mm falling	910166	8 mm falling	48	30	38	12	59	73
80	Horizontal	91008	5 mm rising	91082	10 mm rising	48	25	38	14	59	81
80		91018	5 mm falling	91083	10 mm falling	48	25	38	14	59	81
80	Vertical	91028	5 mm rising	91084	10 mm rising	48	25	38	14	59	81
80		91038	5 mm falling	91085	10 mm falling	48	25	38	14	59	81

\* Versions with double pitch, e.g. for mounting on righthand/left-hand screws

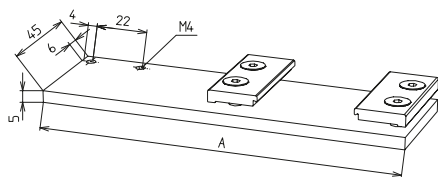
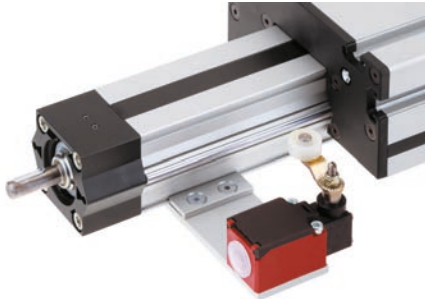


## PLS - Position determination

### Holder for mechanical limit switch

- Clamping with fixing plates to guide profile
- Simple axial displacement and adjustment of holder is possible

**Material:** AlMgSi, clear, anodised  
Galvanised fastenings

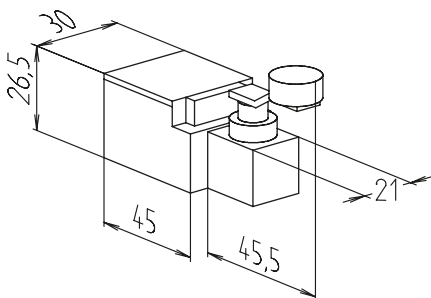


Code No.	Type	Version	A [mm]
92784	PLS (PLZ) 30	Holder with fastenings without limit switch	110
92785	PLS (PLZ) 40		130
92786	PLS (PLZ) 50		150
92787	PLS (PLZ) 60		177
92788	PLS (PLZ) 80		197

### Mechanical limit switch

- Limit switch with angle lever
- Compact design

**Material:** Thermoplastic, fully insulated



Max. voltage	250 V AC
Max. switching current	6 A
Max. starting current	16 A
Operating cycles	Max. 6,000/h
Mechanical lifetime	1 x 10 <sup>7</sup> switching cycles
Axis lever adjustment	Engages at I 360°
Protection class	IP 65
Ambient temperature	-30°C to +80°C

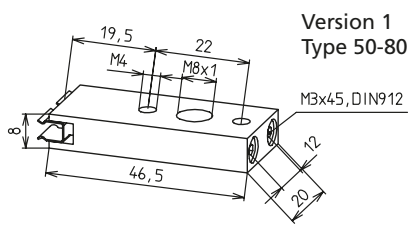
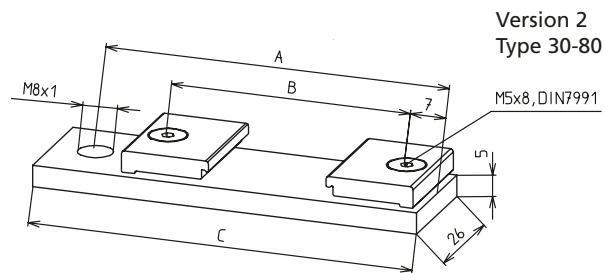
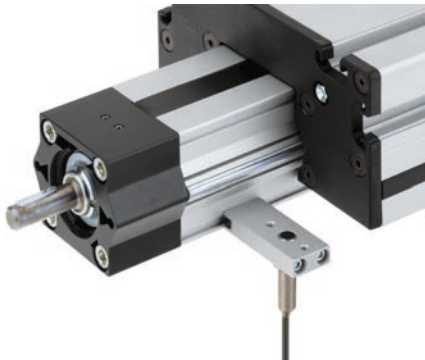
Code No.	Type	Switching function
91905	PLS 30-80	NC/NO

# PLS – Position determination

## Holder for inductive limit switch

- Clamping on guide profile
- Simple axial displacement and adjustment of holder is possible
- Holder with fastenings without limit switch

**Material:** AlMgSi, clear, anodised  
Galvanised fastenings



[mm]

Code No.	Type	Version	A	B	C
92990	PLS 30	2	64.5	46	74
92991	PLS 40	2	80	56	90
92992	PLS 50	2	96	66	106
92993	PLS 60	2	80	80	123.5
92994	PLS 80	2	133.5	100	143.5
92986	PLS 50-80	1	–	–	–

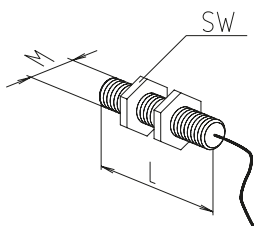
## Inductive limit switch

- Function indicator (LED)
- Maintenance-free

**Material:** Housing: stainless steel



Type	30-80
Voltage	10 - 30 V DC
Max. switching current	150 mA
Operating distance	2 mm for steel
Protection class	IP 67
Ambient temperature	-25°C to +70°C
Cable lengths	2m



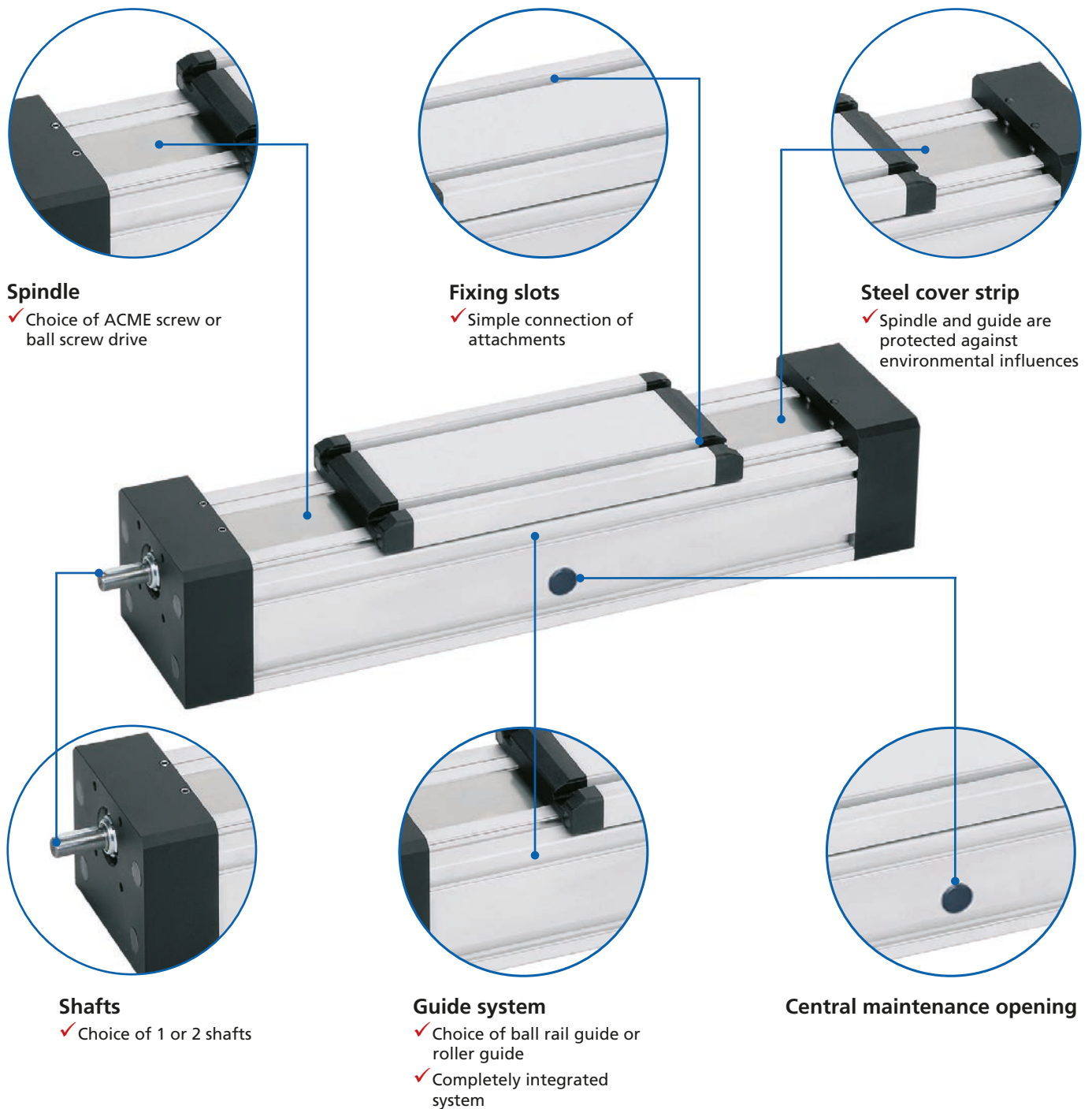
[mm]

Code No.	Type	Switching function	L	M	Wrench size (SW)
92826	PLS 30-80	Changeover	40	8x1	13



# Profile guide/actuator – RK DuoLine S

The all-rounder  
with encapsulated drive/guiding concept



## Spindle

- ✓ Choice of ACME screw or ball screw drive

## Fixing slots

- ✓ Simple connection of attachments

## Steel cover strip

- ✓ Spindle and guide are protected against environmental influences

## Shafts

- ✓ Choice of 1 or 2 shafts

## Guide system

- ✓ Choice of ball rail guide or roller guide
- ✓ Completely integrated system

## Central maintenance opening

## Features:

- Choice of internal ball rail guide or roller guide
- Carriage and guide profile made of extruded aluminium
- Internal components covered
- Central maintenance opening
- Compact and flat design
- BLOCAN® slot geometries for fixing accessories and attachments
- for roller guide adjustment and lubrication

## Options:

- Second free-running carriage
- Extended carriage
- Alternative screw leads

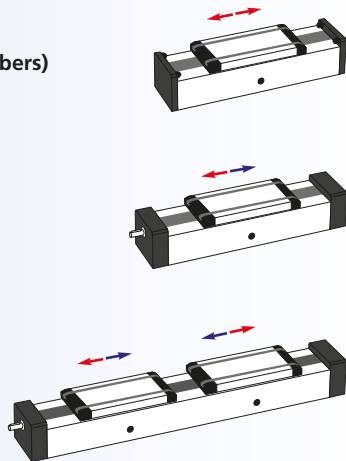
## RK DuoLine S linear unit - Table of contents

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(Dimensions, order numbers)



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#### Drive

- Motor adaptor ..... 266
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- Angular drive ..... 267

#### Position determination

- Limit switches/holder ..... 268

# RK DuoLine S – Technical data

## General information/operating conditions

Design	Encapsulated drive and guiding concept, ACME screw drive
Guide	Choice of internal recirculating ball rail or rollers
Installation position	Any position
Lead accuracy	± 0.15 mm/300 mm travel
Self-locking	Yes
Ambient temperature	0°C to +60°C

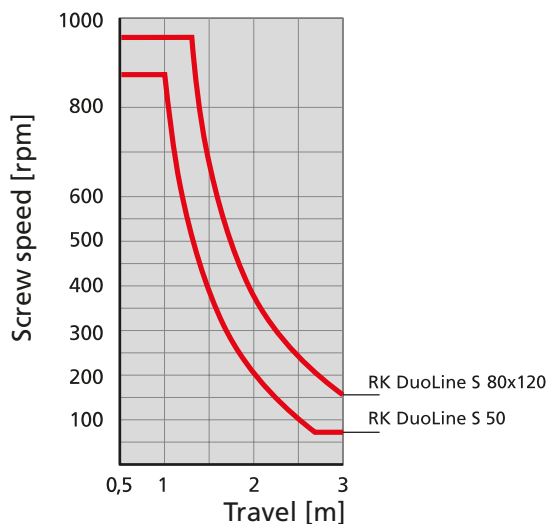
## Screw lead

[mm]

Type	Screw lead
50 x 50	3
120 x 80, 120 x 80 II	4

$$\text{Required screw speed } n \text{ [rpm]} = \frac{\text{speed [m/min]} \times 1000}{\text{screw lead [mm]}}$$

## Critical screw speed



## No-load torque

[Nm]

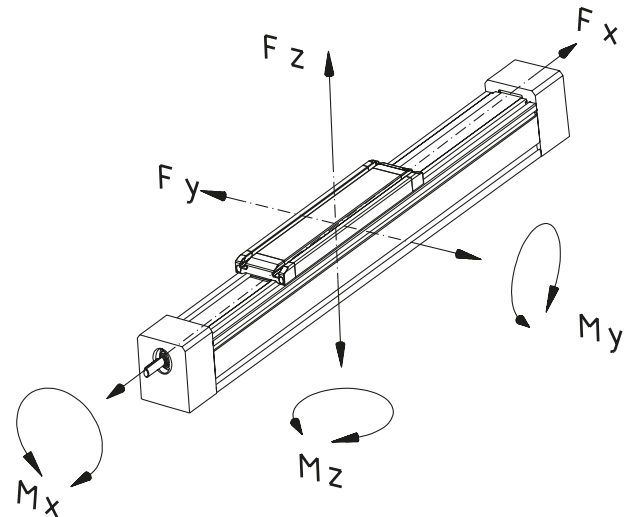
Type	Roller guide	Ball rail guide
RK DuoLine S 50 x 50	–	0.25
RK DuoLine S 120 x 80	0.40	0.60
RK DuoLine S 120 x 80 II	–	0.70



**Load data\***

- F Force [N]
- M Moment [Nm]
- I Geometric moment of inertia [cm<sup>4</sup>]

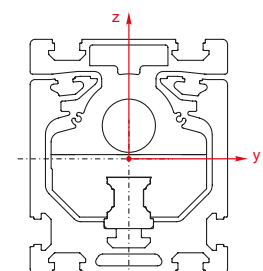
\* With reference to carriage (static values, guide element resting on full surface)



Type	F <sub>x</sub>	F <sub>y</sub>	F <sub>z</sub>	M <sub>x</sub>	M <sub>y</sub>	M <sub>z</sub>
RK DuoLine S 50 x 50, ball rail guide	1400	930	1100	45	65	56
RK DuoLine S 120 x 80 roller guide	3400	2550	2550	118	150	150
RK DuoLine S 120 x 80, ball rail guide	3400	5000	6000	210	430	370
RK DuoLine S 120 x 80 II, ball rail guide	3400	5000	6000	380	430	370

**Geometric moment of inertia**

Type	I <sub>y</sub>	I <sub>z</sub>
RK DuoLine S 50 x 50, ball rail guide	17.39	23.04
RK DuoLine S 120 x 80 roller guide	189.96	595.83
RK DuoLine S 120 x 80, ball rail guide	189.96	595.83
RK DuoLine S 120 x 80 II, ball rail guide	185.94	554.68

 [cm<sup>4</sup>]


# RK DuoLine R – Versions

## Order information:

- Longer travel lengths on request
- Second or extended carriage available on request

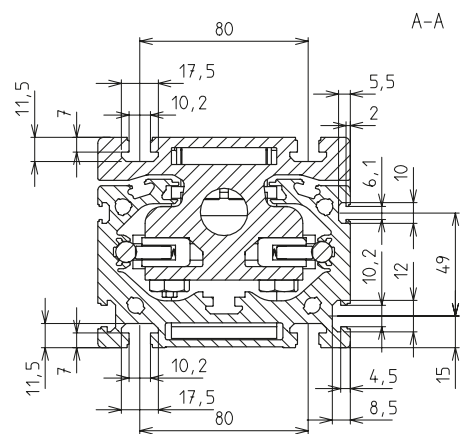
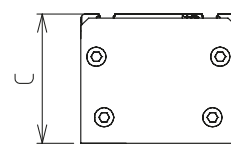
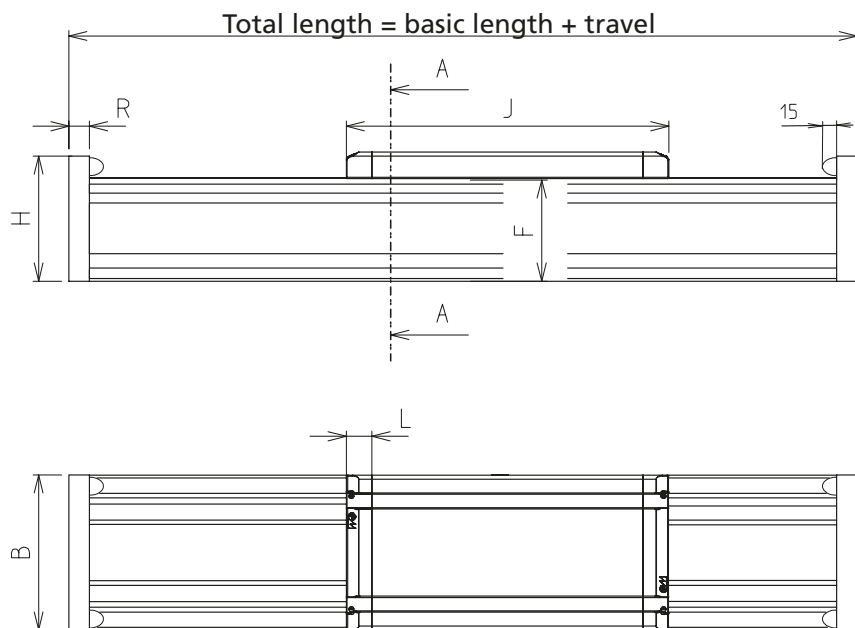
Version ■ Guide



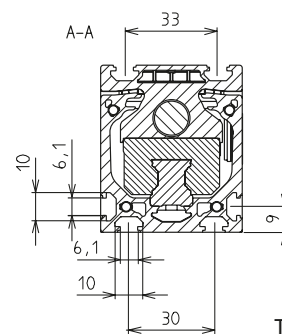
Code No.	Type	Basic length	B	C	F	H
MPD5050IA	RK DuoLine 50 x 50	222	50	59	49.3	57.5
MTA1280IA	RK DuoLine 120 x 80 II	312	120	100	79.5	90
MPA1280_A	RK DuoLine 120 x 80	312	120	100	79.5	97

----- Total length = basic length + travel [mm]

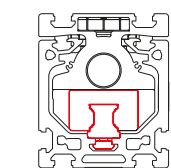
**Guide:**  
H = roller guide  
I = ball rail guide



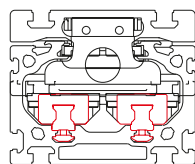
Type 120 x 80



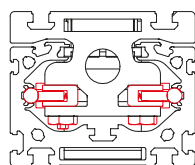
Type 50 x 50



Ball rail guide  
Type 50, 120 x 80



Two ball rail guide  
Type 120 x 80 II



Roller guide  
Type 120 x 80

[mm]

J	L	R	Max. travel	Mass [kg]	
				Basic length	per 100 mm travel
140	7	34	3784	1.43	0.36
250	20	16	3750	7.14	1.01
250	20	16	5750/3750	6.10/7.37	1.02/1.1

# RK DuoLine S – Versions

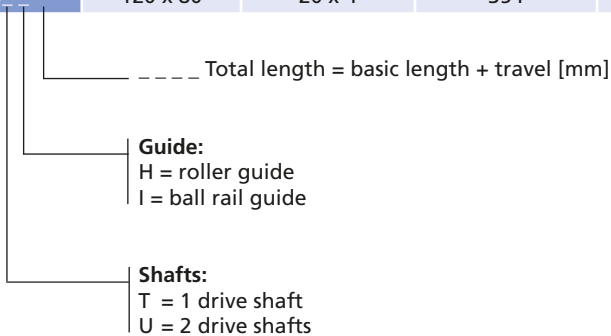
## Order information:

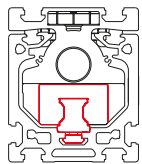
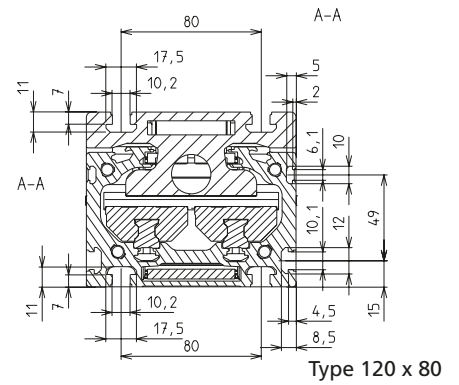
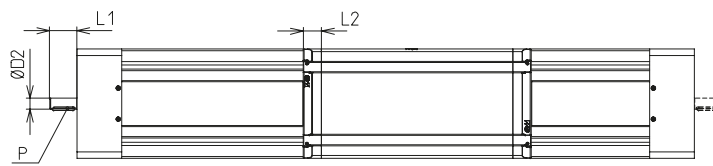
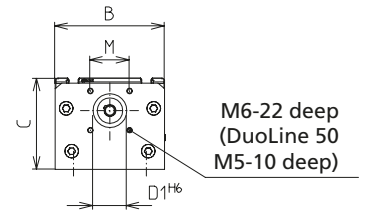
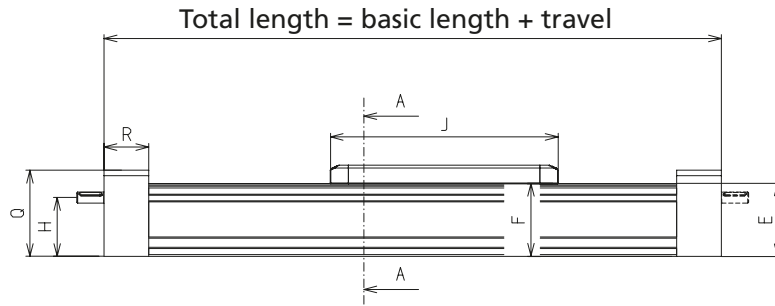
- Longer travel lengths on request
- Second free-running carriage available on request

Version ■ Righthand thread

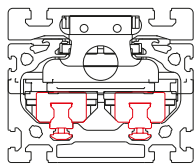


Code No.	Type	Spindle	Basic length	B	C	D1	Ø D2	E	F
TCA5050_I	50 x 50	12 x 3	208	50	59	30	8	49.2	48.5
TRA1280_I	120 x 80 II	20 x 4	354	120	100	42	12	80	79.5
TCA1280	120 x 80	20 x 4	354	120	100	42	12	80	79.5

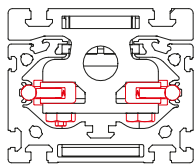




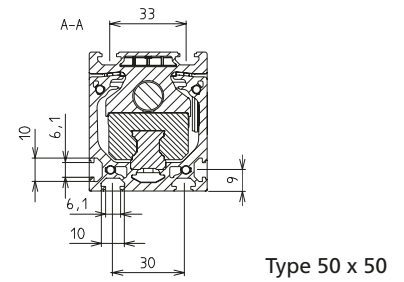
Ball rail guide  
Type 50, 120 x 80



Two ball rail guide  
Type 120 x 80 II



Roller guide  
Type 120 x 80 II



[mm]

H	J	L1	L2	M	P	Q	R	Max. travel	Mass [kg]	
									Basic length	per 100 mm travel
40.3	140	28.5	8	□ 29	2 x 2 x 20	58	34	2268	2.87	0.41
64.5	250	30	20	□ 43	4 x 4 x 25	95.5	52	2924	11.00	1.24
64.5	250	30	20	□ 43	4 x 4 x 25	95.5	52	2924	9.64/10.8	1.24

# RK DuoLine S – Versions

## Order information:

- Longer travel lengths on request
- Extended carriages

Version ■ *Right and lefthand thread*



Code No.	Type	Spindle	Basic length	B	C	D1	Ø D2	E	F
TCC5050_I	50 x 50	12 x 3	348	50	59	30	8	49.2	48.5
TRC1280_I	120 x 80 II	20 x 4	604	120	100	42	12	80	79.5
TCC1280	120 x 80	20 x 4	604	120	100	42	12	80	79.5

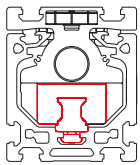
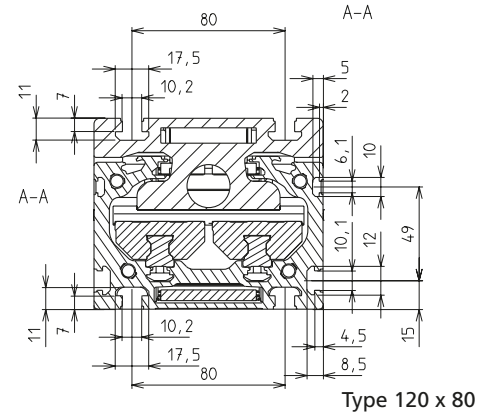
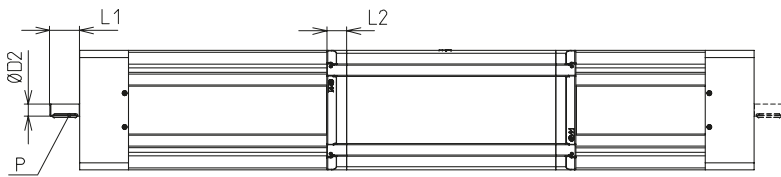
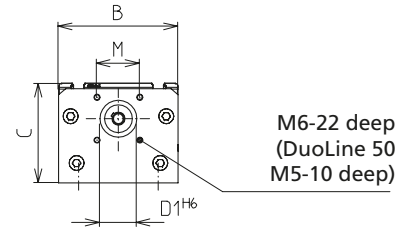
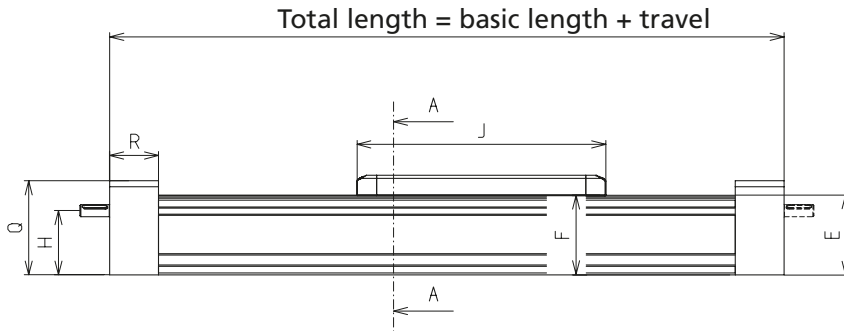
----- Total length = basic length + travel [mm]

### Guide:

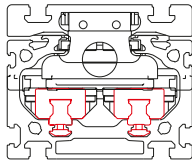
H = roller guide  
I = ball rail guide

### Shafts:

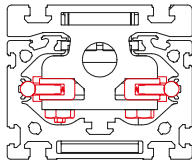
S = 1 drive shaft at lefthand thread end  
T = 1 drive shaft at righthand thread end  
U = 2 drive shafts



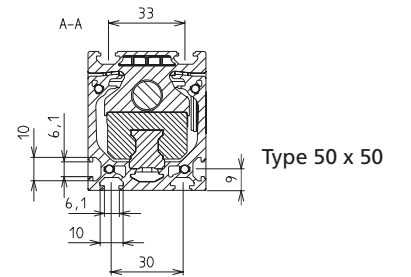
Ball rail guide  
Type 50, 120 x 80



Two ball rail guide  
Type 120 x 80 II



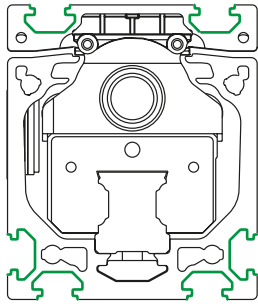
Roller guide  
Type 120 x 80 II



[mm]

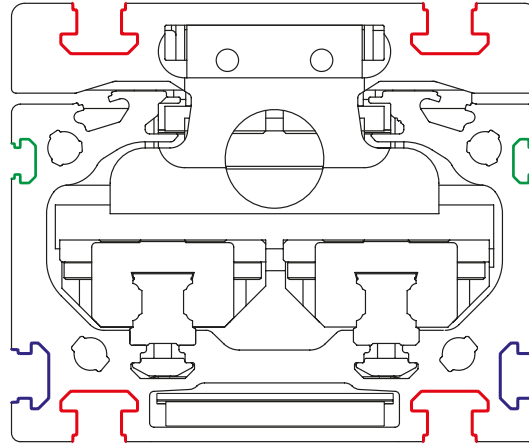
H	J	L1	L2	M	P	Q	R	Max. travel	Mass [kg]	
									Basic length	per 100 mm travel
40.3	140	28.5	8	□ 29	2 x 2 x 20	58	34	2122	1.73	0.41
64.5	250	30	20	□ 43	4 x 4 x 25	95.5	52	2924	13.06	1.24
64.5	250	30	20	□ 43	4 x 4 x 25	95.5	52	2924	12.28/12.66	1.21/1.30

# RK DuoLine S – Fixing



Type 50 x 50

— 20 slot geometry



Type 120 x 80

— 40 slot geometry

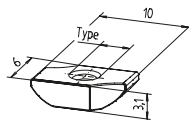
— 30 slot geometry

## Slot stones

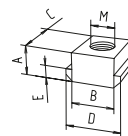
- Profile slots in the carriage and the guide profile facilitate fixation
- Slot stones can be inserted and positioned at the guide profile and carriage

**Material:** Galvanised steel

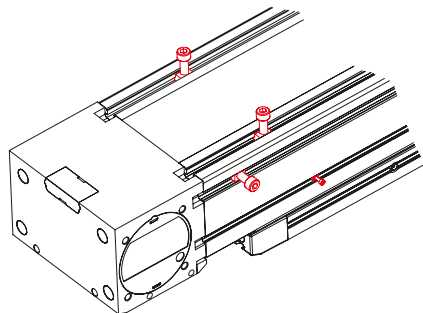
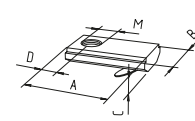
**Slot stone -B-**  
can be swivelled into the slot



**Slot stone -N-**  
can be slid into the slot



**Slot stone -K-**  
can be swivelled into the slot



View of DuoLine from below

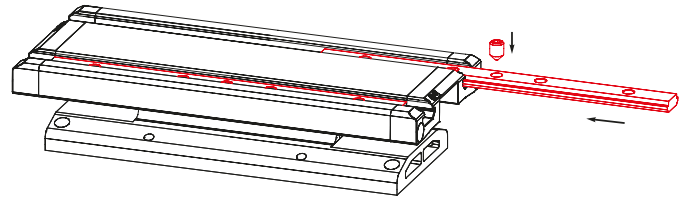
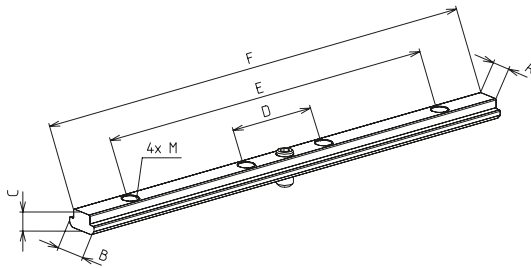
Code No.	Type	Slot geometry	A	B	C	D	E	M	F [N]
<b>Slot stone -B-</b>									
E00017CEH	M3	20							Pack of 10
E00058CEH	M4	20							Pack of 10
<b>Slot stone -N-</b>									
4006202	M8	30	5	10	13	13	3	M8	4000
4026206	M8	40	8	10	13	15	4	M8	9000
<b>Slot stone -K-</b>									
4006211	M5	30 or higher	21	12	4	7	-	M5	5000
4006212	M6	30 or higher	21	12	4	7	-	M6	5000
4016212	M6	40	21	14	4	7	-	M6	5000



## Threaded bar

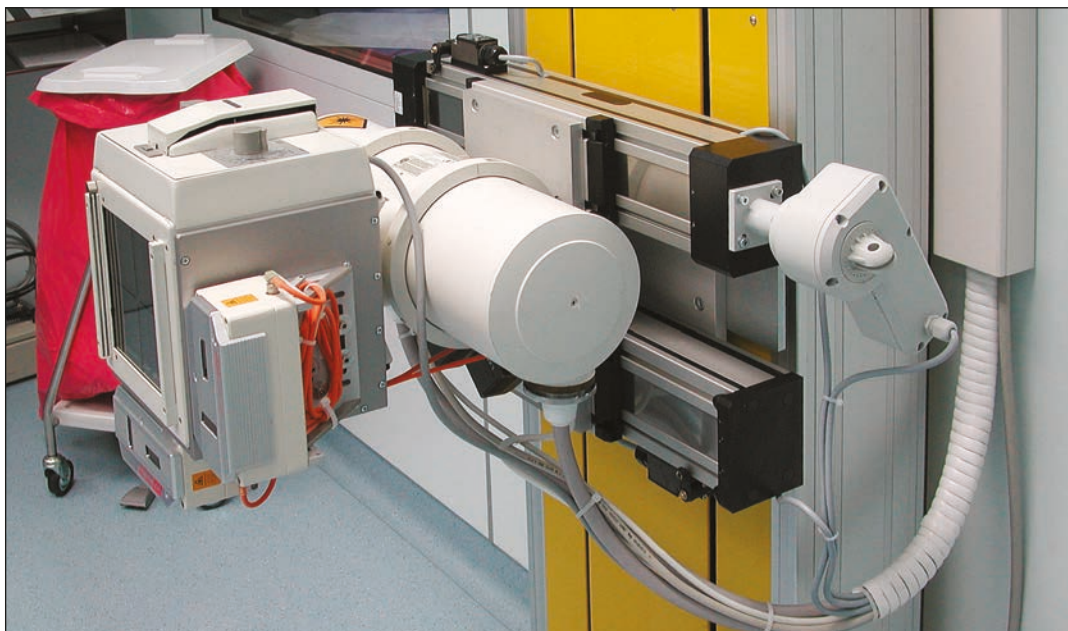
- Threaded strip for lateral insertion in the profile slot
- Fixing in carriage with set screw

**Material:** Galvanised steel



Code No.	Version	Slot geometry	A	B	C	D	E	F	M
4096500	RK DuoLine 50	20	5,5	10	3	30	80	100	M4
4816500	RK DuoLine 120 x 80 (II)	40	10	15	8	40	160	210	M8

[mm]



X-ray head adjustment using RK DuoLine S

# RK DuoLine S – Drive

## Selection table Motor adaptor/coupling

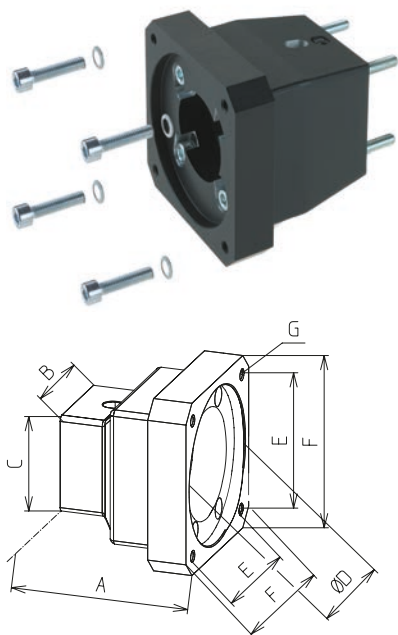
Type	Servo motors without gear			Three-phase motor	
	RK-AC 118	RK-AC 240	RK-AC 470	90/120W	180/250 W
RK DuoLine S 50	949976	949978	–	949981	949982
	911430 0811	911430 0814	–	911430 0812	911430 0814
RK DuoLine S 120	949053	949055	949057	949060	949061
	911430 1112	911940 1214	911940 1219	911940 1212	911430 1214

**Note:** For further details on motor versions, please refer to the chapter “Motors and controls”

### Motor adaptor

- Simple assembly on linear unit and motor
- Exact fit due to centering shoulders

**Material:** Aluminium, black anodised



Code No.	Type	A	B	C	D	E	F	G
949976	50	65	50	50	60	53	70	M5
949978		73	50	50	80	70,7	90	M6
949981		73	50	50	50	46	80	M5
949982		73	50	50	80	100	Ø120	Ø6,6
949053	120x80 120x80 II	66	60	60	60	53	70	M5
949055		81	60	60	80	70,7	90	M6
949057		91	60	60	95	81,3	115	M8
949060		75	60	60	50	65	80	M5
949061		75	60	60	80	100	Ø120	Ø6,6

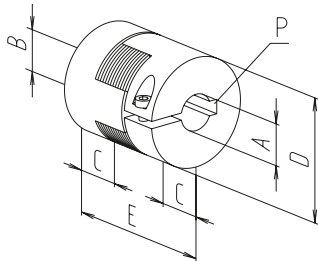


### Coupling

- Small size
- Shaft connection without backlash
- Maintenance-free
- Easy plug-in assembly

**Material:** Aluminium, black anodised

[mm]



Code No.	ØA	ØB	C	ØD	E	P	Torque [Nm]	
							with feather key	without feather key
9109200695	6	9,5	11	30	35	2x2 / -	12	6
9109200612	6	12	11	30	35	2x2 / 4x4	12	6
9114300611	6	11	11	30	35	2x2 / 4x4	12	6
9114300616	6	16	11	30	35	2x2 / 5x5	12	6
9114300895	8	9,5	11	30	35	2x2 / 5x5	12	6
9114300811	8	11	11	30	35	4x4 / 4x4	12	6
9114300812	8	12	11	30	35	4x4 / 5x5	12	6
9114300814	8	14	11	30	35	2x2 / 5x5	12	6
9114309510	9,5	10	11	30	35	- / 3x3	12	6
9114309512	9,5	12	11	30	35	- / 4x4	12	6
9114301011	10	11	11	30	35	3x3 / 4x4	12	6
9114301012	10	12	11	30	35	3x3 / 4x4	12	6

### Angular drive

- Angular drives for RK DuoLine S available on request.

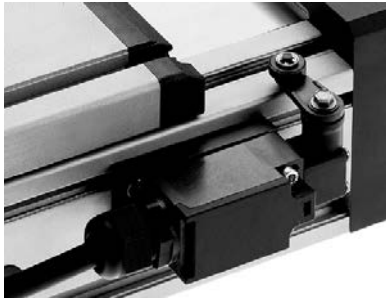


# RK DuoLine S – Position determination

## Mechanical limit switch

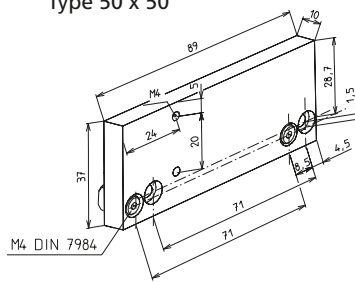
- Limit switch with angle lever
- Compact design

**Material:** Thermoplastic, self-extinguishing

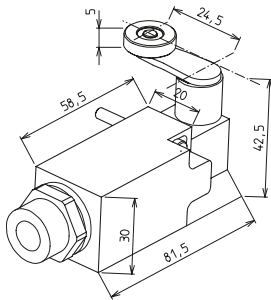
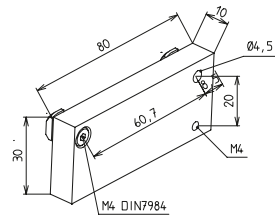


Max. voltage	230 V AC
Max. switching current	4 A
Max. starting current	10 A
Operating frequency	Max. 5000/h
Mechanical lifetime	20 x 10 <sup>6</sup> switching cycles
Axis lever adjustment	locking by 360°
Protection class	IP 67
Ambient temperature	-30°C to +80°C

Type 50 x 50



Type 120 x 80



Code No.	Type	Version
92792	50 x 50	Limit switch NC/NO with bracket
92701	120 x 80	

## Inductive limit switch

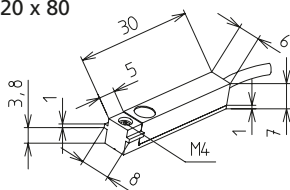
- Maintenance-free

**Material:** Switch housing, aluminium, anodised

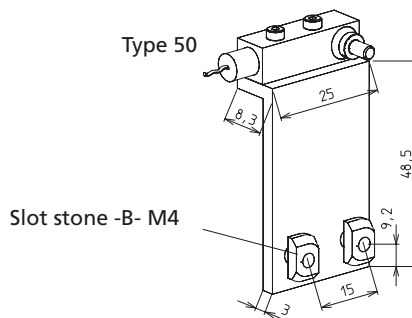


Voltage	10-30 V DC
Max. switching current	10 mA
Max. starting current	100 mA
Operating frequency	max. 5 kHz
Mechanical lifetime	independent of operating cycles
Operating distance	1.5 mm
Protection class	IP 67
Ambient temperature	-25°C to +75°C

Type 120 x 80



Type 50



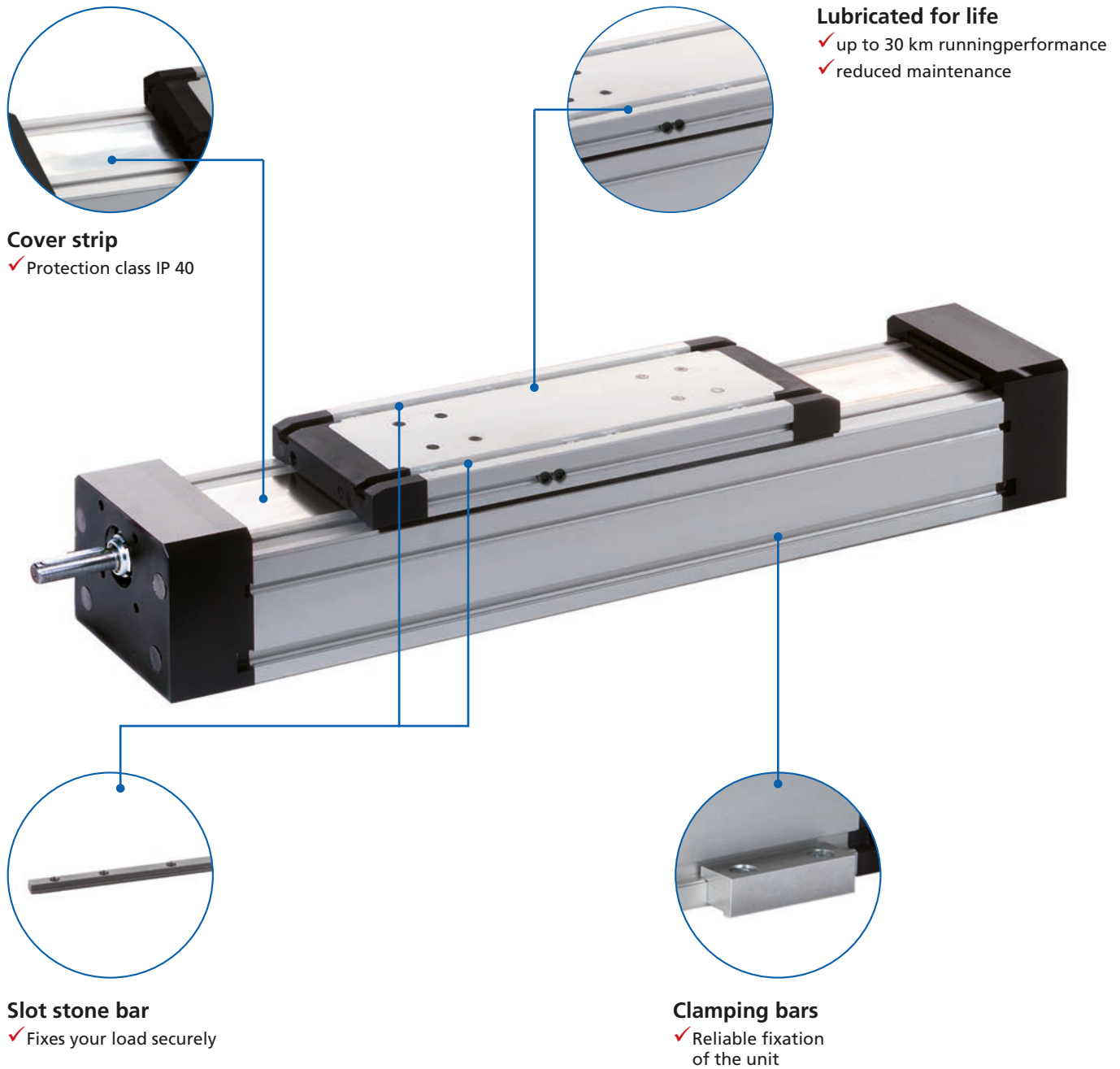
Code No.	Type	Version
92830	50	NC, with bracket
92929	120 x 80	



Suspension of an x-ray tube. X-Y adjustment of RK DuoLine S via EHL

# Profile guide/actuator – RK DuoLine S 60 / 80

## Spindle unit RK DuoLine S with trapezoidal thread



### Features:

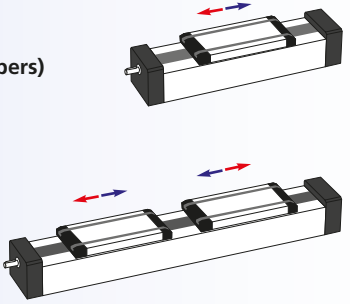
- Max. travel speed regardless of length
- Lifetime lubricated

### RK DuoLine S Protect

- IP 40 protection class due to steel cover strip and seals
- high Positioning accuracy

- Multiple moving screw supports
- Repeatability  $\pm 0,1$  mm

**RK DuoLine S 60/80 Protect - Table of contents**

<p><b>Properties/Technical data</b></p>	<ul style="list-style-type: none"> <li>■ General information/operating conditions... 272</li> <li>■ Load data..... 273</li> </ul>						
<p><b>Versions</b> (Dimensions, order numbers)</p> 	<ul style="list-style-type: none"> <li>■ Righthand thread.....274 - 275</li> <li>■ Right and lefthand thread .....276 - 277</li> </ul>						
<p><b>Accessories</b></p>	<table border="0" style="width: 100%;"> <tr> <td style="padding-right: 20px;"><b>Fixing</b></td> <td> <ul style="list-style-type: none"> <li>■ Fixation of payload ..... 278</li> <li>■ Clamping strips ..... 278</li> <li>■ Slot stones ..... 279</li> </ul> </td> </tr> <tr> <td style="padding-right: 20px;"><b>Drive</b></td> <td> <ul style="list-style-type: none"> <li>■ Motor adapter ..... 279</li> </ul> </td> </tr> <tr> <td style="padding-right: 20px;"><b>Position determination</b></td> <td> <ul style="list-style-type: none"> <li>■ Limit switch .....280 - 281</li> </ul> </td> </tr> </table>	<b>Fixing</b>	<ul style="list-style-type: none"> <li>■ Fixation of payload ..... 278</li> <li>■ Clamping strips ..... 278</li> <li>■ Slot stones ..... 279</li> </ul>	<b>Drive</b>	<ul style="list-style-type: none"> <li>■ Motor adapter ..... 279</li> </ul>	<b>Position determination</b>	<ul style="list-style-type: none"> <li>■ Limit switch .....280 - 281</li> </ul>
<b>Fixing</b>	<ul style="list-style-type: none"> <li>■ Fixation of payload ..... 278</li> <li>■ Clamping strips ..... 278</li> <li>■ Slot stones ..... 279</li> </ul>						
<b>Drive</b>	<ul style="list-style-type: none"> <li>■ Motor adapter ..... 279</li> </ul>						
<b>Position determination</b>	<ul style="list-style-type: none"> <li>■ Limit switch .....280 - 281</li> </ul>						

# RK DuoLine S 60 / 80 – Technical data

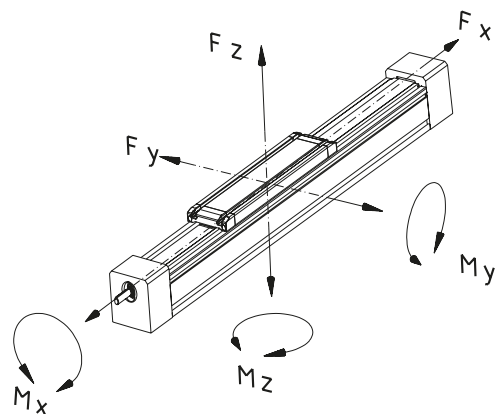
## General information / operating conditions

	RK DuoLine S 60	RK DuoLine S 80
Guidance system	Ball rail system	Ball rail system
Installation position	any position	any position
Input torque max.	2,2 Nm	18 Nm
Max. speed	0.02 m/s	0,02 / 0,04 m/s (regardless of travel)
Max. acceleration	3 m/s <sup>2</sup>	3 m/s <sup>2</sup>
Repeat accuracy	± 0.1 mm	± 0,1 mm
Positioning accuracy	-	-
Max. no-load torque		1.0 Nm
Drive	Trapezoidal thread Ø16, Pitch 4	Trapezoidal thread, Ø20, Pitch 4 or 8 mm, on the right
Pitch accuracy	(± 0.1 / 300 mm)	(± 0,1 / 300 mm)
Duty cycle	S3 30% Basic 1h	S3 30% Basis 1h
Ambient temperature	0 to +60°C	0 bis +60°C
Degree of protection	IP 40	IP 40



**Dynamic load data**

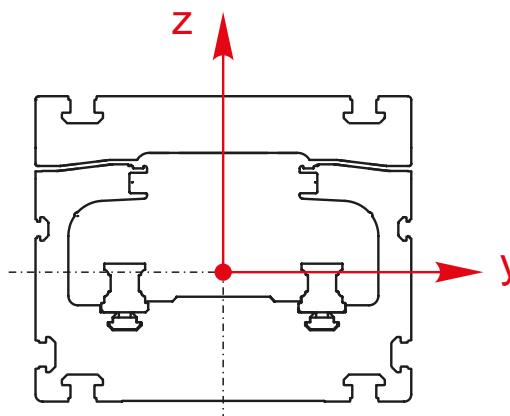
F Force [N]  
 M Torque [Nm]



Spindle drive							
Load data	Spindle	Fx	Fy	Fz	Mx	My	Mz
Standard guide carriages							
RK DuoLine S 60	16x4	1400	700	2500	48	160	140
RK DuoLine S 80	20x4 / 20x8	2500	1000	4100	100	380	350
Extended guide carriage							
RK DuoLine S 60	16x4	1400	700	2500	48	250	220
RK DuoLine S 80	20x4 / 20x8	2500	1000	4100	100	620	550

**Geometric moment of inertia**

	$I_y$	$I_z$
RK DuoLine S 60	48.97 cm <sup>4</sup>	61.84 cm <sup>4</sup>
RK DuoLine S 80	116.76 cm <sup>4</sup>	165.75 cm <sup>4</sup>



# RK DuoLine S 60 / 80 – Versions

## Order information:

- Second free concurrent carriage on request
- Also available without screw drive as a torque support
- Lubrication over carriages on request

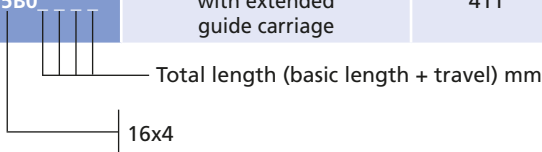
Versions ■ Righthand thread



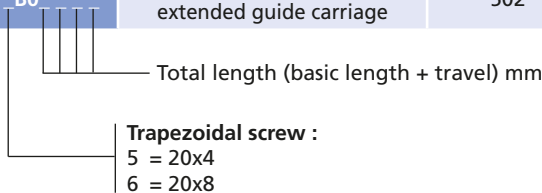
## Key feature:

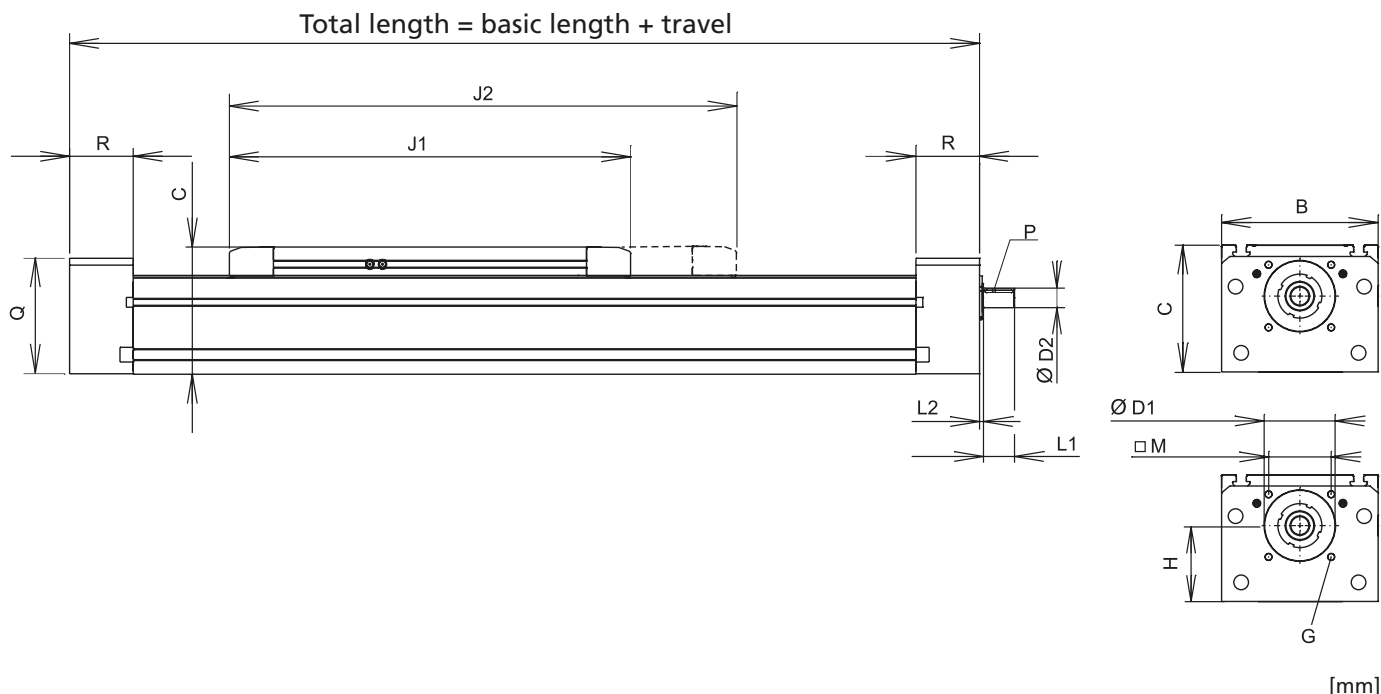
- ✓ Lubricated for life up to 30 km running performance

Code No.	Type	Basic length	B	C	D1	D2
TD13A5A1A15B0_ _ _ _	RK DuoLine S 60 Protect	321	60	80	Ø32 <sup>H7</sup> 2.3 deep	Ø10 <sub>k7</sub>
TD13A5A1B15B0	RK DuoLine S 60 Protect with extended guide carriage	411	60	80	Ø32 <sup>H7</sup> 2.3 deep	Ø10 <sub>k7</sub>



Code No.	Type	Basic length	B	C	D1	D2
TD13A2A1A1_ B0_ _ _ _	RK DuoLine S 80 Protect	370	80	100	Ø42 <sup>H7</sup> 2.3 deep	Ø14 <sub>k7</sub>
TD13A2A1B1_ B0	RK DuoLine S 80 Protect with extended guide carriage	502	80	100	Ø42 <sup>H7</sup> 2.3 deep	Ø14 <sub>k7</sub>





G	H	J1	J2	L1	L2	M	P	Q	R	Max. travel	Mass [kg]	
											Basic length	per 100 mm travel
M5-10 deep	47.7	245	-	17.2	2.8	33x24	3x3x12	72.2	38	2664	3.44	0.60
M5-10 deep	47.7	-	335	17.2	2.8	33x24	3x3x12	72.2	38	2574	4.26	0.60

[mm]

G	H	J1	J2	L1	L2	M	P	Q	R	Max. travel	Mass [kg]	
											Basic length	per 100 mm travel
M6-18 deep	57.5	278	-	30	3.8	□46±0.2	5x5x25	89	46	2890	6.74	0.96
M6-18 deep	57.5	-	410	30	3.8	□46±0.2	5x5x25	89	46	2758	8.01	0.96

# RK DuoLine S 80 – Versions

## Order information:

- Lubrication over carriages on request
- Extended carriages on request

Version ■ Right- and lefthand thread

## Version

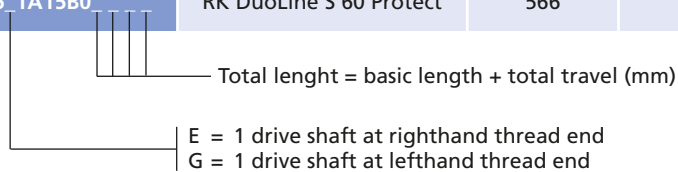
- Right and lefthand thread  
DuoLine S 60 16x4  
DuoLine S 80 20x4



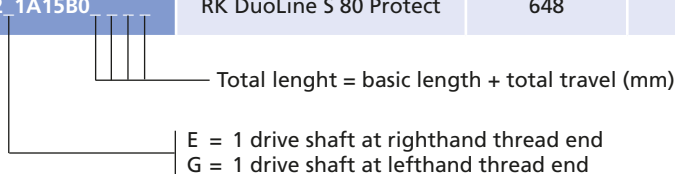
## Key feature:

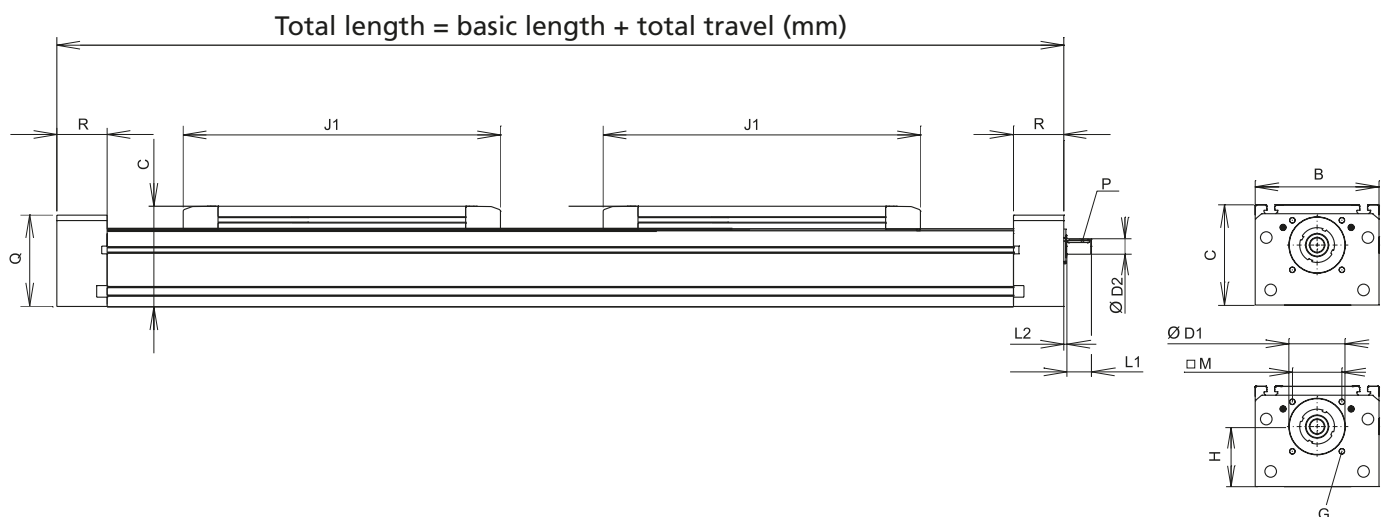
- ✓ Lubricated for life up to 30 km running performance

Code No.	Type	Basic length	B	C	D1	D2
TD13A5_1A15B0	RK DuoLine S 60 Protect	566	60	80	Ø32 <sup>H7</sup> 2.3 deep	Ø10 <sub>k7</sub>



Code No.	Type	Basic length	B	C	D1	D2
TD13A2_1A15B0	RK DuoLine S 80 Protect	648	80	100	Ø42 <sup>H7</sup> 2.3 deep	Ø14 <sub>k7</sub>





[mm]

G	H	J1	L1	L2	M	P	Q	R	Max. travel	Mass [kg]	
										Basic length	per 100 mm travel
M5-10 deep	47.7	245	20	2,8	33x24	3x3x12	72.2	38	2476	5.97	0.60

[mm]

G	H	J1	L1	L2	M	P	Q	R	Max. travel	Mass [kg]	
										Basic length	per 100 mm travel
M6-18 deep	57.5	278	30	3.8	□46±0.2	5x5x25	89	46	2890	11.7	0.96

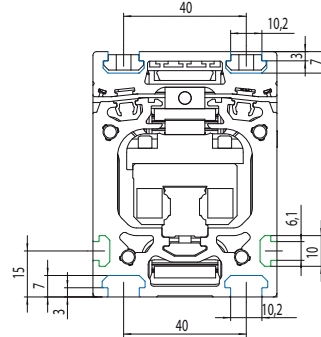
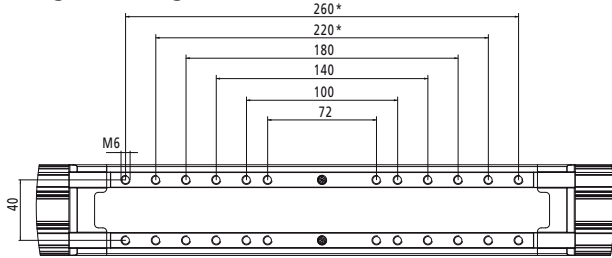
# RK DuoLine S 60 / 80 – Fixing

## Fixation of payload

- Two slot stone strips have been inserted in the guide carriage on which fittings can be securely attached in a variety of ways
- Profile slots in the guide carriage and guide profiles facilitate fixation

### RK DuoLine S 60

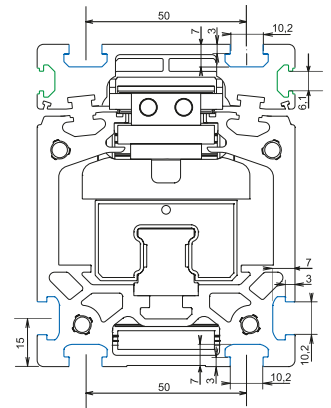
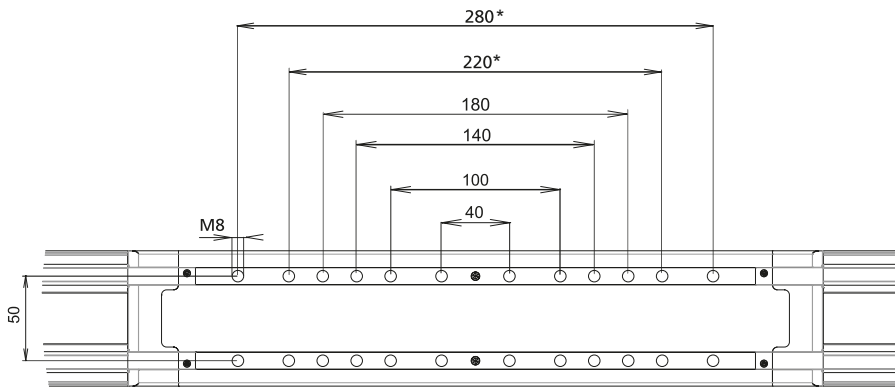
\*only with version with extended guide carriage



- 20 slot geometry
- 30 slot geometry

### RK DuoLine S 80

\*only with version with extended guide carriage



- 20 slot geometry
- 30 slot geometry

## Clamping strips

- Clamping strips facilitate fixation of the linear unit to the chassis or two units to a crossing table

**Material:** Natural anodised aluminium, galvanised fixation material.  
**Scope of delivery:** 2 clamping strips with fixation material

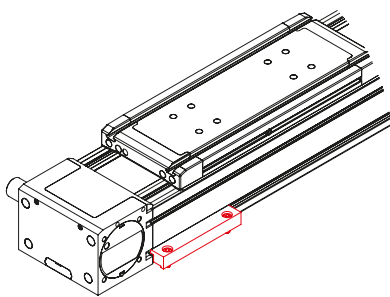


Fig.1: Ground assembly

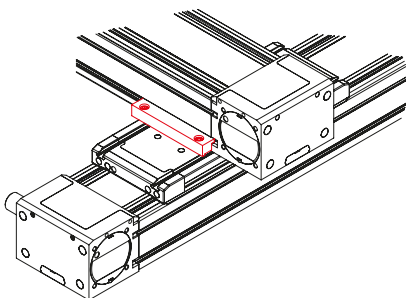
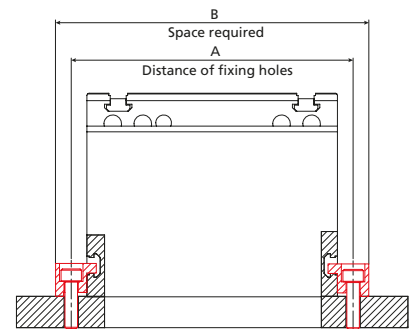
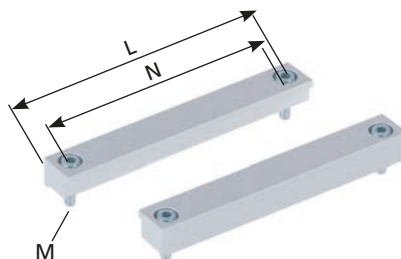


Fig.2: Crossing units

Code No.	Type	Abb.	A	B	L	M	N
91806	RK DuoLine 80 ground assembly	1	100	122	76	M8	50
	RK DuoLine 80 crossing to 80	2					

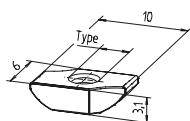
[mm]

### Slot stones

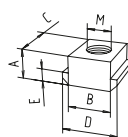
- Slot stones can be inserted and positioned at the guide profile and guide carriage

**Material:** galvanised steel

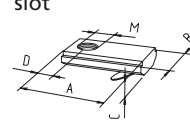
**Slot stone -B-** can be swivelled into the slot



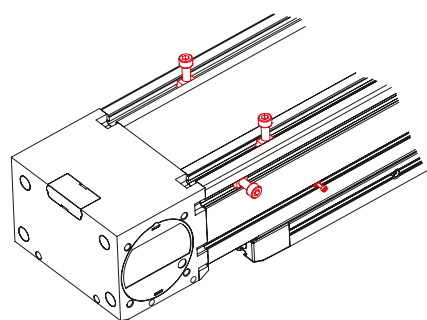
**Slot stone -N-** can be slid into the slot



**Slot stone -K-** can be swivelled into the slot



[mm]



View of DuoLine from below

Code No.	Type	Slot geometry	A	B	C	D	E	M8M	F [N]
<b>Slot stone -B-</b>									
E00017CEH	M3	20							Pack of 10 units
E00058CEH	M4	20							Pack of 10 units
<b>Slot stone -N-</b>									
4006202	M8	30	5	10	13	13	3	M8	4000
<b>Slot stone -K-</b>									
4006211	M5	30	21	12	4	7	-	M5	5000
4006212	M6	30	21	12	4	7	-	M6	5000

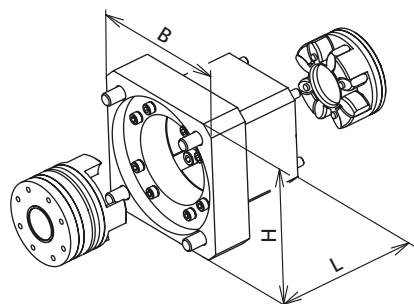
### Motor adapter kit for RK-Motors



- Servomotors from the RK standard range can be easily connected
- Motor adapter kits for every motor or gear unit manufacturer

- Complete motor adapter kits manufactured to your specifications on request

**Scope of delivery:** Motor adapter kit, elastomer coupling and fixation material



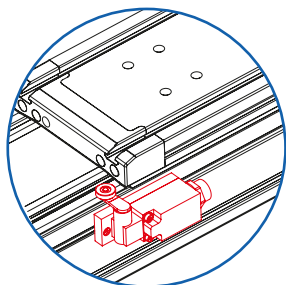
Code No.	Type	Version
<b>Servo motors DuoLine S 60</b>		
949392	RK-AC 112	with gearbox – PLE 60
949391	RK-AC 118	without gearbox
949390	RK-AC 240	without gearbox
<b>Servo motors DuoLine S 80</b>		
949360	RK-AC 112	with gearbox – PLE 60
949367	RK-AC 240	without gearbox
949364	RK-AC 260	with gearbox – PLE 80
949366	RK-AC 470	without gearbox
<b>Three phase motors DuoLine S 80</b>		
949368	DSM 90 / 120 W	with gearbox
949369	DSM 180 / 250 W	with gearbox

# RK DuoLine S 60 / 80 – Position determination

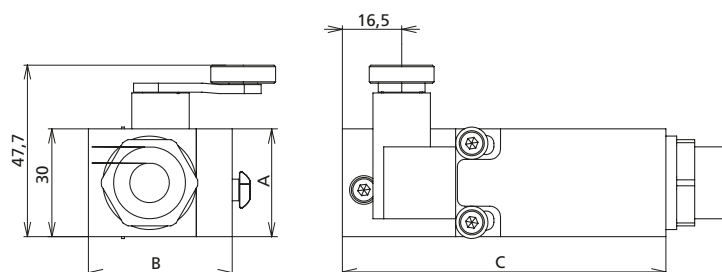
## Mechanical limit switch

- External fixation on the guide profile

**Scope of delivery:**  
Limit switch with set of fixing items



Voltage	max. 230 V AC
Max. switching current	4 A
Max. starting current	10 A
Operating frequency	max. 5000 / h
Mechanical lifetime	20x10 <sup>6</sup> cycles
Axis leverage adjustment	locking by 360°
Degree of protection	IP67
Ambient temperature	-30°C to +80°C



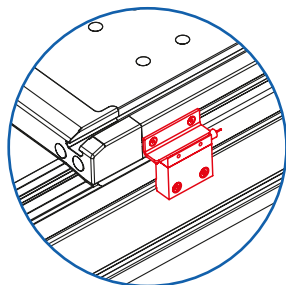
Code No.	Type	A	B	C	Version
92848	RK DuoLine 60	49	39	82	NO / NC, mechanical limit switch
91919	RK DuoLine 80	63	40	83	



## External inductive limit switch

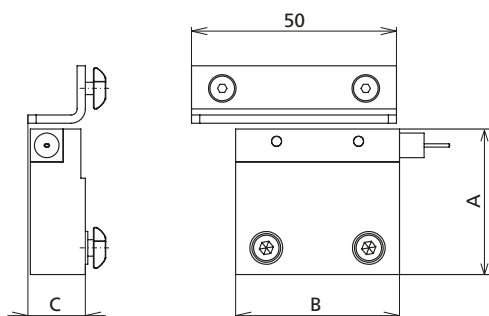
- External fixation on the guide profilev

**Scope of delivery:**  
Limit switch with set of fixing items



	external	internal
Voltage	10...30 VDC	10...30 VDC
Max. switching current	100 mA	100 mA
Operating frequency	max. 5 kHz	max. 5 kHz
Mechanical lifetime	independent of operating cycles	independent of operating cycles
Operating distance	2 mm	1.5 mm
Degree of protection	IP65	IP67
Cable length	2.5 m	5 m*
Ambient temperature	-25°C to +70°C	-25°C to +70°C

\*Other cable lengths available on request.

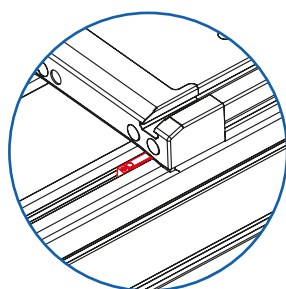


Code No.	Type	A	B	C	Version
92838	RK DuoLine 60	52.8	25	10	NO, External inductive limit switch
92819	RK DuoLine 80	71.5	25	10	

## Internal inductive limit switch

- Proximity switch integrated in the guide profile – no protruding contours

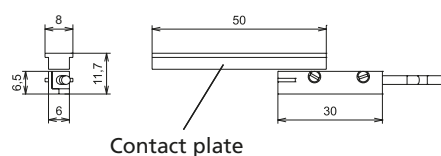
**Scope of delivery:**  
Proximity switch with set of fixing items



Code No.	Type	Ausführung
92828	RK DuoLine 60	NC, Internal inductive limit switch
92820*	RK DuoLine 80	

\* On this limit switch, the slot must be sealed off with a cover profile

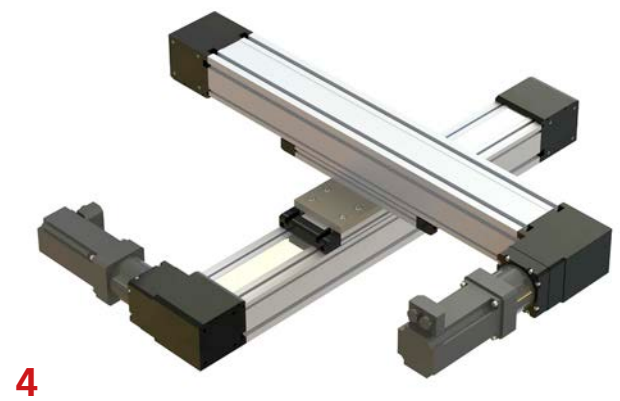
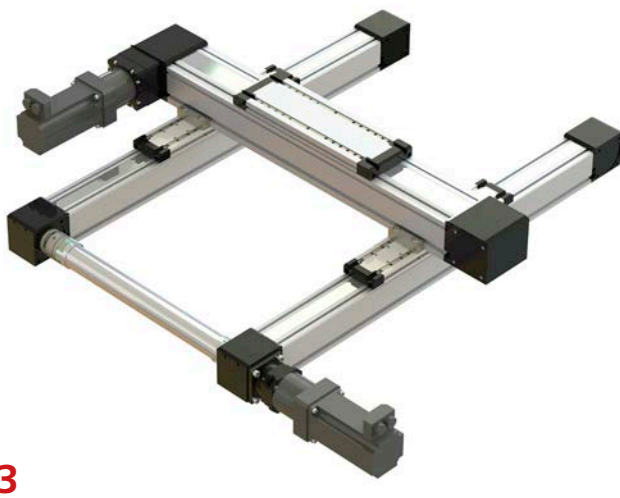
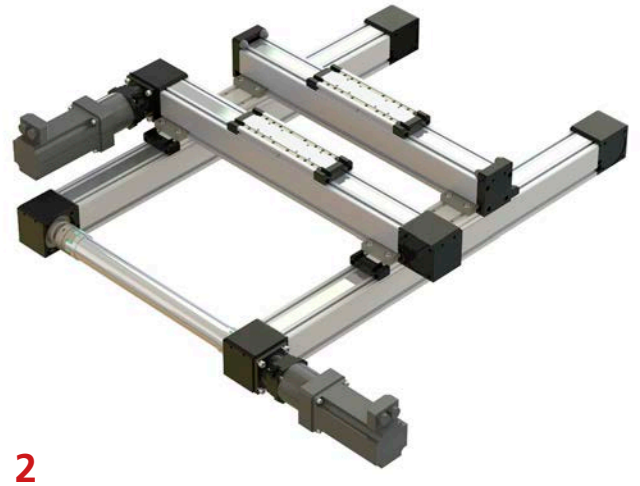
## Cover profile



Code No.	Version		
E00024DAC	bar	black	2.000 mm

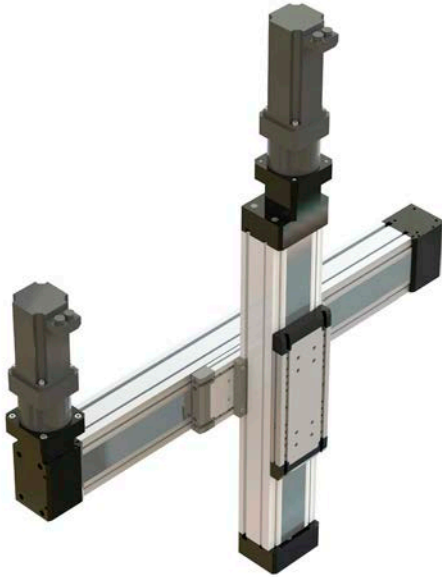
# Assembly examples

## RK DuoLine





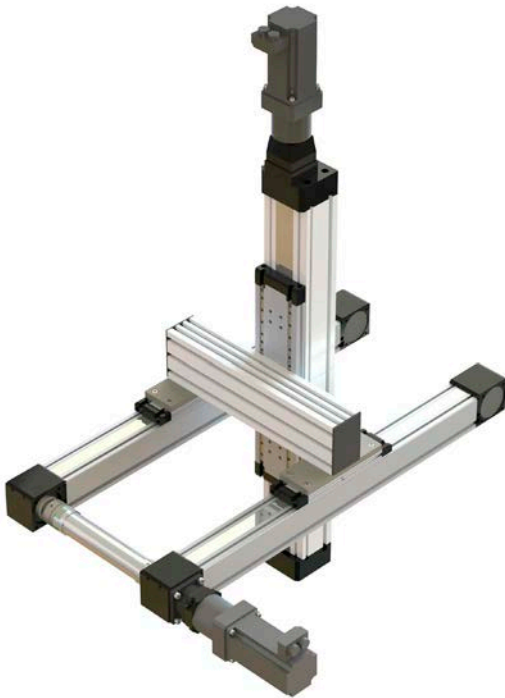
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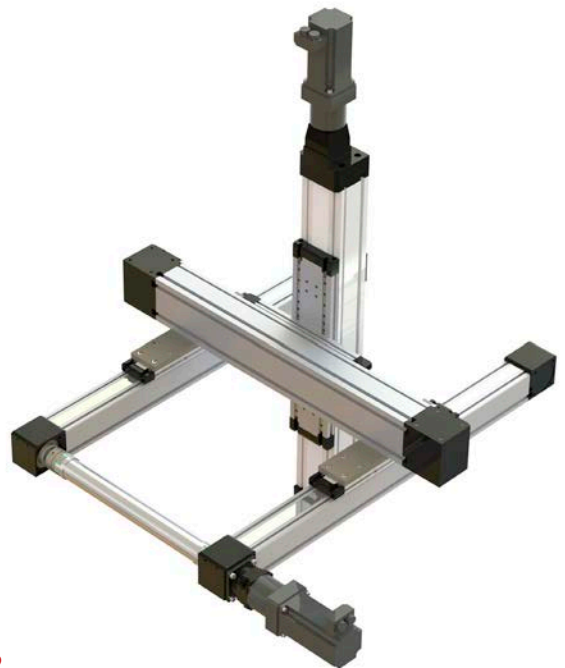
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7



8

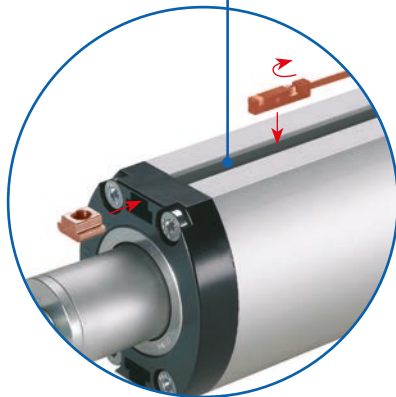
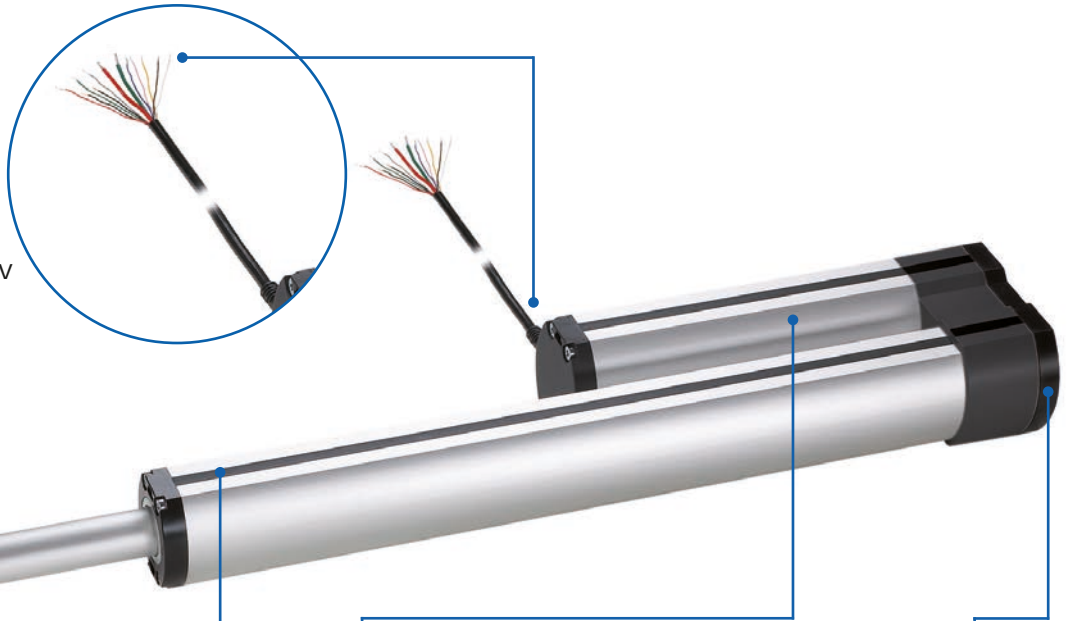


# LZ 80 Heavy-duty cylinder

The industrial design complete system with push/pull forces up to 10,000 N.

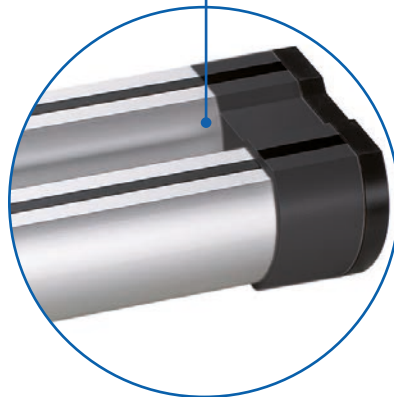
## Electrical connection

- ✓ Cable outlet
- ✓ Internal limit switches, incremental displacement pick-up and optional lead-through for brake
- ✓ Connection to PLC or equivalent control 24 V / 36V



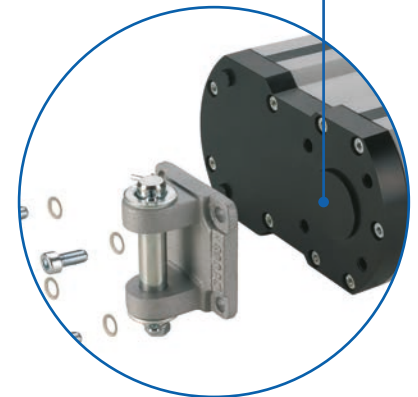
## Adjustable external magnetic switch

- ✓ Covered in slot geometry
- ✓ Stroke can be adjusted
- ✓ Accessories can be retrofitted
- ✓ Pre-fitted with internal magnets for external magnetic switch



## High-performance DC motor

- ✓ Integrated motor brake on "ball screw" version



## Cylinder fixing

- ✓ Simple connection of trunnion flange, trunnion or clevis

## Features:

- Integrated DC drive
- Integrated limit switches
- Flexible use of space thanks to parallel motor positioning
- Coverable slot geometry on both sides, supports a range of fixing options
- Push rod with rotation locking

- Maintenance-free for entire lifetime of unit
- IP 54
- Self-locking
- Choice of ACME screw or recirculating-ball spindle

## Options:

- Optional IP 66 can be supplied
- Special stroke lengths available on request
- ACME screw version optionally available with motor brake

## LZ 80 Electric cylinder - Table of contents

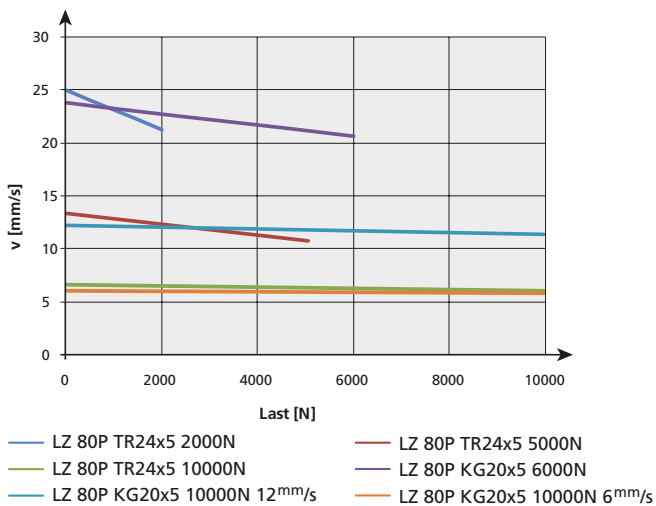
<b>Properties/Technical data</b>	<ul style="list-style-type: none"> <li>■ General information/operating conditions ... 286</li> </ul>				
<b>Versions</b> (Dimensions, order numbers)	LZ 80 electric cylinder with ACME screw and ball screw drive: <ul style="list-style-type: none"> <li>■ Dimensions/Order table ..... 287</li> </ul>				
<b>Accessories</b>	<table border="0" style="width: 100%;"> <tr> <td style="width: 30%;"><b>Fixing</b></td> <td style="width: 70%;"> <ul style="list-style-type: none"> <li>■ Slot stones ..... 288</li> <li>■ Clevis ..... 288</li> <li>■ Bearing block for Clevis ..... 288</li> <li>■ Swivel head ..... 288</li> <li>■ Fork attachment for Swivel head ..... 289</li> <li>■ Swivel ..... 289</li> <li>■ Bearing block for Swivel ..... 289</li> <li>■ Trunnion mounting set ..... 290</li> <li>■ Support blocks for trunnion mounting ..... 290</li> </ul> </td> </tr> <tr> <td><b>Position determination</b></td> <td> <ul style="list-style-type: none"> <li>■ Magnetic switch ..... 291</li> <li>■ Controls ..... 291</li> </ul> </td> </tr> </table>	<b>Fixing</b>	<ul style="list-style-type: none"> <li>■ Slot stones ..... 288</li> <li>■ Clevis ..... 288</li> <li>■ Bearing block for Clevis ..... 288</li> <li>■ Swivel head ..... 288</li> <li>■ Fork attachment for Swivel head ..... 289</li> <li>■ Swivel ..... 289</li> <li>■ Bearing block for Swivel ..... 289</li> <li>■ Trunnion mounting set ..... 290</li> <li>■ Support blocks for trunnion mounting ..... 290</li> </ul>	<b>Position determination</b>	<ul style="list-style-type: none"> <li>■ Magnetic switch ..... 291</li> <li>■ Controls ..... 291</li> </ul>
<b>Fixing</b>	<ul style="list-style-type: none"> <li>■ Slot stones ..... 288</li> <li>■ Clevis ..... 288</li> <li>■ Bearing block for Clevis ..... 288</li> <li>■ Swivel head ..... 288</li> <li>■ Fork attachment for Swivel head ..... 289</li> <li>■ Swivel ..... 289</li> <li>■ Bearing block for Swivel ..... 289</li> <li>■ Trunnion mounting set ..... 290</li> <li>■ Support blocks for trunnion mounting ..... 290</li> </ul>				
<b>Position determination</b>	<ul style="list-style-type: none"> <li>■ Magnetic switch ..... 291</li> <li>■ Controls ..... 291</li> </ul>				

# LZ 80 – Technical data

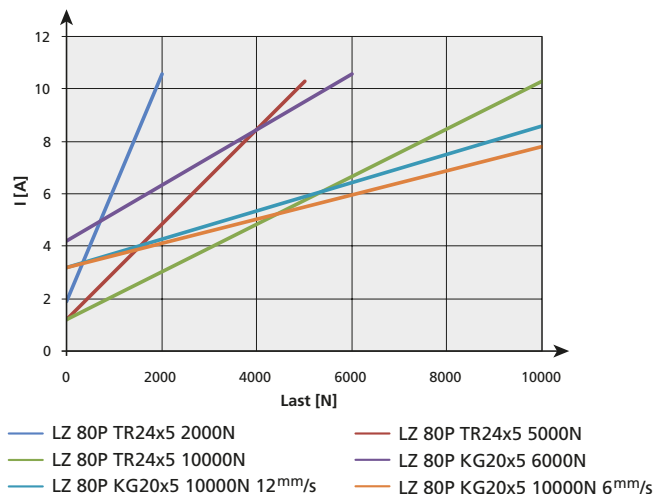
## General information/operating conditions

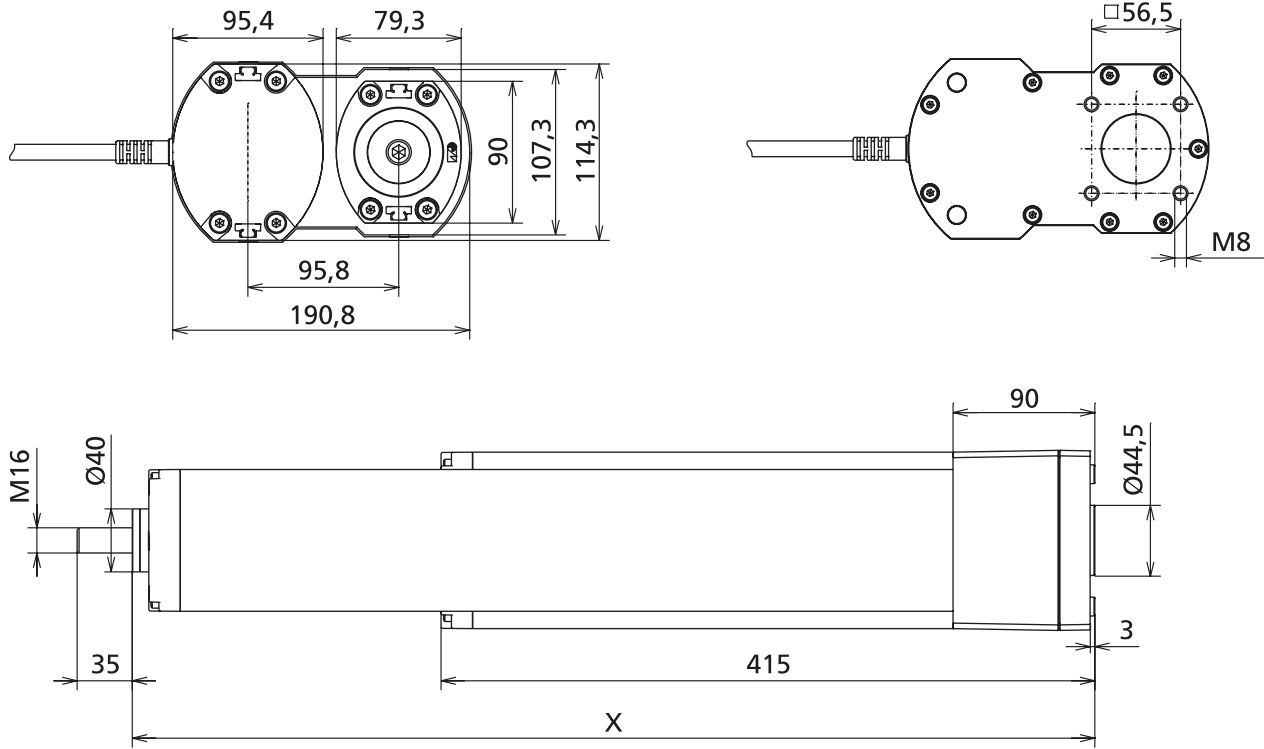
	ACME screw	Ball screw
Design	Linear cylinder with integrated DC motor	
Guide	Double bearing with POM bushes	
Installation position	Any position, without shear forces	
Ambient temperature	+5°C to +40°C	
Repeatability	0.5 mm	
Speed	Max. 25 mm/s	
Duty cycle (at max. load)	10% (1 min. operating time; 9 mins rest time/depending on sizing, up to 100% duty cycle possible)	
Voltage	24 V	
Current consumption	12 A	
Power input	450 W	
Protection class	IP 54 (optional IP 66)	
Compressive force/tensile force	10,000 N	
Self-locking	10,000 N	10,000 N (motor brake)

## Speed/Force diagram



## Current consumption/Force diagram





### Versions LZ 80

Code No.	Type	Max. force F [N]	Max. speed [mm/s]
<b>ACME screw 24 x 5</b>			
QLP00AAAB_ _ _ _	LZ 80	2,000	25
QLP00ABAB_ _ _ _	LZ 80	5,000	13
QLP00ACAB_ _ _ _	LZ 80	10,000	6.5
<b>Ball screw drive 20 x 5</b>			
QLP11ADAB_ _ _ _	LZ 80	6,000	24
QLP11AEAB_ _ _ _	LZ 80	10,000	12
QLP11AFAB_ _ _ _	LZ 80	10,000	6

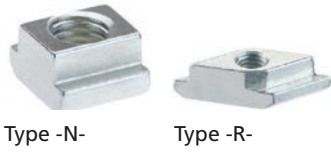
Stroke lengths available in increments of 7.5 mm  
 e.g. stroke [mm] = 0 3 9 7 .5

Stroke [mm]	Installation dimension X [mm]	Weight [kg]
7.5 to 397.5	Stroke + 311.0	12.5-16.0
405.0 to 600.0	Stroke + 348.5	16.0-18.0
607.5 to 795.0	Stroke + 386.0	18.0-20.0
802.5 to 1005.0	Stroke + 431.0	20.0-22.0

# LZ 80 – Fixing/Position determination

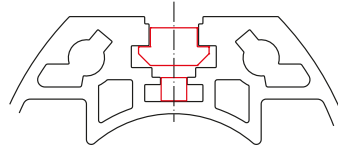
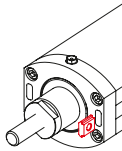
## Slot stone

- Slot stones facilitate the attachment of fittings to the cylinder.
- To this end, the slot stones can be slid into the lateral slots (Type -N-) or swivelled into the slot from above (Type -R-).



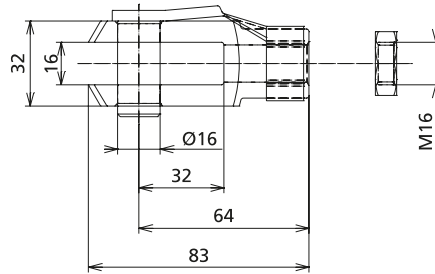
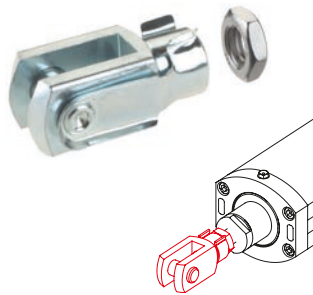
Type -N-

Type -R-



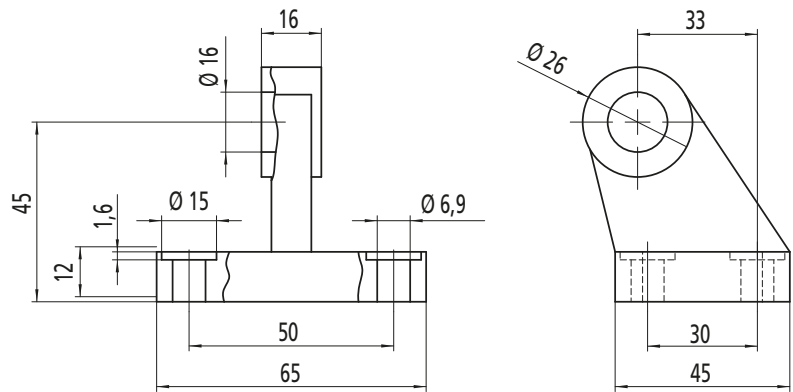
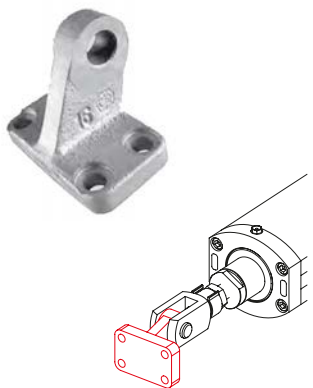
Code No.	Type	F [N]
4026203	Slot stone -N- M6	9,000
4026206	Slot stone -N- M8	9,000
4026221	Slot stone -R- M6	8,000
4026222	Slot stone -R- M8	8,000

## Clevis



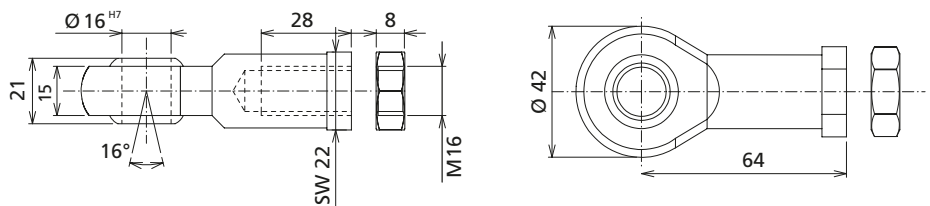
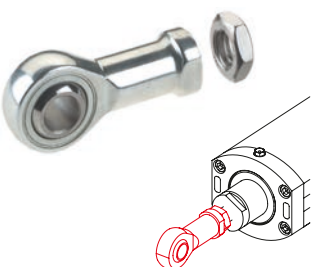
Code No.	Type
QZD050571	Clevis M16

## Bearing block for Clevis



Code No.	Type
QZD050573	LZ 80 Bearing block Ø16

## Swivel head



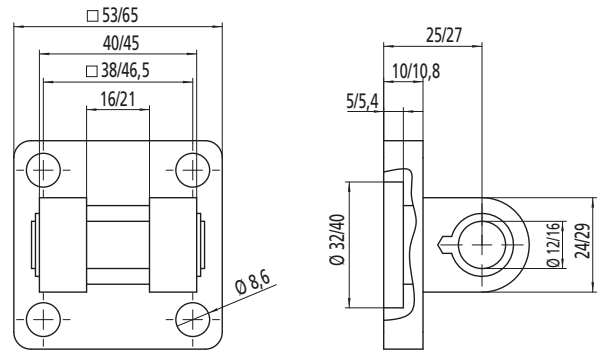
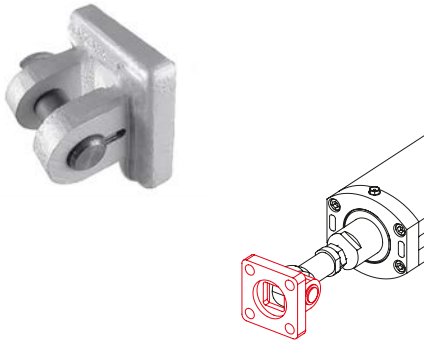
Code No.	Type
QZD050575	LZ 80 Swivel head M16





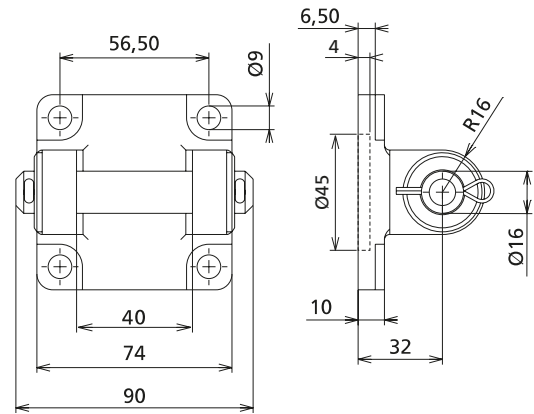
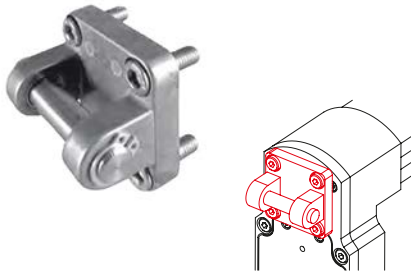
# LZ 80 - Fixing/Position determination

## Fork attachment for Swivel head



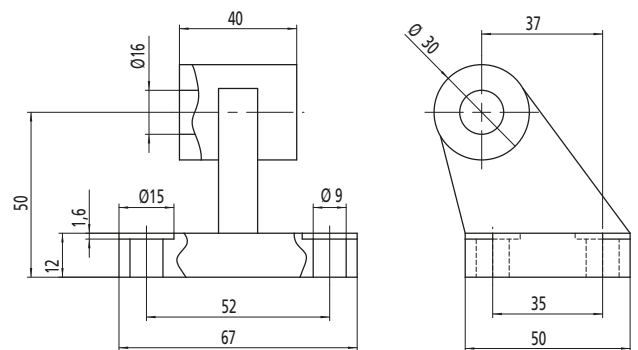
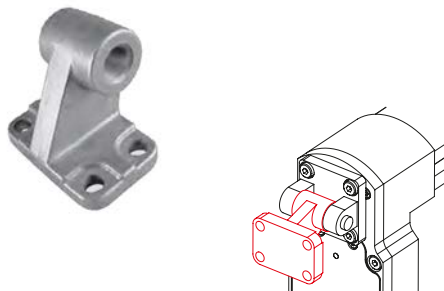
Code No.	Type
QZD050577	LZ 80 Fork attachment $\varnothing 16$

## Swivel



Code No.	Type
QZD050580	Swivel $\varnothing 16$

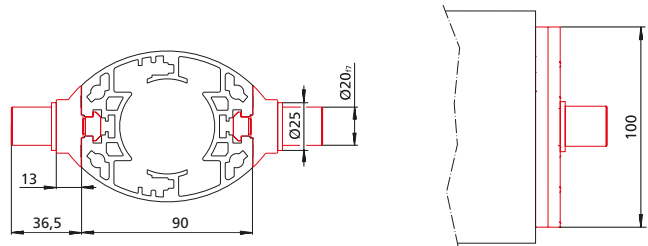
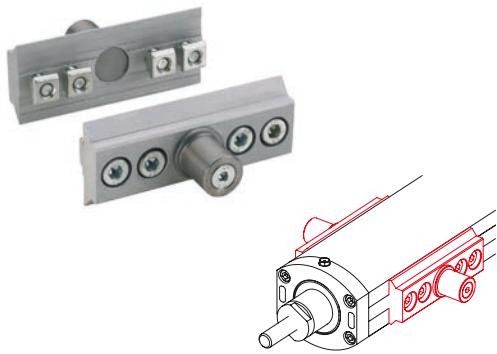
## Bearing block for Swivel



Code No.	Type
QZD050585	LZ 80 Swivel head wide $\varnothing 16$

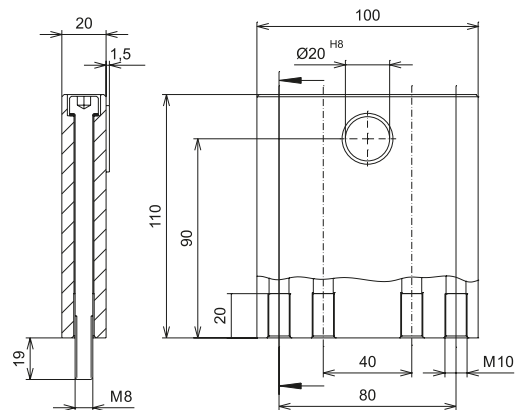
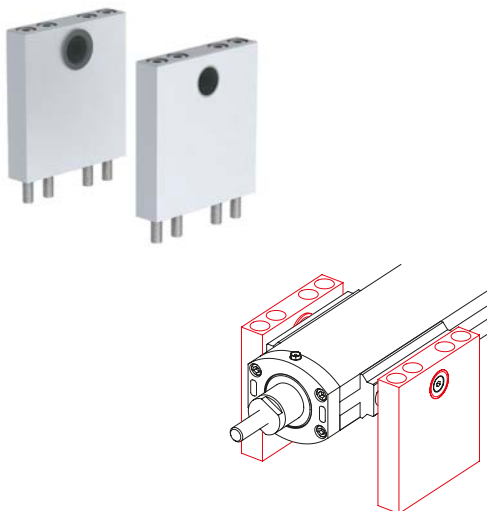
# LZ 80 – Fixing/Position determination

## Trunnion mounting set



Code No.	Type
QZD050588	Trunnion mounting set LZ 80

## Support blocks for trunnion mounting

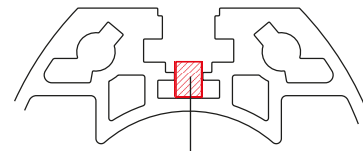
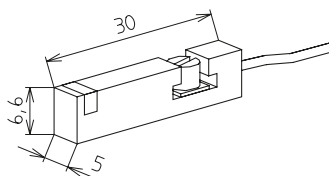


Code No.	Type
QZD050589	Support blocks LZ 70/80

## Magnetic switch

- Signals from the magnetic switch can be collected and evaluated by a customer-provided control unit (such as a PLC).

- The switch can be retrofitted in the lateral slot (protected by a cover profile as standard)
- Magnets are integrated in the cylinder as standard.



Magnetic switch

Code No.	Type
QZD050598	Magnetic switch, NO contact, cable length 6 m
QZD050599	Magnetic switch, NC contact, cable length 5.3 m

## Magnetic switch – Technical data

	NC contact	NO contact
Voltage	10-30 V DC	5-30 V DC
Current consumption	< 10 mA	< 10 mA
Output current	Max. 100 mA	Max. 50 mA
Output type	PNP	PNP
Function indication	LED	LED
Ambient temperature	-25°C to +85°C	-20°C to +70°C
Protection class	IP 67	IP 68

## Control requirements

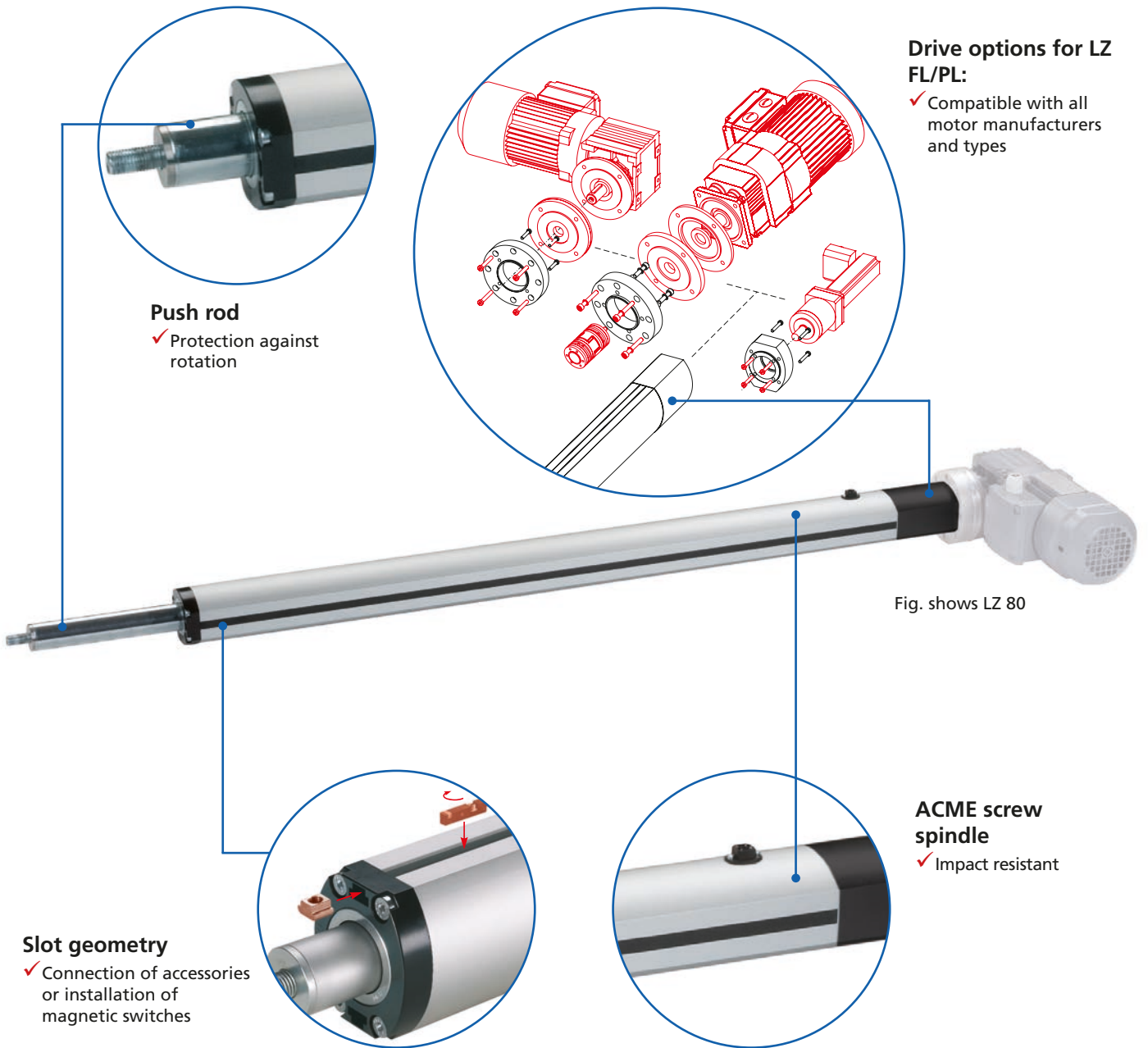
Power supply	24 V DC, at least 500 W
Current output	At least 20 A
Deceleration	Via generator brakes
Brake power	At least 500 W
Duty cycle	Up to 100%
Motor brake	24 V DC, at max. 1 A
Limit switch evaluation	Upper and lower limit switch (NC contacts)

### Note:

Controls available on request.

# Heavy duty cylinder – LZ 70/80 TR PL

## The new generation of industrial linear cylinders



### Drive options for LZ FL/PL:

- ✓ Compatible with all motor manufacturers and types

Fig. shows LZ 80

### ACME screw spindle

- ✓ Impact resistant

### Slot geometry

- ✓ Connection of accessories or installation of magnetic switches

### Features:

- Freely selectable drive (three-phase motor / servo motor / stepper motor)
- Flexible use of space thanks to different motor configurations
- Coverable slot geometry on both sides supports a range of fixing options

- Push rod with rotation locking
- Service life of up to 5 million double strokes (500 mm stroke with KG spindles)
- Protection class IP 54
- Integrated sensors for external magnetic switches

### Options:

- Optional IP 65 can be supplied
- Special stroke lengths available on request
- External magnetic switches
- Angular three-phase motor with fixing boss available on request
- Integrated absolute measuring system (with LZ 70)

## LZ electric cylinders - Table of contents

<b>Properties/performance data</b>	<ul style="list-style-type: none"> <li>■ General information/operating conditions ... 294</li> <li>■ Power diagram LZ 70 ..... 294</li> <li>■ Power diagram LZ 80 ..... 295</li> </ul>						
<b>Versions</b> (Dimensions, order numbers)	<ul style="list-style-type: none"> <li>■ LZ 70 PL electric cylinder ..... 296 - 297</li> <li>■ LZ 80 PL electric cylinder ..... 296 - 297</li> </ul>						
<b>Accessories</b>	<table border="0" style="width: 100%;"> <tr> <td style="vertical-align: top; padding-right: 20px;"> <b>Fixing</b> </td> <td style="vertical-align: top;"> <ul style="list-style-type: none"> <li>■ Clevis ..... 298</li> <li>■ Bearing block for Clevis ..... 298</li> <li>■ Swivel head ..... 298</li> <li>■ Fork attachment for swivel head ..... 299</li> <li>■ Swivel ..... 299</li> <li>■ Bearing block for swivel ..... 299</li> <li>■ Trunnion mounting set ..... 300</li> <li>■ Support blocks for trunnion mounting ..... 300</li> <li>■ Slot stone ..... 300</li> <li>■ Axial adjustment – RK SyncFlex A ..... 301</li> </ul> </td> </tr> <tr> <td style="vertical-align: top; padding-right: 20px;"> <b>Drive</b> </td> <td style="vertical-align: top;"> <ul style="list-style-type: none"> <li>■ Motor adaptor kit ..... 302</li> </ul> </td> </tr> <tr> <td style="vertical-align: top; padding-right: 20px;"> <b>Position determination</b> </td> <td style="vertical-align: top;"> <ul style="list-style-type: none"> <li>■ Magnetic switch ..... 303</li> </ul> </td> </tr> </table>	<b>Fixing</b>	<ul style="list-style-type: none"> <li>■ Clevis ..... 298</li> <li>■ Bearing block for Clevis ..... 298</li> <li>■ Swivel head ..... 298</li> <li>■ Fork attachment for swivel head ..... 299</li> <li>■ Swivel ..... 299</li> <li>■ Bearing block for swivel ..... 299</li> <li>■ Trunnion mounting set ..... 300</li> <li>■ Support blocks for trunnion mounting ..... 300</li> <li>■ Slot stone ..... 300</li> <li>■ Axial adjustment – RK SyncFlex A ..... 301</li> </ul>	<b>Drive</b>	<ul style="list-style-type: none"> <li>■ Motor adaptor kit ..... 302</li> </ul>	<b>Position determination</b>	<ul style="list-style-type: none"> <li>■ Magnetic switch ..... 303</li> </ul>
<b>Fixing</b>	<ul style="list-style-type: none"> <li>■ Clevis ..... 298</li> <li>■ Bearing block for Clevis ..... 298</li> <li>■ Swivel head ..... 298</li> <li>■ Fork attachment for swivel head ..... 299</li> <li>■ Swivel ..... 299</li> <li>■ Bearing block for swivel ..... 299</li> <li>■ Trunnion mounting set ..... 300</li> <li>■ Support blocks for trunnion mounting ..... 300</li> <li>■ Slot stone ..... 300</li> <li>■ Axial adjustment – RK SyncFlex A ..... 301</li> </ul>						
<b>Drive</b>	<ul style="list-style-type: none"> <li>■ Motor adaptor kit ..... 302</li> </ul>						
<b>Position determination</b>	<ul style="list-style-type: none"> <li>■ Magnetic switch ..... 303</li> </ul>						

# Technical data – LZ 70/80 TR PL

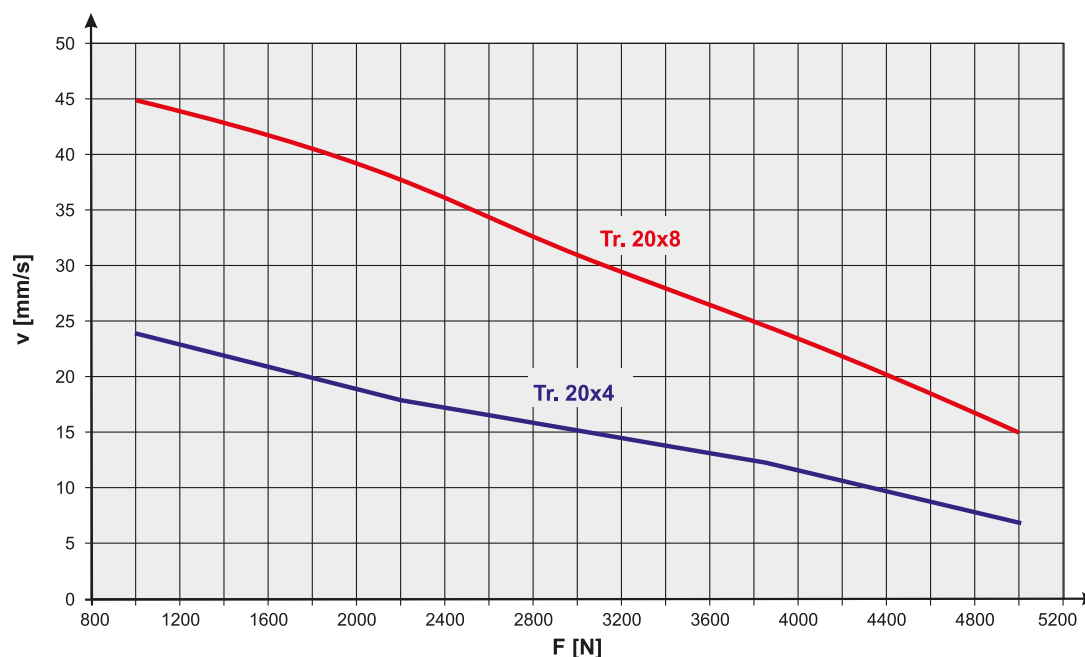
## General information / operating conditions

Linear cylinder with ACME screw  
for robust, versatile moving applications (Move-Tec)

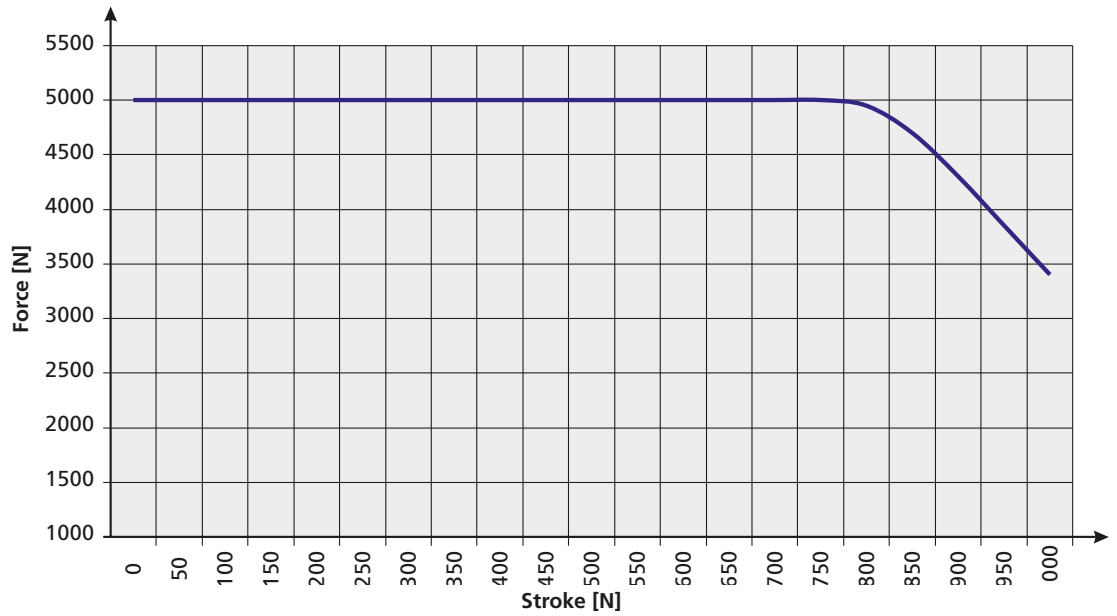
Type	LZ 70 PL	LZ 80 PL
Max. compressive force / tensile force	5.000 N	10.000 N
Max. driving torque	20 Nm	25 Nm
Max. speed	24 / 48 mm/s	29 mm/s
Max. acceleration	3 m/s <sup>2</sup>	3 m/s <sup>2</sup>
Repeatability	± 0.2 mm	± 0.2 mm
Max. no-load torque	0.7 Nm	-
Drive	ACME screw TR 20x4 / 20x8	ACME screw TR 24x5
Lead accuracy	≤ 0.15 mm / 300 mm	≤ 0.15 mm / 300 mm
Duty cycle	S3 30%	S3 20%
Ambient temperature	+0°C to +50°C	+5°C to +40°C
Degree of protection	IP 54 (optional IP 65)	IP 54
Continuous sound pressure level	≤ 65 dB (A)	≤ 65 dB (A)

## Speed/Force diagram for LZ70 with ACME screw TR 20x4 / TR 20x8

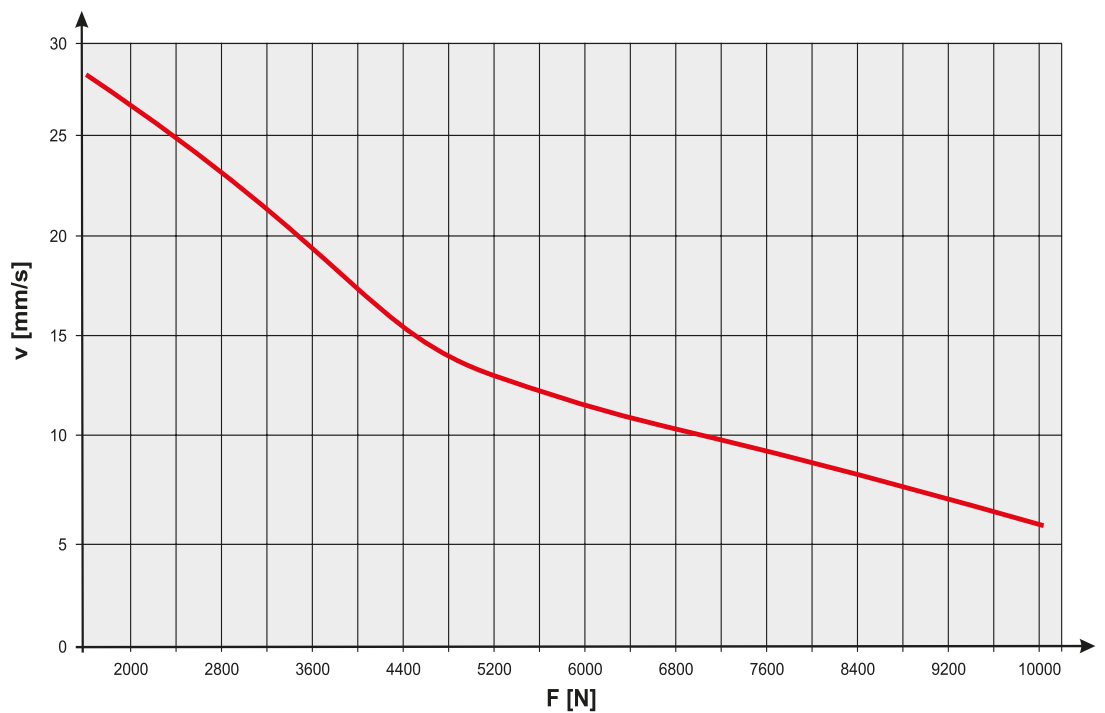
The application of an ACME screw TR 20x8 requires a drive motor with brake.  
At 5000N and Stroke >800 mm see Diagram „Maximal Load“ (page 295).



**Maximal Load, Force/Stroke diagram for TR 20x4 / TR 20x8**



**Speed/Force diagram for LZ80 with ACME screw TR 24x5**



# Dimensions / ordering data

## Order information:

- Maintenance opening of the LZ 70 can be moved on request
- Integr. position transducer available with the LZ 70 on request

## LZ PL electric cylinder with ACME screw



Fig. shows LZ 70

Code No.	Type	Spindle	A	B	C	D
TQ1_A2A1D34AA_	LZ 70 PL	TR 20x4	69	77	44	47.6
TQ1_A2A1D37AA		TR 20x8	69	77	44	47.6

Stroke [mm] freely configurable  
e.g. **0 3 9 7**

Degree of protection:  
1 = IP 54  
3 = IP 65

Travel	Installation dimension X	Weight [kg]	
		Basic length	per 100 mm travel
1 to 397 mm	Stroke + 302 mm	2.5	0.7
398 to 600 mm	Stroke + 339.5 mm	2.5	0.7
601 to 795 mm	Stroke + 377 mm	2.5	0.7
796 to 1000 mm	Stroke + 407 mm	2.5	0.7

Code No.	Type	Spindle	A	B	C	D
TQ1_A1A1B11AA	LZ 80 PL	TR 24x5	80	91	55	48

Stroke [mm] configurable in 7.5 mm increments  
e.g. **0 3 9 7 . 5**

Degree of protection:  
1 = IP 54  
3 = IP 65

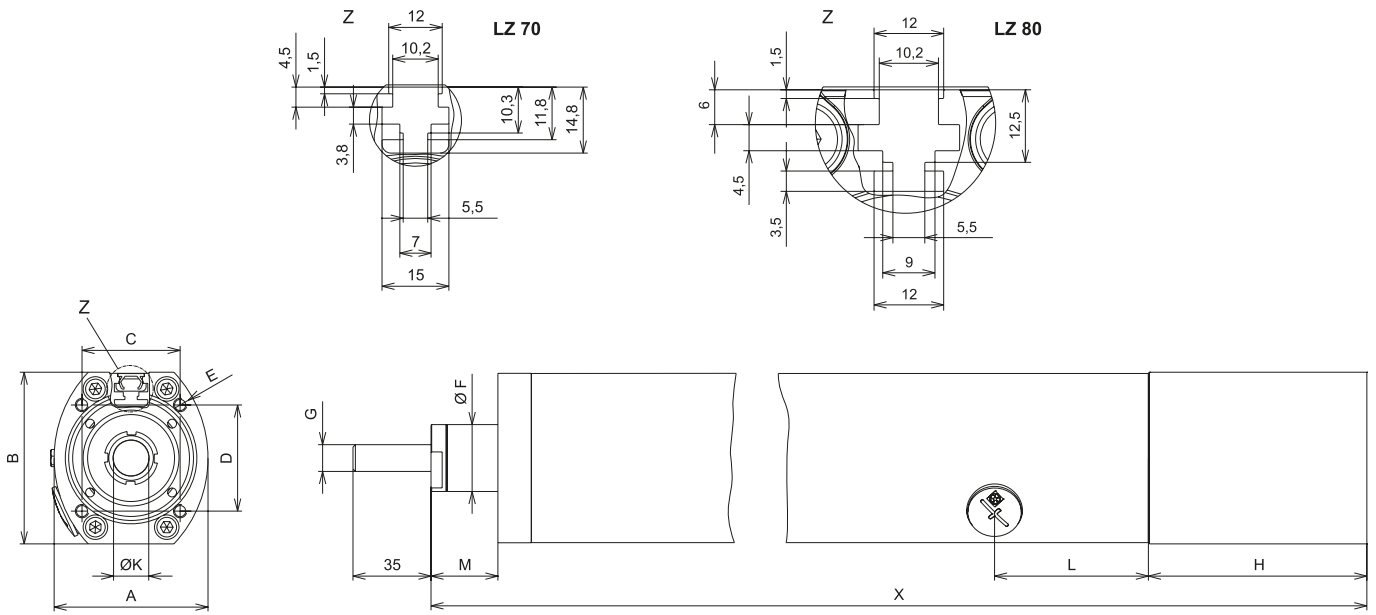
Travel	Installation dimension X	Weight [kg]	
		Basic length	per 100 mm travel
7.5 to 397.5 mm	Stroke + 348.5 mm	6.5	1
405 to 600 mm	Stroke + 386 mm	6.5	1
607.5 to 795 mm	Stroke + 423.5 mm	6.5	1
802.5 to 1005 mm	Stroke + 468.5 mm	6.5	1





# LZ 80 TR PL - Position determination

**RK ROSE+KRIEGER**



[mm]

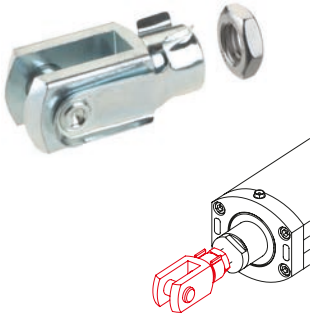
E	F	G	H	K	L	M
M6	30	M12	98	12	69	30
M6	30	M12	98	12	69	30

[mm]

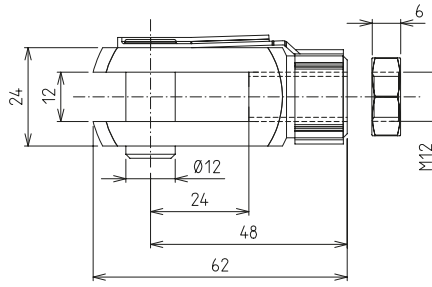
E	F	G	H	K	L	M
M6	40	M16	110	15	Stroke-33 (slot)	28.2

# Fixing

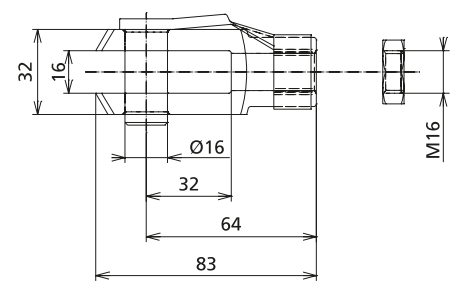
## Clevis



Clevis M12 for LZ 70

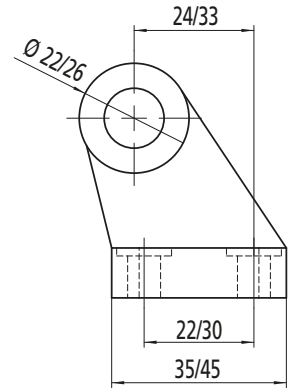
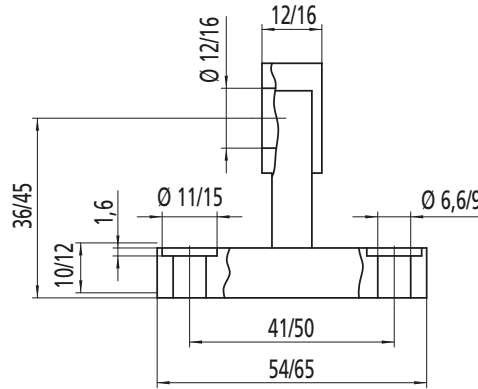
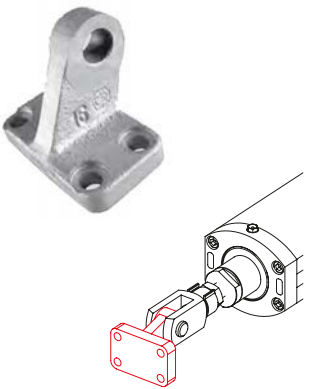


Clevis M12 for LZ 80



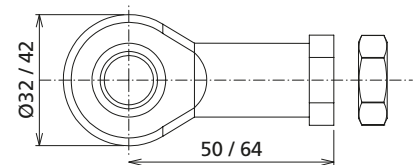
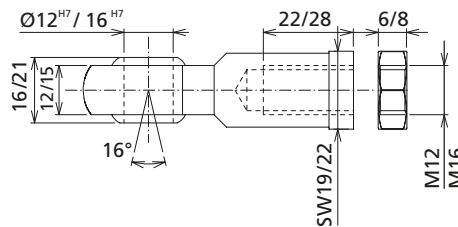
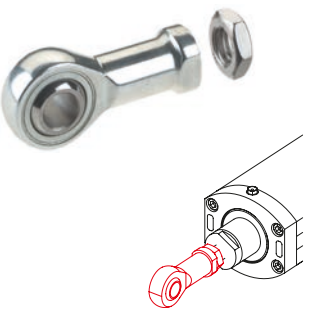
Code No.	Type	
QZD050570	LZ 70	Clevis M12
QZD050571	LZ 80	Clevis M16

## Bearing block for Clevis



Code No.	Type	
QZD050572	LZ 70	Bearing block Ø12
QZD050573	LZ 80	Bearing block Ø16

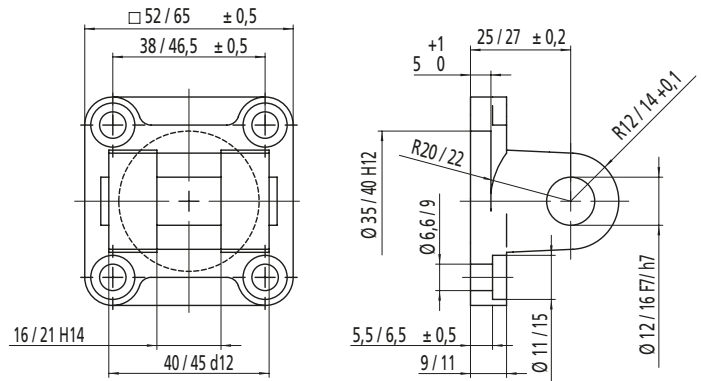
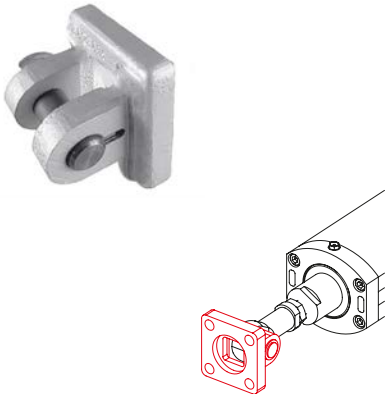
## Swivel head



Code No.	Type	
QZD050574	LZ 70	Swivel head M12
QZD050575	LZ 80	Swivel head M16

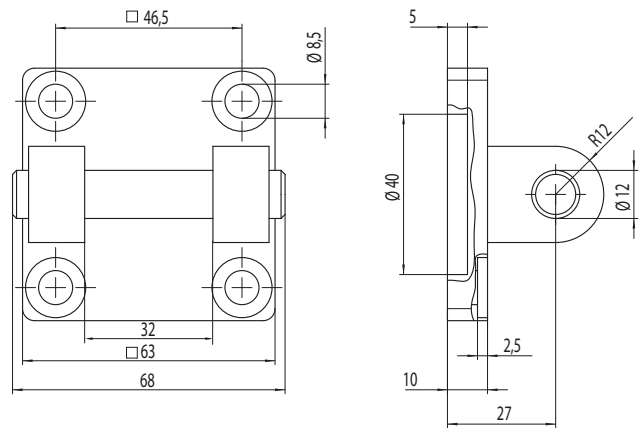
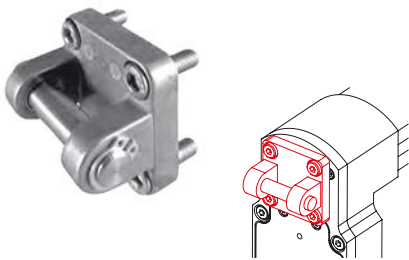


### Fork attachment for Swivel head



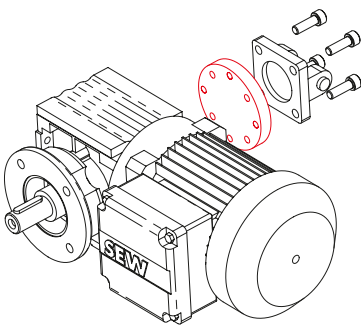
Code No.	Type	
QZD050576	LZ 70	Fork attachment Ø 12
QZD050577	LZ 80	Fork attachment Ø 16

### Swivel



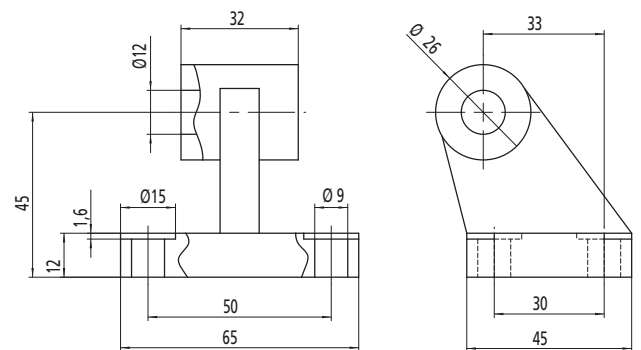
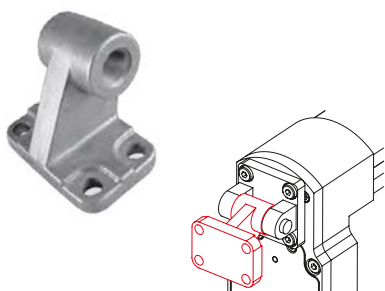
Code No.	Type	
QZD050579	LZ 70	Swivel Ø 12

For use with SEW spiro plan geared motor one of following adaptor plates is needed



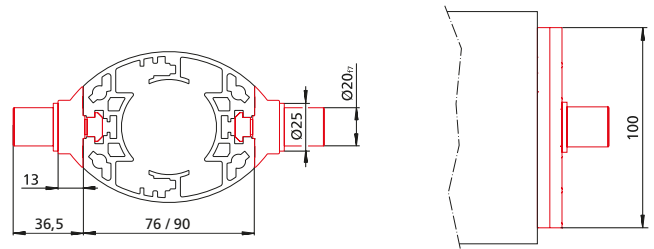
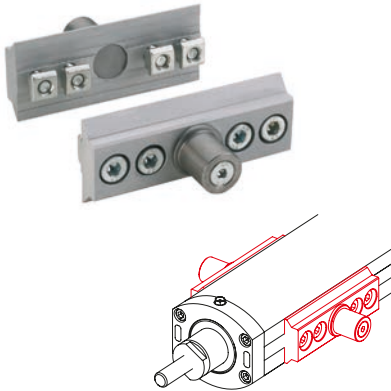
Code No.	Type	
QZD050581	LZ 70	Adaptor plates SEW WF 20
QZD050582	LZ 70	Adaptor plates SEW WF 30

### Bearing block for Swivel



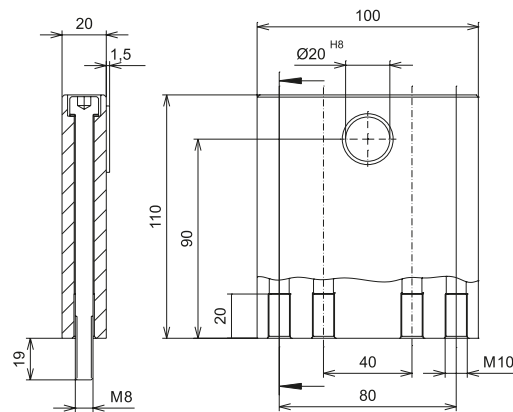
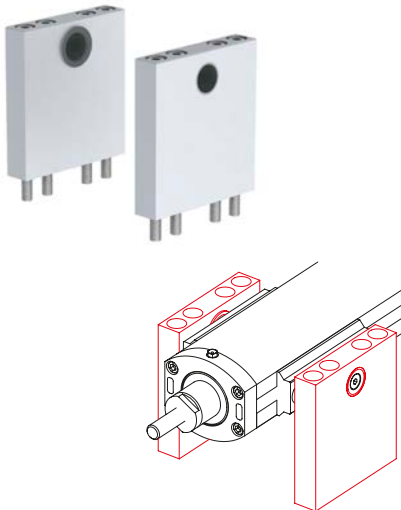
Code No.	Type	
QZD050584	LZ 70	Bearing block wide Ø 12

## Trunnion mounting set



Code No.	Type
QZD050587	Trunnion mounting set LZ 70
QZD050588	Trunnion mounting set LZ 80

## Support blocks for trunnion mounting



Code No.	Type
QZD050589	Support blocks LZ 70/80

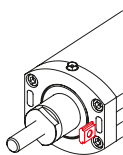
## Slot stone

- Slot stones facilitate the attachment of fittings to the cylinder.
- They can be slid into the lateral slots (Type -N-) or swivelled into the slot from above (Type -R-).



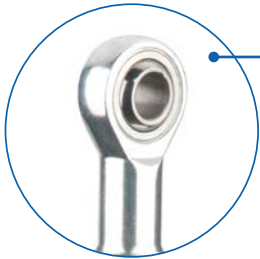
Type -N-

Type -R-



Code No.	Type	F [N]	
4006201	LZ 70	Slot stone -N- M5	4.000
4006203		Slot stone -N- M6	4.000
4026207	LZ 80	Slot stone -N- M5	4.000
4026203		Slot stone -N- M6	9.000
4026206		Slot stone -N- M8	9.000
4026221		Slot stone -R- M6	8.000
4026222		Slot stone -R- M8	8.000

## RK SyncFlex A – axial adjustment for LZ 70



### Levelling eye

- ✓ Eliminates distortions

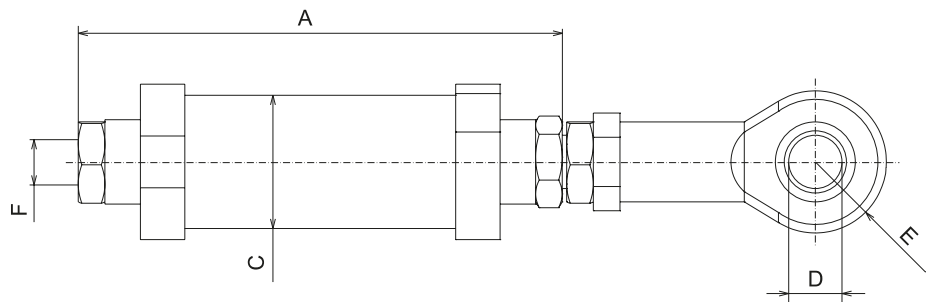
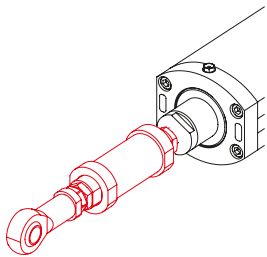
### Scope of delivery:

Axial adjustment, incl. swivel head as depicted



### Axial adjustment

- ✓ Compensates manufacturing tolerances
- ✓ Compensates installation tolerances
- ✓ Length compensation -2 mm
- ✓ Reduces commissioning times



**Note:**  
Screw depth 15 mm max.

Code No.	Load	A	C	D	E	F
QZD050590	600 N	102	Ø30	Ø12	R16	M12
QZD050591	1.000 N	102				
QZD050592	2.000 N	103,5				
QZD050593	2.500 N	109				
QZD050594	3.000 N	107,5				
QZD050595	4.000 N	139,5				
QZD050596	5.000 N	137				

[mm]

## Motor adaptor kit for 3 phase and servo motors

- Servomotors from the RK standard range can be easily connected

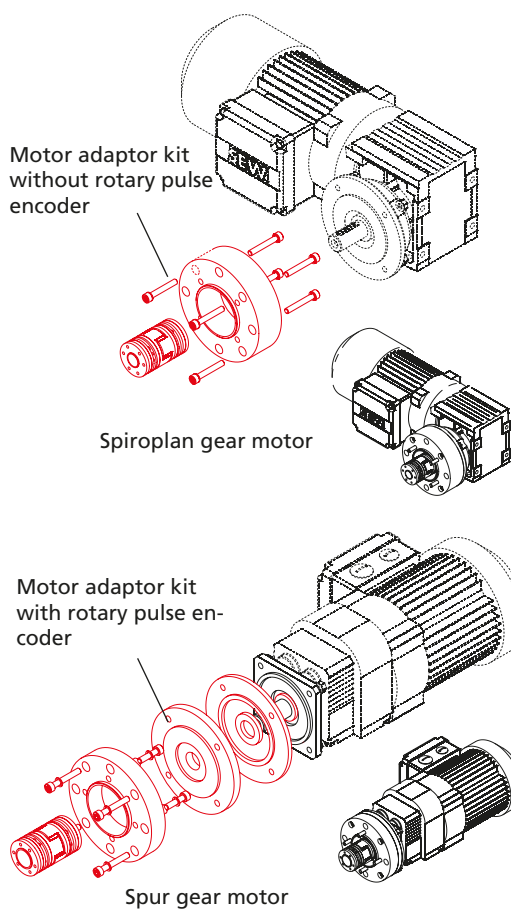
- Complete motor adaptor kits manufactured to your specifications on request

- Motor adaptors offer degree of protection IP 54 (IP 65 available on request)

### Scope of delivery:

Motor adaptor, elastomer coupling and fastenings

### 3 phase motor

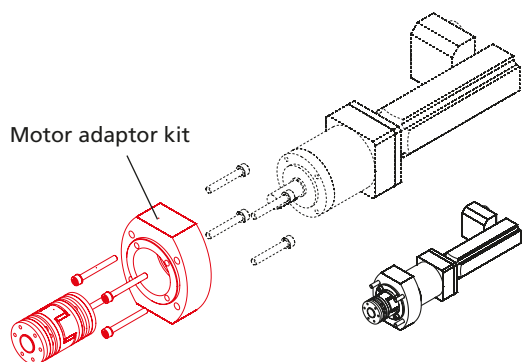


Code No.	Type	Version
LZ 70 for 3 phase motor		
949088	SEW WF20DR63L2	with gear
	SEW WF20DR63M2	with gear
	SEW WF20DR63S2	with gear
	SEW WF30DRS71M2	with gear

Code No.	Type	Version
LZ 80 for 3 phase motor		
949089	SEW WF20DR63L2	with gear
	SEW WF20DR63M2	with gear
	SEW WF20DR63M4	with gear
	SEW WF30DRS71M2	with gear
	SEW WF30DRS71S4	with gear
	SEW WF30DRS80S2	with gear
949090	SEW WF20DR63L2	with gear and rotary pulse encoder
	SEW WF20DR63M2	with gear and rotary pulse encoder
	SEW WF20DR63M4	with gear and rotary pulse encoder
	SEW WF30DRS71M2	with gear and rotary pulse encoder
	SEW WF30DRS71S4	with gear and rotary pulse encoder
	SEW WF30DRS80S2	with gear and rotary pulse encoder

Note: Motor adaptor fits all SEW flanges Ø120 with shaft Ø20x40.

### Servo motor

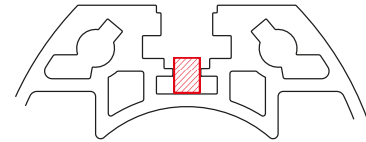
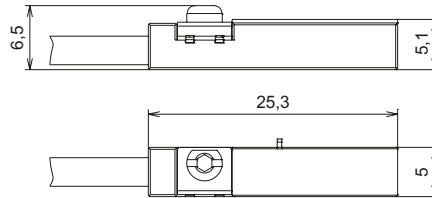


Code No.	Type	Version
LZ 70 for servo motor		
949091	RK-AC 112	with PLE 60 gear
949092	RK-AC 118	without gear
949093	RK-AC 240	without gear
949094	RK-AC 260	with PLE 80 gear
949095	RK-AC 470	without gear

Code No.	Type	Version
LZ 80 for servo motor		
949096	RK-AC 112	with PLE 60 gear

## Magnetic switch

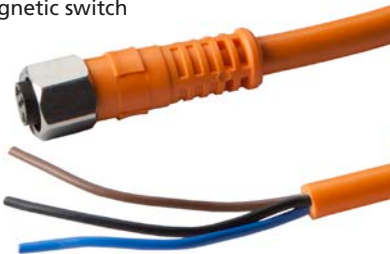
- Signals from the magnetic switch can be collected and evaluated by a customer-provided control unit (such as a PLC).
- The switch can be retrofitted in the lateral slot (protected by a cover profile as standard)
- Magnets are already integrated within the cylinder as standard.



Magnetic switch

### Magnetic switch – Technical data

Extension for magnetic switch



	NC contact
Voltage	10-30 V DC
Current consumption	< 10 mA
Output current	Max. 100 mA
Output type	PNP
Function indication	LED
Ambient temperature	-20°C to +70°C
Degree of protection	IP 67

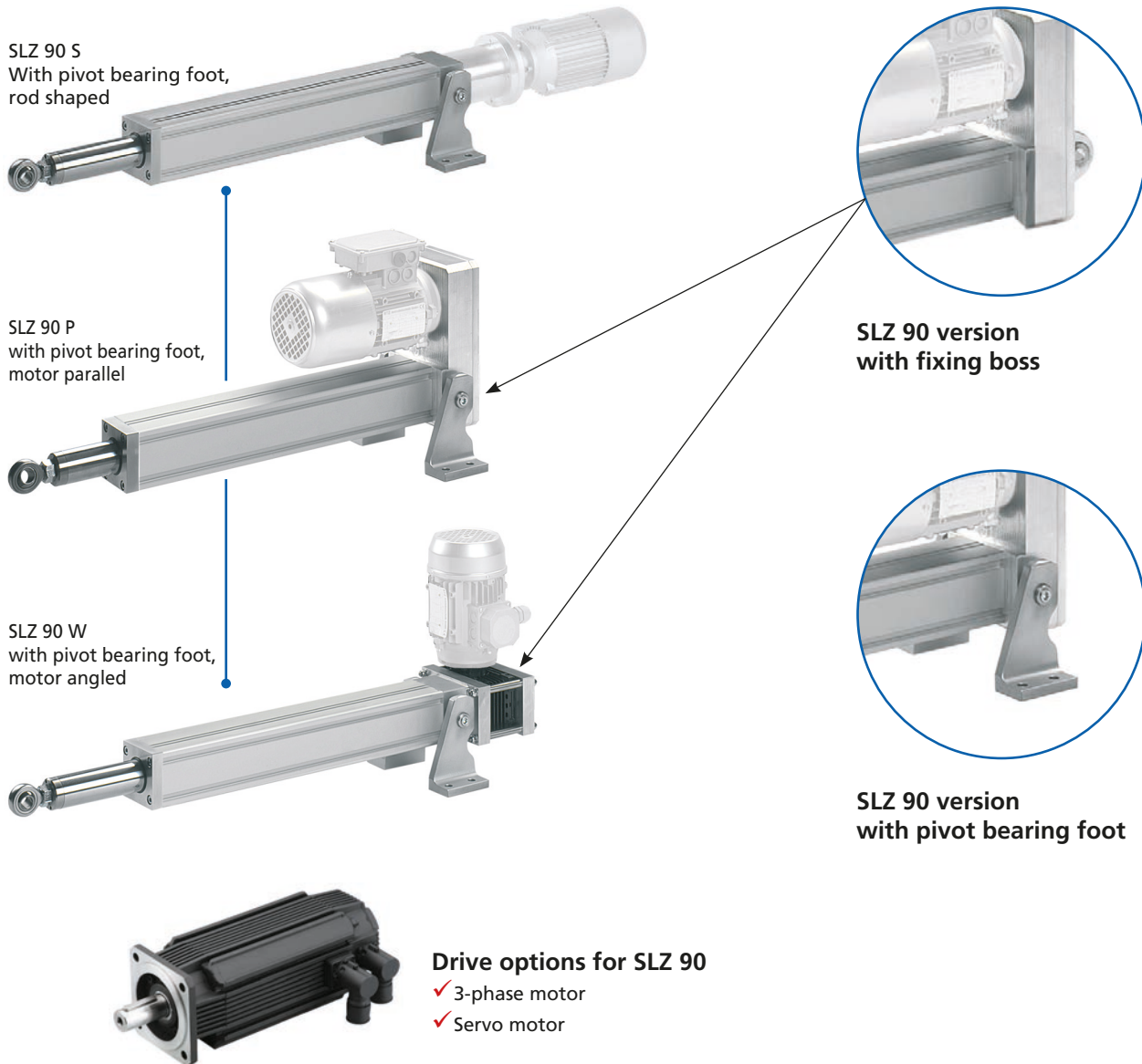
Code No.	Type
QZD050600	Magnetic switch, NC contact, cable length 0.3 m
QZD050601	Extension for magnetic switch, cable length 5 m

LZ 70 with swivel head and trunnion



# Heavy duty cylinder – SLZ 90

The powerful linear cylinder for precise moving applications up to 25,000 N



## Features:

- Choice of drives (3-phase motor/servo motor)
- Flexible use of space due to different motor configurations
- Forces from 10,000 N to 25,000 N
- Coverable slot geometry on both sides supports a range of fixing options for attachments
- Push rod with rotation locking
- Travel up to 2000 mm
- Maintenance-free for entire lifetime of unit
- IP 54
- Self-locking
- Integrated magnets for external magnetic switches

## Options:

- Optional IP 65 can be supplied
- Special stroke lengths available on request
- ACME screw version optionally available with motor brake



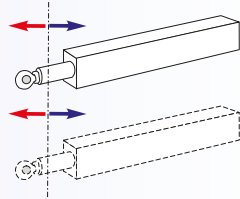
## SLZ 90 Electric cylinder - Table of contents

### Properties/Technical data

- General information/operating conditions... 306

### Versions

(Dimensions, order numbers)



- SLZ 90 electric cylinder with pivot bearing foot and fixing boss:

SLZ 90 S ..... 308 - 309

SLZ 90 P ..... 310 - 312

SLZ 90 W ..... 314 - 316

### Accessories

#### Fixing

- Slot stone -R- ..... 317

#### Position determination

- Magnetic switch ..... 317

# SLZ 90 – Technical data

## General information/operating conditions

Type	SLZ 90 with ACME screw for moving applications		
	SLZ 90 S	SLZ 90 P	SLZ 90 W
Push force/Pull force	24,000 N	14,000 N	25,000 N
Self-locking (via motor brake)	25,000 N	25,000 N	25,000 N
Max. speed	77 mm/s	77 mm/s	23 mm/s
Design	Linear cylinder with ACME screw 26 x 5 or 36 x 6		
Guide	Double bearing provided by slide bushes		
Installation position	Any position, without shear forces		
Ambient temperature	-20°C to +70°C		
Repeatability	± 0.3 mm		
Duty cycle (at max. load)	25% (2.5 mins operating time; 7.5 mins rest time/depending on sizing, up to 40% duty cycle possible)		
Voltage	230/400 V AC		
Current consumption (max. starting current)	depending on motor selection		
Power input	depending on motor selection, up to 1.5 KW		
Protection class	IP 54 (optional IP 65)		

The data refers to a three-phase motor 230/400 V AC, 50 Hz, different performance data available on request.

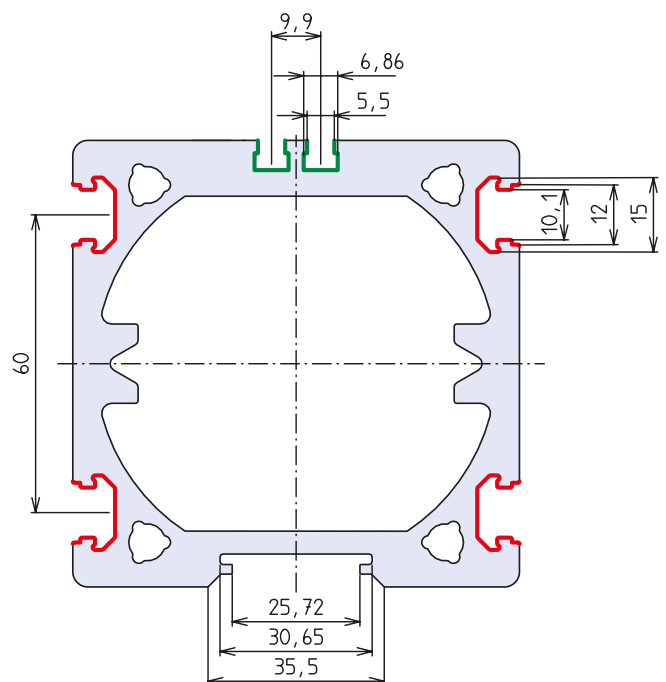
## Connecting slots - guide profile



Slot for magnetic switch, see page 317



Slot for accessory attachment (30 BLOCAN® slot geometry)





Adjustment of maintenance platform via SLZ 90 heavy duty cylinders.

# SLZ 90 S – Versions

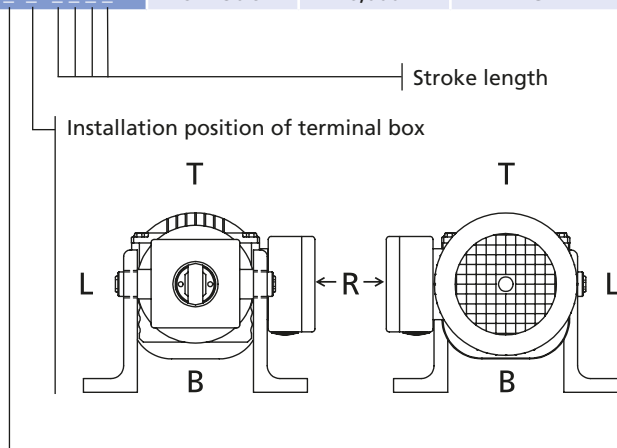
## Order information:

- Longer stroke lengths on request
- Other speeds and motors available on request



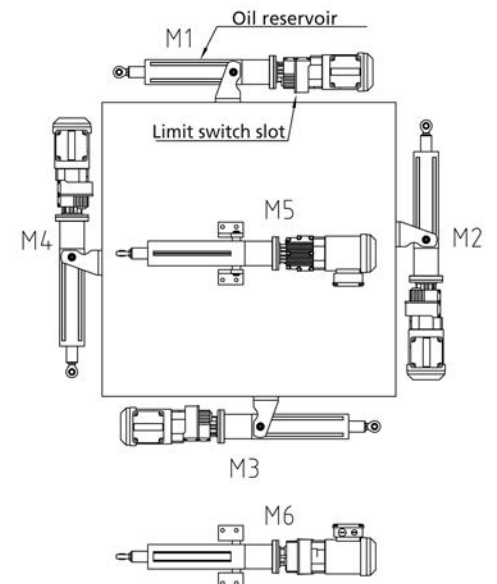
## SLZ 90 S versions with ACME screw

Code No.	Type	Max. force F [N]	Max. speed [mm/s]	Max. stroke [mm]	Output [kW]	Motor selection
ACME screw 26 x 5						without motor brake
TQ21A1S2T_1_A_ _ _ _	SLZ 90 S	12,000	13	1,000	0.55	RF17DRS71M4
TQ21A1S2Y_1_A_ _ _ _	SLZ 90 S	14,000	8	1,000	0.37	RF17DRS71S4
						with motor brake
TQ21A1S2E_1_A_ _ _ _	SLZ 90 S	6,000	52	1,300	1.1	RF17DRE80M2/BE
TQ21A1S2L_1_A_ _ _ _	SLZ 90 S	8,000	30	1,200	0.75	RF17DRE80S4/BE
ACME screw 36 x 6						without motor brake
TQ21A1S2H_2_A_ _ _ _	SLZ 90 S	18,000	18	1,400	1.1	RF17DRE80M2
TQ21A1S2P_2_A_ _ _ _	SLZ 90 S	25,000	10	1,100	0.75	RF17DRE80S4
						with motor brake
TQ21A1S2E_2_A_ _ _ _	SLZ 90 S	5,000	63	2,000	1.1	RF17DRE80M2/BE
TQ21A1S2G_2_A_ _ _ _	SLZ 90 S	8,000	37	2,000	1.1	RF17DRE80M2/BE

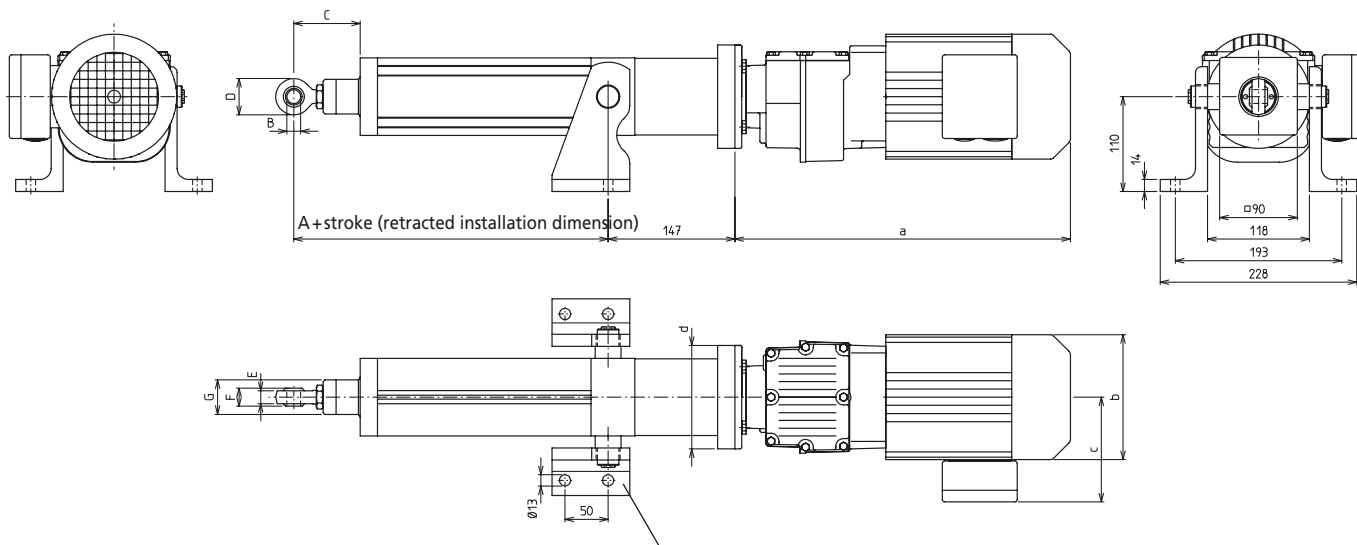


All diagrams show the terminal box in the R position

- 1 = M1    4 = M4
- 2 = M2    5 = M5
- 3 = M3    6 = M6



Version with pivot bearing foot



Can be turned through 360°  
The pivot bearing feet can also be mounted laterally reversed.

[mm]

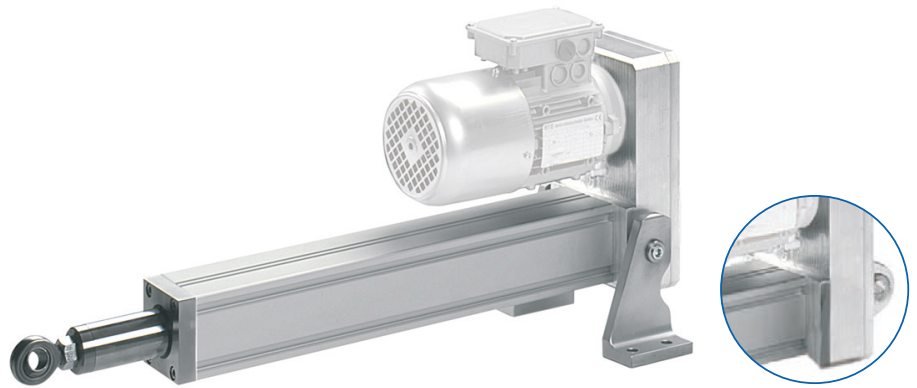
3-phase motors	a	b	c	d	Weight [kg]
RF17DRS71	360	Ø 139	119	Ø 120	11
RF17DRS71/BE	428		129		14
RF17DRE80	360	Ø 156	128	Ø 120	9
RF17DRE80/BE	428		139		12

Type	A	B	C	D	E	F	G	Weight [kg]	
								Basic length (dimension A)	Additional weight/100 mm
Tr 26 x 5	215	Ø 16	94	42	15	21	Ø 40	10.8	1.5
Tr 36 x 6	245	Ø 20	113	50	18	25	Ø 50	12.0	2.0

# SLZ 90 P – Versions

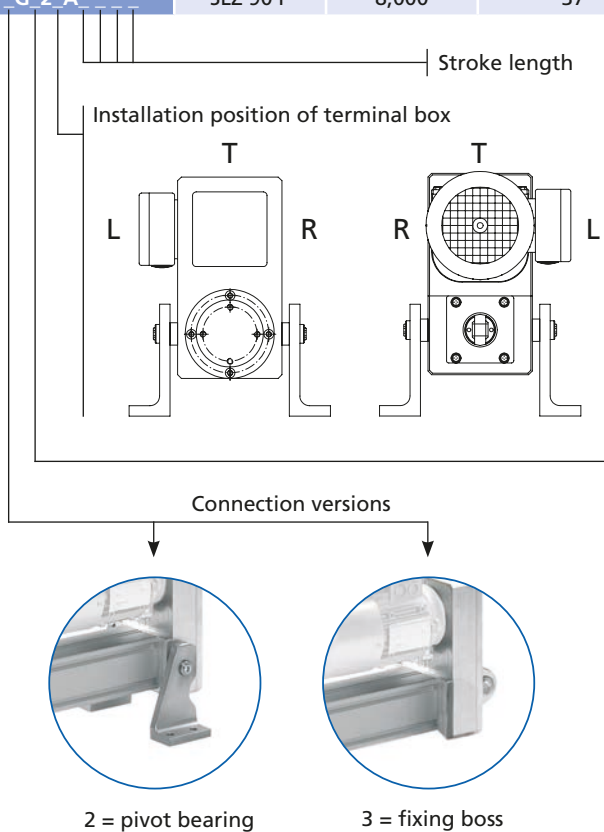
## Order information:

- Longer stroke lengths on request
- Other speeds and motors available on request



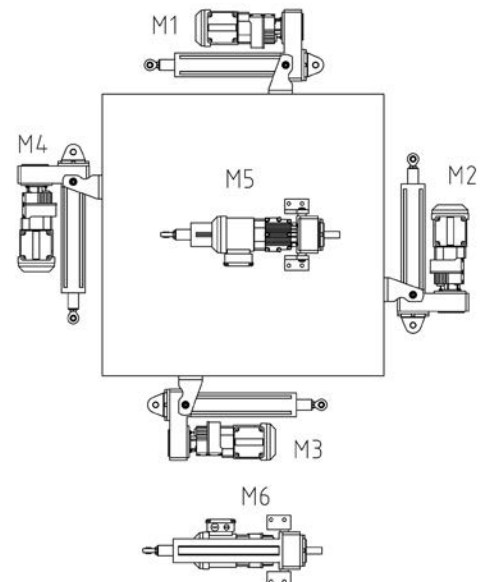
## SLZ 90 P versions with ACME screw

Code No.	Type	Max. force F [N]	Max. speed [mm/s]	Max. stroke [mm]	Output [kW]	Motor selection
ACME screw 26 x 5						without motor brake
TQ21A1P_T_1_A_	SLZ 90 P	12,000	13	1,000	0.55	RF17DRS71M4
TQ21A1P_Y_1_A_	SLZ 90 P	14,000	8	1,000	0.37	RF17DRS71S4
						with motor brake
TQ21A1P_E_1_A_	SLZ 90 P	6,000	52	1,300	1.1	RF17DRE80M2/BE
TQ21A1P_L_1_A_	SLZ 90 P	8,000	30	1,200	0.75	RF17DRE80S4/BE
ACME screw 36 x 6						without motor brake
TQ21A1P_H_2_A_	SLZ 90 P	18,000	18	1,400	1.1	RF17DRE80M2
TQ21A1P_P_2_A_	SLZ 90 P	25,000	10	1,100	0.75	RF17DRE80S4
						with motor brake
TQ21A1P_E_2_A_	SLZ 90 P	5,000	63	2,000	1.1	RF17DRE80M2/BE
TQ21A1P_G_2_A_	SLZ 90 P	8,000	37	2,000	1.1	RF17DRE80M2/BE

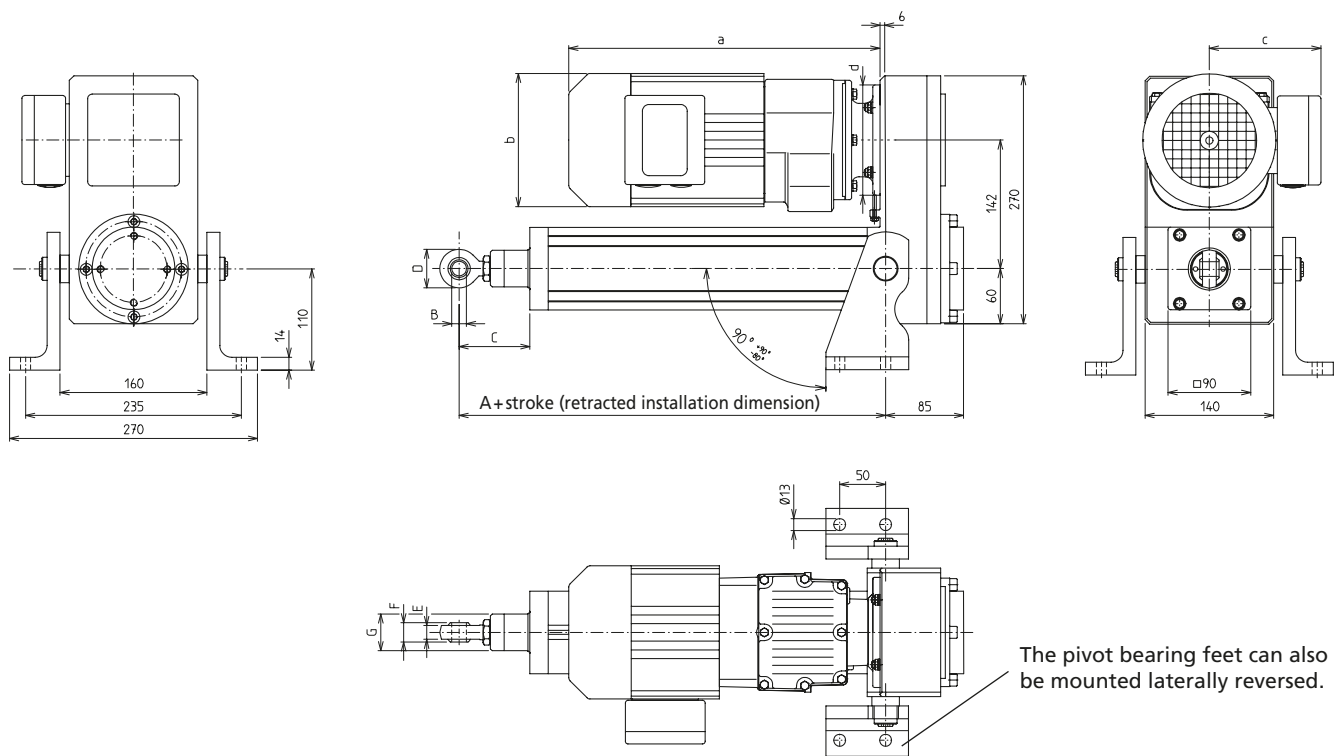


All diagrams show the terminal box in the L position

- 1 = M1
- 2 = M2
- 3 = M3
- 4 = M4
- 5 = M5
- 6 = M6



Version with pivot bearing foot



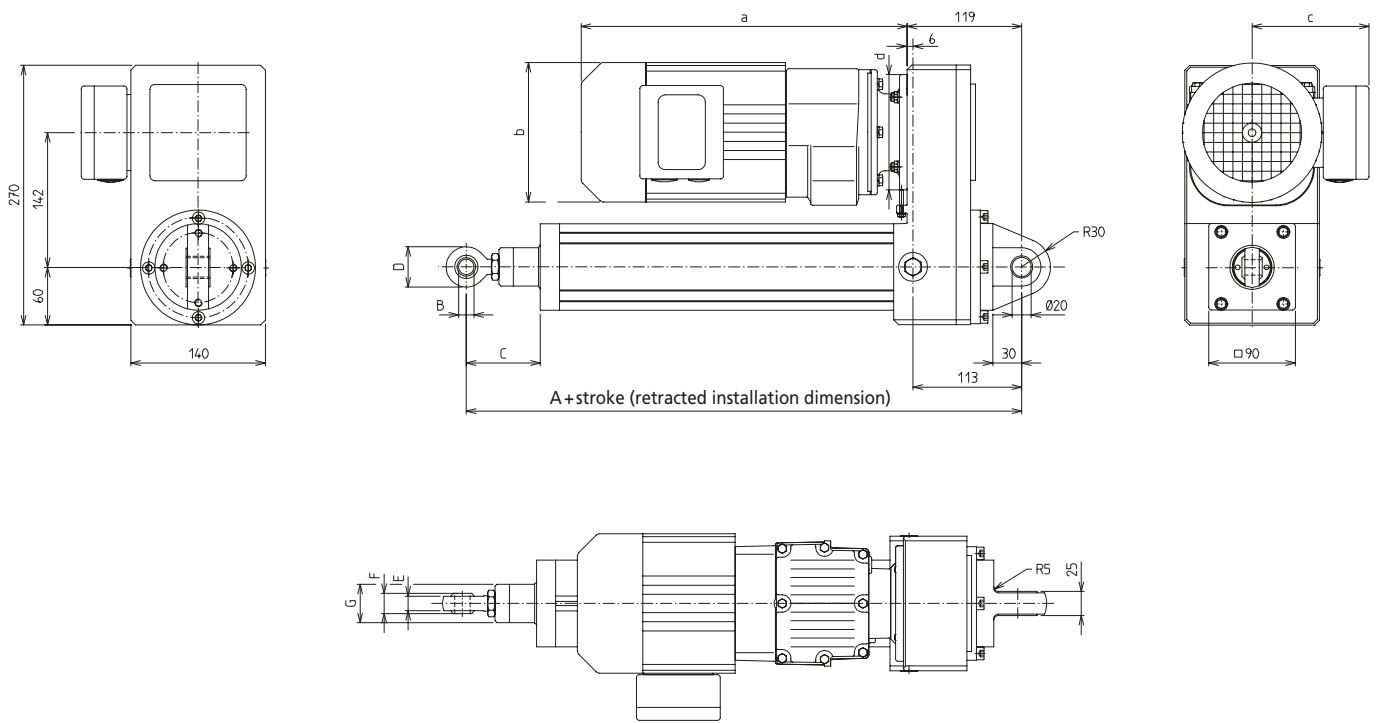
[mm]

3-phase motors	a	b	c	d	Weight [kg]
RF17DRS71	360	Ø 139	119	Ø 120	9
RF17DRS71/BE	428		129		12
RF17DRE80	360	Ø 156	128	Ø 120	11
RF17DRE80/BE	428		139		14

Type	A	B	C	D	E	F	G	Weight [kg]	
								Basic length (dimension A)	Additional weight/ 100 mm
Tr 26 x 5	215	Ø 16	94	42	15	21	Ø 40	12.1	1.5
Tr 36 x 6	245	Ø 20	113	50	18	25	Ø 50	13.1	2.0

# SLZ 90 P – Versions

## Version with fixing boss



[mm]

3-phase motors	a	b	c	d	Weight [kg]
RF17DRS71	360	Ø 139	119	Ø 120	9
RF17DRS71/BE	428		129		12
RF17DRE80	360	Ø 156	128	Ø 120	11
RF17DRE80/BE	428		139		14

Type	A	B	C	D	E	F	G	Weight [kg]	
								Basic length (dimension A)	Additional weight/ 100 mm
Tr 26 x 5	328	Ø 16	94	42	15	21	Ø 40	10.3	1.5
Tr 36 x 6	358	Ø 20	113	50	18	25	Ø 50	11.3	2.0



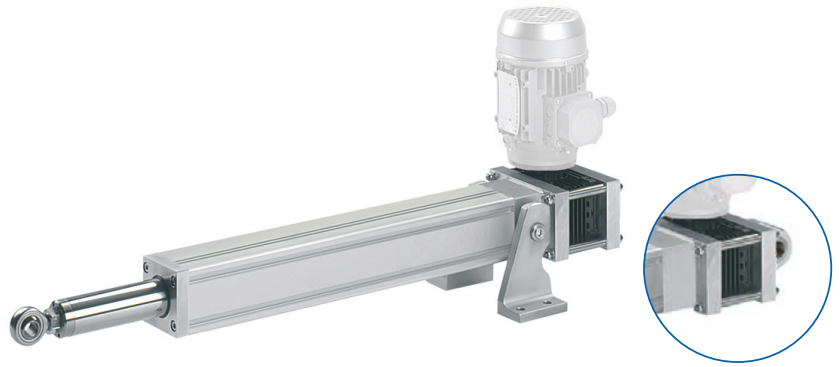


Adjustment of maintenance platform via SLZ 90 heavy duty cylinders.

# SLZ 90 W – Versions

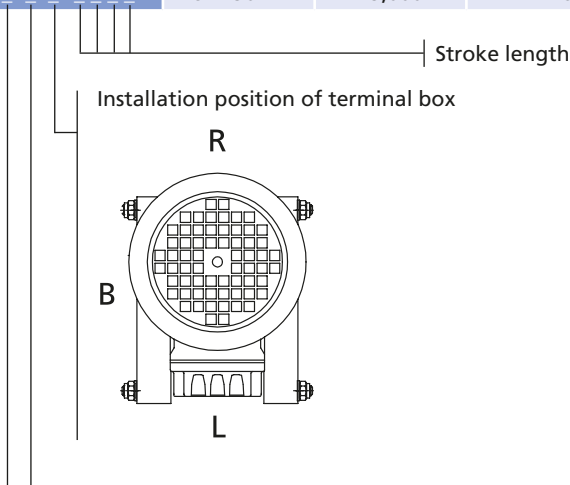
## Order information:

- Longer stroke lengths on request
- Other speeds and motors available on request



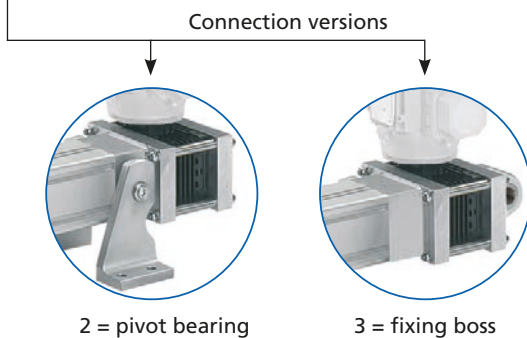
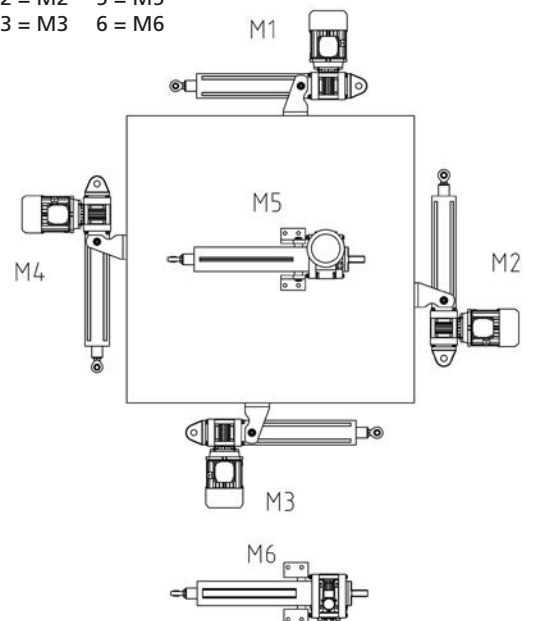
## SLZ 90 W versions with ACME screw

Code No.	Type	Max. force F [N]	Max. speed [mm/s]	Max. stroke [mm]	Output [kW]	Motor selection
ACME screw 26 x 5						without motor brake
TQ21A1W_L_1_A_ _ _ _	SLZ 90 W	5,000	23	1,400	0.37	71-4
TQ21A1W_M_1_A_ _ _ _	SLZ 90 W	7,000	15	1,200	0.37	71-4
TQ21A1W_N_1_A_ _ _ _	SLZ 90 W	9,000	11	1,000	0.37	71-4
TQ21A1W_X_1_A_ _ _ _	SLZ 90 W	11,500	5	900	0.25	63-4
TQ21A1W_T_1_A_ _ _ _	SLZ 90 W	13,000	7	900	0.37	71-4
ACME screw 36 x 6						without motor brake
TQ21A1W_V_2_A_ _ _ _	SLZ 90 W	22,000	7	1,300	0.55	71-4
TQ21A1W_J_2_A_ _ _ _	SLZ 90 W	23,000	9	1,200	0.75	80-4
TQ21A1W_E_2_A_ _ _ _	SLZ 90 W	24,000	14	1,200	1.1	80-4
TQ21A1W_B_2_A_ _ _ _	SLZ 90 W	25,000	18	1,200	1.5	90-4

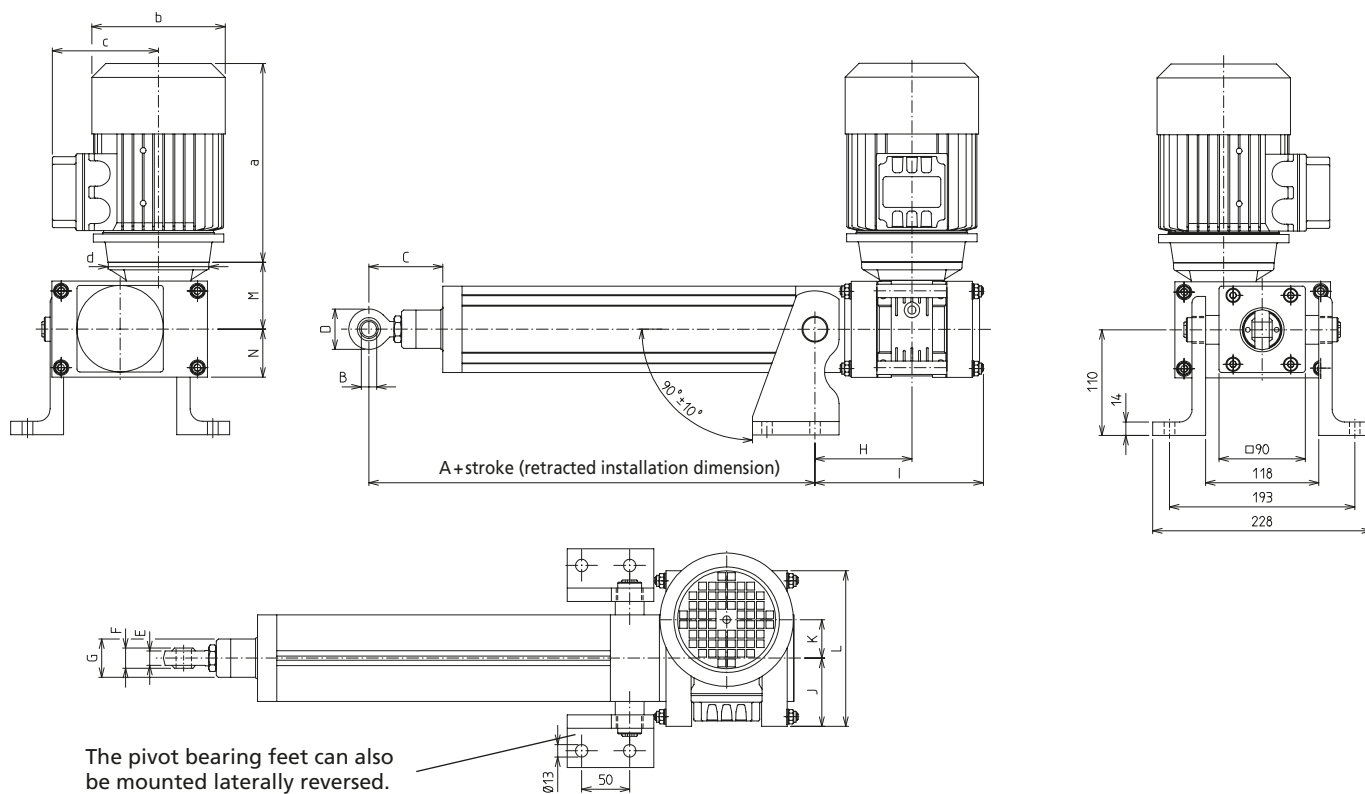


All diagrams show the terminal box in the L position

- 1 = M1    4 = M4
- 2 = M2    5 = M5
- 3 = M3    6 = M6



Version with pivot bearing foot



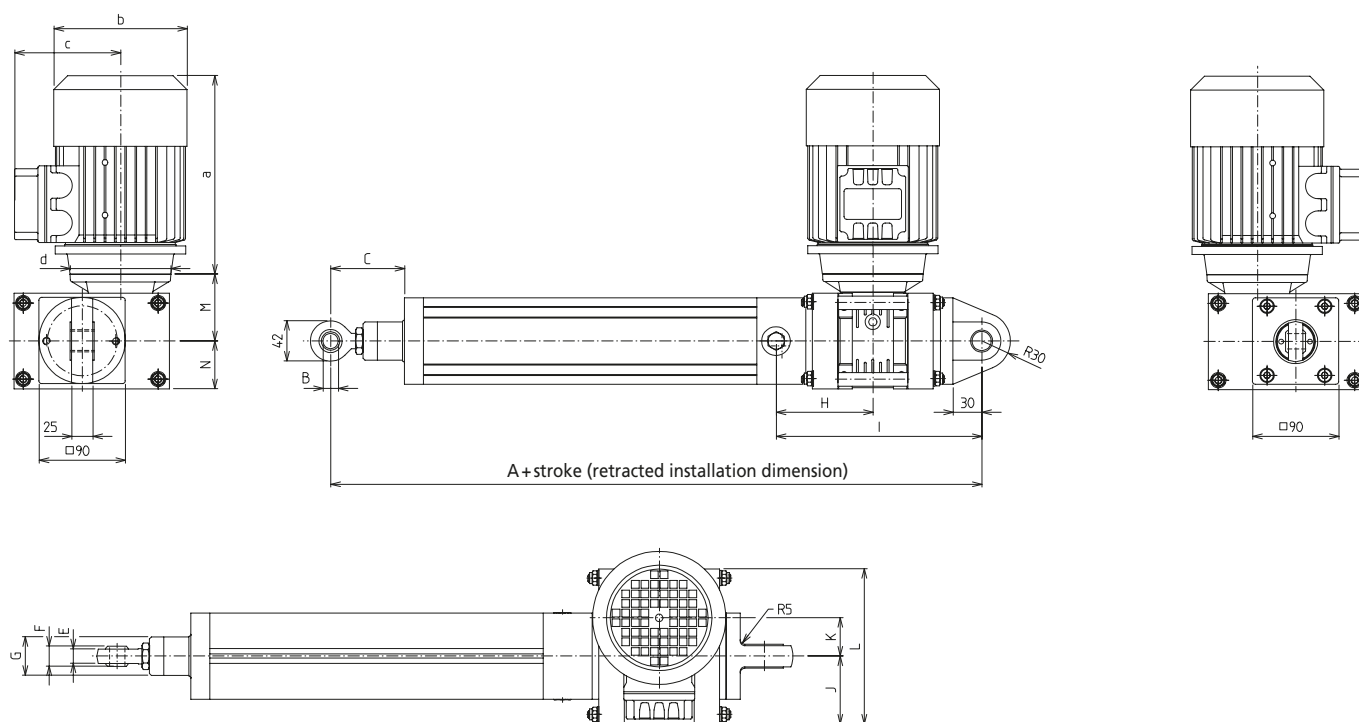
[mm]

3-phase motors	a	b	c	d	Weight [kg]
63-4	189	Ø 124	104	Ø 105	6
71-4	218	Ø 140	109	Ø 105	7
80-4	237	Ø 156	123	Ø 120	10
90-4	279	Ø 178	128	Ø 140	14

Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Weight [kg]	
															Basic length (dimension A)	Additional weight/ 100 mm
Tr 26 x 5	215	Ø 16	94	42	15	21	Ø 40	101.5	176	71	40	162	70	50	14.0	1.5
Tr 36 x 6	245	Ø 20	113	50	18	25	Ø 50	117.5	212	98	63	231.5	109	72	21.7	2.0

# SLZ 90 W – Fixing/Position determination

## Version with fixing boss



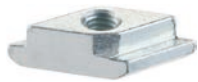
[mm]

Three-phase motors	a	b	c	d	Weight [kg]
63-4	189	Ø 124	104	Ø 105	6
71-4	218	Ø 140	109	Ø 105	7
80-4	237	Ø 156	123	Ø 120	10
90-4	279	Ø 178	128	Ø 140	14

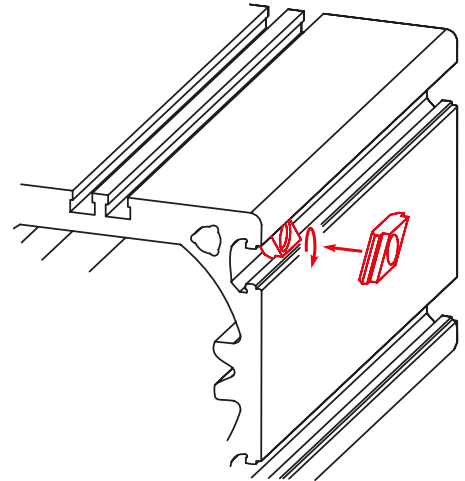
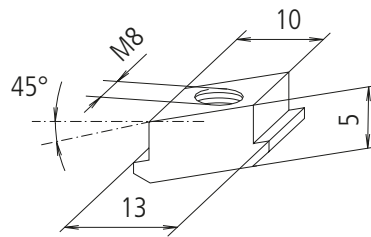
Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Weight [kg]	
															Basic length (dimension A)	Additional weight/ 100 mm
Tr 26 x 5	430	Ø 16	94	42	15	21	Ø 40	101.5	215	71	40	162	70	50	12.2	1.5
Tr 36 x 6	493	Ø 20	113	50	18	25	Ø 50	117.5	248	98	63	231.5	109	72	19.9	2.0

**Slot stone -R-**

- Slot stones facilitate the fitting of attachments to the cylinder. To this end, they can be swivelled into the slot from above (Type -R-).



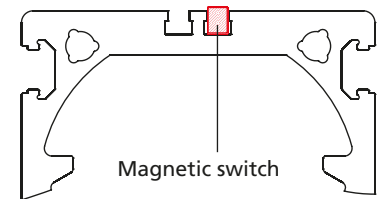
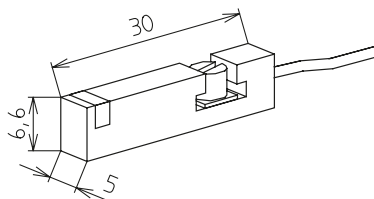
Type -R-



Code No.	Type	F [N]
4006223	Slot stone -R- M8	4.000

**Magnetic switch**

- Signals from the magnetic switch can be collected and evaluated by a customer-provided control unit (such as a PLC).
- The switch can be retrofitted in the lateral slot (protected by a cover profile as standard)

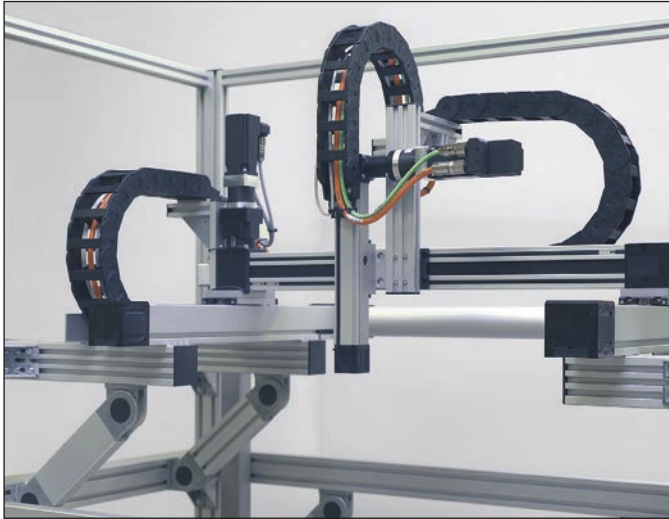


Code No.	Type
QZD050599	Magnetic switch, NC contact*, cable length 5.3 m

\*Magnetic switch, NO contact, available on request

**Magnetic switch – Technical data**

	NC contact
Voltage	10-30 V DC
Current consumption	< 10 mA
Output current	Max. 100 mA
Output type	PNP
Function indication	LED
Ambient temperature	-25°C to +85°C
Protection class	IP 67



**Place-Tec features:**

- ✓ High cycle rates
- ✓ 3 shift operation
- ✓ Short cycle times
- ✓ High reliability
- ✓ High repeatability



**RK ROSE+KRIEGER**



**Loading and unloading,  
palletising, pick & place**

**Rodless style..... Page 322 - 405**

**Rodstyle ..... Page 406 - 425**

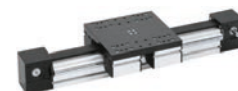
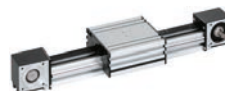
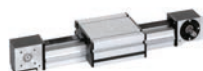
***Place-Tec***

# Place-Tec overview

## Rodless style | Drive + Guide

The "max." data refer to the smallest/largest sizes

### Roller guide actuators/guides



	PLZ from page 322	SQZ from page 348	LMZ from page 366
Size	30, 40, 50, 60, 80	30, 40, 60, 80	100
Max. travel	4590-5788 mm	5788-5898 mm	5700 mm
Fx max.	140-2810 N	160-2810 N	3400 N
Fy max.	790-2550 N	790-2500 N	7000 N
Fz max.	790-2550 N	790-2550 N	7000 N
Mx max.	14-124 Nm	14-124 Nm	441 Nm
My max.	20-168 Nm	20-168 Nm	609 Nm
Mz max.	22-169 Nm	22-169 Nm	609 Nm
Timing-belt	●	●	●
Timing-belt 2 contradirectional carriages	●		
Guide without drive	●	●	●
Features	✓ Roller guide paired with wide timing-belt	✓ Timing-belt unit with optimum connecting options via slots in the guide profile/carriage	✓ Robust linear actuators that enable high moments and forces

## Rodstyle | Drive + Guide

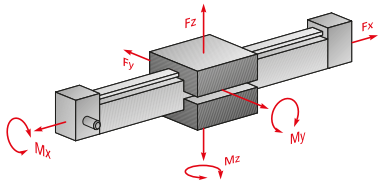
The "max." data refer to the smallest/largest sizes

### Roller guide actuators



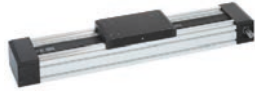
	SQ-II MT from page 406	SQ-II ZST from page 418
Size	30, 40, 50, 60, 80	60, 80
Max. travel	3722-17476 mm	29530 mm
Fx max.	480-3200 N	Motor-dependent
Fy max.	1000-5000 N	2550 N
Fz max.	1200-6000 N	2550 N
Mx max.	48-380 Nm	99-124 Nm
My max.	70-430 Nm	171-201 Nm
Mz max.	60-370 Nm	171-201 Nm
Features	✓ Timing-belt unit for large stroke lengths	✓ Rack unit for large strokes up to 30 m





Length/Strokes [mm]  
 Forces [N]  
 Moments [Nm]

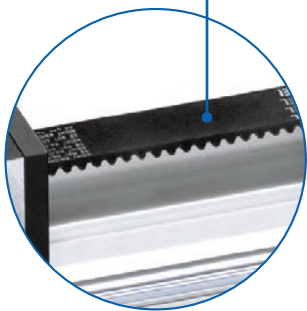
### Ball rail actuators/guides



MultiLine from page 378	RK DuoLine Z from page 390
200	60, 80, 120, 160
5620 mm	5753-9010 mm
4700 N	900-6000N
10000 N	700-5100 N
10000 N	2500-8900 N
720 Nm	48-500 Nm
900 Nm	250-1200 Nm
900 Nm	220-1150 Nm
•	•
•	•
✓ Compact ball rail actuator for high loads	✓ All-round talent with encapsulated guide system

# Roller guide actuator/guides - PL/PLZ/PLZ-i

## Roller guide with wide timing-belt



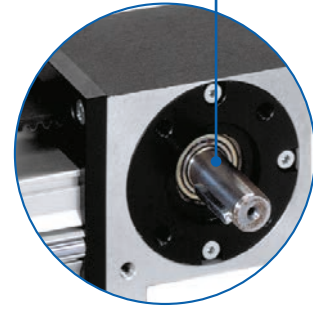
### Wide timing-belt

- ✓ Transmission of large axial forces



### Fixing slots

- ✓ Simple connection of accessories



### Shaft configuration

- ✓ Freely configurable acc. to your requirements

### Features:

- Guide profile and carriage made of extruded aluminium
- BLOCAN® slot geometry in carriage
- Use of wide timing-belts up to 40 mm
- Carriage guidance by means of rollers
- Versions available with internal timing-belt (in guide profile)
- Version with two contradirectional carriages

### Options:

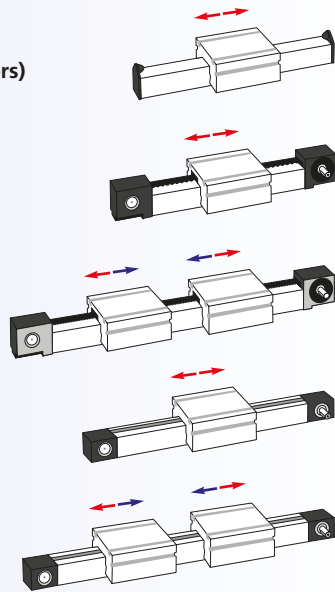
- Longer stroke lengths
- Second free-running carriage
- Extended carriage

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# PLZ/PLZ-i – Technical data

## General information/operating conditions

Design	Aluminium profile, timing-belt drive
Guide	Rollers, external
Installation position	Any position
Repeatability	0.05 mm
Ambient temperature	0°C to +60°C
Protection class	IP 20

Type	Timing-belt	Pitch/width	Eff. diam. of pulley [mm]	Max. input torque [Nm]	Max. speed [m/s]	Max. acceleration [m/s <sup>2</sup> ]
<b>PLZ (timing-belt unit)</b>						
PLZ 30	GT 5MR	5/12	23.87	5	5	20
PLZ 40	GT 5MR	5/20	27.08	8.5		
PLZ 50	GT 5MR	5/25	38.20	20		
PLZ 60	GT 8MR	8/28	56.02	55	10	
PLZ 80	GT 8MR	8/40	61.12	90		
<b>PLZ-i with internal timing-belt</b>						
PLZ-i 30	GT 3MR	3/6	13.37	1	0.5	20
PLZ-i 40	GT 3MR	3/9	17.19	2		
PLZ-i 50	GT 5MR	5/15	22.28	5		
PLZ-i 60	GT 5MR	5/20	27.06	9		
PLZ-i 80	GT 5MR	5/30	33.42	19		

## No-load torque

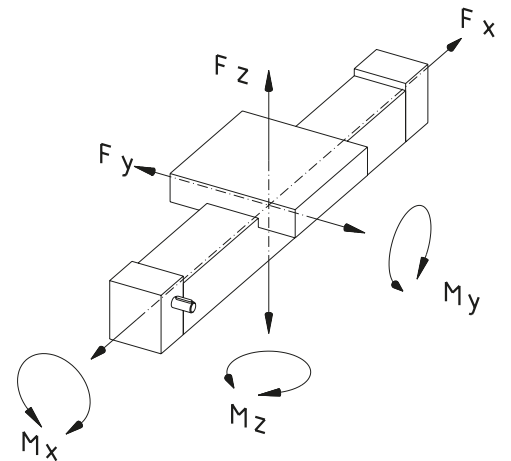
[Nm]

Type	PLZ	PLZ-i
30	0.25	0.35
40	0.35	0.45
50	0.60	0.70
60	0.80	0.90
80	1.00	1.10



**Load data\***

- F Force [N]
- M Moment [Nm]
- I Geometric moment of inertia [cm<sup>4</sup>]



\* With reference to carriage (static values, guide element resting on full surface)

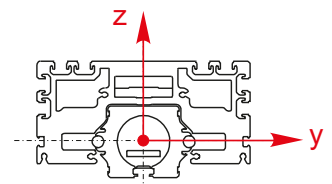
	F <sub>x</sub> **	F <sub>y</sub>	F <sub>z</sub>	M <sub>x</sub>	M <sub>y</sub>	M <sub>z</sub>
<b>PL (roller guide)</b>						
PL 30	–	790	790	14	20	22
PL 40	–	1020	1020	23	33	33
PL 50	–	1020	1020	28	49	49
PL 60	–	2550	2550	99	143	143
PL 80	–	2550	2550	124	168	169
<b>PLZ with external timing-belt</b>						
PLZ 30	340	790	790	14	20	22
PLZ 40	610	1020	1020	23	33	33
PLZ 50	1000	1020	1020	28	49	49
PLZ 60	1790	2550	2550	99	143	143
PLZ 80	2810	2550	2550	124	168	169
<b>PLZ-i with internal timing-belt</b>						
PLZ-i 30	95	790	790	14	20	22
PLZ-i 40	145	1020	1020	23	33	33
PLZ-i 50	400	1020	1020	28	49	49
PLZ-i 60	610	2550	2550	99	143	143
PLZ-i 80	1100	2550	2550	124	168	169

\*\* Initial tension of the timing belt 0,8 x F<sub>x</sub>

**Geometric moment of inertia**

[cm<sup>4</sup>]

Type	I <sub>y</sub>	I <sub>z</sub>
30	4.3	6.4
40	14.4	19.9
50	35.5	44.3
60	77.3	111.5
80	201.9	280.7



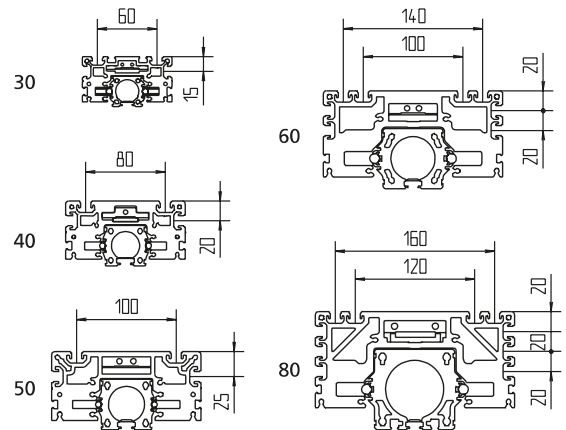
# PL - Versions

## Order information:

- Longer travel lengths on request
- Second or extended carriage available on request

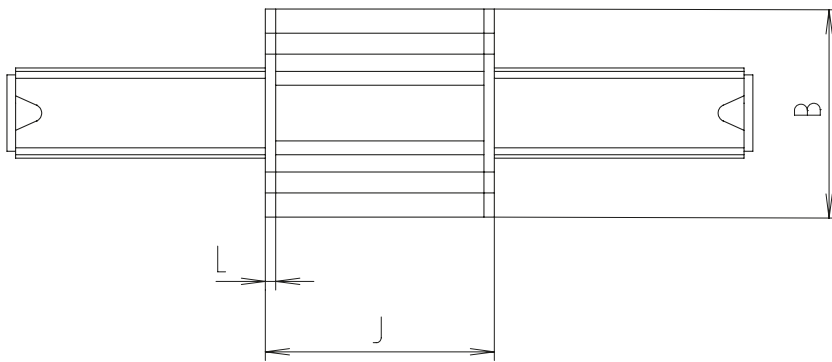
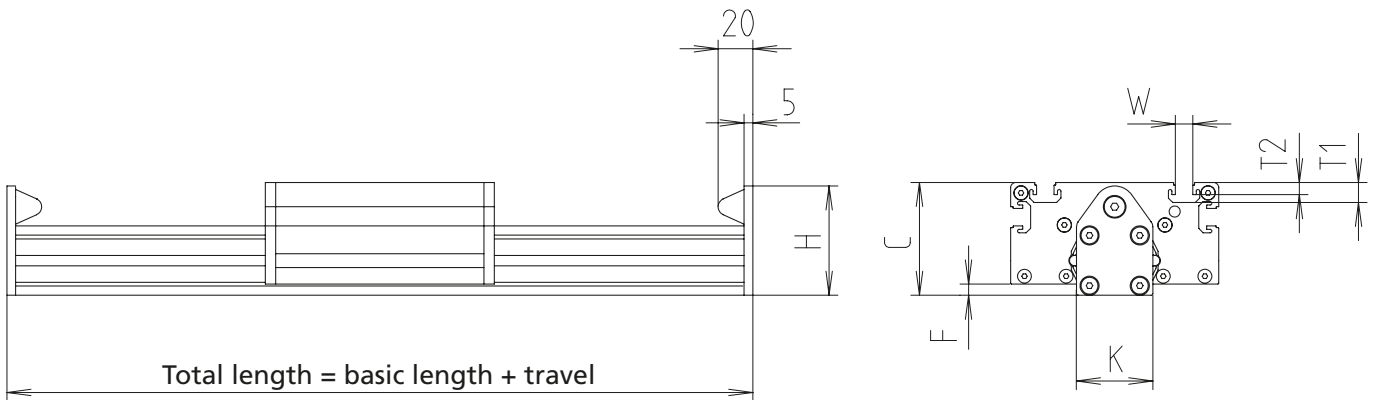
## Version

## ■ Guide



Code No.	Type	Basic length	B	C	F	H	J	K
MMA3030AA	PL-II 30	142	90	50	4.5	50	102	34
MMA4040AA	PL-II 40	172	120	65	6.5	63	132	44
MMA5050AA	PL-II 50	202	150	78	9.0	74	162	54
MMA6060AA	PL-II 60	232	180	98	11.5	84	192	72
MMA8080AA	PL-II 80	252	200	118	21.5	104	212	92

----- Total length = basic length + travel [mm]



[mm]

L	T1	T2	W	Max. travel	Mass [kg]	
					Basic length	per 100 mm travel
6	8.5	4.5	10.1	5458	1.0	0.16
6	11.5	7	10.1	5428	1.9	0.28
6	11.5	7	10.1	5398	3.5	0.41
6	11.5	7	10.1	5778	5.9	0.60
6	11.5	7	10.1	5758	7.9	0.90

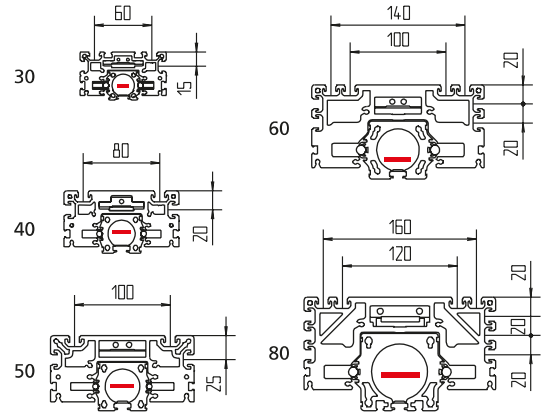
# PLZ - Versions

## Order information:

- Longer travel lengths on request
- Second non driven or extended carriage available on request

## Version

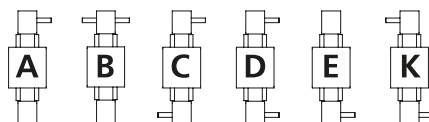
## ■ Timing-belt unit



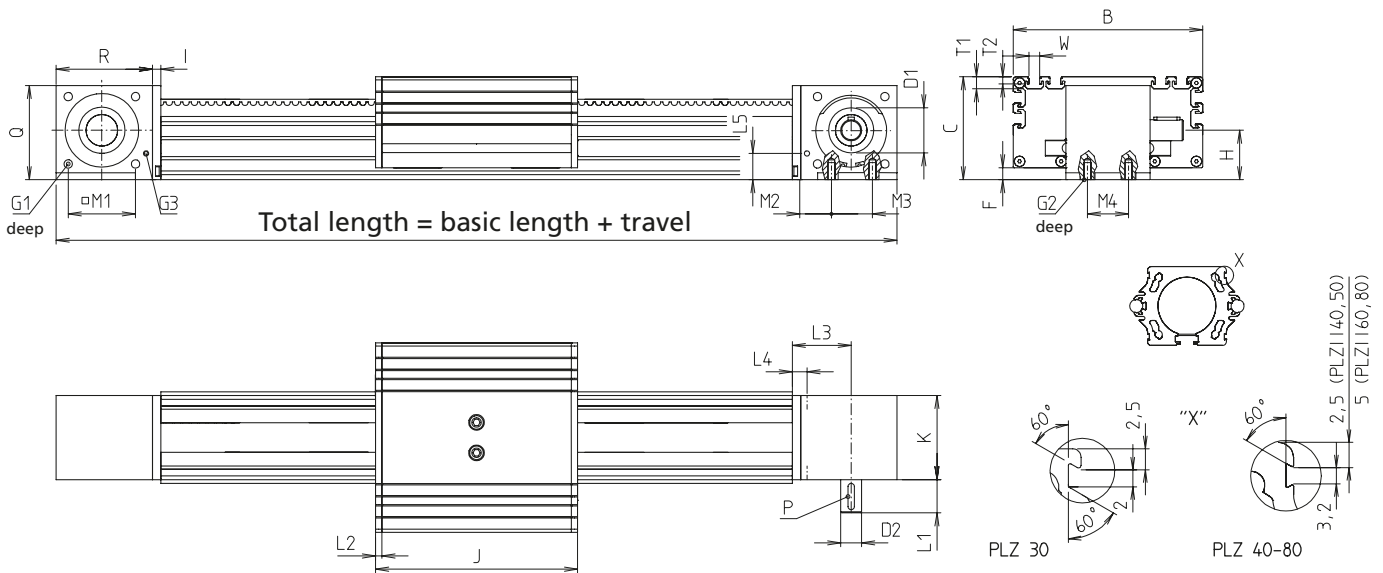
Code No.	Type	Timing-belt	Basic length	B	C	D1	D2	F	G1	G2	G3	H	I	J
FZA3030_A	PLZ 30	5M-12	220	90	50	22 <sup>H7</sup>	10	4.5	M4	M5	M5	25.5	6	102
FZA4040_A	PLZ 40	5M-20	270	120	65	28 <sup>H7</sup>	10	6.5	M5	M6	M5	35.1	8	132
FZA5050_A	PLZ 50	5M-25	332	150	78	35 <sup>H7</sup>	14	9	M6	M6	M5	43	8	162
FZA6060_A	PLZ 60	8M-28	391	180	98	70 <sup>H7</sup>	20	11.5	M8	M8	M5	47	8	192
FZA8080_A	PLZ 80	8M-40	428	200	118	70 <sup>H7</sup>	25	21.5	M8	M8	M5	66	10	212

----- Total length = basic length + travel [mm]

Configuration of drive shaft







[mm]

K	L1	L2	C	L4	L5	M1	M2	M3	M4	P	Q	R	T1	T2	W	Max. travel	Mass [kg]	
																	Basic length	per 100 mm travel
38	25	6	34	13	10	21	17	20	20	3 x 3 x 20	48	53	8.5	4.5	10.1	5498	1.23	0.17
48	28	6	40	16	15	29	20	20	20	3 x 3 x 20	61	61	11.5	7	10.1	5468	2.76	0.29
58	30	6	48	16	14	38	16	40	20	5 x 5 x 25	77	77	11.5	7	10.1	5438	5.17	0.41
80	31.5	6	56	16	29	64	30	40	40	6 x 6 x 25	89.5	91.5	11.5	7	10.1	5808	9.45	0.63
100	31.5	6	63	18	29	64	35	40	40	8 x 7 x 25	109.5	98	11.5	7	10.1	5788	14.05	0.93

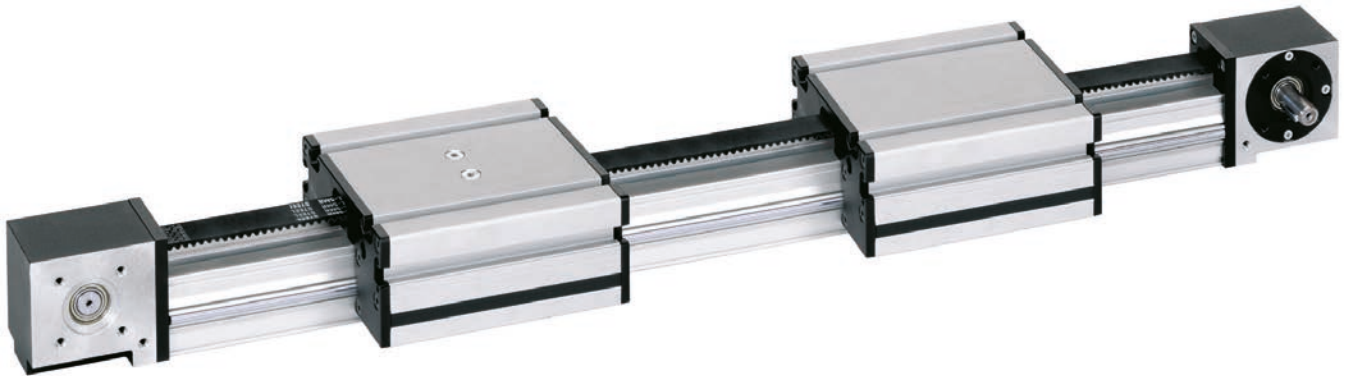
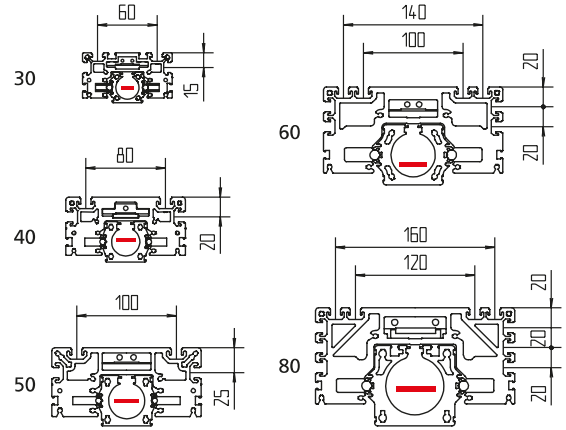
# PLZ R/L -Versions

## Order information:

- Longer travel lengths on request
- Extended carriage available on request

## Version

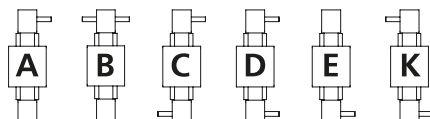
- Timing-belt unit
- Two opposite moving carriages

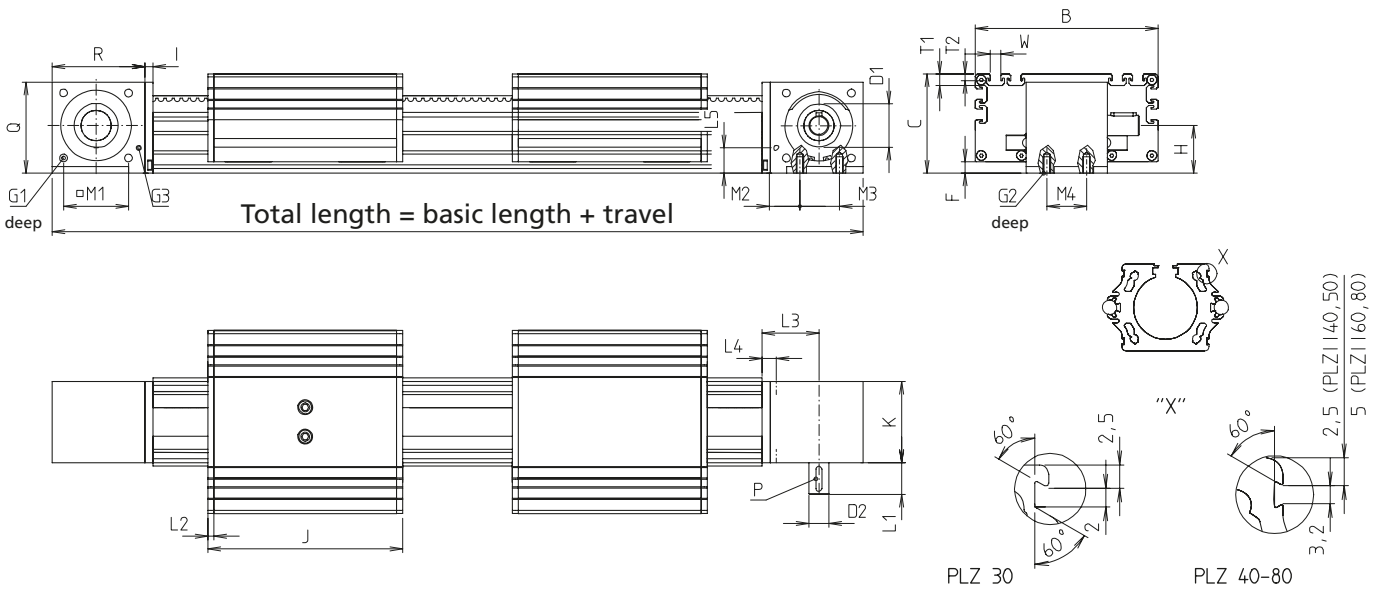


Code No.	Type	Timing-belt	Basic length	B	C	D1	D2	F	G1	G2	G3	H	I	J
FZC3030_A	PLZ 30	5M-12	322	90	50	22 <sup>H7</sup>	10	4.5	M4	M5	M5	25.5	6	102
FZC4040_A	PLZ 40	5M-20	402	120	65	28 <sup>H7</sup>	10	6.5	M5	M6	M5	35.1	8	132
FZC5050_A	PLZ 50	5M-25	494	150	78	35 <sup>H7</sup>	14	9	M6	M6	M5	43	8	162
FZC6060_A	PLZ 60	8M-28	583	180	98	70 <sup>H7</sup>	20	11.5	M8	M8	M5	47	8	192
FZC8080_A	PLZ 80	8M-40	640	200	118	70 <sup>H7</sup>	25	21.5	M8	M8	M5	66	10	212

----- Total length = basic length + travel [mm]

Configuration of drive shaft





[mm]

K	L1	L2	C	L4	L5	M1	M2	M3	M4	P	Q	R	T1	T2	W	Max. travel	Mass [kg]	
																	Basic length	per 100 mm travel
38	25	6	34	13	10	21	17	20	20	3 x 3 x 20	48	53	8.5	4.5	10.1	5396	1.89	0.17
48	28	6	40	16	15	29	20	20	20	3 x 3 x 20	61	61	11.5	7	10.1	5336	4.38	0.29
58	30	6	48	16	14	38	16	40	20	5 x 5 x 25	77	77	11.5	7	10.1	5276	8.26	0.41
80	31.5	6	56	16	29	64	30	40	40	6 x 6 x 25	89.5	91.5	11.5	7	10.1	5616	14.50	0.63
100	31.5	6	63	18	29	64	35	40	40	8 x 7 x 25	109.5	98	11.5	7	10.1	5576	20.63	0.93

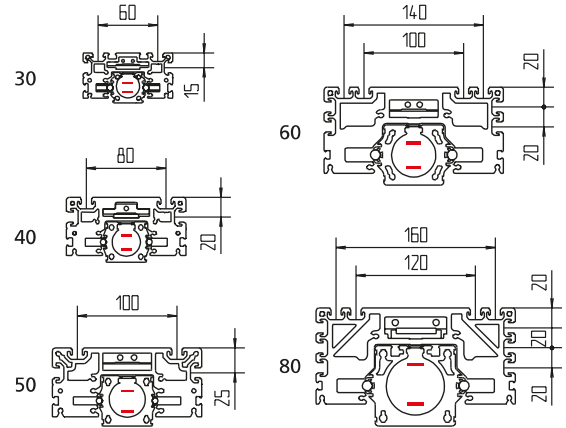
# PLZ-i - Versions

## Order information:

- Longer travel lengths on request
- Second non driven or extended carriage available on request

## Version

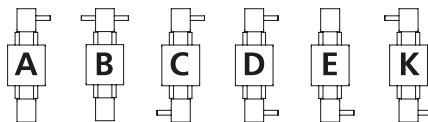
### ■ Unit with internal timing-belt

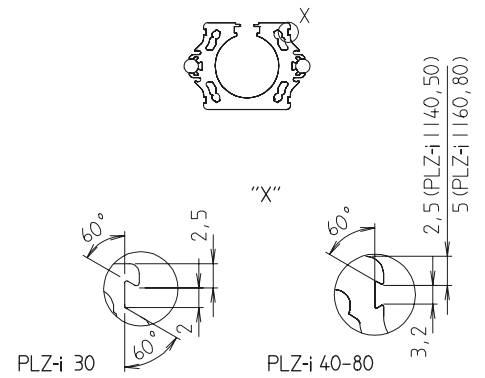
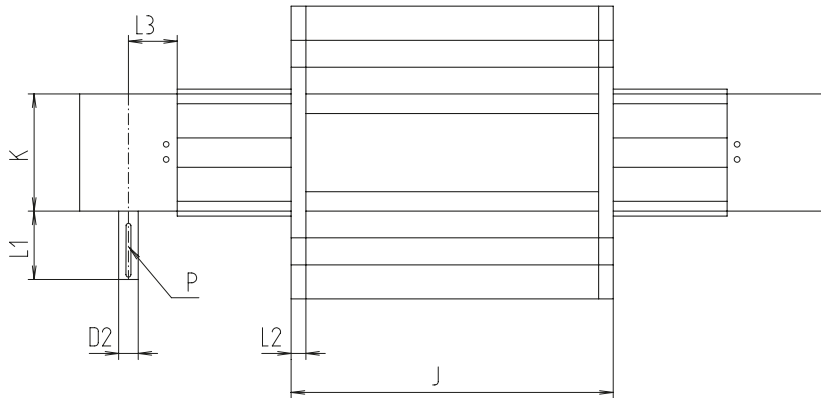
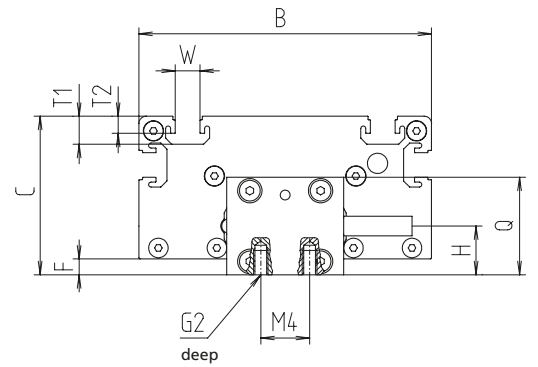
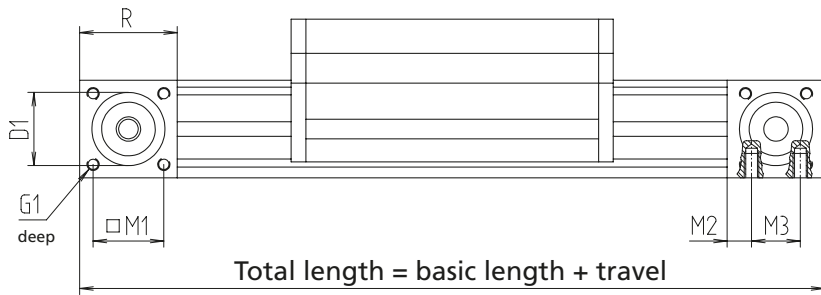


Code No.	Type	Timing-belt	Basic length	B	C	D1	D2	F	G1	G2	H	J	K
FZI3030_A	PLZ-i 30	3M-6	176	90	50	22 <sup>J6</sup>	6	4.5	M4	M5	15	102	38
FZI4040_A	PLZ-i 40	3M-9	226	120	65	30 <sup>J6</sup>	8	6.5	M5	M6	20	132	48
FZI5050_A	PLZ-i 50	5M-15	276	150	78	35 <sup>J6</sup>	10	9	M6	M6	25	162	58
FZI6060_A	PLZ-i 60	5M-20	318	180	98	35 <sup>J6</sup>	12	11.5	M6	M6	30	192	72
FZI8080_A	PLZ-i 80	5M-30	378	200	118	50 <sup>J7</sup>	14	21.5	M8	M8	40	212	92

----- Total length = basic length + travel [mm]

Configuration of drive shaft





[mm]

L1	L2	C	M1	M2	M3	M4	P	Q	R	T1	T2	W	Max. travel	Mass [kg]	
														Basic length	per 100 mm travel
25	6	15	21	6	20	-	2 x 2 x 20	30	37	8.5	4.5	10.1	4590	0.92	0.15
28	6	20	29	10	20	-	2 x 2 x 20	40	47	11.5	7	10.1	5090	2.10	0.28
30	6	25	38	15	20	20	3 x 3 x 20	50	57	11.5	7	10.1	5398	3.92	0.40
30	6	30	43	20	20	20	4 x 4 x 25	60	63	11.5	7	10.1	5808	7.15	0.61
38	6	40	64	20	40	40	5 x 5 x 32	80	83	11.5	7	10.1	5788	10.52	0.91

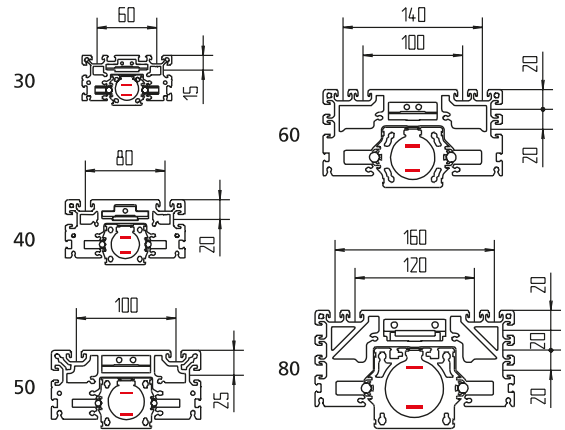
# PLZ-i R/L - Versions

## Order information:

- Longer travel lengths on request
- Extended carriage available on request

## Version

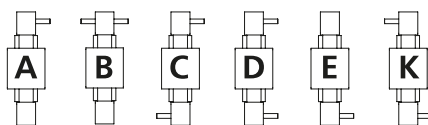
- Unit with internal timing-belt
- Two opposite moving carriages

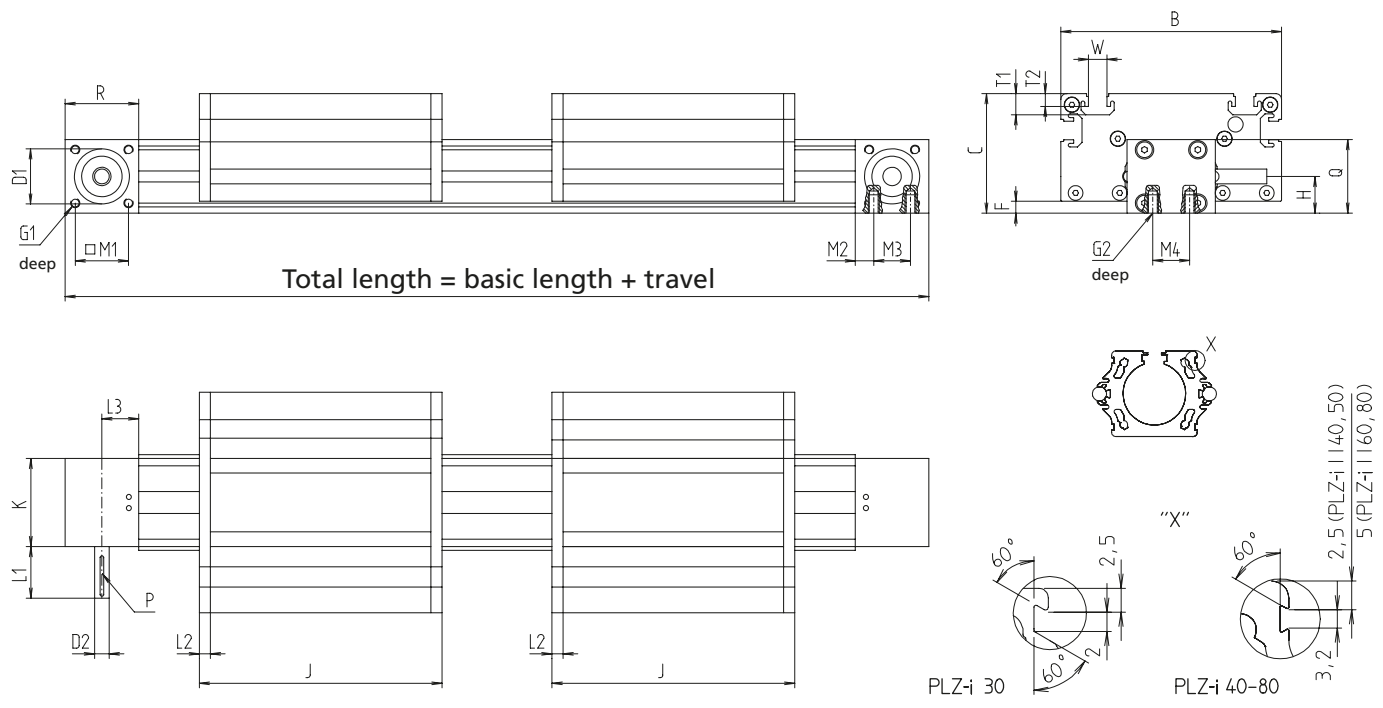


Code No.	Type	Timing-belt	Basic length	B	C	D1	D2	F	G1	G2	H	J	K
FZK3030_A	PLZ-i 30	3M-6	278	90	50	22 <sup>J6</sup>	6	4.5	M4	M5	15	102	38
FZK4040_A	PLZ-i 40	3M-9	358	120	65	30 <sup>J6</sup>	8	6.5	M5	M6	20	132	48
FZK5050_A	PLZ-i 50	5M-15	438	150	78	35 <sup>J6</sup>	10	9	M6	M6	25	162	58
FZK6060_A	PLZ-i 60	5M-20	510	180	98	35 <sup>J6</sup>	12	11.5	M6	M6	30	192	72
FZK8080_A	PLZ-i 80	5M-30	590	200	118	50 <sup>J7</sup>	14	21.5	M8	M8	40	212	92

----- Total length = basic length + travel [mm]

Configuration of drive shaft



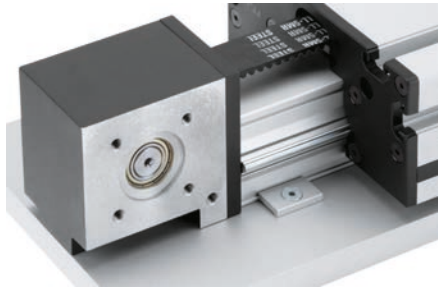


[mm]

L1	L2	C	M1	M2	M3	M4	P	Q	R	T1	T2	W	Max. travel	Mass [kg]	
														Basic length	per 100 mm travel
25	6	15	21	6	20	-	2 x 2 x 20	30	37	8.5	4.5	10.1	4490	1.61	0.17
28	6	20	29	10	20	-	2 x 2 x 20	40	47	11.5	7	10.1	4960	3.72	0.29
30	6	25	38	15	20	20	3 x 3 x 20	50	57	11.5	7	10.1	5266	7.02	0.41
30	6	30	43	20	20	20	4 x 4 x 25	60	63	11.5	7	10.1	5616	12.33	0.63
38	6	40	64	20	40	40	5 x 5 x 32	80	83	11.5	7	10.1	5576	17.54	0.93

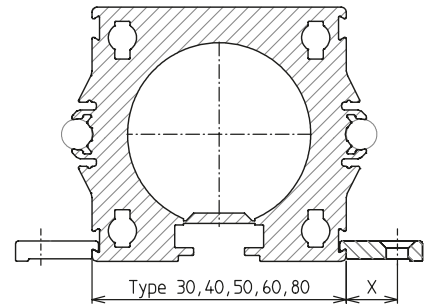
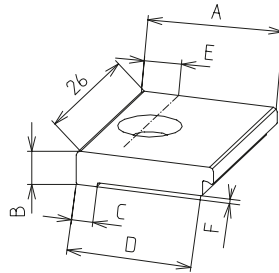
# PL/PLZ/PLZ-i – Fixing

## Fixing plate



- Plate for fixing the linear unit to a substructure
- The fixing plates can also be retrofitted and moved axially

**Scope of delivery:** Pack of 10 without screws

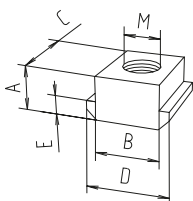


[mm]									
Code No.	Type	Version	A	B	C	D	E	F	X
95510	PLZ 30, 40, 50	Counterbore for M5 screw, DIN 7991	16.3	4	2.5	15	7	0.5	8
95511	PLZ 60, 80	Counterbore for M6 screw, DIN 7984	23.8	7.5	3.5	22.5	12.5	1	10

## Slot stone -N-

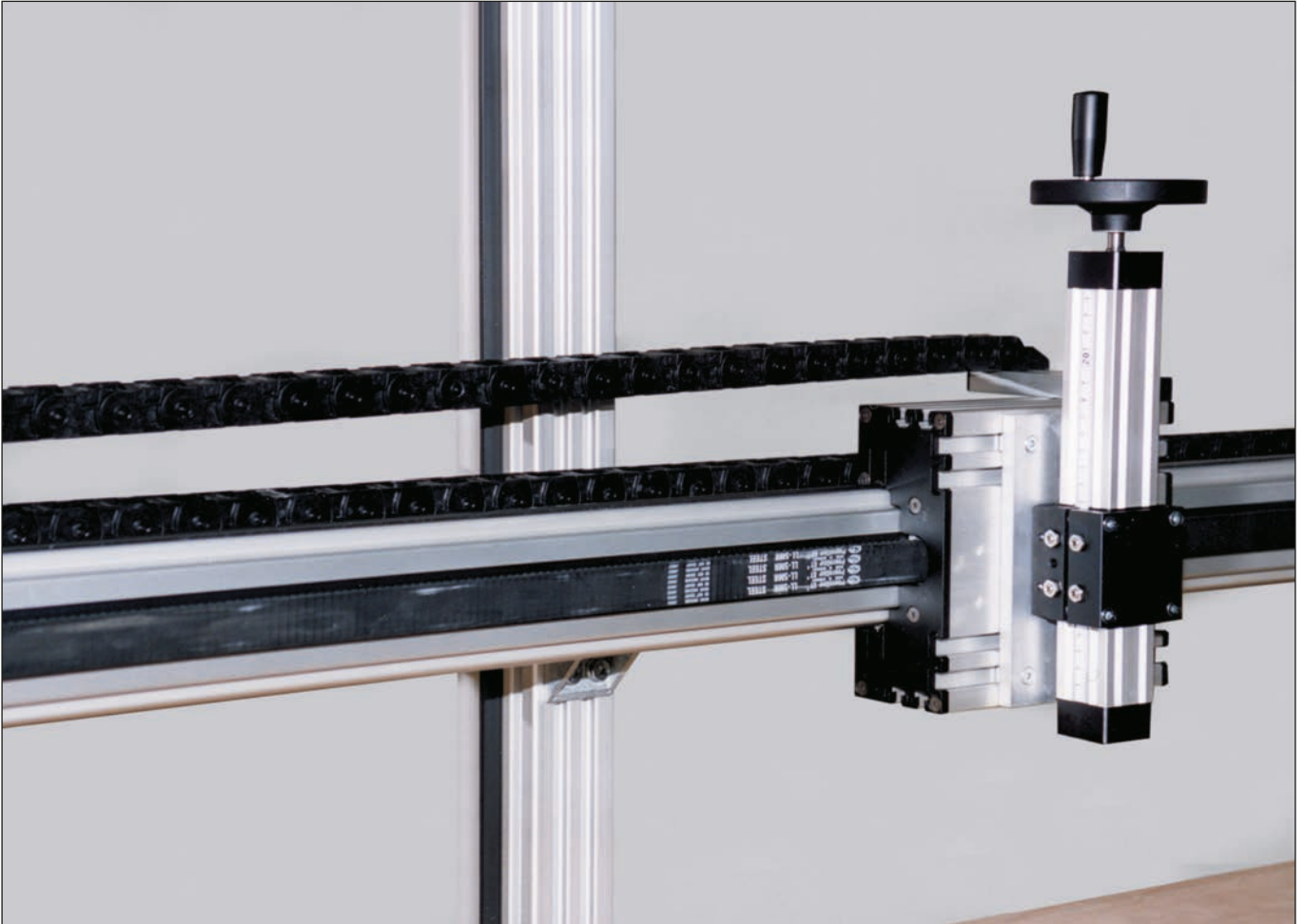
- Slot stone for lateral insertion in the carriage
- For further slot stone versions, please refer to the catalogue "BLOCAN® Profile Technology"

**Material:** Steel, galvanised



[mm]									
Code No.	Type	Version	A	B	C	D	E	M	F [N]
4006201	PLZ 30	M5	5	10	13	13	3	M5	4000
4006203	PLZ 30	M6	5	10	13	13	3	M6	4000
4006202	PLZ 30	M8	5	10	13	13	3	M8	4000
4026207	PLZ 40-80	M5	8	10	13	15	4	M5	4000
4026203	PLZ 40-80	M6	8	10	13	15	4	M6	9000
4026206	PLZ 40-80	M8	8	10	13	15	4	M8	9000





X-Z combination - PLZ/quad EV

# PLZ/PLZ-i – Drive

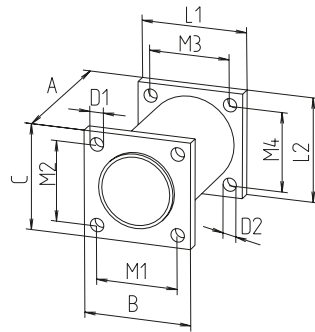
## Connecting adaptor 30-50



- Connecting piece between linear unit and transmission unit

**Material:** Aluminium, black anodised  
Galvanised fastenings

**Scope of delivery:** Adaptor with fastenings



[mm]

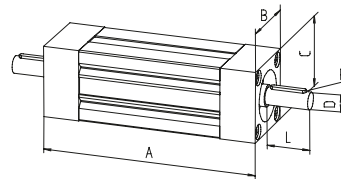
Code No.	Type	A	B	C	D1	D2	L1	L2	M1	M2	M3	M4
91305	PLZ 30	62	30	30	4.3	4.3	48	30	21	21	21	21
91306	PLZ 40	68	40	40	5.4	5.4	40	40	29	29	29	29
91307	PLZ 50	75	50	50	6.4	6.4	50	50	38	38	38	38
91316	PLZ-i 40	68	40	40	5.4	5.4	40	40	29	29	29	29

## Connecting and transmission unit 30-50



- Transmission of torques or as connecting unit between two parallel linear units

**Material:** Aluminium, anodised



[mm]

Code No.	Type	A (basic length)	B	C	D	L	P
92503_ _ _ _	Transmission unit 30	60	30	30	8	25	2 x 2 x 20
92513_ _ _ _	Connecting unit 30	60	30	30	–	–	–
92504_ _ _ _	Transmission unit 40	80	40	40	10	28	3 x 3 x 20
92514_ _ _ _	Connecting unit 40	80	40	40	–	–	–
92505_ _ _ _	Transmission unit 50	80	50	50	12	30	4 x 4 x 25
92515_ _ _ _	Connecting unit 50	80	50	50	–	–	–



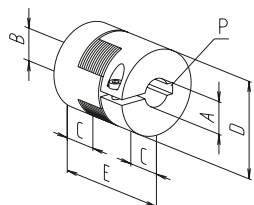
## Coupling for transmission unit 30-50



- Shaft connection without backlash
- Easy plug-in assembly

**Material:** Hub, aluminium  
Gear ring, polyurethane

[mm]

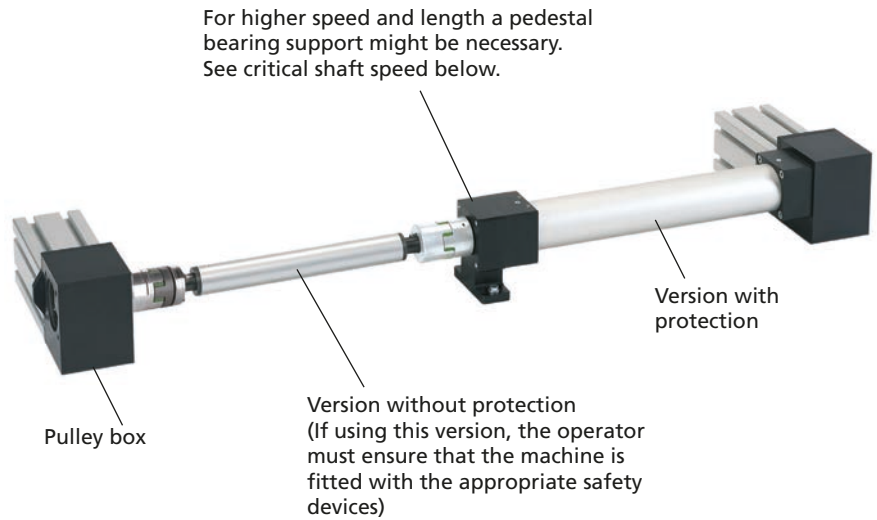
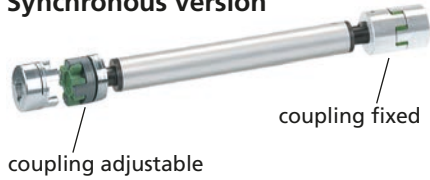


Code No.	Type	A	B	C	D	E	P	Torque [Nm]	
								with feather key	without feather key
9109200810	PLZ 30	8	10	10	20	30	2 x 2/3 x 3	5	3
9109201010	PLZ 40	10	10	10	20	30	3 x 3/3 x 3	5	3
9114301214	PLZ 50	12	14	11	30	35	4 x 4/5 x 5	12	6
9109200608	PLZ-i 30	6	8	10	20	30	2 x 2/2 x 2	5	3
9109200810	PLZ-i 40	8	10	10	20	30	2 x 2/3 x 3	5	3
9114301012	PLZ-i 50	10	12	11	30	35	3 x 3/4 x 4	5	3

**Transmission unit 60-80**

- Transmission of high torques up to 120 Nm on parallel linear units
- Synchronisation of carriages via zero point alignment

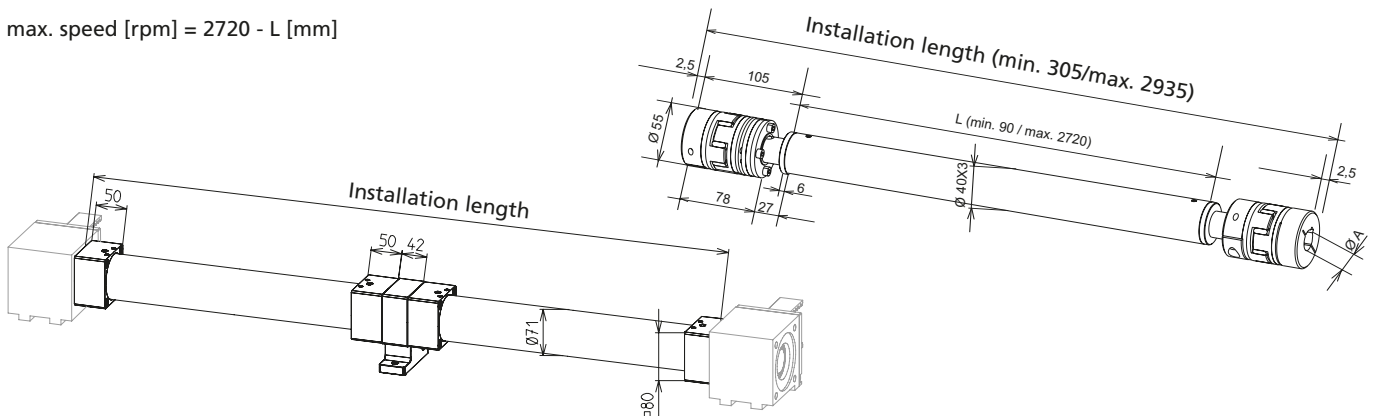
**Synchronous version**



**Critical shaft speed:**

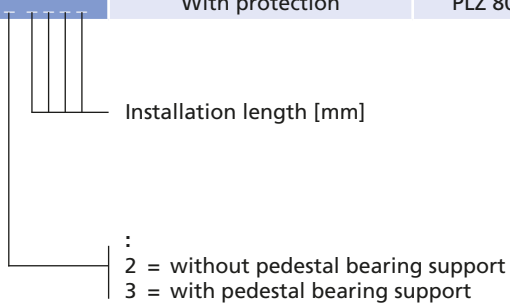
max. unsupported length [mm] = (2720 - speed [rpm]) + 2 x 107.5

max. speed [rpm] = 2720 - L [mm]



[mm]

Code No.	Version	for linear unit	A [mm]	Weight [g]		
				1000 mm	per 100 mm	Pedestal bearing support
9252036 _ _ _ _	Without protection	PLZ 60	20	5.23	230	1400
9252136 _ _ _ _	With protection	PLZ 60	20	8.56	400	1400
9252038 _ _ _ _	Without protection	PLZ 80	25	5.23	230	1500
9252138 _ _ _ _	With protection	PLZ 80	25	8.56	400	1500



## Selection table - motor adaptor/coupling

Type	Servo motors without gear			Servomotor with gear			Three-phase motor	
	RK-AC 118	RK-AC 240	RK-AC 470	RK-AC 112	RK-AC 260	RK-AC 345	90/120W	180/250 W
PLZ 30	949211	–	–	949426	–	–	94995	949948
	911430 1011	–	–	911430 1014	–	–	910920 1012	911430 1014
PLZ 40	949212	949231	–	949427	949428	–	94987	94988
	911430 1011	911430 1014	–	911430 1014	911940 1020	–	911430 1012	911430 1014
PLZ 50	949213	949232	–	949429	949430	–	94905	949527
	911430 1114	911430 1414	–	911940 1414	911940 1420	–	911940 1214	911430 1414
PLZ 60	949214	949233	949243	949431	949432	949433	94956	94950
	911940 1120	911940 1420	911940 1920	911940 1420	911940 2020	912855 2025	911940 1220	911940 1420
PLZ 80	–	949234	949244	949434	949435	949436	949329	949114
	–	912855 1425	912855 1925	912855 1425	912855 2025	912855 2525	912855 1225	912855 2025
PLZ-i 30	949501	–	–	–	–	–	949504	–
	911430 0611	–	–	–	–	–	910920 0612	–
PLZ-i 40	949510	949512	–	–	–	–	949516	949517
	911430 0811	911430 0814	–	–	–	–	911430 0812	911430 0814
PLZ-i 50	949520	949522	–	–	–	–	949526	949527
	911430 1011	911430 1014	–	–	–	–	911940 1012	911430 1014
PLZ-i 60	949540	949542	949544	–	–	–	949547	949548
	911430 1112	911940 1214	911940 1219	–	–	–	911940 1212	911940 1212
PLZ-i 80	–	949560	949562	–	–	–	949566	949567
	–	911940 1414	911940 1419	–	–	–	911940 1214	911940 1414



Code No. Motor adaptor: <b>949560</b>
Code No. Coupling with specification of shaft diameter 1st end = 14 mm 2nd end = 14 mm: <b>911940 1414</b>

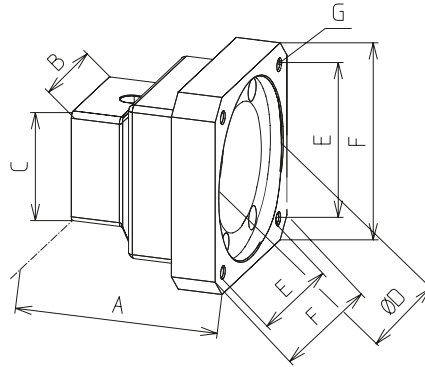
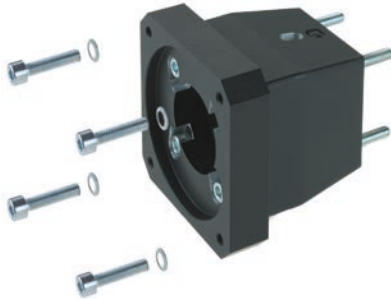
**Note:**

For further details on motor versions, please refer to the chapter "Motors and controls"

**Motor adaptor**

- Simple assembly
- Exact fit due to centering shoulders

**Material:**  
Aluminium, black anodised



Code No.	Type	A	B	C	D	E	F	G
949426	PLZ-30	73	40	40	40	53	70	Ø5,5
949211	PLZ-30	63	40	40	60	53	70	M5
94995	PLZ-30	65	40	40	50	46	80	M5
949948	PLZ-30	70	40	40	80	100	Ø120	Ø6,6
949427	PLZ-40	75	50	50	40	53	70	Ø5,5
949212	PLZ-40	65	50	50	60	53	70	M5
949231	PLZ-40	73	50	50	80	70,7	90	M6
949306	PLZ-40	100	50	50	80	70,7	90	M6
949428	PLZ-40	93	50	50	60	70,7	90	Ø6,6
94987	PLZ-40	73	50	50	50	46	80	M5
94988	PLZ-40	73	50	50	80	100	Ø120	Ø6,6
949429	PLZ-50	85	52	52	40	53	70	Ø5,5
949213	PLZ-50	66	52	52	60	53	70	M5
949232	PLZ-50	73	52	52	80	70,7	90	M6
949430	PLZ-50	89	52	52	60	70,7	90	Ø6,6
949257	PLZ-50	73	52	52	73	70	90	M6
94905	PLZ-50	73	52	52	50	65	80	M5
949527	PLZ-50	75	52	52	80	100	Ø120	Ø6,6
949431	PLZ-60	84	80	80	40	53	70	Ø5,5
949214	PLZ-60	74	80	80	60	53	70	M5
949233	PLZ-60	79	80	80	80	70,7	90	M6
949432	PLZ-60	89	80	80	60	70,7	70	Ø6,6
949433	PLZ-60	114	80	80	80	91,9	115	Ø9
949243	PLZ-60	89	80	80	95	81,3	115	M8
949317	PLZ-60	112,5	80	80	110	91,9	115	M8
94956	PLZ-60	79	80	80	50	46	80	M5
94950	PLZ-60	79	80	80	80	100	Ø120	Ø6,6
949434	PLZ-80	99	80	80	40	53	70	Ø5,5
949234	PLZ-80	86	80	80	80	70,7	90	M6
949435	PLZ-80	96	80	80	60	70,7	70	Ø6,6
949436	PLZ-80	111	80	80	80	91,9	115	Ø9
949244	PLZ-80	96	80	80	95	81,3	115	M8
949329	PLZ-80	89	80	80	50	46	80	M5
949114	PLZ-80	86	80	80	80	100	Ø120	Ø6,6

[mm]

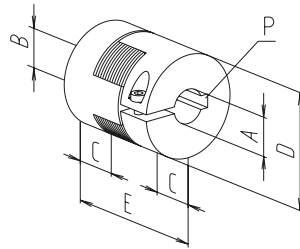
Code No.	Type	A	B	C	D	E	F	G
949501	PLZ-i-30	63	40	40	60	53	70	M5
949504	PLZ-i-30	65	40	40	50	46	80	M5
949510	PLZ-i 40	65	50	50	60	53	70	M5
949511	PLZ-i 40	73	50	50	60	53	70	M5
949512	PLZ-i 40	73	50	50	80	70,7	90	M6
949516	PLZ-i 40	73	50	50	50	46	80	M5
949517	PLZ-i 40	73	50	50	80	100	Ø120	Ø6,6
949520	PLZ-i 50	66	52	52	60	53	70	M5
949522	PLZ-i 50	73	52	52	80	70,7	90	M6
949523	PLZ-i 50	97	52	52	80	70,7	96	M6
949524	PLZ-i 50	73	52	52	73	70	90	M6
949526	PLZ-i 50	73	52	52	50	65	80	M5
949527	PLZ-i 50	75	52	52	80	100	Ø120	Ø6,6
949540	PLZ-i 60	66	60	60	60	53	70	M5
949541	PLZ-i 60	75	60	60	60	53	70	M5
949542	PLZ-i 60	81	60	60	80	70,7	90	M6
949544	PLZ-i 60	91	60	60	95	81,3	115	M8
949547	PLZ-i 60	75	60	60	50	65	80	M5
949548	PLZ-i 60	75	60	60	80	100	Ø120	Ø6,6
949560	PLZ-i 80	86	80	80	80	70,7	90	M6
949562	PLZ-i 80	96	80	80	95	81,3	115	M8
949566	PLZ-i 80	86	80	80	50	46	80	M5
949567	PLZ-i 80	86	80	80	80	100	Ø120	Ø6,6

# PLZ/PLZ-i – Drive

## Coupling

- Shaft connection without backlash
- Easy plug-in assembly

**Material:** Hub, aluminium  
Gear ring, polyurethane



[mm]

Code No.	A	B	C	D	E	P	Torque [Nm]	
							with feather key	without feather key
9109200612	6	12	10	20	30	2 x 2/4 x 4	5	3
9109209510	9.5	10	10	20	30	-3 x 3	5	3
9109201011	10	11	10	22	30	3 x 3/4 x 4	5	3
9109201012	10	12	10	22	30	3 x 3/4 x 4	5	3
9114300611	6	11	11	30	35	2 x 2/4 x 4	12	6
9114300616	6	16	11	30	35	2 x 2/5 x 5	12	6
9114300811	8	11	11	30	35	2 x 2/4 x 4	12	6
9114300814	8	14	11	30	35	2 x 2/5 x 5	12	6
9114300816	8	16	11	30	35	2 x 2/5 x 5	12	6
9114309514	9.5	14	11	30	35	-5 x 5	12	6
9114301011	10	11	11	30	35	3 x 3/4 x 4	12	6
9114301012	10	12	11	30	35	3 x 3/4 x 4	12	6
9114301014	10	14	11	30	35	3 x 3/5 x 5	12	6
9114301016	10	16	11	30	35	3 x 3/5 x 5	12	6
9114301112	11	12	11	30	35	4 x 4/4 x 4	12	6
9114301114	11	14	11	30	35	4 x 4/5 x 5	12	6
9114301214	12	14	11	30	35	4 x 4/5 x 5	12	6
9114301216	12	16	11	30	35	2 x 2/5 x 5	12	6
9114301414	14	14	11	30	35	5 x 5/5 x 5	12	6
9114301416	14	16	11	30	35	5 x 5/5 x 5	12	6

## Coupling

[mm]

Code No.	A	B	C	D	E	P	Torque [Nm]	
							with feather key	without feather key
9119400820	8	20	25	40	65	2 x 2/6 x 6	17	10
9119409520	9.5	20	25	40	65	-/6 x 6	17	10
9119401012	10	12	25	40	65	2 x 2/4 x 4	17	10
9119401014	10	14	25	40	65	2 x 2/5 x 5	17	10
9119401020	10	20	25	40	65	2 x 2/6 x 6	17	10
9119401120	11	20	25	40	65	3 x 3/6 x 6	17	10
9119401212	12	12	25	40	65	4 x 4/4 x 4	17	10
9119401214	12	14	25	40	65	4 x 4/5 x 5	17	10
9119401219	12	19	25	40	65	4 x 4/6 x 6	17	10
9119401220	12	20	25	40	65	4 x 4/6 x 6	17	10
9119401414	14	14	25	40	65	5 x 5/5 x 5	17	10
9119401420	14	20	25	40	65	5 x 5/6 x 6	17	10
9119401416	14	16	25	40	65	5 x 5/5 x 5	17	10
9119401419	14	19	25	40	65	5 x 5/6 x 6	17	10
9119401620	16	20	25	40	65	5 x 5/6 x 6	17	10
9119401920	19	20	25	40	65	6 x 6/6 x 6	17	10
9119402020	20	20	25	40	65	6 x 6/6 x 6	17	10
9128551225	12	25	30	55	78	4 x 4/8 x 8	60	35
9128551425	14	25	30	55	78	5 x 5/8 x 8	60	35
9128551625	16	25	30	55	78	5 x 5/8 x 8	60	35
9128551925	19	25	30	55	78	6 x 6/8 x 8	60	35
9128552025	20	25	30	55	78	6 x 6/8 x 8	60	35
9128552525	25	25	30	55	78	8 x 8/8 x 8	60	35

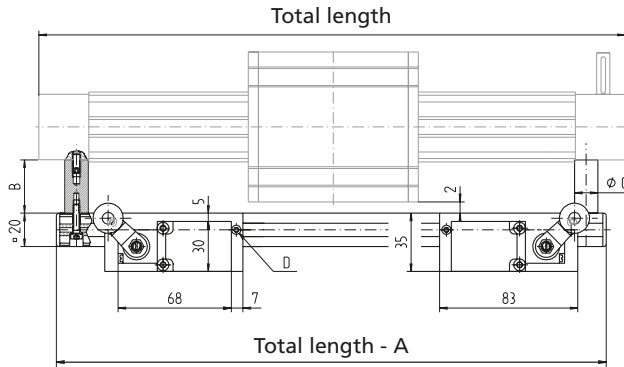
# PLZ/PLZ-i – Position determination

## Holder for mechanical limit switch

- Limit switch can be moved and fixed axially
- Guide rail made of profile F-20 x 20
- Connecting cables can be laid in the profile slots

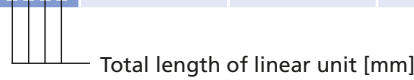
**Material:** Aluminium, anodised  
Galvanised fastenings  
**Scope of delivery:** Guide rail, spacer, 2 fixing plates, caps and fastenings

**Note:** The Code No. does not include the limit switch.  
For limit switch, please see page 346.



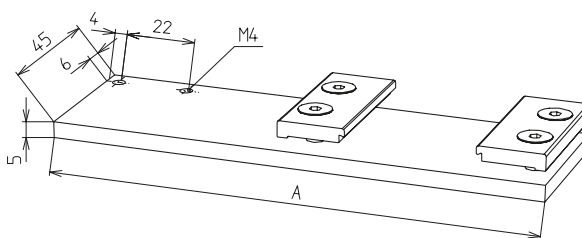
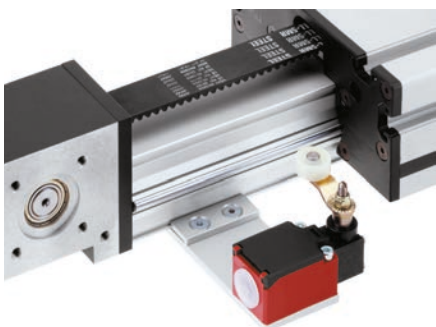
[mm]

Code No.	Type	A	B	C	D
92775 _ _ _ _	PLZ 30	66	28	14	M3 x 10
92776 _ _ _ _	PLZ 40	80	38	16	M3 x 10
92777 _ _ _ _	PLZ 50	112	48	16	M3 x 10
92778 _ _ _ _	PLZ 60	140	52	16	M3 x 10
92779 _ _ _ _	PLZ 80	150	52	16	M3 x 10



- Fixing to guide profile using fixing plates
- Simple axial displacement and adjustment of holder is possible

**Material:** Aluminium, clear anodised  
Galvanised fastenings



[mm]

Code No.	Type	Version	A
92784	PLZ 30	Holder with fastenings without limit switch	110
92785	PLZ 40		130
92786	PLZ 50		150
92787	PLZ 60		177
92788	PLZ 80		197
91905	all	Limit switches NC/NO contacts*	-

\*For technical data for the limit switch, please refer to page 346

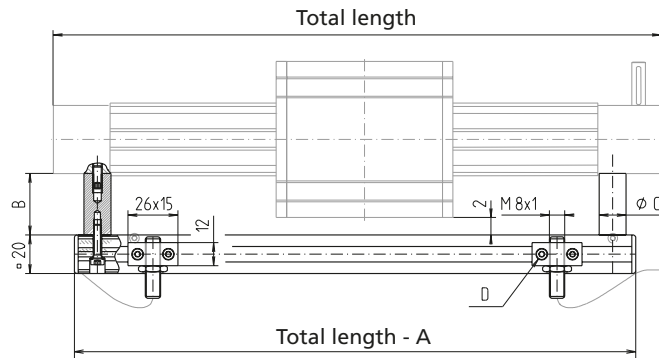


**Holder for inductive limit switch**

- Limit switch can be moved and fixed axially
- Guide rail made of profile F-20 x 20
- Connecting cables can be laid in the profile slots

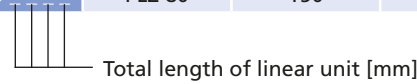
**Material:** Aluminium, anodised  
**Galvanised fastenings**  
**Scope of delivery:** Guide rail, spacer, 2 fixing plates, caps and fastenings

**Note:** The Code No. does not include the limit switch.  
 For limit switch, please see page 346.



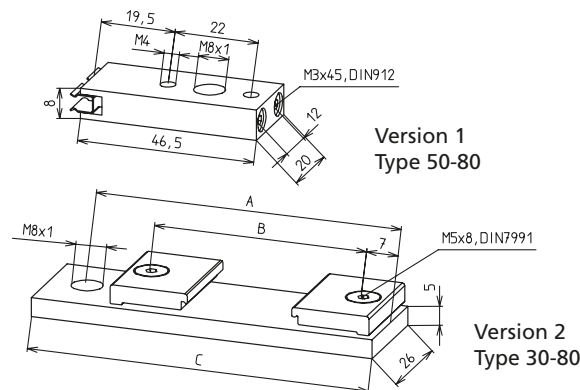
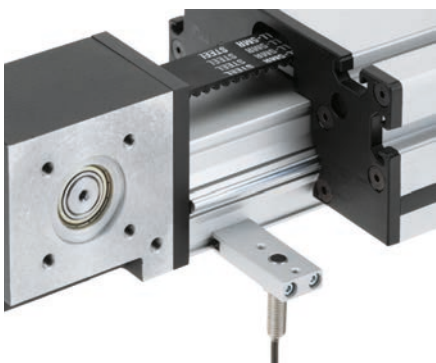
[mm]

Code No.	Type	A	B	C	D
92975 _ _ _ _	PLZ 30	66	28	14	M3 x 16
92976 _ _ _ _	PLZ 40	80	38	16	M3 x 16
92977 _ _ _ _	PLZ 50	112	48	16	M3 x 16
92978 _ _ _ _	PLZ 60	140	52	16	M3 x 16
92979 _ _ _ _	PLZ 80	150	52	16	M3 x 16



- Clamping on guide profile
- Simple axial displacement and adjustment of holder is possible

**Material:** Aluminium, clear anodised,  
**Galvanised fastenings**  
**Scope of delivery:** Holder with fastenings **without** limit switch



[mm]

Code No.	Type	Version	A	B	C
92990	PLZ 30	2	64.5	46	74
92991	PLZ 40	2	80	56	90
92992	PLZ 50	2	96	66	106
92993	PLZ 60	2	80	80	123.5
92994	PLZ 80	2	133.5	100	143.5
92986	PLZ 50-80	1	-	-	-

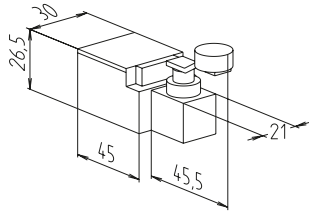
For limit switch, please see page 346.

# PLZ/PLZ-i – Position determination

## Mechanical limit switch

- Limit switch with angle lever
- Compact design

**Material:** Thermoplastic, fully insulated



Max. voltage	250 V AC
Max. switching current	6 A
Max. starting current	16 A
Operating cycles	Max. 6,000/h
Mechanical lifetime	1 x 10 <sup>7</sup> switching cycles
Axis lever adjustment	locking by 360°
Protection class	IP 65
Ambient temperature	-30°C to +80°C

Code No.	Type	Switching function
91905	PLZ 30-80	NC/NO
92767	Fixing plate (same version as for limit switch holder on page 344, with fastenings)	

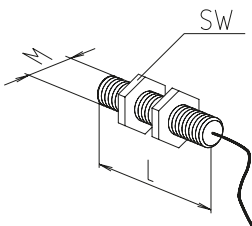
## Inductive limit switch

- Function indicator (LED)
- Maintenance-free

**Material:** Housing: stainless steel



Type	30-80
Voltage	10 - 30 V DC
Max. switching current	150 mA
Operating distance	2 mm for steel
Protection class	IP 67
Ambient temperature	-25°C to +70°C
Cable lengths	2m



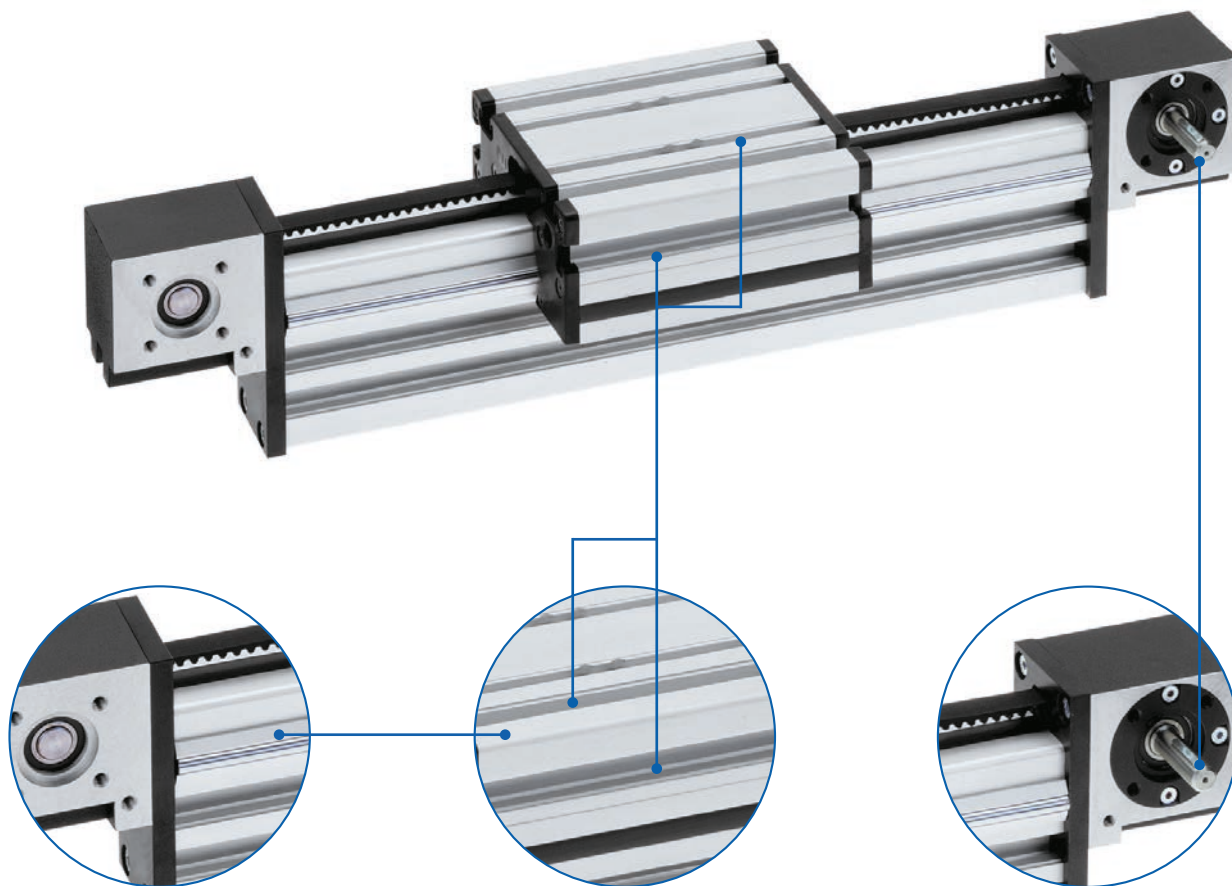
Code No.	Type	Switching function	L	M	Wrench size (SW)
92826	PLZ 30-80	Changeover	40	8x1	13
92967	Fixing element (same version as for limit switch holder on page 345, with fastenings)				

[mm]



# Roller guide actuator/guides – SQ /SQZ

Timing-belt unit with optimum connecting options due to slots in guide profile/carriage



## Fixing slots

- ✓ Easy fixing of linear actuator
- ✓ Simple connection of accessories

## Configuration of drive shaft

- ✓ Either at one end or both

## Features:

- Sizes 30, 40, 40 x 80, 60, 60 x 120, 80 and 80 x 160 mm
- Guide profile made from the BLOCAN® modular profile system
- Extruded carriage with fixing slots

- Spring-mounted wiper system
- Roller cover

## Options:

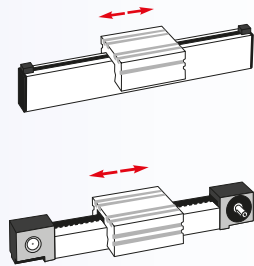
- Longer stroke lengths
- Second non driven carriage
- Extended carriage

**SQ/SQZ - Table of contents**

**Properties/Technical data**

- General information/operating conditions... 350
- Load data..... 351

**Versions**  
(Dimensions, order numbers)



- SQ guide unit ..... 352 - 353
- SQZ timing-belt unit ..... 354 - 355

**Accessories**

**Fixing**

- Slot stones ..... 356

**Drive**

- Connecting/transmission unit..... 358 - 359
- Motor adaptor/couplings ..... 360 - 362

**Position determination**

- Limit switches ..... 364 - 365

# SQZ – Technical data

## General information/operating conditions

Design	Profile, aluminium, timing-belt drive
Guide	Roller, external
Installation position	Any position
Repeatability	0.05 mm
Ambient temperature	0°C to +60°C
Protection class	IP 20

Type	Timing-belt	Pitch/ width	Eff. diam. of lock washer [mm]	Max. input torque [Nm]	Max. speed [m/s]	Max. acceleration [m/s]
SQZ 30	GT 5MR	5/8	23.87	5	5	20
SQZ 40	GT 5MR	5/11	27.06	8.5		
SQZ 40 x 80	GT 5MR	5/11	27.06	8.5		
SQZ 60	GT 5MR	5/25	44.56	on request	10	
SQZ 60 x 120	GT 5MR	5/25	44.56	on request		
SQZ 80	GT 8MR	8/40	61.12	90		
SQZ 80 x 160	GT 8MR	8/28	61.12	55		

## No-load torques

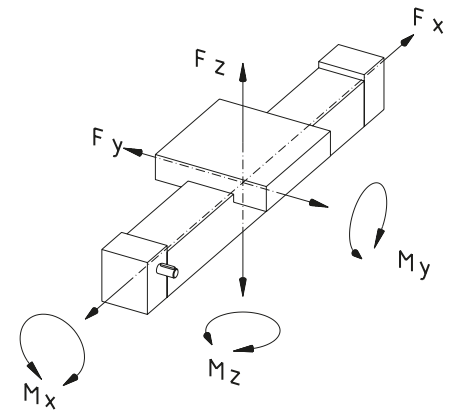
[Nm]

Type	SQZ
30	0.30
40	0.35
60	0.80
80	1.00



**Load data\***

- F Force [N]
- M Moment [Nm]
- I Geometric moment of inertia [cm<sup>4</sup>]



\* With reference to carriage (static values, guide element resting on full surface)

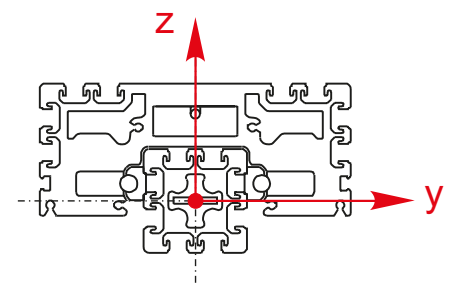
	F <sub>x</sub> **	F <sub>y</sub>	F <sub>z</sub>	M <sub>x</sub>	M <sub>y</sub>	M <sub>z</sub>
<b>SQ (guides)</b>						
SQ 30	–	790	790	14	20	22
SQ 40	–	1020	1020	23	33	33
SQ 40 x 80	–	1020	1020	23	33	33
SQ 60	–	2550	2550	99	143	143
SQ 60 x 120	–	2550	2550	99	143	143
SQ 80 x 40	–	2550	2550	124	168	169
SQ 80	–	2550	2550	124	168	169
SQ 80 x 160	–	2550	2550	124	168	169
<b>SQZ linear unit</b>						
SQZ 30	160	790	790	14	20	22
SQZ 40	230	1020	1020	23	33	33
SQZ 40 x 80	230	1020	1020	23	33	33
SQZ 60	800	2550	2550	99	143	143
SQZ 60 x 120	800	2550	2550	99	143	143
SQZ 80	2810	2550	2550	124	168	169
SQZ80 x 160	1900	2550	2550	124	168	169

\*\* Initial tension of the timing belt 0,8 x F<sub>x</sub>

**Geometric moment of inertia**

[cm<sup>4</sup>]

Type	I <sub>y</sub>	I <sub>z</sub>
30	3.4	3.4
40	11.3	11.3
40 x 80	19.4	76.0
60	51.2	51.2
60 x 120	94.7	372.3
80 x 40	76.0	19.4
80	155.3	155.3
80 x 160	292.4	1090.0



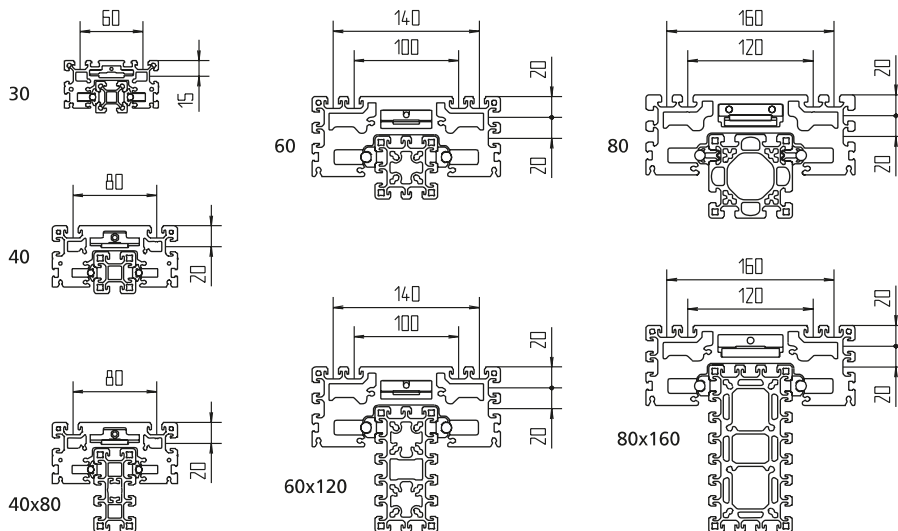
# SQ – Versions

## Order information:

- Longer travel lengths on request
- Second or extended carriage available on request

## Version

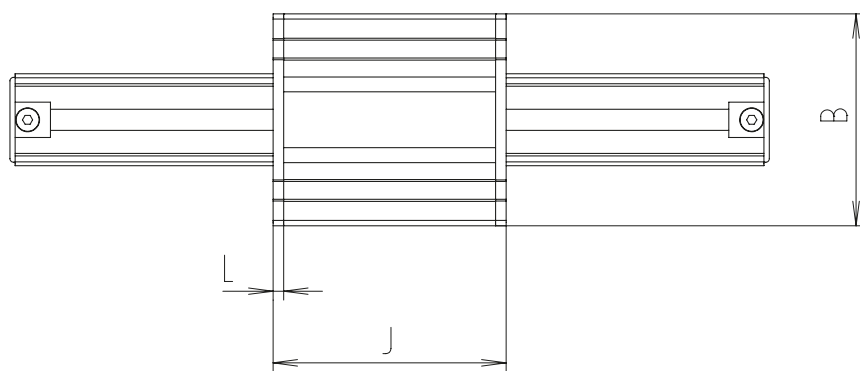
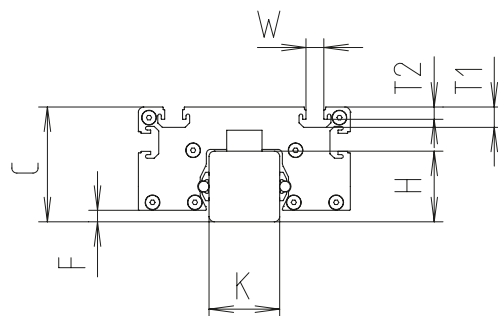
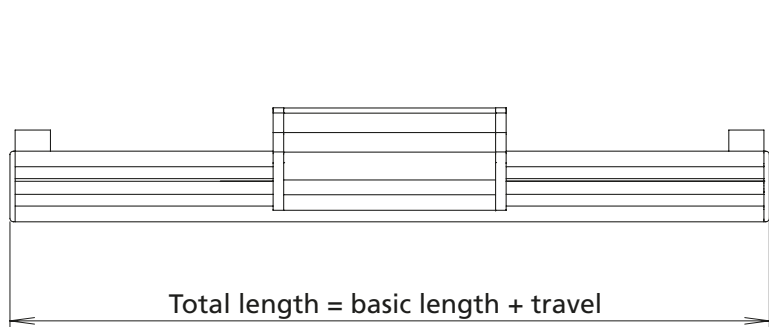
## ■ Guide



Code No.	Type	Basic length	B	C	F	H	J	O
MDA3030AA	SQ II 30	148	90	50	4.5	30	102	30
MDA4040AA	SQ II 40	180	120	65	6.5	40	132	40
MDA4080AA	SQ II 40 x 80	180	120	105	46.5	80	132	40
MDA6060AA	SQ II 60	240	180	98	21.5	60	192	60
MDA6012AA	SQ II 60 x 120	240	180	158	81.5	120	192	60
MDA8040AA	SQ II 80 x 40	260	200	78	1.5	40	212	80
MRA8080AA	SQ III 80	260	200	118	41.5	80	212	80
MDA8016AA	SQ II 80 x 160	260	200	198	121.5	160	212	80

----- Total length = basic length + travel [mm]





[mm]

L	T1	T2	W	Max. travel	Mass [kg]	
					Basic length	per 100 mm travel
6	8.5	4.5	10.1	5448	1.3	0.15
6	11.5	7	10.1	5418	2.1	0.22
6	11.5	7	10.1	5418	2.4	0.39
6	11.5	7	10.1	5768	5.6	0.50
6	11.5	7	10.1	5768	7.7	0.90
6	11.5	7	10.1	5748	6.9	0.57
6	11.5	7	10.1	5748	7.3	0.77
6	11.5	7	10.1	5748	8.9	1.39

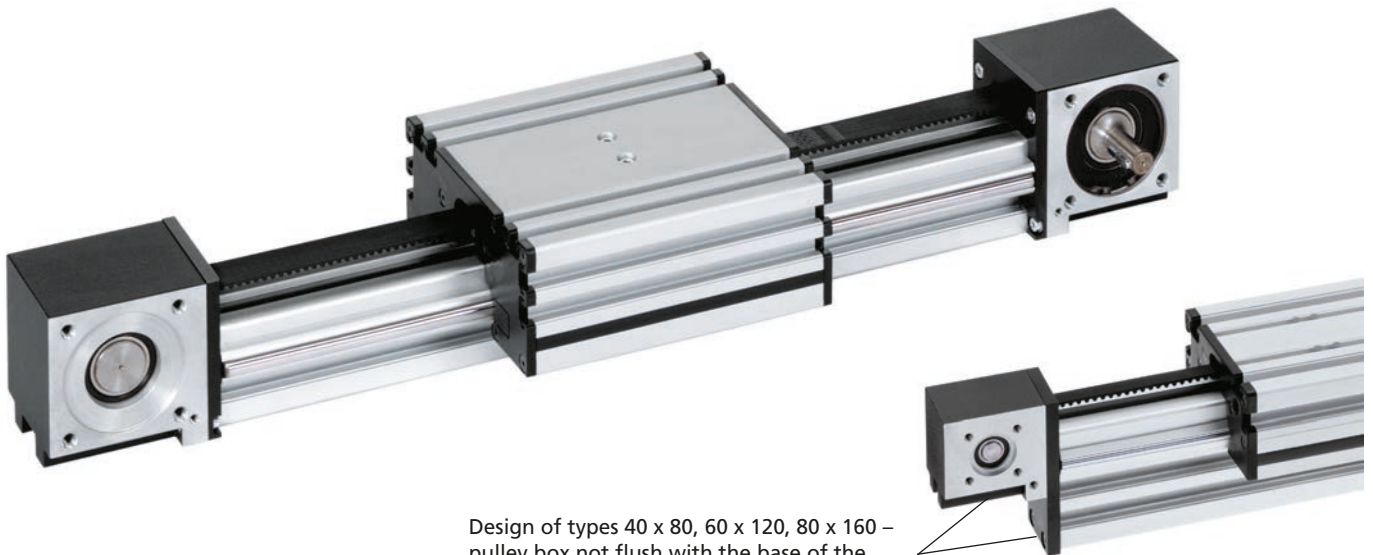
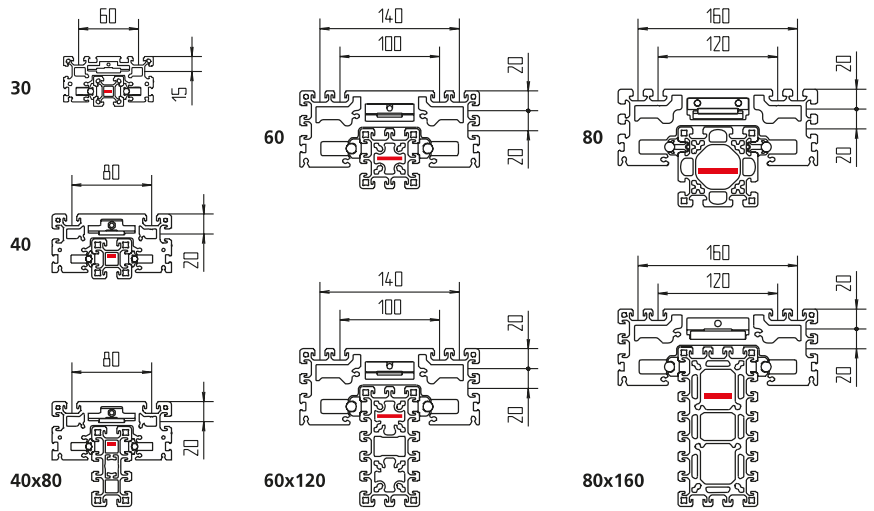
# SQZ – Versions

## Order information:

- Longer travel lengths on request
- Second non driven or extended carriage available on request

## Version

## ■ Timing-belt unit

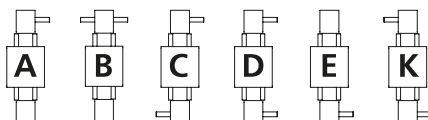


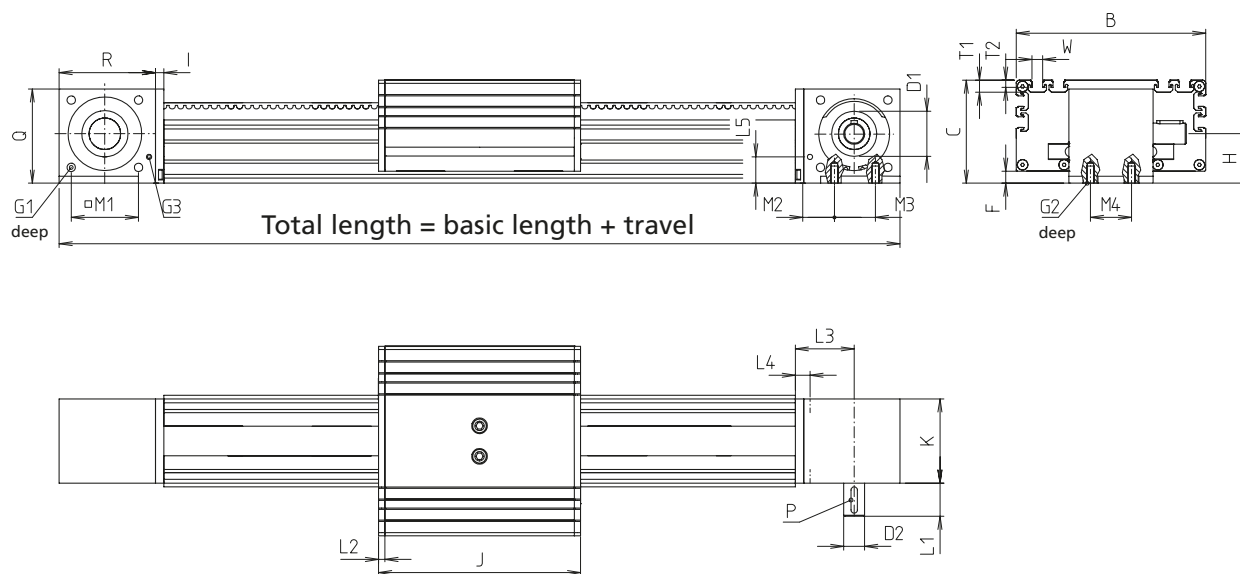
Design of types 40 x 80, 60 x 120, 80 x 160 – pulley box not flush with the base of the guide profile

Code No.	Type	Timing-belt	Basic length	B	C	D1	D2	F	G1	G2	G3	H	I	J
FEA3030_A	SQZ 30	5M-8	220	90	50	22H7	10	4.5	M4	M5	M5	25.5	6	102
FEA4040_A	SQZ 40	5M-11	270	120	65	28H7	10	6.5	M5	M6	M5	35.1	8	132
FEA4080_A	SQZ 40 x 80	5M-11	270	120	105	28H7	10	46.5	M5	M6	M5	35.1	8	132
FEA6060_A	SQZ 60	5M-25	391	180	98	70H7	15	21.5	M8	M8	M5	52	8	192
FEA6012_A	SQZ 60 x 120	5M-25	391	180	158	70H7	15	81.5	M8	M8	M5	52	8	192
TGA8080_A	SQZ 80	8M-40	428	200	118	70H7	25	41.5	M8	M8	M5	66	10	212
FFA8016_A	SQZ 80 x 160	8M-28	428	200	198	70H7	20	121.5	M8	M8	M5	66	10	212

----- Total length = basic length + travel [mm]

Configuration of drive shaft





[mm]

O	L1	L2	C	L4	L5	M1	M2	M3	M4	P	Q	R	T1	T2	W	Max. travel	Mass [kg]	
																	Basic length	per 100 mm travel
38	25	6	34	13	10	21	17	20	20	3 x 3 x 20	48	53	8.5	4.5	10.1	5898	1.23	0.17
48	28	6	40	16	15	29	20	20	20	3 x 3 x 20	61	61	11.5	7	10.1	5868	2.76	0.23
48	28	6	40	16	15	29	20	20	20	3 x 3 x 20	61	61	11.5	7	10.1	5868	3.09	0.41
80	31.5	6	56	16	29	64	30	40	40	5 x 5 x 25	94.5	91.5	11.5	7	10.1	5808	9.33	0.56
80	31.5	6	56	16	29	64	30	40	40	5 x 5 x 25	94.5	91.5	11.5	7	10.1	5808	10.67	0.94
100	31.5	6	63	18	29	64	35	40	40	8 x 7 x 25	109.5	98	11.5	7	10.1	5788	13.42	0.79
100	31.5	6	63	18	29	64	35	40	40	6 x 6 x 25	109.5	98	11.5	7	10.1	5788	16.08	1.40

# SQ/SQZ – Fixing

## Slot stones

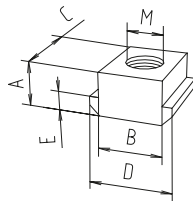
■ Slot stones can be inserted and positioned at the guide profile and carriage

**Material:** Galvanised steel

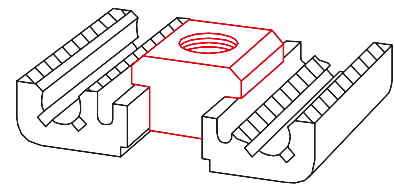
### Slot stone -N-



### Slot stone -N-



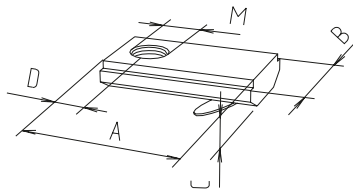
Slot stone -N- can be slid into the slot



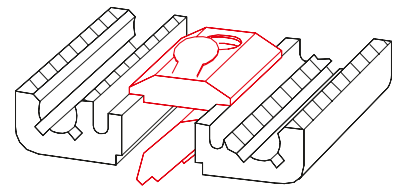
### Slot stone -K-



### Slot stone -K-



Slot stone -K- can be swivelled into the slot



Code No.	Type	Version	A	B	C	D	E	M	F [N]
<b>Slot stone -N-</b>									
4006201	SQZ 30	M5	5	10	13	13	3	M5	4000
4006203	SQZ 30	M6	5	10	13	13	3	M6	4000
4006202	SQZ 30	M8	5	10	13	13	3	M8	4000
4026207	SQZ 40-80	M5	8	10	13	15	4	M5	4000
4026203	SQZ 40-80	M6	8	10	13	15	4	M6	9000
4026206	SQZ 40-80	M8	8	10	13	15	4	M8	9000
<b>Slot stone -K-</b>									
4006211	all	M5	21	12	4	7	M5	5000	5000
4006212	all	M6	21	12	4	7	M6	5000	5000
4006213	all	M8	21	12	4	7	M8	5000	5000
4016212	SQZ 40-80	M6	21	14	4	7	M6	5000	5000
4016213	SQZ 40-80	M8	21	14	4	7	M8	8000	8000



3-axis portal system of a machining centre

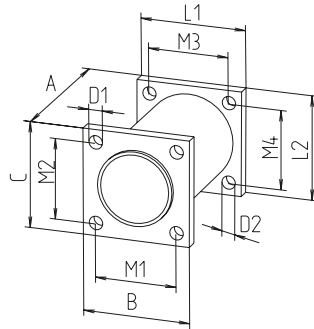
# SQZ – Drive

## Connecting adaptor 30-40



- Connecting piece between linear unit and transmission unit

**Material:**  
Aluminium, black anodised  
Fastenings, galvanised  
**Scope of delivery:**  
Adaptor with fastenings



[mm]

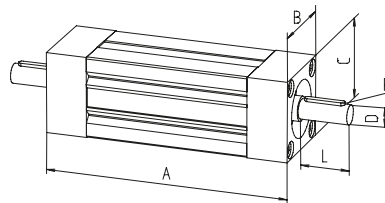
Code No.	Type	A	B	C	D1	D2	L1	L2	M1	M2	M3	M4
91305	30	62	30	30	4.3	4.3	48	30	21	21	21	21
91306	40	68	40	40	5.4	5.4	40	40	29	29	29	29

## Connecting and transmission unit 30-40



- Transmission of torques or as connecting unit between two parallel linear units

**Material:** Aluminium, anodised



[mm]

Code No.	Type	A (basic length)	B	C	D	L	P
92503_ _ _ _	Transmission unit 30	60	30	30	8	25	2 x 2 x 20
92513_ _ _ _	Connecting unit 30	60	30	30	–	–	–
92504_ _ _ _	Transmission unit 40	80	40	40	10	28	3 x 3 x 20
92514_ _ _ _	Connecting unit 40	80	40	40	–	–	–

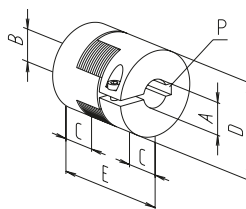


## Coupling for transmission unit 30-50



- Shaft connection without backlash
- Easy plug-in assembly

**Material:** Hub, aluminium  
Gear ring, polyurethane

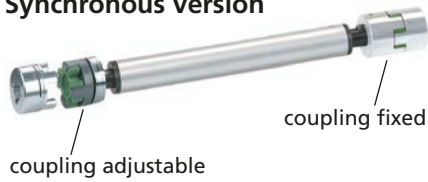


[mm]

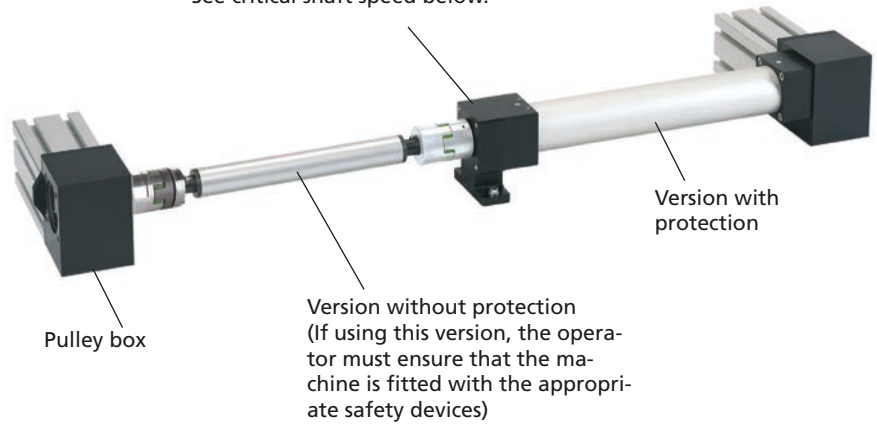
Code No.	Type	A	B	C	D	E	P	Torque [Nm]	
								with feather key	without feather key
9109200810	SQZ 30	8	10	10	20	30	2x2 / 3x3	5	3
9109201010	SQZ 40	10	10	10	20	30	3x3 / 3x3	5	3

**Transmission unit 60-80**

- Transmission of high torques up to 120 Nm on parallel linear units
- Synchronisation of carriages via zero point alignment

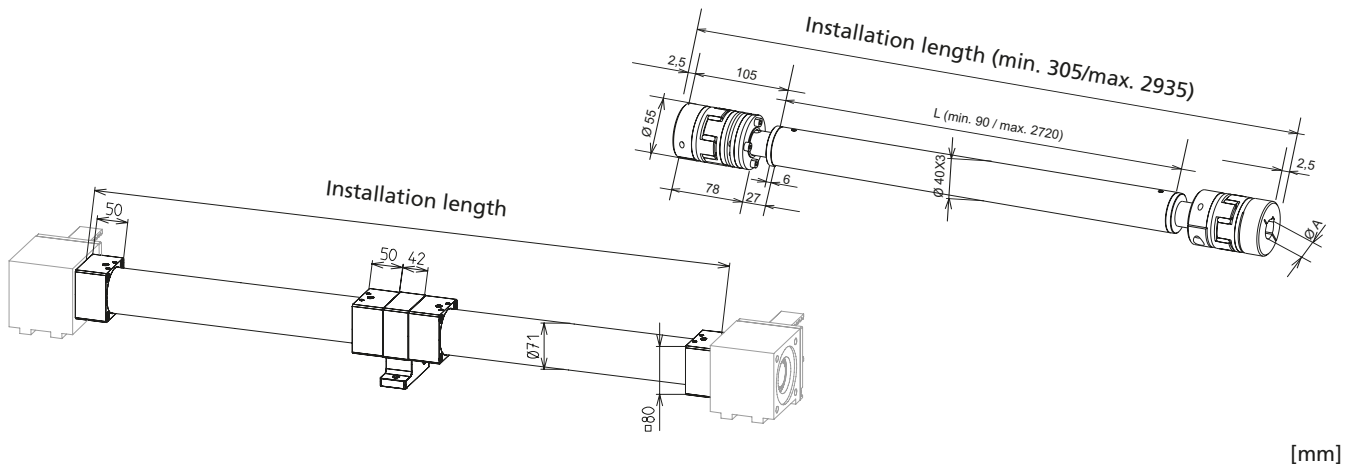
**Synchronous version**


For higher speed and length a pedestal bearing support might be necessary. See critical shaft speed below.


**Critical shaft speed:**

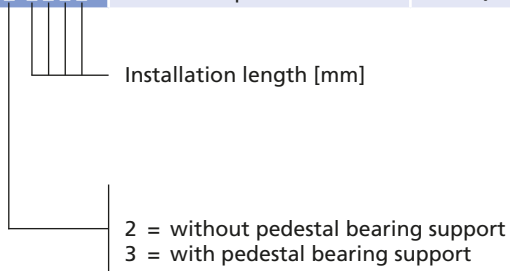
$$\text{max. unsupported length [mm]} = (2720 - \text{speed [rpm]}) + 2 \times 107.5$$

$$\text{max. speed [rpm]} = 2720 - L \text{ [mm]}$$



[mm]

Code No.	Version	for linear unit	A [mm]	Weight [kg]		
				1000 mm	/100 mm	Pedestal bearing support
9252046 _ _ _ _	Without protection	SQZ 60	15	5.23	230	1400
9252146 _ _ _ _	With protection	SQZ 60	15	8.56	400	1400
9252048 _ _ _ _	Without protection	SQZ 80	25	5.23	230	1500
9252148 _ _ _ _	With protection	SQZ 80	25	8.56	400	1500



## Selection table - motor adaptor/coupling

Type	Servo motors without gear			Servo motors with gear			Three-phase motor	
	RK-AC 118	RK-AC 240	RK-AC 470	RK-AC 112	RK-AC 260	RK-AC 345	90/120W	180/250 W
SQZ 30	949215	–	–	–	–	–	94995	–
	911430 1011	–	–	–	–	–	910920 1012	–
SQZ 40 40x80	949216	949235	–	949438	949439	–	94987	94988
	911430 1011	911430 1014	–	911430 1014	911940 1020	–	911430 1012	911430 1014
SQZ 60 60x120	949217	949236	949245	949440	949441	949442	949029	949030
	911430 1115	911940 1415	911430 1519	911940 1415	911940 1520	912855 1519	911940 1215	911940 1415
SQZ 80	–	949683	949687	949681	949685	949686	949695	949697
	–	912855 1425	912855 1925	912855 1425	912855 2025	912855 2525	912855 1225	912855 1425
SQZ 80x160	–	949237	949246	949443	949444	949445	94956	94950
	–	911940 1420	911940 1920	912855 1420	912855 2020	912855 2025	911940 1220	911940 1420



Code No. Motor adaptor: <b>949237</b>
Code No. Coupling with specification of shaft diameter 1st end = 14 mm 2nd end = 14 mm: <b>911940 1420</b>

**Note:**

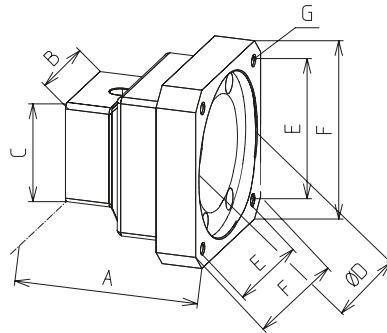
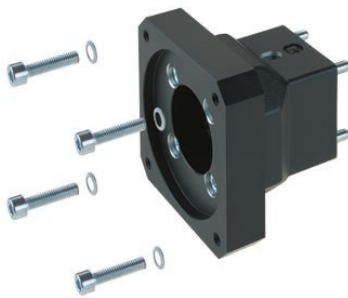
For further details on motor versions, please refer to the chapter "Motors and controls"



**Motor adaptor**

- Simple assembly
- Exact fit due to centring shoulders

**Material:**  
Aluminium, black anodised



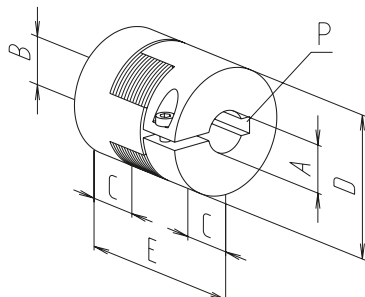
[mm]

Code No.	Type	A	B	C	D	E	F	G
949215	30	63	40	40	60	53	70	M5
94995	30	65	40	40	50	46	80	M5
949438	40	75	50	50	40	53	70	Ø5,5
949216	40	65	50	50	60	53	70	M5
949235	40	73	50	50	80	70,7	90	M6
949439	40	93	50	50	60	70,7	90	Ø5,5
94987	40	73	50	50	50	46	80	M5
94988	40	73	50	50	80	100	Ø120	Ø6,6
949440	60,60x120	84	80	80	40	53	70	Ø5,5
949217	60,60x120	67,5	80	80	60	53	70	M5
949236	60,60x120	79	80	80	80	70,7	90	M6
949441	60,60x120	89	80	80	60	70,7	90	Ø5,5
949442	60,60x120	114	80	80	80	91,9	115	M8
949245	60,60x120	86	80	80	95	81,3	115	M8
949029	60,60x120	79	80	80	50	46	80	M5
949030	60,60x120	79	80	80	80	100	Ø120	Ø6,6
949681	80	99	80	80	40	53	70	Ø5,5
949683	80	86	80	80	80	70,7	90	M6
949685	80	96	80	80	60	70,7	70	Ø6,6
949686	80	111	80	80	80	91,9	115	Ø9
949687	80	96	80	80	95	81,3	115	M8
949695	80	89	80	80	50	46	80	M5
949697	80	86	80	80	80	100	Ø120	Ø6,6
949443	80x160	99	80	80	40	53	70	Ø5,5
949237	80x160	79	80	80	80	70,7	90	M6
949444	80x160	96	80	80	60	70,7	90	Ø6,6
949445	80x160	111	80	80	80	91,9	115	M8
949246	80x160	89	80	80	95	81,3	115	M8
94956	80x160	79	80	80	50	46	80	M5
94950	80x160	79	80	80	80	100	Ø120	Ø6,6

## Coupling

- Shaft connection without backlash
- Easy plug-in assembly

**Material:** Hub, aluminium  
Gear ring, polyurethane



[mm]

Code No.	A	B	C	D	E	P	Torque [Nm]	
							with feather key	without feather key
9109209510	9,5	10	10	20	30	- / 3x3	5	3
9109201012	10	12	10	22	30	3x3 / 4x4	5	3
9114309510	9,5	10	11	30	35	- / 3x3	12	6
9114301011	10	11	11	30	35	3x3 / 4x4	12	6
9114301012	10	12	11	30	35	3x3 / 4x4	12	6
9114301014	10	14	11	30	35	3x3 / 5x5	12	6
9114301115	11	15	11	30	35	4x4 / 5x5	12	6
9114301519	15	19	11	30	35	5x5 / 6x6	12	6
9119409515	9,5	15	25	40	65	- / 5x5	17	10
9119401215	12	15	25	40	65	4x4 / 5x5	17	10
9119401220	12	20	25	40	65	4x4 / 6x6	17	10
9119401415	14	15	25	40	65	5x5 / 5x5	17	10
9119401420	14	20	25	40	65	5x5 / 6x6	17	10
9119401920	19	20	25	40	65	6x6 / 6x6	17	10
9128551225	12	25	30	55	78	4x4 / 8x7	60	35
9128551420	14	20	30	55	78	5x5 / 6x6	60	35
9128551425	14	25	30	55	78	5x5 / 8x7	60	35
9128551925	19	25	30	55	78	6x6 / 8x7	60	35
9128552020	20	20	30	55	78	6x6 / 6x6	60	35



Headlight adjustment system

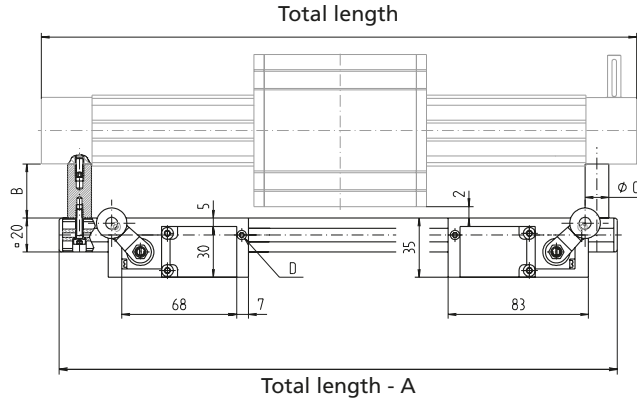
# SQZ – Position determination

## Holder for mechanical limit switch

**Note:** The Code No. does not include the limit switch.  
For limit switch, please see page 365.

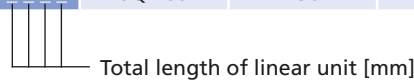
- Limit switch can be moved and fixed axially
- Guide rail made of profile F-20 x 20
- Connecting cables can be placed in the profile slots

**Material:** Aluminium, anodised  
Galvanised fastenings  
**Scope of delivery:** Guide rail, spacer, 2 fixing plates, caps and fastenings



[mm]

Code No.	Type	A	B	C	D
92780 _ _ _ _	SQZ 30	66	28	14	M3 x 10
92781 _ _ _ _	SQZ 40	80	38	16	M3 x 10
92782 _ _ _ _	SQZ 60	140	52	16	M3 x 10
92783	SQZ 80	150	52	16	M3 x 10

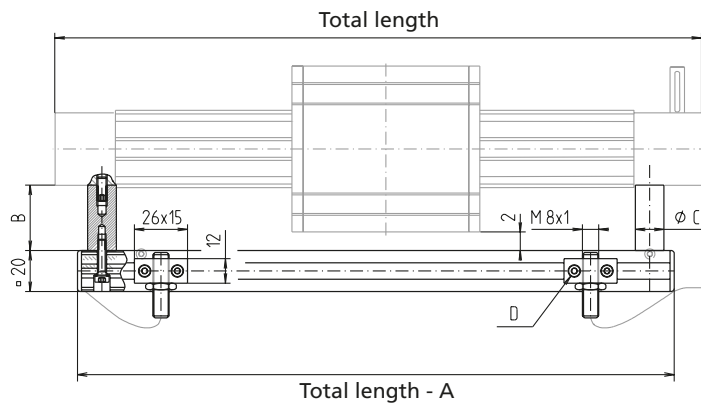


## Holder for inductive limit switch

**Note:** The Code No. does not include the limit switch.  
For limit switch, please see page 365.

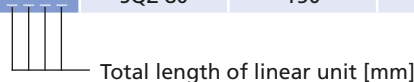
- Limit switch can be moved and fixed axially
- Guide rail made of profile F-20 x 20
- Connecting cables can be laid in the profile slots

**Material:** Aluminium, anodised  
Galvanised fastenings  
**Scope of delivery:** Guide rail, spacer, 2 fixing plates, caps and fastenings



[mm]

Code No.	Type	A	B	C	D
92980 _ _ _ _	SQZ 30	66	28	14	M3 x 16
92981 _ _ _ _	SQZ 40	80	38	16	M3 x 16
92982 _ _ _ _	SQZ 60	140	52	16	M3 x 16
92983	SQZ 80	150	52	16	M3 x 16

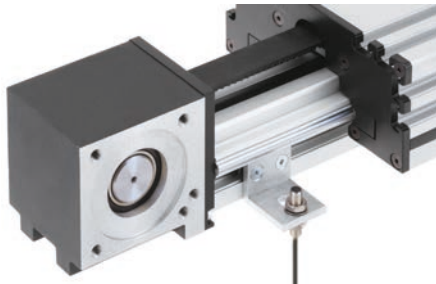




### SQZ - Position determination

#### Holder for inductive limit switch

For technical data of the limit switch, please refer to the next page

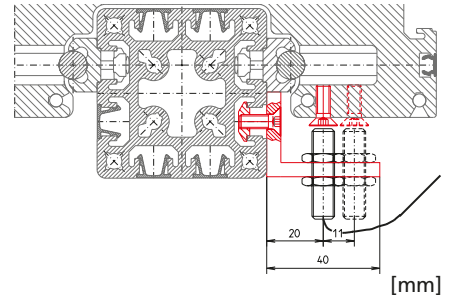
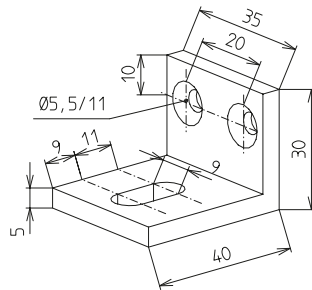


The Order No. does not include the limit switch! (see below)

- Fixing bracket for limit switches
- Fixing in the profile slot of the guide profile
- Simple axial displacement and adjustment of holder is possible

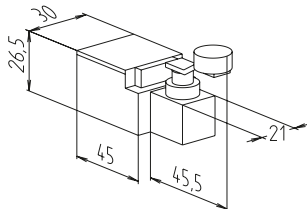
**Material:** AlMgSi, vibratory finished

**Scope of delivery:** Holder with fastenings



Code No.	Type
92909	SQZ- 40 x 80, 60, 60 x 120, 80, 80 x 160

#### Mechanical limit switch



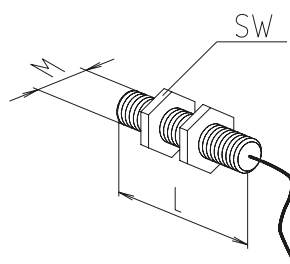
- Limit switch with angle lever
- Compact design

**Material:** Thermoplastic, fully insulated

Max. voltage	250 V AC
Max. switching current	6 A
Max. starting current	16 A
Operating cycles	Max. 6,000/h
Mechanical lifetime	1 x 10 <sup>7</sup> switching cycles
Axis lever adjustment	locking by 360°
Protection class	IP 65
Ambient temperature	-30°C to +80°C

Code No.	Type	Switching function
91905	SQZ 30-80	NC/NO
92767	Fixing plate (same version as for limit switch holder on page 364, with fastenings)	

#### Inductive limit switch



- Function indicator (LED)
- Maintenance-free

**Material:** Housing: stainless steel

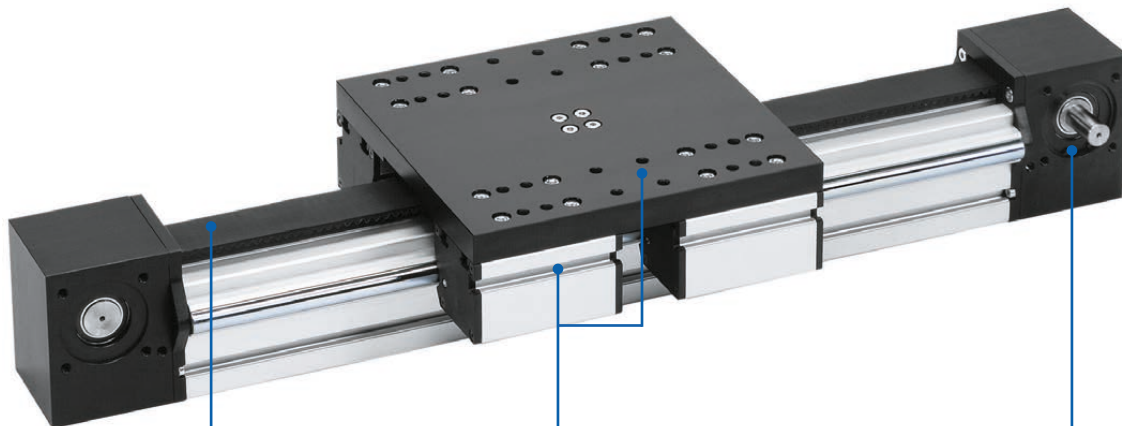
Type	30-80
Voltage	10 - 30 V DC
Max. switching current	150 mA
Operating distance	2 mm for steel
Protection class	IP 67
Ambient temperature	-25°C to +70°C
Cable lengths	2m

Code No.	Type	Switching function	L	M	Wrench size (SW)
92826	SQZ 30-80	Changeover	40	8x1	13
92967	Fixing element (same version as for limit switch holder on page 364 - with fastenings)				

[mm]

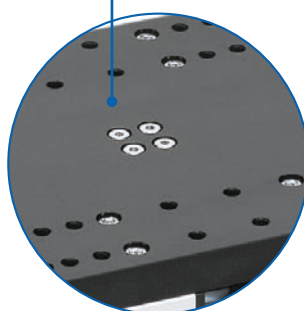
# Roller guide actuators/guides – LM/LMZ

Robust linear actuator that takes high moments and forces



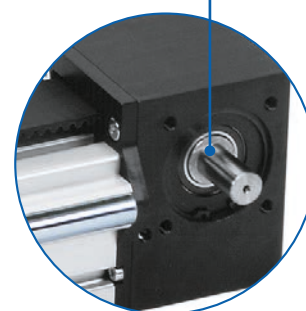
## Wide timing-belt

- ✓ Transmission of large axial forces



## Large fixing plate

- ✓ Simple connection of attachments
- ✓ Enables high moments



## Configuration of drive shaft

- ✓ Freely configurable acc. to your requirements

## Features:

- Simple, robust and cost-effective design
- Guide shafts diam. 20 mm
- Guide profile from BLOCAN® F-100 x 100
- Roller modules with external lubrication and wipers
- Timing-belt with a width of 50 mm

## Options:

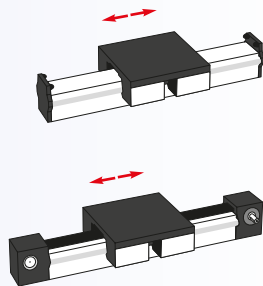
- Second non driven carriage
- Longer stroke lengths

**LM/LMZ - Table of contents**

**Properties/Technical data**

- General information/operating conditions... 368
- Load data..... 369

**Versions**  
(Dimensions, order numbers)



- LM guide unit.....370 - 371
- LMZ timing-belt unit.....372 - 373

**Accessories**

**Fixing**

- Slot stones ..... 374

**Drive**

- Transmission unit..... 375
- Motor adaptor/couplings ..... 376

**Position determination**

- Limit switches ..... 377

## General information/operating conditions

Design	Aluminium profile, timing-belt drive
Guide	Roller with individual modules, external
Installation position	Any position
Repeat accuracy	0.05 mm
Ambient temperature	0°C to +60°C
Protection class	IP 20

Type	Toothed belt	Pitch/ width	Eff. diam pulley [mm]	Max. input torque [Nm]	Max. speed [m/s]	Max. acceleration [m/s]
LMZ 100	GT 8MR	8/50	61.12	90	10	20

## No-load torque

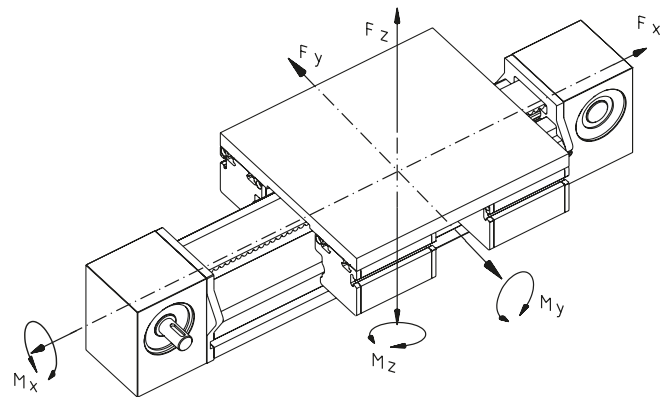
[Nm]

Type	No-load torque
LMZ 100	1.20



**LM/LMZ - Technical data**
**Load data\***

- F Force [N]
- M Moment [Nm]
- I Geometric moment of inertia [cm<sup>4</sup>]



\* With reference to carriage (static values, guide element resting on full surface)

	$F_x^{**}$	$F_y^{***}$	$F_z^{***}$	$M_x$	$M_y$	$M_z$
<b>LM (guide roller unit)</b>						
LM 100	–	7000	7000	441	609	609
<b>LMZ with external timing-belt</b>						
LMZ 100	3400	7000	7000	441	609	609

\*\* The design should incorporate appropriate safety factors for these values, depending on application.

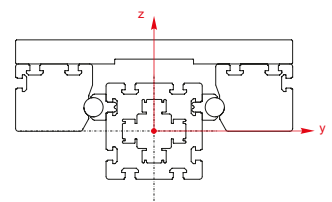
Initial tension of the timing belt 0,8 x  $F_x$

\*\*\* Force evenly distributed on the carriage and fixed

**Geometric moment of inertia**

Type	$I_y$	$I_z$
LMZ 100	304	304

[cm<sup>4</sup>]



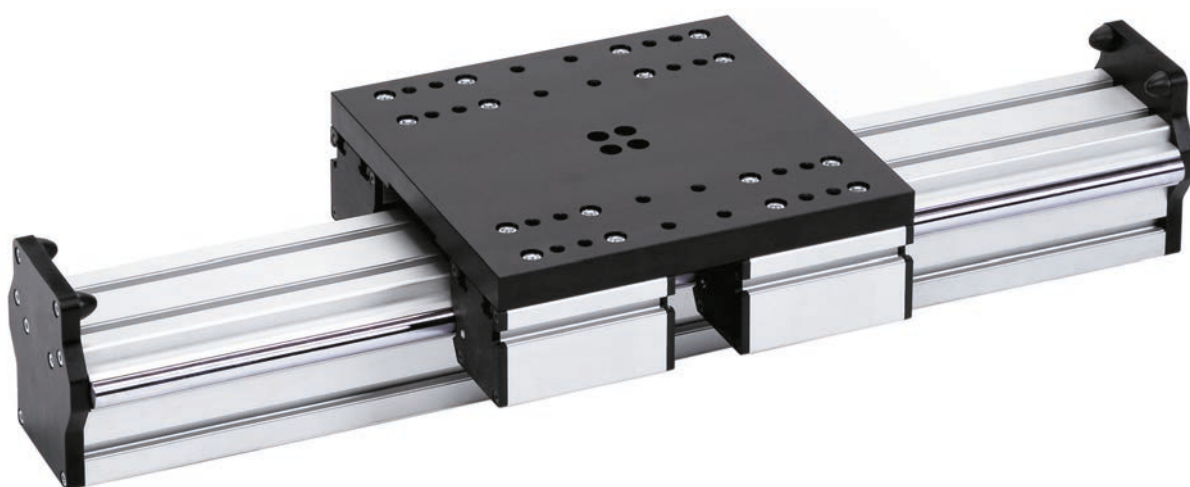
# LM – Versions

## Order information:

- Longer travel lengths on request
- Second carriage available

Version

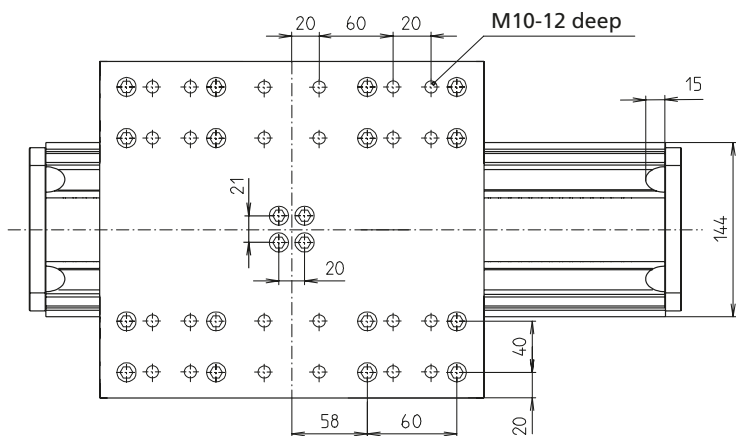
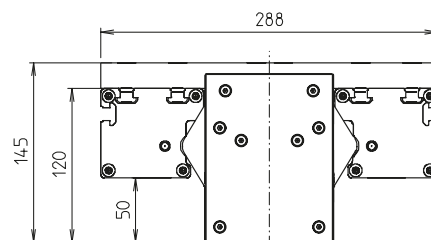
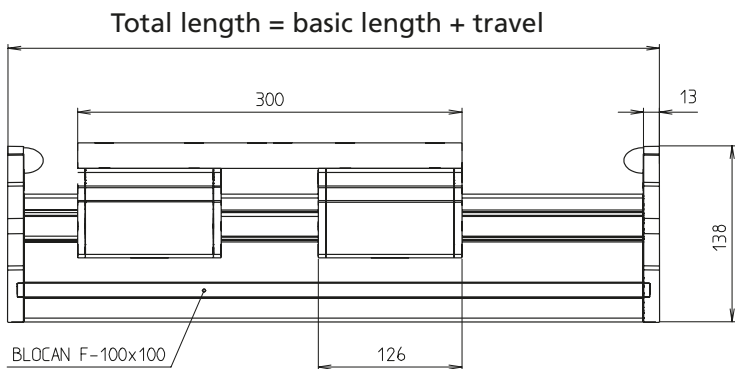
■ Guide



Code No.	Type	Basic length	Max. travel	Mass [kg]	
				Basic length	per 100 mm travel
MNA1010AL	LM 100	356	5670	16.4	3.11

[mm]

----- Total length = basic length + travel [mm]



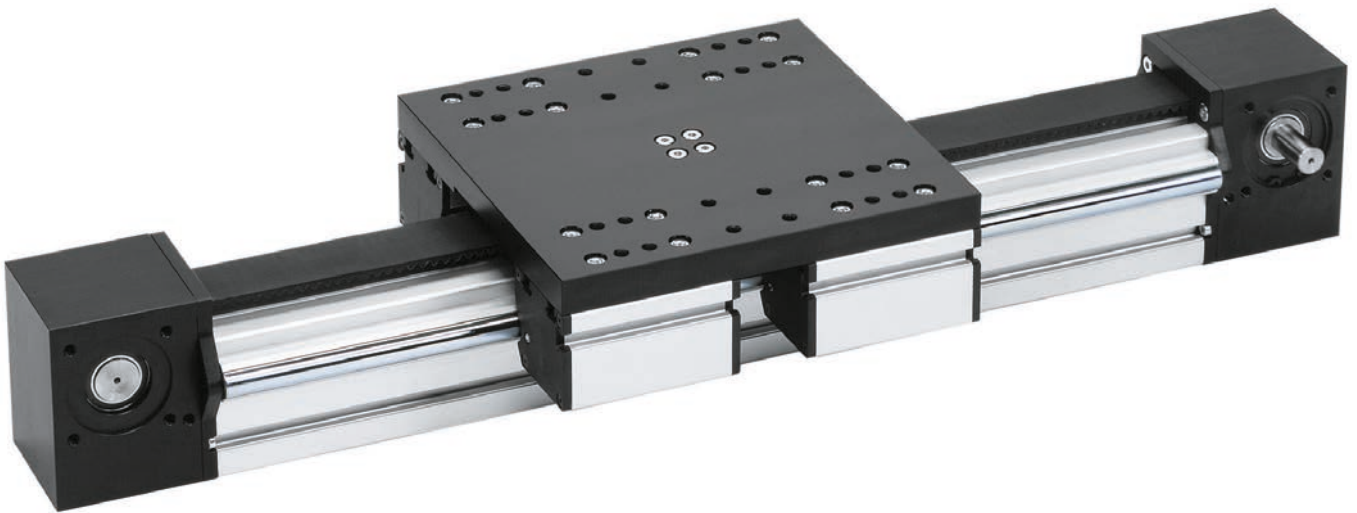
# LMZ – Versions

## Order information:

- Longer travel lengths on request
- Second non driven carriage available on request

Version

■ Timing-belt unit

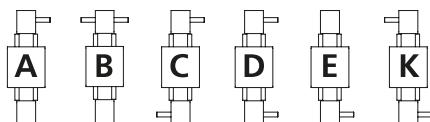


[mm]

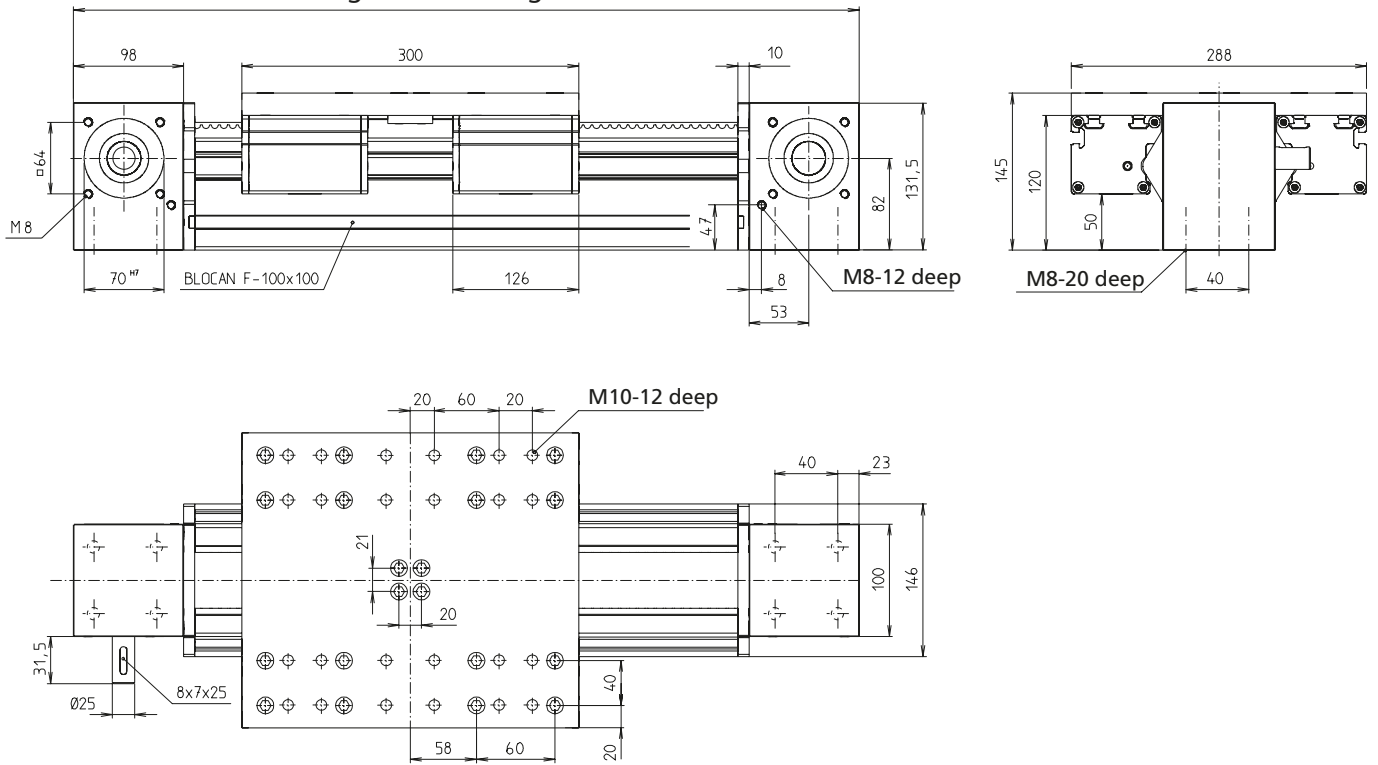
Code No.	Type	Timing-belt	Basic length	Max. travel	Mass [kg]	
					Basic length	per 100 mm travel
FDA1010_L	LMZ 100	GT8 MR-50	516	5700	22.8	1.47

----- Total length = basic length + travel [mm]

Configuration of drive shaft



Total length = basic length + travel



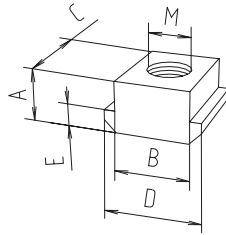
# LMZ – Fixing/Drive

## Slot stones

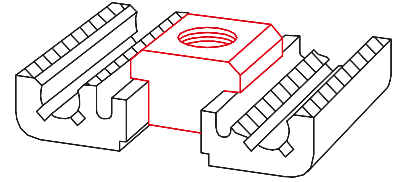
■ Slot stones can be inserted and positioned at the guide profile

**Material:** galvanised steel

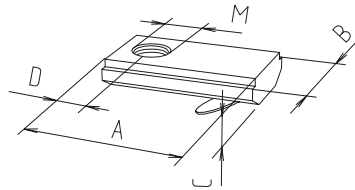
Slot stone -N-



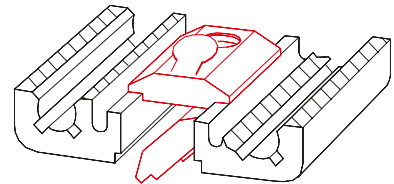
Slot stone -N- can be slid into the slot



Slot stone -K-



Slot stone -K- can be swivelled into the slot



[mm] 

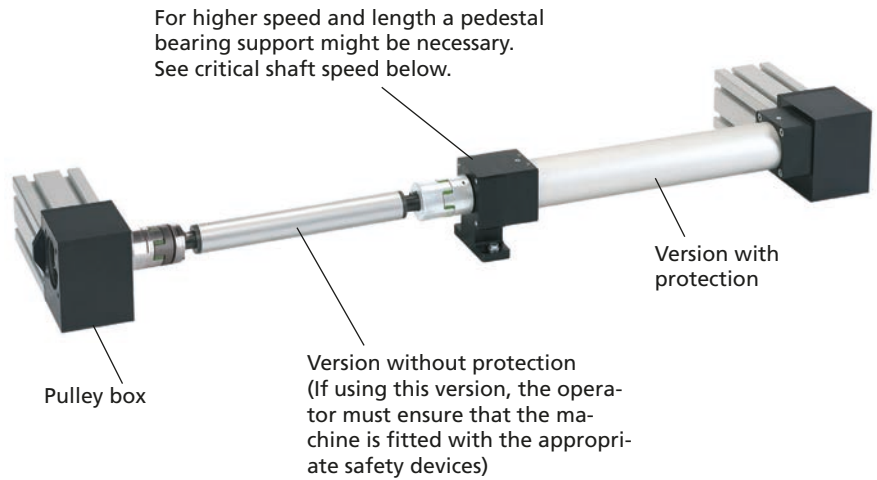
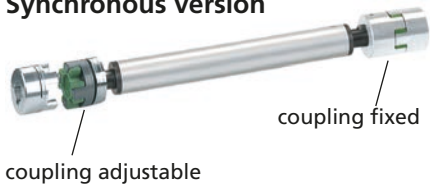
Code No.	Version	A	B	C	D	E	M	F [N]
<b>Slot stone -N-</b>								
4026207	M5	8	10	13	15	4	M5	4000
4026203	M6	8	10	13	15	4	M6	9000
4026206	M8	8	10	13	15	4	M8	9000
<b>Slot stone -K-</b>								
4006211	M5	21	12	4	7	M5	5000	5000
4006212	M6	21	12	4	7	M6	5000	5000
4006213	M8	21	12	4	7	M8	5000	5000
4016212	M6	21	14	4	7	M6	5000	5000
4016213	M8	21	14	4	7	M8	8000	8000



**Transmission unit 60-80**

- Transmission of high torques up to 120 Nm on parallel linear units
- Synchronisation of carriages via zero point alignment

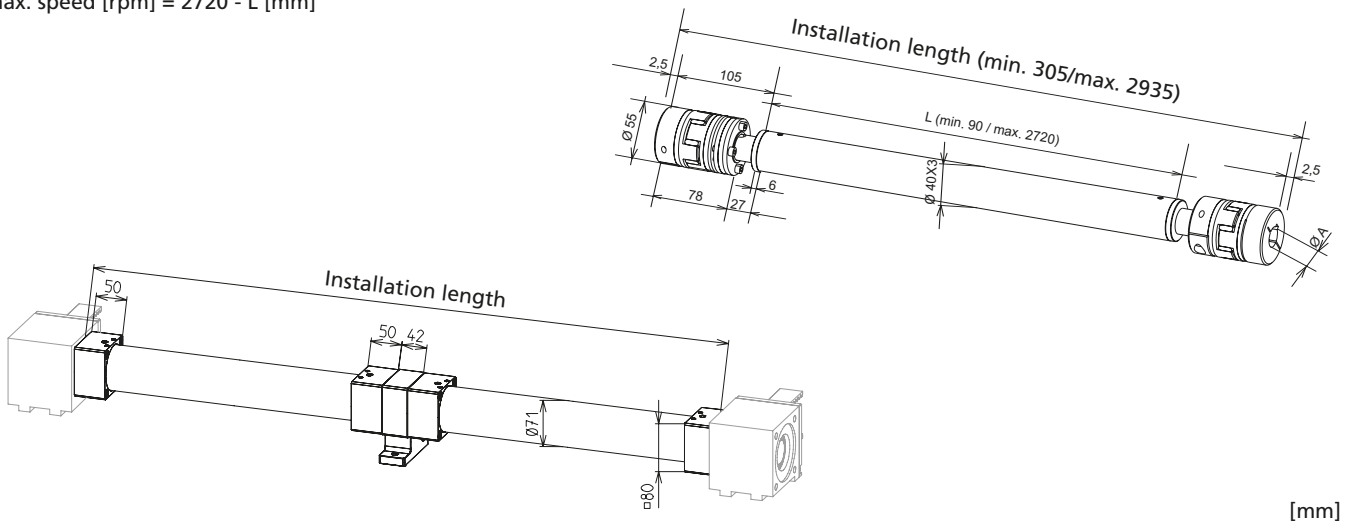
**Synchronous version**



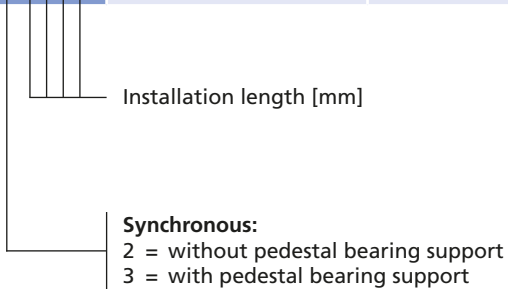
**Critical shaft speed:**

max. unsupported length [mm] = (2720 - speed [rpm]) + 2 x 107.5

max. speed [rpm] = 2720 - L [mm]



Code No.	Version	for linear unit	A [mm]	Weight [kg]		
				1000 mm	/100 mm	Pedestal bearing support
9252011	Without protection	LMZ	25	5.23	230	1700
9252111	With protection	LMZ	25	8.56	400	1700



## Selection table motor adaptor/coupling

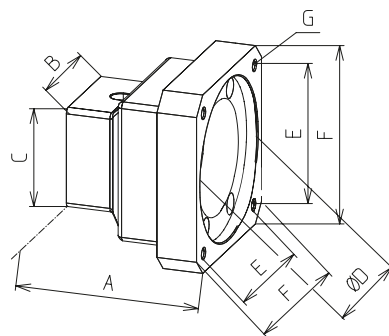
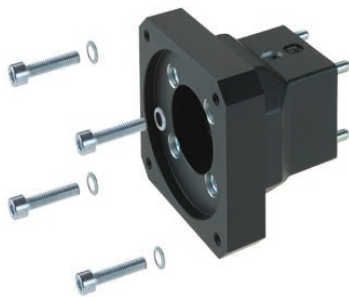
Type	Servo motors without gear		Servo motors with gear			Three-phase motor	
	RK-AC 240	RK-AC 470	RK-AC 112	RK-AC 260	RK-AC 345	90/120W	180/250 W
LMZ	949037	949038	949449	949450	949451	949039	949114
	912855 1425	912855 1925	912855 1425	912855 2025	912855 2525	912855 1225	912855 1425

Note: For further details on motor versions, please refer to the chapter "Motors and controls"

### Motor adaptor

- Simple assembly
- Exact fit due to centering shoulders

**Material:**  
Aluminium, black anodised



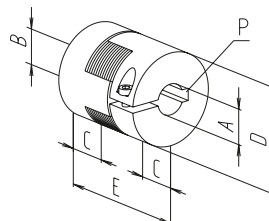
[mm]

Code No.	A	B	C	D	E	F	G
949449	102	80	80	40	53	70	Ø5,5
949037	86	80	80	80	70,7	90	M6
949450	96	80	80	60	70,7	90	Ø6,6
949451	111	80	80	80	91,9	115	Ø9
949038	96	80	80	95	81,3	115	M8
949039	86	80	80	50	65	80	M5
949114	86	80	80	80	100	Ø120	Ø6,6

### Coupling

- Shaft connection without backlash
- Easy plug-in assembly

**Material:** Aluminium hub, polyurethane gear ring



[mm]

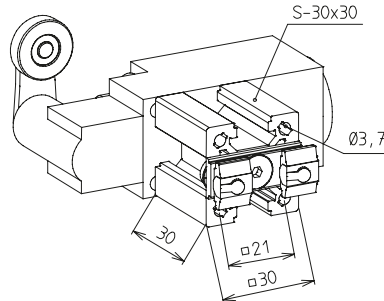
Code No.	ØA	ØB	C	D	E	P	Torque [Nm]	
							with feather key	without feather key
9128559525	9,5	25	30	55	78	- / 8x7	60	35
9128551225	12	25	30	55	78	4x4 / 8x7	60	35
9128551425	14	25	30	55	78	5x5 / 8x7	60	35
9128551925	19	25	30	55	78	6x6 / 8x7	60	35



**LMZ– Position determination**
**Bracket for mechanical limit switch**

- Limit switch with angle lever
- Compact design

**Material:** limit switch housing made of thermoplastic, self-extinguishing, bracket made of aluminium profile



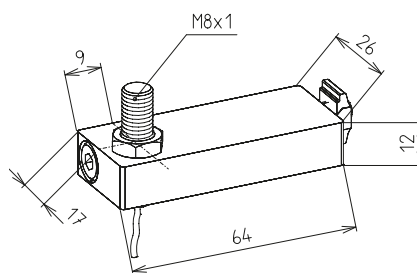
Max. voltage	230 V AC
Max. switching current	4 A
Max. starting current	10 A
Operating cycles	Max. 5,000/h
Mechanical lifetime	20 x 10 <sup>6</sup> switching cycles
Axis lever adjustment	locking by 360°
Protection class	IP 67
Ambient temperature	-30°C to +80°C

Code No.	Type
92710	Limit switch NC/NO with bracket

**Bracket for inductive limit switch**

- Fixing in the profile slot of the guide profile
- Function indicator
- Maintenance-free

**Material:** Limit switch housing made of stainless steel, bracket made of aluminium

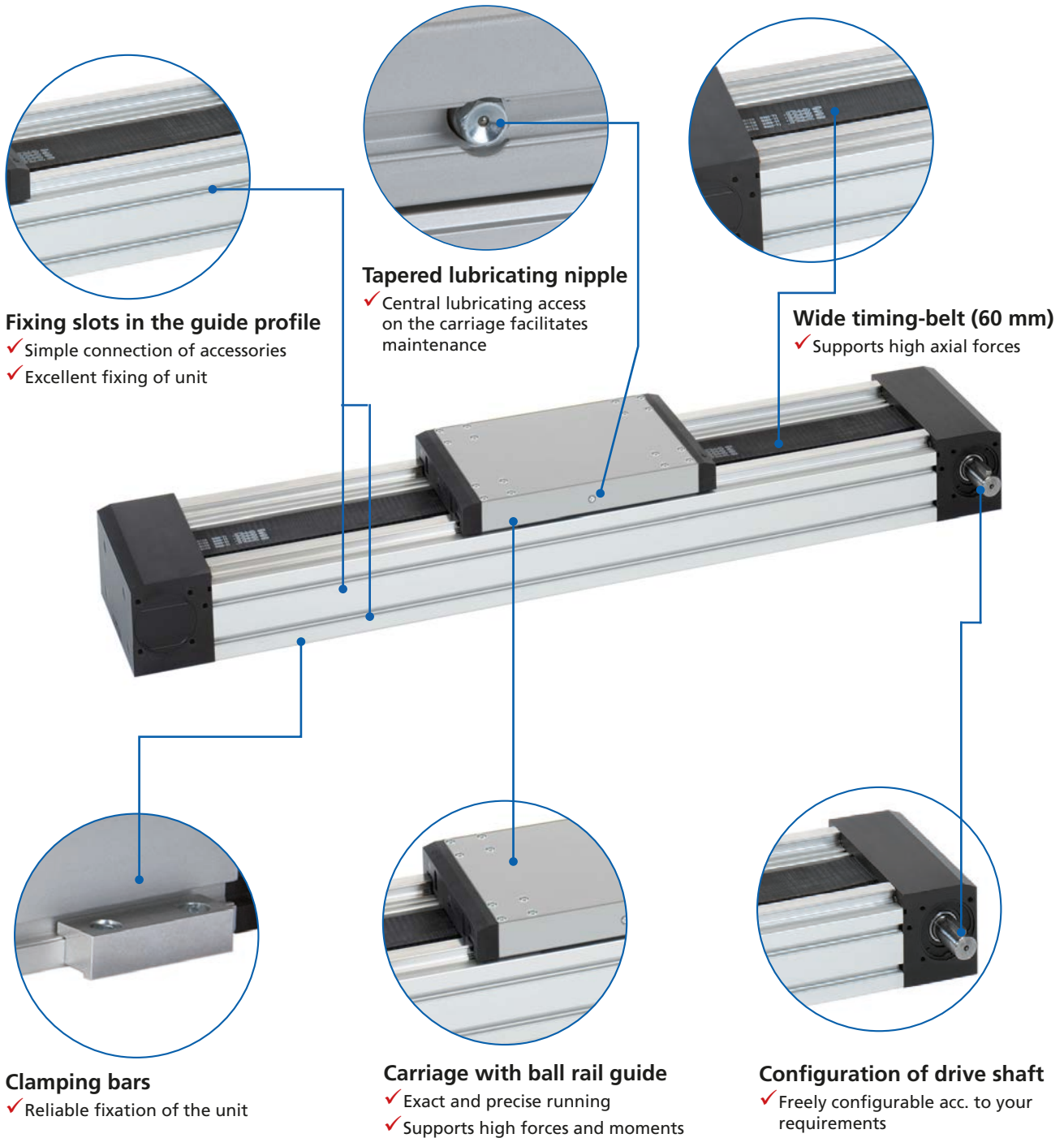


Type	100
Voltage	10 - 30 V DC
Max. switching current	150 mA
Operating distance	2 mm for steel
Protection class	IP 67
Ambient temperature	-25°C to +70°C
Cable lengths	2m

Code No.	Type
92960	Limit switch changeover, with bracket

# Ball rail actuator/guide - MultiLine / R

## Compact ball rail actuator for high loads



**Fixing slots in the guide profile**  
✓ Simple connection of accessories  
✓ Excellent fixing of unit

**Tapered lubricating nipple**  
✓ Central lubricating access on the carriage facilitates maintenance

**Wide timing-belt (60 mm)**  
✓ Supports high axial forces

**Clamping bars**  
✓ Reliable fixation of the unit

**Carriage with ball rail guide**  
✓ Exact and precise running  
✓ Supports high forces and moments

**Configuration of drive shaft**  
✓ Freely configurable acc. to your requirements

### Features:

- Guide profile 100 x 200 compatible with BLOCAN® profile system

- Durable ball rail guide
- Flat and compact design

### Options:

- Longer stroke lengths
- Second non driven carriage
- Extended carriage

## MultiLine / R - Table of contents

<b>Properties/Technical data</b>		<ul style="list-style-type: none"> <li>■ General information/operating conditions... 380</li> <li>■ Load data..... 380</li> </ul>
<b>Versions</b> (Dimensions, order numbers)		<ul style="list-style-type: none"> <li>■ MultiLine R guide unit..... 382 - 383</li> <li>■ MultiLine timing-belt unit..... 384 - 385</li> </ul>
<b>Accessories</b>	<b>Fixing</b> <ul style="list-style-type: none"> <li>■ Slot stones ..... 386</li> </ul> <b>Drive</b> <ul style="list-style-type: none"> <li>■ Transmission unit..... 387</li> <li>■ Motor adaptor/couplings ..... 388</li> </ul> <b>Position determination</b> <ul style="list-style-type: none"> <li>■ Limit switches ..... 389</li> </ul>	

# MultiLine – Technical data

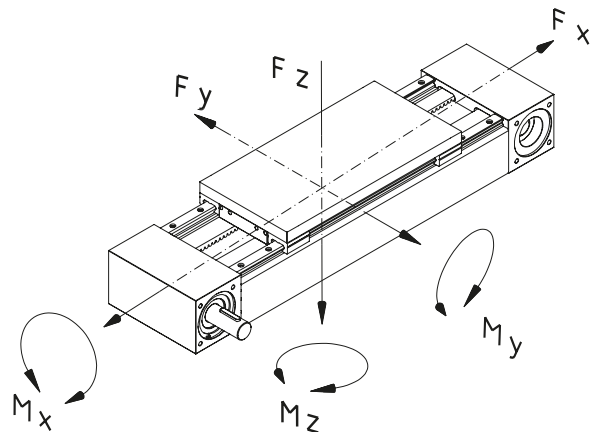
## General information/operating conditions

	MultiLine
Design	Aluminium profile, timing-belt drive
Guidance system	2 parallel ball rails, external
Installation position	Any position
Max. input torque [Nm]	161
Max. speed [m/s]	5
Max. acceleration [m/s <sup>2</sup> ]	50
Repeatability	± 0,05 mm
No-load torque [Nm]	2,00
Drive	GT-Toothed belt, Pitch 8 mm, Width 60 mm
Eff. diam. of pulley [mm]	68,75,
Pulley wheel circumference	216
Ambient temperature	0°C to +60°C
Protection class	IP 20

## Dynamic load data

F Force [N]

M Moment [Nm]



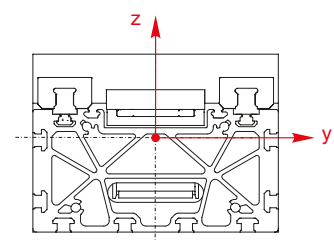
Type	Fx*	Fy	Fz	Mx	My	Mz
MultiLine (Ball rail system)						
MultiLine R	–	8200	12000	920	1600	1500
MultiLine with external timing-belt						
MultiLine	4700	8200	12000	920	1600	1500

\* Initial tension of the timing belt 0,8 x Fx

## Geometric moment of inertia

Type	Iy	Iz
MultiLine	630,85	2643,85

[cm<sup>4</sup>]

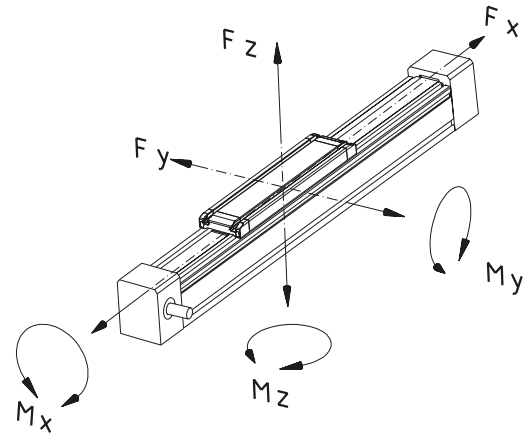


## MultiLine / R - Technical data

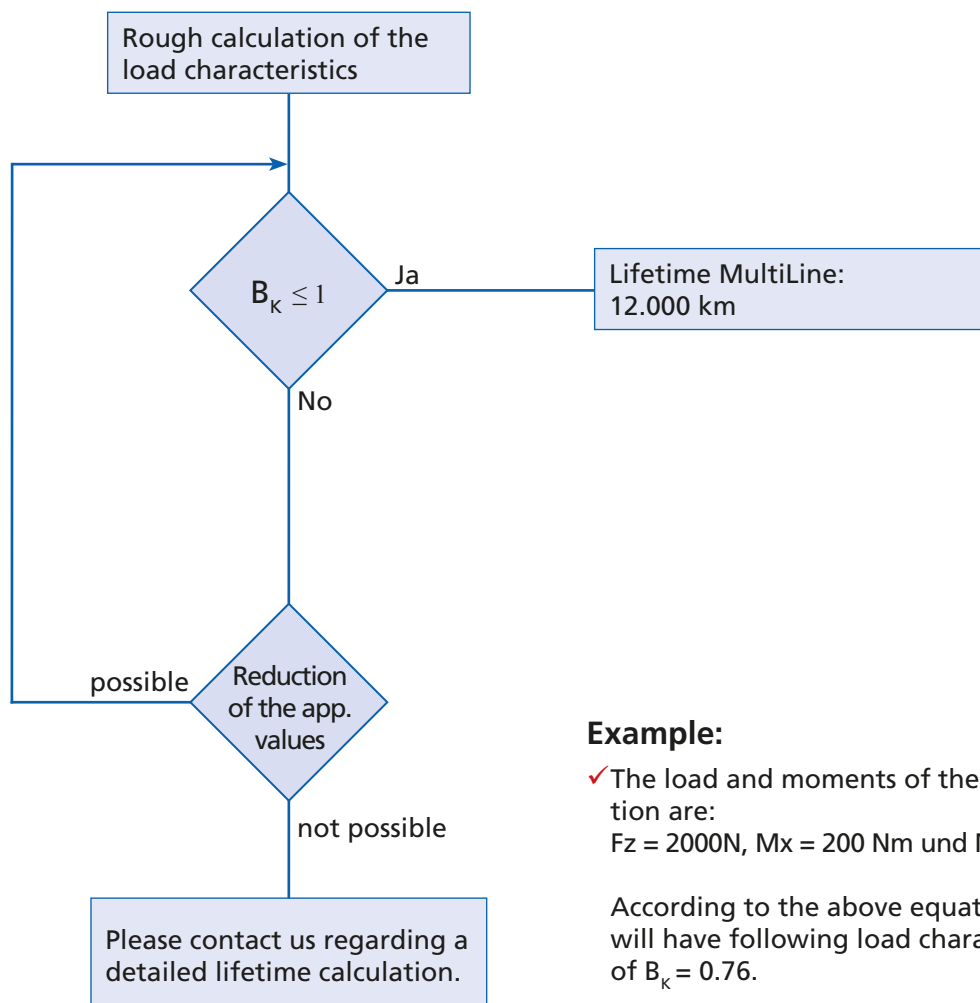
### Calculation of the load characteristic to define the lifetime

- The lifetime of linear units are in accordance with the average loads and moments of an application. The load characteristic can approximately calculated by following equation with simultaneously appearing load and moments.

$$\text{Load characteristic} = \frac{\text{Application values (z.B. } F_y)}{\text{Catalog values (z.B. } F_{y_{\max}})}$$



$$\text{Load characteristic } B_k = \frac{F_y}{F_{y_{\max}}} + \frac{F_z}{F_{z_{\max}}} + \frac{M_x}{M_{x_{\max}}} + \frac{M_y}{M_{y_{\max}}} + \frac{M_z}{M_{z_{\max}}} \leq 1$$



#### Example:

- ✓ The load and moments of the application are:  
 $F_z = 2000\text{N}$ ,  $M_x = 200\text{ Nm}$  und  $M_z = 450\text{ Nm}$

According to the above equation you will have following load characteristic of  $B_k = 0.76$ .

# MultiLine R - Versions

## Order information:

- Longer travel lengths on request
- Second or extended carriage available on request

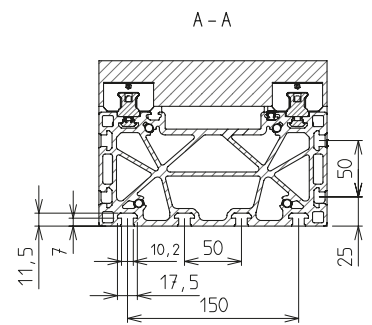
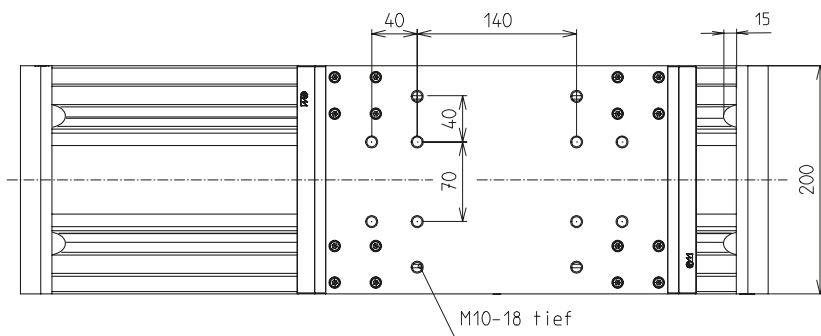
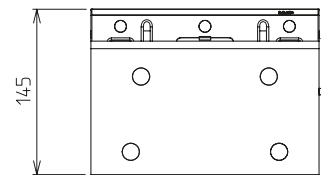
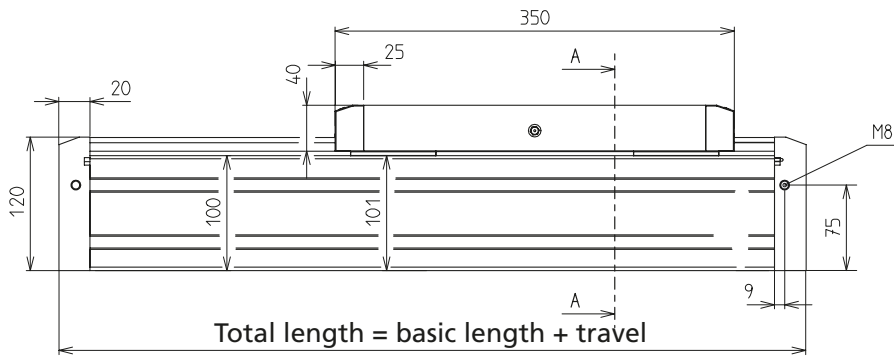
Version

■ Guide



[mm]

Code No.	Type	Basic length	Max. travel	Mass [kg]	
				Basic length	per 100 mm travel
MSA2010IA	Ball rail system	420	5620	31.11	2.00



# MultiLine - Versions

## Order information:

- Longer travel lengths on request
- Second non driven or extended carriage available on request

Version

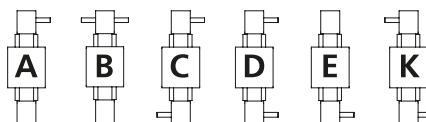
■ Timing-belt unit



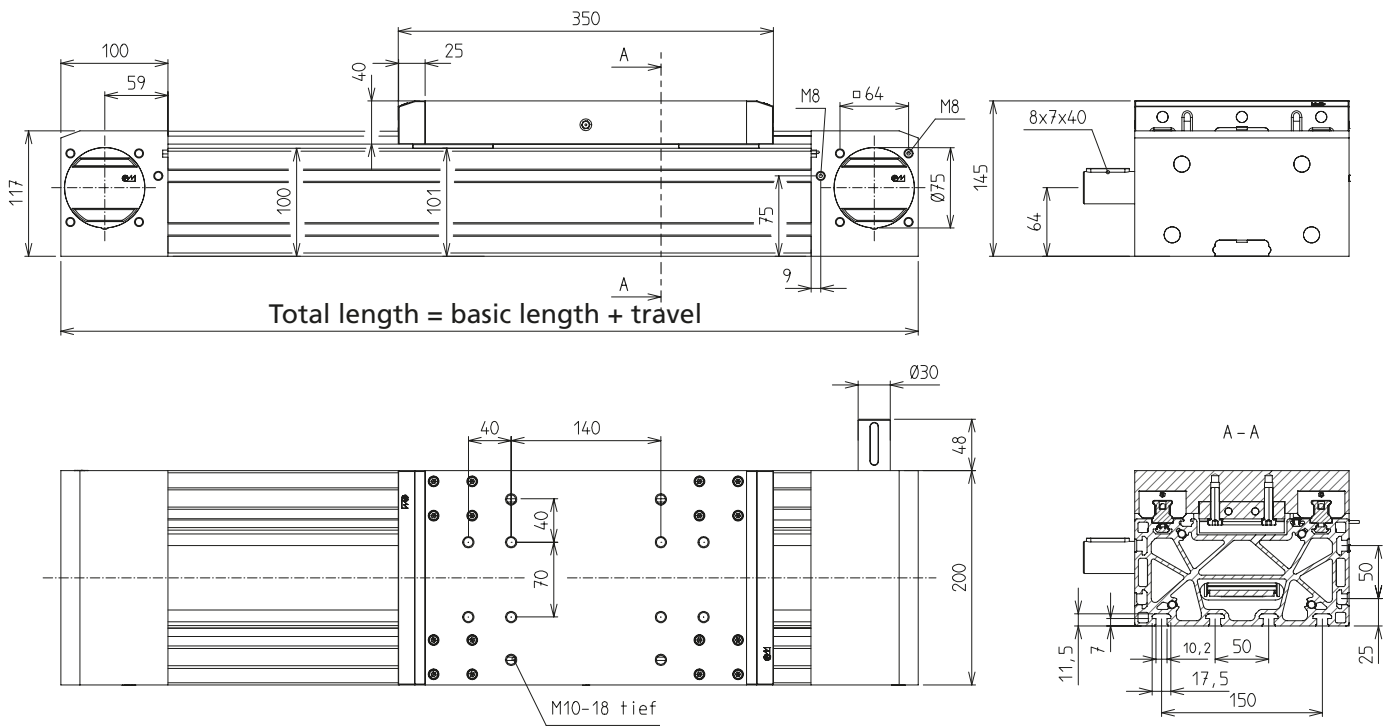
[mm]

Code No.	Type	Toothed belt	Basic length	Max. travel	Mass [kg]	
					Basic length	per 100 mm travel
TAA2010_I	Ball rail system	8 M60	550	5620	29.90	2.05

Configuration of drive shaft







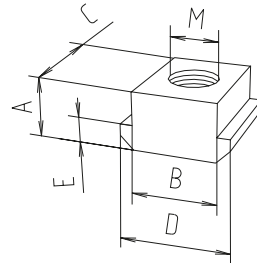
# MultiLine – Fixing/Drive

## Slot stones

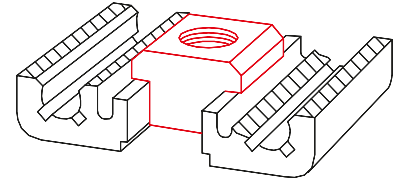
■ Slot stones can be inserted and positioned at the guide profile and carriage

**Material:** galvanised steel

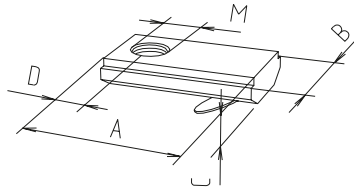
Slot stone -N-



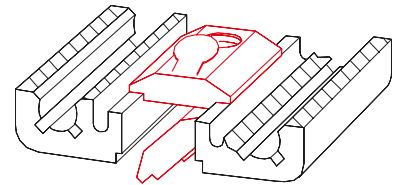
**Slot stone -N-**  
can be slid into the slot



Slot stone -K-



**Slot stone -K-**  
can be swivelled into the slot



[mm] 

Code No.	Version	A	B	C	D	E	M	F [N]
<b>Slot stone -N-</b>								
4026207	M5	8	10	13	15	4	M5	4000
4026203	M6	8	10	13	15	4	M6	9000
4026206	M8	8	10	13	15	4	M8	9000
<b>Slot stone -K-</b>								
4016212	M6	21	14	4	7	M6	5000	5000
4016213	M8	21	14	4	7	M8	8000	8000



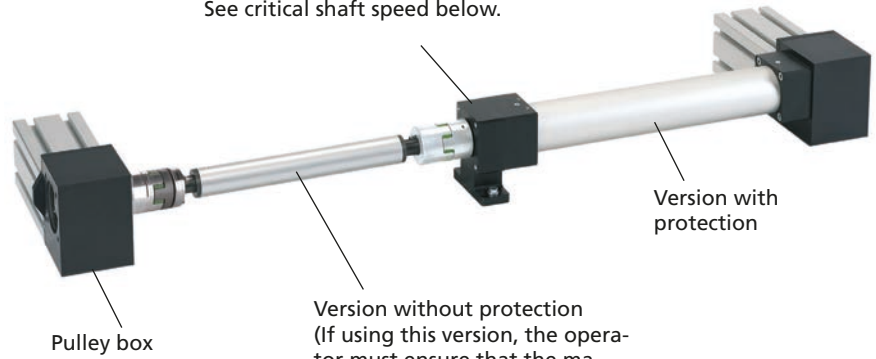
Transmission unit

- Transmission of high torques up to 120 Nm on parallel linear units
- Synchronisation of carriages via zero point alignment

Synchronous version



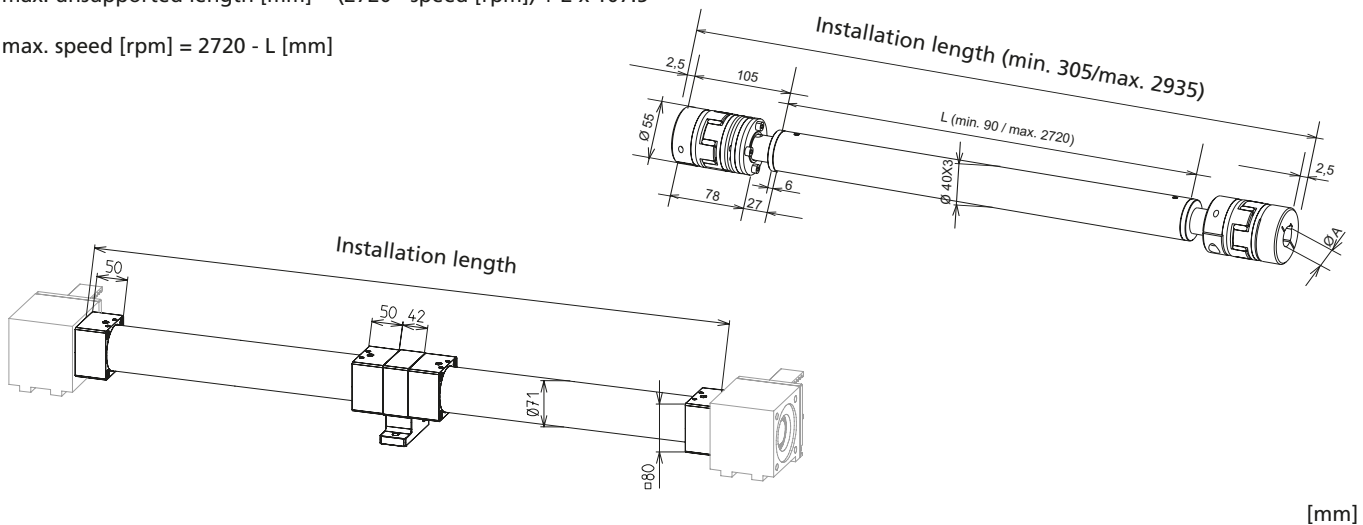
For higher speed and length a pedestal bearing support might be necessary. See critical shaft speed below.



Critical shaft speed:

max. unsupported length [mm] = (2720 - speed [rpm]) + 2 x 107.5

max. speed [rpm] = 2720 - L [mm]



[mm]

Code No.	Version	for linear unit	A [mm]	Weight [kg]		
				1000 mm	/100 mm	Pedestal bearing support
9252052 _ _ _ _	Without protection	MultiLine	30	5.23	230	1700
9252152	With protection	MultiLine	30	8.56	400	1700

- Installation length [mm]
- Standard:**
  - 0 = without pedestal bearing support
  - 1 = with pedestal bearing support
- Synchronous:**
  - 2 = without pedestal bearing support
  - 3 = with pedestal bearing support

# MultiLine – Drive

## Selection table Motor adaptor/coupling

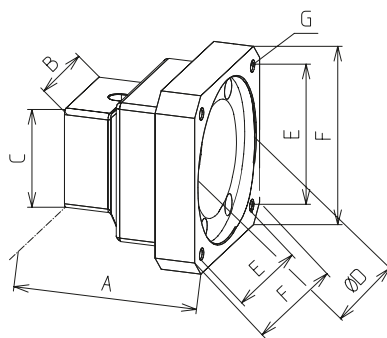
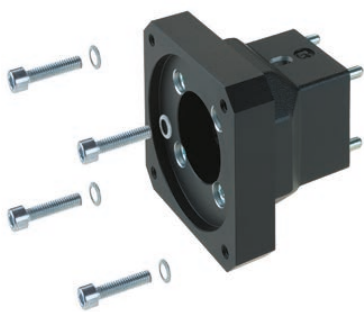
Type	Servo motors without gear		Servo motors with gear			Three-phase motor	
	RK-AC 240	RK-AC 470	RK-AC 112	RK-AC 260	RK-AC 345	90/120 W	180/250 W
MultiLine	949962	949964	949446	949447	949448	949968	949969
	912855 1430	912855 1930	912855 1430	912855 2030	912855 2530	912855 1230	912855 1430

Note: For further details on motor versions, please refer to the chapter "Motors and controls"

### Motor adaptor

- Simple assembly
- Exact fit due to centering shoulders

**Material:** Aluminium, black anodised



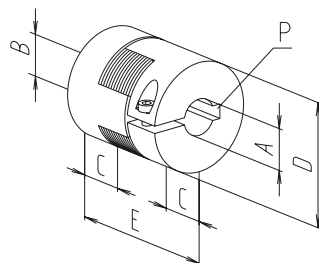
[mm]

Code No.	A	B	C	D	E	F	G
949446	112	80	80	40	53	70	Ø5,5
949962	99	80	80	80	70,7	90	M6
949447	106	80	80	60	70,7	90	Ø6,6
949448	120	80	80	80	91,9	115	Ø9
949964	106	80	80	95	81,3	115	M8
949968	99	80	80	50	46	80	M5
949969	99	80	80	80	100	Ø120	Ø6,6

### Coupling

- Shaft connection without backlash
- Easy plug-in assembly

**Material:** Aluminium hub, polyurethane gear ring



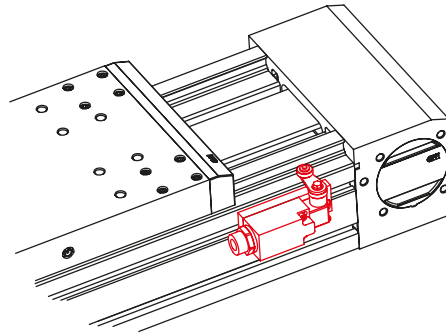
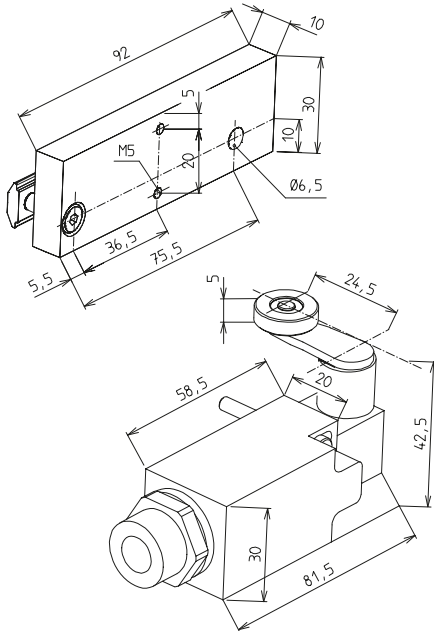
[mm]

Code No.	ØA	ØB	C	D	E	P	Torque [Nm]	
							with feather key	without feather key
9128559530	9,5	30	30	55	78	- / 8x7	60	35
9128551230	12	30	30	55	78	4x4 / 8x7	60	35
9128551430	14	30	30	55	78	5x5 / 8x7	60	35
9128551930	19	30	30	55	78	6x6 / 8x7	60	35

**MultiLine - Position determination**
**Bracket for mechanical limit switch**

- Limit switch with angle lever
- Compact design

**Material:** Limit switch housing made of thermoplastic, self-extinguishing, bracket made of aluminium profile



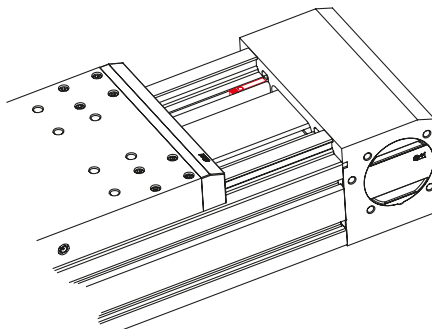
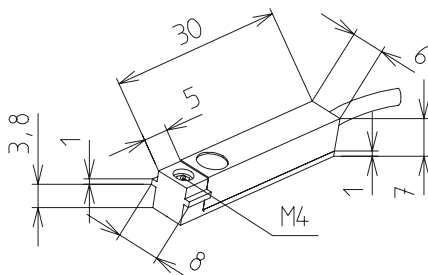
	[mm]
Max. voltage	230 V AC
Max. switching current	4 A
Max. starting current	10 A
Operating cycles	Max. 5,000/h
Mechanical lifetime	20 x 10 <sup>6</sup> switching cycles
Axis lever adjustment	locking by 360°
Protection class	IP 67
Ambient temperature	-30°C to +80°C

Code No.	Type
92711	Limit switch NC/NO with bracket

**Bracket for inductive limit switch**

- Fixing in the profile slot of the guide profile
- Function indicator
- Maintenance-free

**Material:** Limit switch housing made of stainless steel, bracket made of aluminium

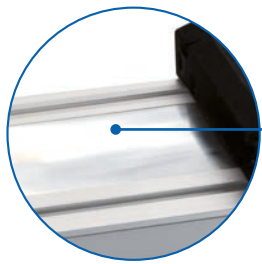


Voltage	10-30 V DC
Max. switching current	10 mA
Max. starting current	100 mA
Operating frequency	Max. 5 kHz
Mechanical lifetime	independent of operating cycles
Operating distance	1.5 mm
Protection class	IP 67
Ambient temperature	-25°C to +70°C

Code No.	Type
92929	Limit switch NC, with bracket

# Ball rail actuator – RK DuoLine Z 60/80/120/160

A performance class with functional details that are unrivalled



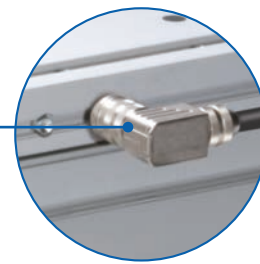
### Cover strip

- ✓ Degree of protection IP 40



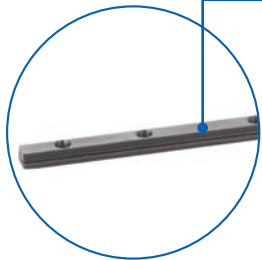
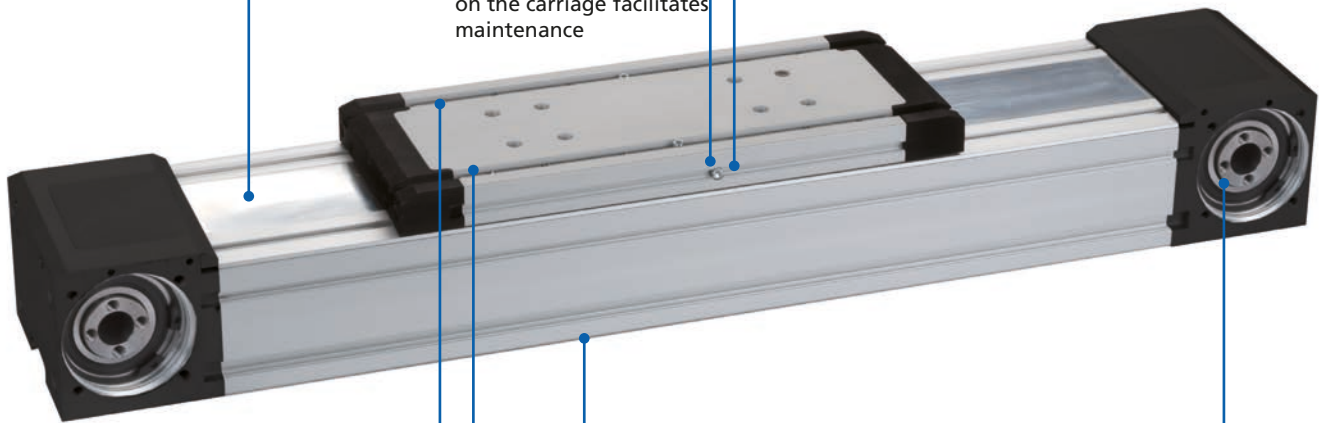
### Tapered lubricating nipple

- ✓ Central lubricating access on the carriage facilitates maintenance



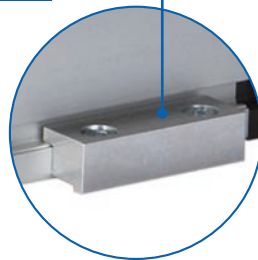
### Integr. position transducer

- ✓ Excellent positioning accuracy along entire length of unit



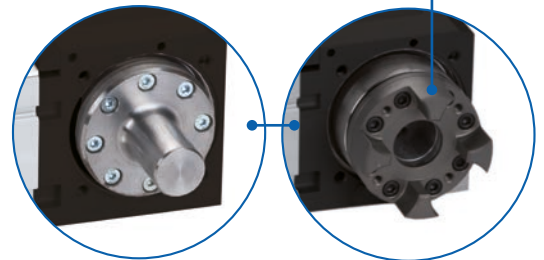
### Slot stone strip

- ✓ To hold your load securely



### Clamping bars

- ✓ Reliable fixation of the axis



### Variable motor connection

- ✓ For metal bellows coupling
- ✓ For elastomer coupling

### RK DuoLine Z Basic

- IP 20 protection class
- Flexible positioning of motor thanks to pulley boxes with hollow shafts
- Repeatability  $\pm 0.05$  mm

### Features:

- No-load torque  $\leq 2.5$  Nm
- Central lubricating access on the carriage facilitates maintenance

### Options:

- Extended carriage

### RK DuoLine Z Protect

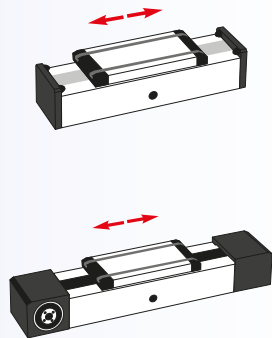
- IP 40 protection class thanks to steel cover strip and seals
- Flexible positioning of motor thanks to pulley boxes with hollow shafts
- Repeatability  $\pm 0.05$  mm

**RK DuoLine Z 80/120/160 - Table of contents**

**Properties/Technical data**

- General information/operating conditions ... 392
- Load data..... 392
- Calculation of the load characteristic ..... 393

**Versions**  
(Dimensions, order numbers)



- RK DuoLine R guide unit ..... 394
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**Accessories**

**Fixing**

- Fixing the rated load ..... 398
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- Centering Sets ..... 400

**Drive**

- Drive shaft ..... 402
- Motor adaptor kit ..... 402
- Synchronisation shaft ..... 403

**Position determination**

- Limit switch ..... 404 - 405

# RK DuoLine Z 60/80/120/160 – Technical data

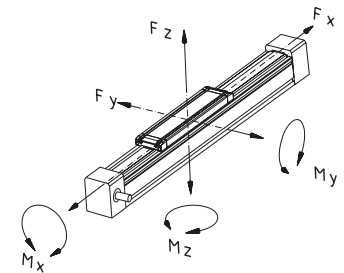
## General information / operating conditions

	RK DuoLine Z 60	RK DuoLine Z 80	RK DuoLine Z 120	RK DuoLine Z 120 II	RK DuoLine Z 160
Guidance system	1 Ball rail system	1 Ball rail system	1 Ball rail system	2 Ball rail system	2 Ball rail system
Installation position	any position				
Max. driving torque	28 Nm	67 Nm	141 Nm	141 Nm	220 Nm
Max. speed	5 m/s	5 m/s	5 m/s (10m/s)	5 m/s	5 m/s
Max. acceleration	50 m/s <sup>2</sup>	50 m/s <sup>2</sup>	50 m/s <sup>2</sup>	50 m/s <sup>2</sup>	50 m/s <sup>2</sup>
Repeat accuracy	± 0,05 mm	± 0,05 mm	± 0,05 mm	± 0,05 mm	± 0,05 mm
Positioning accuracy	with integrated linear encoder ± (0.025 + 0.01 x L) mm; L = travel in meters				
Max. no-load torque	2 Nm	2,2 Nm	2,3 Nm	2,3 Nm	2,5 Nm
Drive	GT Belts from neoprene, Pitch 5 mm, Width 20 mm	GT Belts from neoprene, Pitch 8 mm, Width 30 mm	GT Belts from neoprene, Pitch 8 mm, Width 50 mm	GT Belts from neoprene, Pitch 8 mm, Width 50 mm	GT Belts from neoprene, Pitch 8 mm, Width 75 mm
Active Ø pulley wheel	52,52 mm	66,21 mm	76,39 mm	76,39 mm	76,39 mm
Pulley wheel circumference	165 mm	208 mm	239,99 mm	239,99 mm	239,99 mm
Ambient temperature	0 to +60°C	0 to +60°C	0 to +60°C	0 to +60°C	0 to +60°C
Degree of protection	Basic IP 20 / Protect IP 40	Basic IP 20 / Protect IP 40	Basic IP 20 / Protect IP 40	Basic IP 20 / Protect IP 40	Basic IP 20 / Protect IP 40

## Dynamic load data

Force [N]

Torque [Nm]



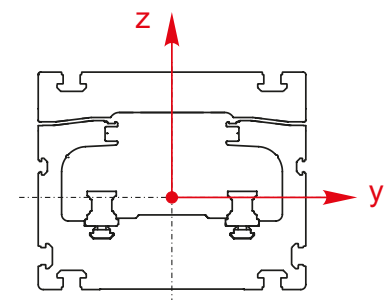
Toothed-belt drive						
Load data	Fx*	Fy	Fz	Mx	My	Mz
Standard guide carriagew						
RK DuoLine Z 60	900	700	2500	48	160	140
RK DuoLine Z 80	2000	1000	4100	100	340	300
RK DuoLine Z 120	3600	1400	6400	125	550	530
RK DuoLine Z 120 II	3600	2000	6900	205	620	560
RK DuoLine Z 160	6000	5100	8900	500	840	810
Extended guide carriage						
RK DuoLine Z 60	900	700	2500	48	250	220
RK DuoLine Z 80	2000	1000	4100	100	590	520
RK DuoLine Z 120	3600	1400	6400	125	890	680
RK DuoLine Z 120 II	3600	2000	6900	205	940	790
RK DuoLine Z 160	6000	5100	8900	500	1200	1150

\* Initial tension of the timing belt 0,8 x Fx

## Geometric moment of inertia

[cm<sup>4</sup>]

	Iy	Iz
RK DuoLine Z 60	52,54 cm <sup>4</sup>	67,41 cm <sup>4</sup>
RK DuoLine Z 80	127,90 cm <sup>4</sup>	172,80 cm <sup>4</sup>
RK DuoLine Z 120	289,5 cm <sup>4</sup>	627,8 cm <sup>4</sup>
RK DuoLine Z 120 II	287,3 cm <sup>4</sup>	597,9 cm <sup>4</sup>
RK DuoLine 160	437,70 cm <sup>4</sup>	1455,90 cm <sup>4</sup>

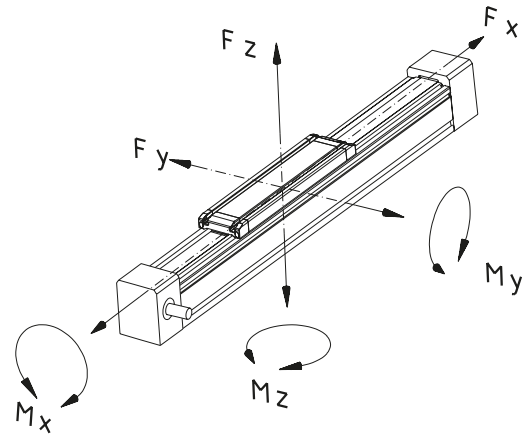




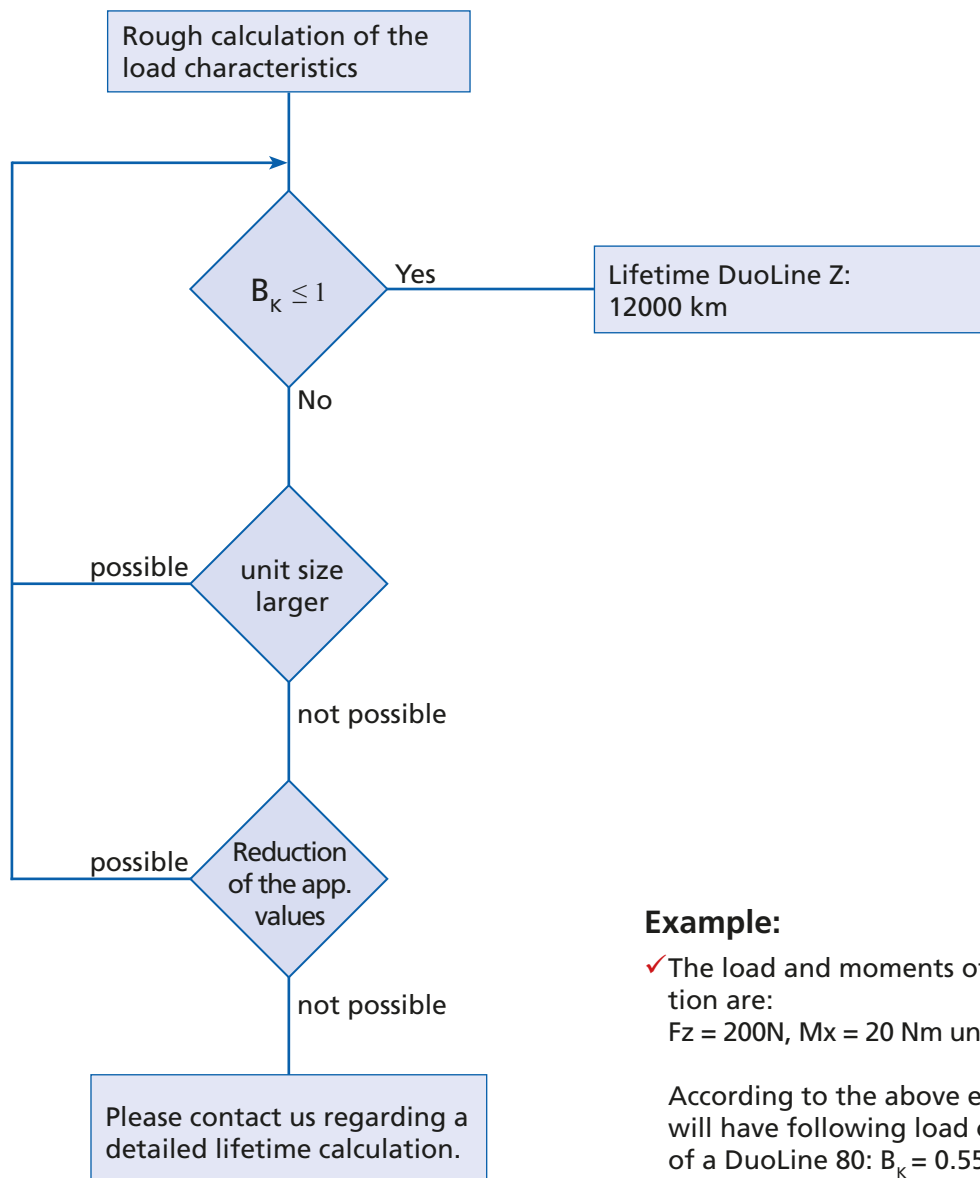
## Calculation of the load characteristic to define the lifetime

- The lifetime of linear units are in accordance with the average loads and moments of an application. The load characteristic can approximately calculated by following equation with simultaneously appearing load and moments.

$$\text{Load characteristic} = \frac{\text{Application values (z.B. } F_y)}{\text{Catalog values (z.B. } F_{y_{\max}})}$$



$$\text{Load characteristic } B_k = \frac{F_y}{F_{y_{\max}}} + \frac{F_z}{F_{z_{\max}}} + \frac{M_x}{M_{x_{\max}}} + \frac{M_y}{M_{y_{\max}}} + \frac{M_z}{M_{z_{\max}}} \leq 1$$



### Example:

- ✓ The load and moments of the application are:  
 $F_z = 200\text{N}$ ,  $M_x = 20\text{ Nm}$  und  $M_z = 45\text{ Nm}$

According to the above equation you will have following load characteristic of a DuoLine 80:  $B_k = 0.55$ .

# RK DuoLine R 60/80/120 – Version

## Bestellhinweise:

- Longer travel lengths on request
- Integrated linear encoder as Option

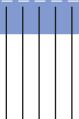
## Version

## ■ Guide

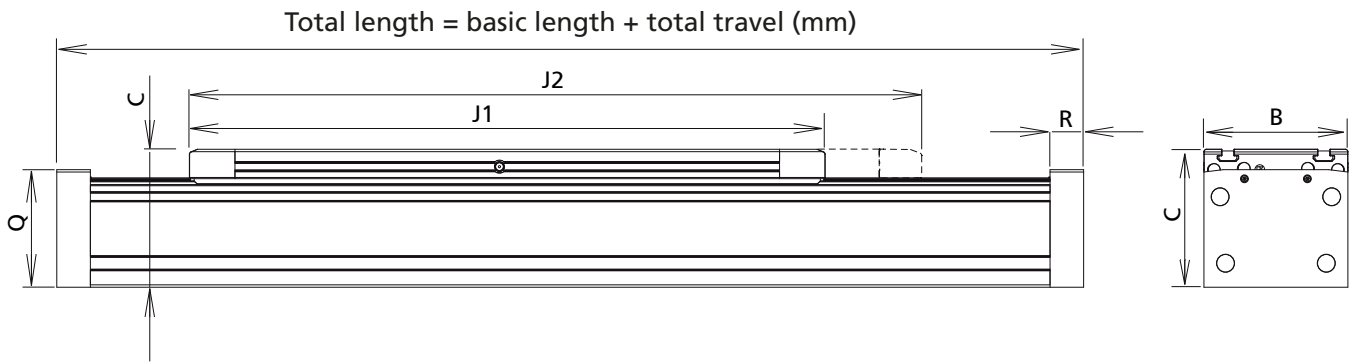
Ideal as additional / secondary support for the DuoLine with toothed belt or spindle.



Code No.	Type	Basic length	B	C
TD14A5T1A11A0 _ _ _ _	RK DuoLine R 60 Protect	289	60	80
TD14A5T1B11A0 _ _ _ _	RK DuoLine R 60 Protect with extended guide carriage	379		
TD14A2T1A11A0 _ _ _ _	RK DuoLine R 80 Protect	352	80	100
TD14A2T1B11A0 _ _ _ _	RK DuoLine R 80 Protect with extended guide carriage	484		
TD14A3T1A11A _ _ _ _	RK DuoLine R 120 Protect one ball rail guide	472	120	115
TD14A3T1B11A _ _ _ _	RK DuoLine R 120 Protect one ball rail guide with extended guide carriage	616		



Total length = basic length + total travel (mm)



[mm]

J1	J2	Q	R	max. travel	Mass [kg]	
					Basic length	per 100 mm travel
245	–	70	22	3587	3,73	0,54
–	335			3497	4,46	0,54
278	–	97	22	7692	5,22	0,83
–	410			7560	6,89	0,83
386	–	98	28	7584	9,76	1,19
–	530			7440	12,16	1,19

# RK DuoLine Z 60/80/120/160 – Versions

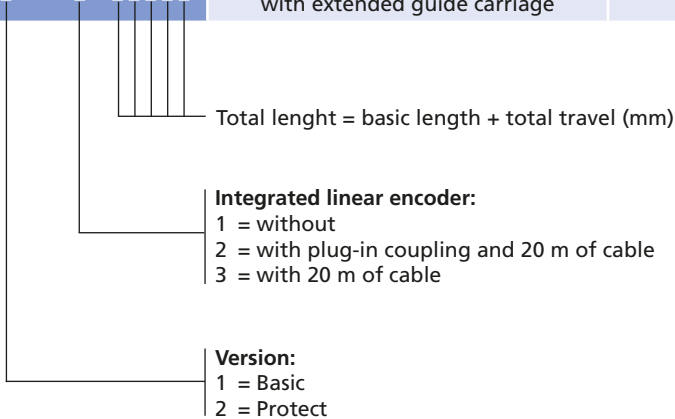
## Order information:

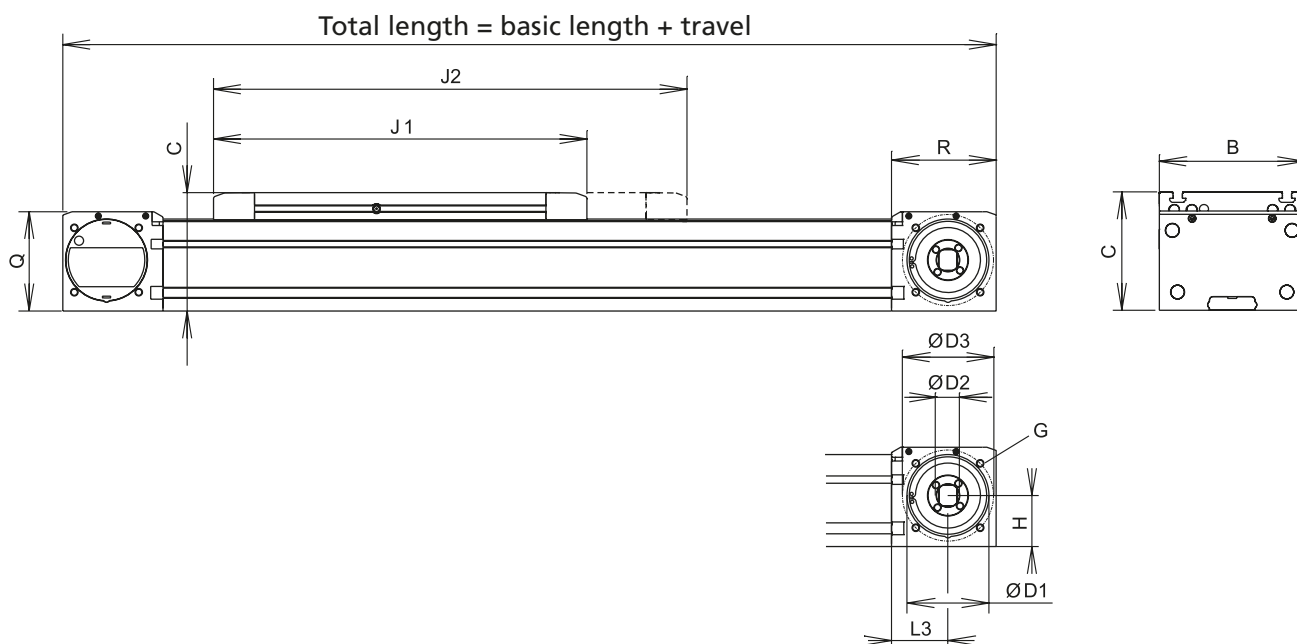
- Longer travel lengths on request
- Also available without screw drive as a torque support

## Timing-belt unit RK DuoLine Z Place-Tec



Code No.	Type	Basic length	B	C	D1	D2
TD1_A5F1A11A0_	RK DuoLine Z 60	405	60	80	62 <sup>H7</sup> 5 deep	15 <sup>H6</sup>
TD1_A5F1B11A0_	RK DuoLine Z 60 one ball rail guide with extended guide carriage	495				
TD1_A2F1A_1A_	RK DuoLine Z 80	468	80	100	75 <sup>H7</sup> 7 deep	16 <sup>H6</sup>
TD1_A2F1B_1A_	RK DuoLine Z 80 with extended guide carriage	600				
TD1_A3F1A_1A_	RK DuoLine Z 120 one ball rail guide	606	120	115	90 <sup>H7</sup> 3,5 deep	20 <sup>H6</sup>
TD1_A3F1B_1A_	RK DuoLine Z 120 one ball rail guide with extended guide carriage	750				
TD1_A4F1A_1A_	RK DuoLine Z 120 two ball rail guides	606				
TD1_A4F1B_1A_	RK DuoLine Z 120 two ball rail guides with extended guide carriage	750				
TD1_A1F1A_1A_	RK DuoLine Z 160	630	160	130	90 <sup>H7</sup> 3,5 deep	25 <sup>H6</sup>
TD1_A1F1B_1A_	RK DuoLine Z 160 with extended guide carriage	780				





[mm]

D3	G	H	J1	J2	L3	Q	R	max. travel	Mass [kg]	
									Basic length	pro 100 mm travel
72,1±0.2	M6-12 deep	33.8	245	-	44	70	80	5753	4.65	0.54
			-	335				5665	5.38	0.54
90.5±0.2	M8-12 deep	40.1	278	-	52	85	95	7722	7.84	0.83
			-	410				7590	9.51	0.83
100±0.2	M8-16 deep	46.8	386	-	62	98	110	7614	16.33	1.19
			-	530				7470	18.72	1.19
			386	-				5614	16.33	1.19
			-	530				5470	18.72	1.19
100±0.2	M8-28 deep	56	410	-	62	109	110	9010	25.76	1.80
			-	560				8860	28.16	1.80

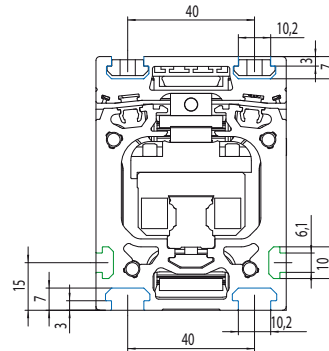
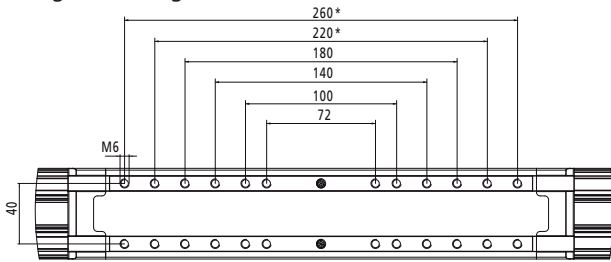
# RK DuoLine Z 60/80/120/160 – Fixing

## Fixation of payload RK DuoLine S/Z 80

- Two slot stone strips have been inserted in the guide carriage on which fittings can be securely attached in a variety of ways
- Profile slots in the guide carriage and guide profiles facilitate fixation

## RK DuoLine R/S/Z 60

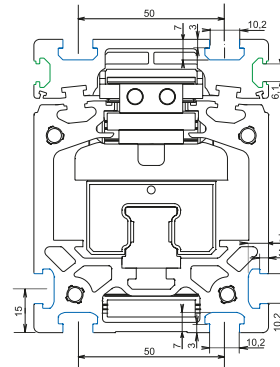
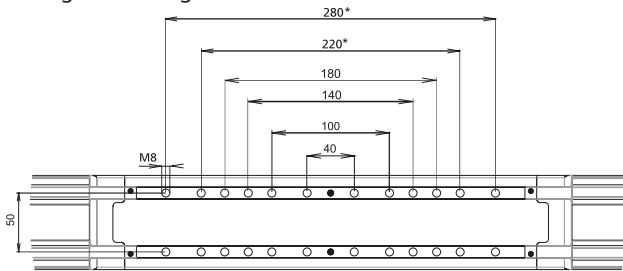
\*only with version with extended guide carriage



- 20 slot geometry
- 30 slot geometry

## RK DuoLine R/S/Z 80

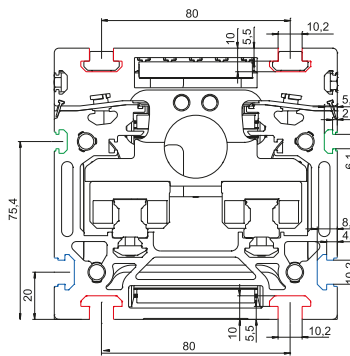
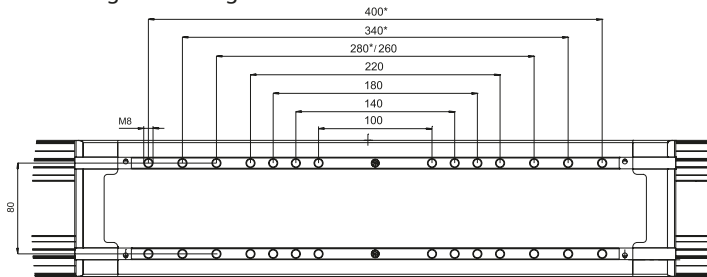
\*only with version with extended guide carriage



- 20 slot geometry
- 30 slot geometry

## RK DuoLine R/S/Z 120

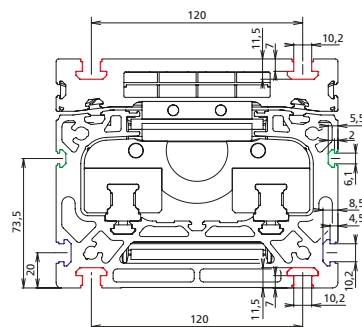
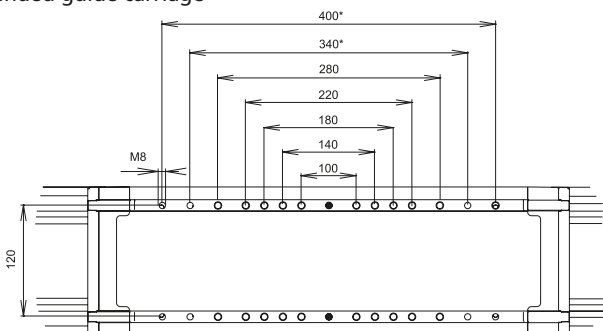
\*only with version with extended guide carriage



- 20 slot geometry
- 30 slot geometry
- 40 slot geometry

## RK DuoLine S/Z 160

\*only with version with extended guide carriage



- 20 slot geometry
- 30 slot geometry
- 40 slot geometry



Clamping strips

- Clamping strips facilitate fixation of the linear unit to the chassis or two units to a crossing table

**Material:** Natural anodised aluminium, galvanised fixation material.  
**Scope of delivery:** 2 clamping strips with fixation material

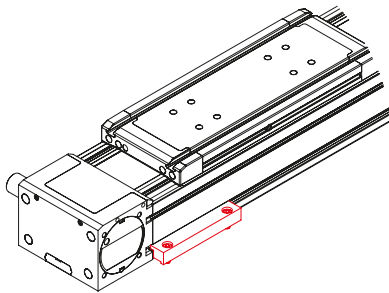


Fig. 1: Ground assembly

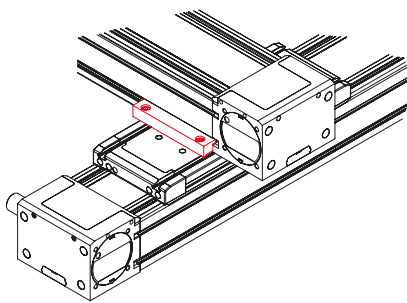
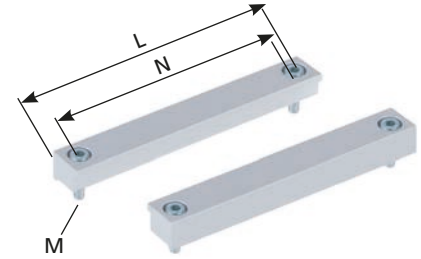
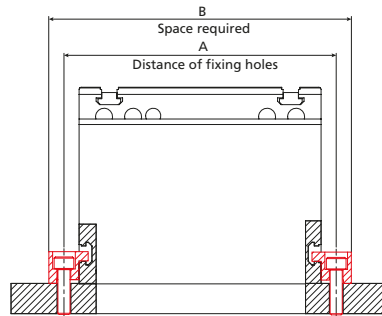


Fig. 2: Crossing units

Code No.	Type	Abb.	A	B	L	M	N
91818	RK DuoLine 60 ground assembly	1	72	91	57	M6	40
	RK DuoLine 60 crossing to 60	2					
91806	RK DuoLine 80 ground assembly	1	100	122	76	M8	50
	RK DuoLine 80 crossing to 80	2					
91812	RK DuoLine 120 ground assembly	1	140	160	116	M8	80
	RK DuoLine 120 crossing to 120	2					
	RK DuoLine 160 crossing to 120	2					
91802	RK DuoLine 160 ground assembly	1	180	200	156	M8	120
	RK DuoLine 160 crossing to 160	2					
	RK DuoLine 120 crossing to 160	2					

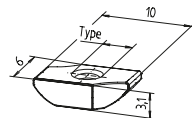
[mm]

Slot stones

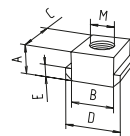
- Slot stones can be inserted and positioned at the guide profile and guide carriage

**Material:** galvanised steel

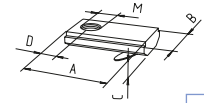
**Slot stone -B-** can be swivelled into the slot



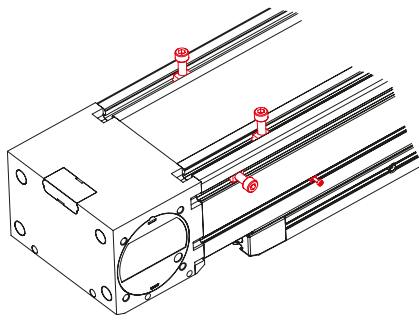
**Slot stone -N-** can be slid into the slot



**Slot stone -K-** can be swivelled into the slot



[mm]



View of DuoLine from below

Code No.	Type	Slot geometry	A	B	C	D	E	M	F [N]
<b>Slot stone -B-</b>									
E00017CEH	M3	20							Pack of 10 units
E00058CEH	M4	20							Pack of 10 units
<b>Slot stone -N-</b>									
4006202	M8	30	5	10	13	13	3	M8	4000
4026206	M8	40	8	10	13	15	4	M8	9000
<b>Slot stone -K-</b>									
4006211	M5	30	21	12	4	7	-	M5	5000
4006212	M6	30	21	12	4	7	-	M6	5000
4016212	M6	40	21	14	4	7	-	M6	5000

# RK DuoLine Z 60/80/120/160 – Fixing

## Centering Sets for RK DuoLine

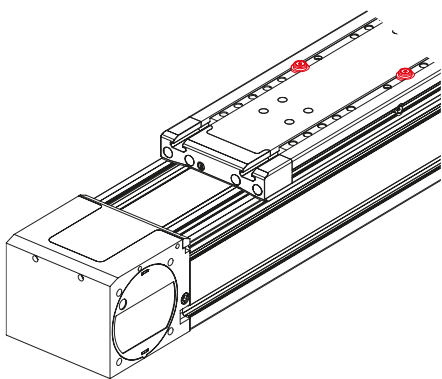


Abb.1: Slide centering

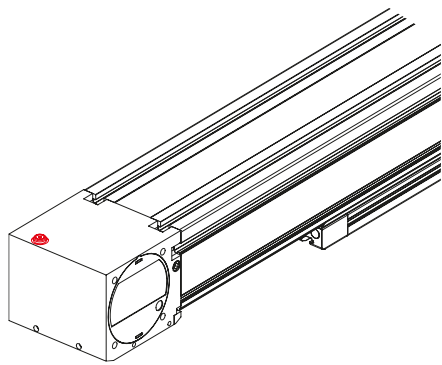
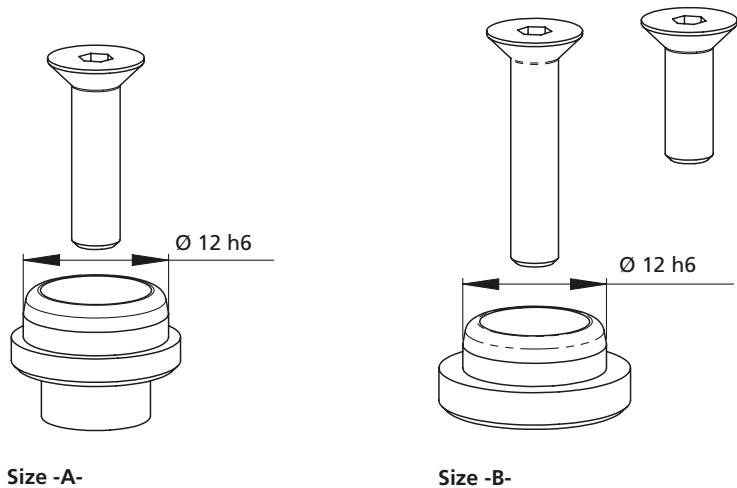


Abb.2: Base centering

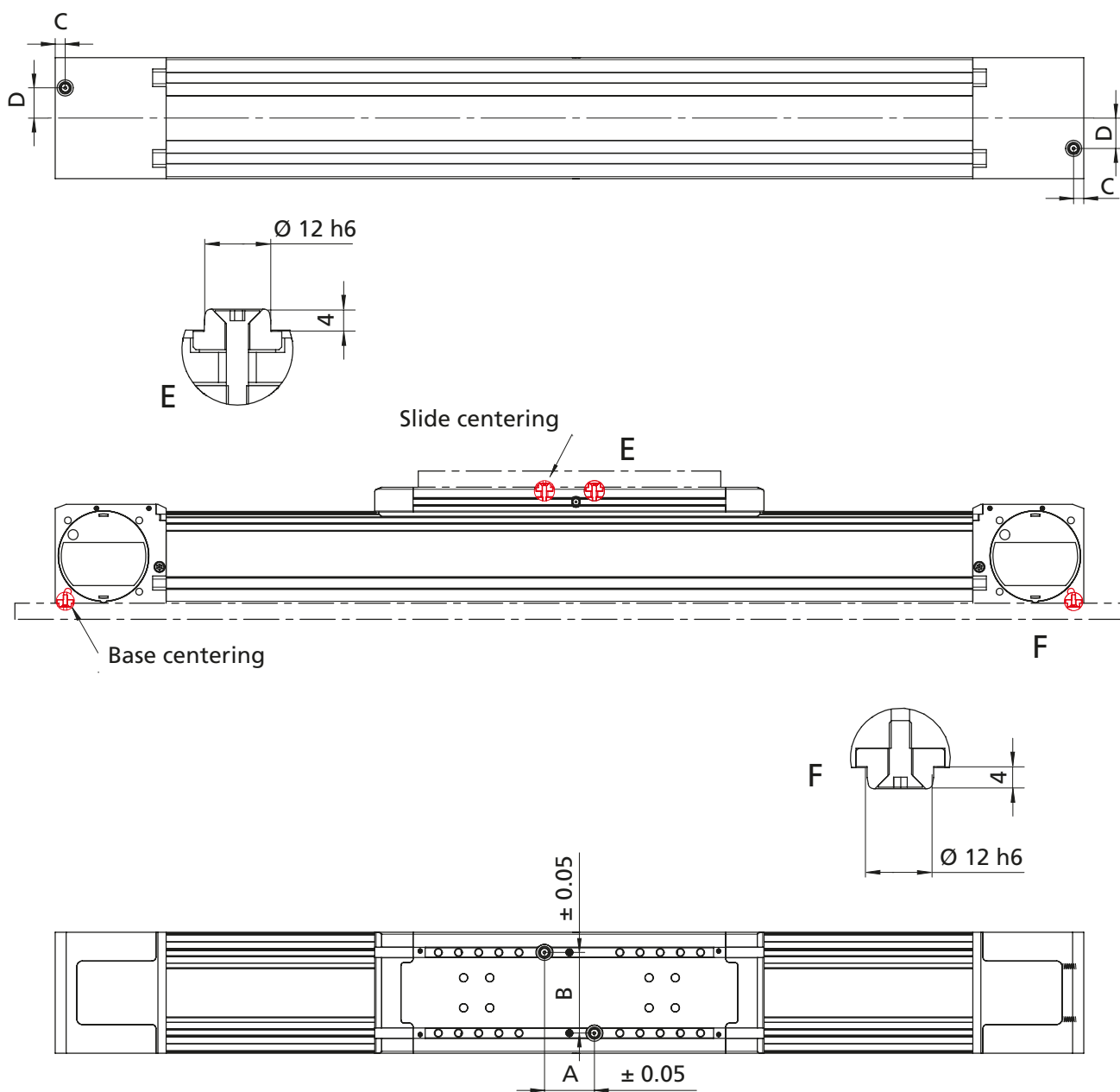
- The following positions could be defined exactly during the design process per set
  - Load capacity
  - Linear unit
- Reproducible position of the load capacity
- Reduced assembly/disassembly time of the load capacity or the linear unit
- Accuracy of the centering bolts h6
- To use for all RK DuoLine linear units in Basic and Protect design from October 2015 production date

**Scope of delivery per set:**  
2 centering bolts and fixing material



Code No.	Type	Use for
91898	Centering Set Size -A-	Slide centering RK DuoLine Z 60 + Z 80
91899	Centering Set Size -B-	Slide centering RK DuoLine Z 120 + Z 160 Base centering RK DuoLine Z 60 + Z 80 + Z 120 + Z 160





[mm]

Type	A	B	C	D
RK DuoLine Z 60	42	40	10	0
RK DuoLine Z 60 with extended guide carriage	48	40	10	0
RK DuoLine Z 80	*	*	10	10
RK DuoLine Z 80 with extended guide carriage	70	50	10	10
RK DuoLine Z 120	49.5	80	10	30
RK DuoLine Z 120 with extended guide carriage	250	80	10	30
RK DuoLine Z 160	70	120	10	40
RK DuoLine Z 160 with extended guide carriage	366	120	10	40

**\*Note:**

Centering on request only with special drill holes in the slide/clamp strips possible

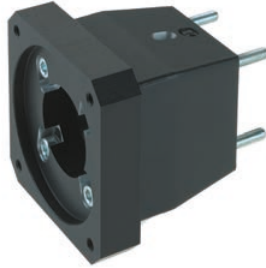
# RK DuoLine Z 60/80/120/160 – Drive

## Motor adapter kit for RK AC servomotors

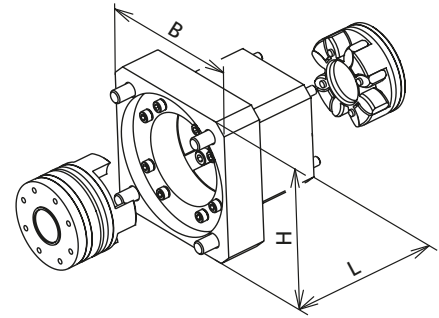
- Complete motor adapter kits manufactured to your specifications on request

**Scope of delivery:**  
Motor adapter kit, elastomer coupling and fixation material

- Servomotors from the RK standard range can be easily connected



- Motor adapter kits for every motor or gear unit manufacturer



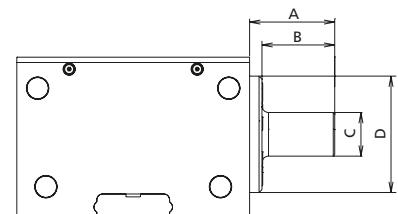
Type	Servo motors without gearbox		Servo motors with gearbox					Three phase motors	
	RK-AC 240	RK-AC 470	RK-AC 112	RK-AC 260	RK-AC 345	RK-AC 800	RK-AC 1252 RK-AC 1776 RK-AC 2521	90/120 W	180/250 W
DuoLine Z 60	949376	–	949374	949375	–	–	–	949377	949378
DuoLine Z 80	–	949357	949350	949353	949354	–	–	949355	949356
DuoLine Z 120			–	949371	949370	949370	–	949372	949373
DuoLine Z 160			–	–	949344	949344	949345	–	–

## Drive shaft

**Scope of delivery:**  
Drive shaft with fixation material

- The RK DuoLine Z is fitted as standard with a hollow shaft

- This can be retrofitted with a drive shaft as an optional extra



For metal bellows coupling

[mm]

Code No.	Type	Version	A	B	C	D
91328	RK DuoLine Z 60	Drive shaft for metal bellows coupling	28,6	25	16	44
91312	RK DuoLine Z 80		35	31,5	20	52
91320	RK DuoLine Z 120		45,5	39	25	74
9720000	RK DuoLine Z 160		58,5	50	30	80



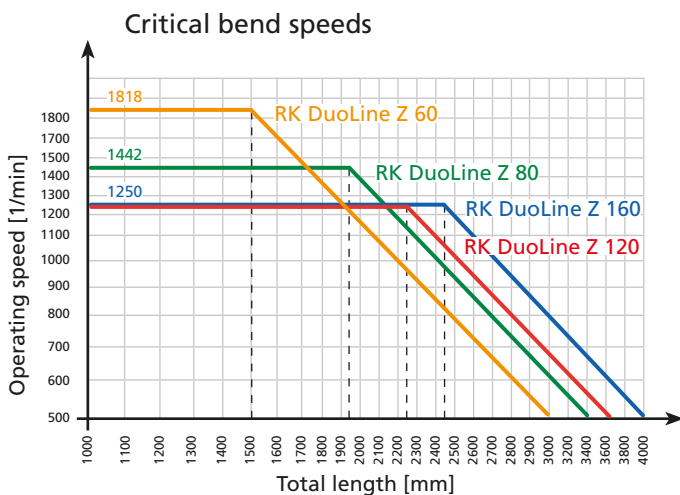
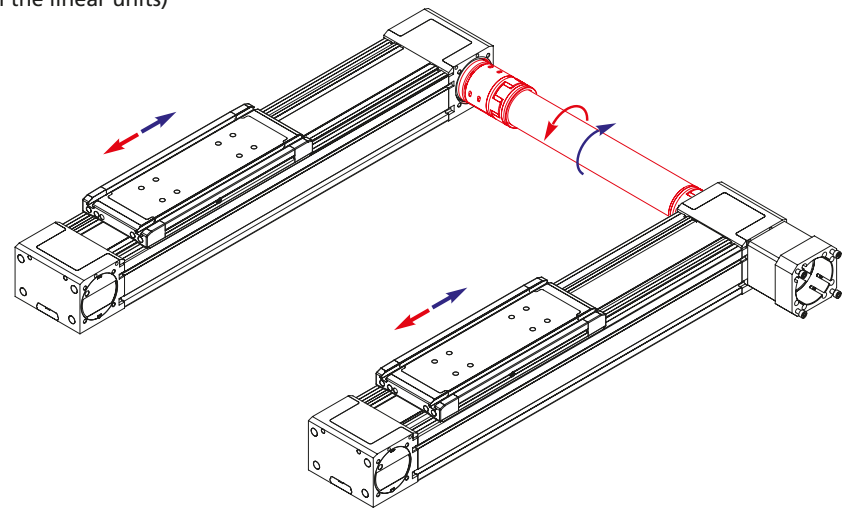
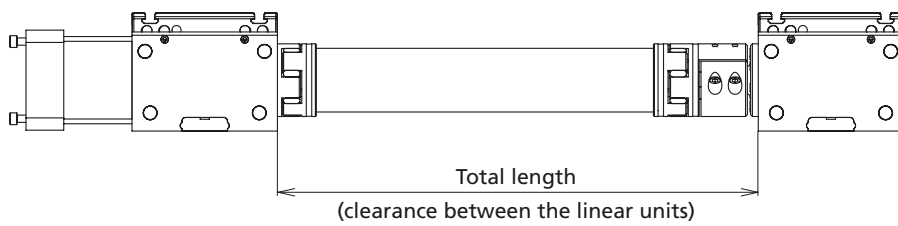
**Synchronising shaft**

- For torque transmission with parallel linear units
- Synchronisation of the guide carriages by zero point alignment

**Scope of delivery:**  
Synchronising shaft with fixation material

**Max. transfer torque:**

RK DuoLine Z 60	28 Nm
RK DuoLine Z 80	67 Nm
RK DuoLine Z 120	141 Nm
RK DuoLine Z 160	220 Nm



[mm]

Code No.	Type	Basic length (minimum length)	Max. length	Weight [kg]	
				Basic length	per 100 mm travel
92548_ _ _ _	Synchronising shaft RK DuoLine Z 60	118	2985	0,53	0,09
92538_ _ _ _	Synchronising shaft RK DuoLine Z 80	144	3400	1,07	0,12
92519_ _ _ _	Synchronising shaft RK DuoLine Z 120	175	3994	1,38	0,15
92510_ _ _ _	Synchronising shaft RK DuoLine Z 160	220	3991	3,42	0,22

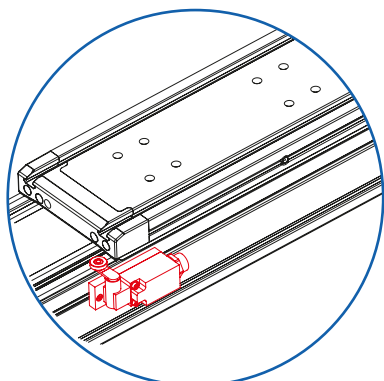


# RK DuoLine Z 60/80/120/160 – Position determination

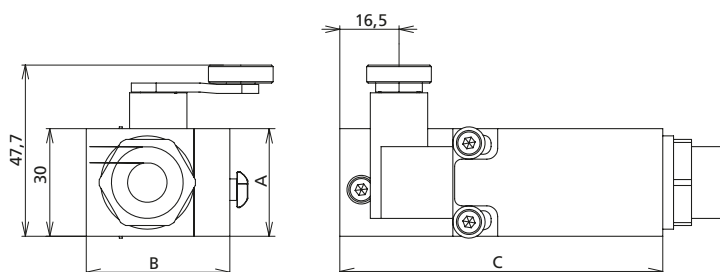
## Mechanical limit switch

- External fixing on the guide profile

**Scope of delivery:**  
Limit switch with set of fastenings



Voltage	max. 230 V AC
Max. switching current	4 A
Max. starting current	10 A
Operating frequency	max. 5000/h
Mechanical lifetime	20 x 10 <sup>6</sup> cycles
Axis lever adjustment	locking by 360°
Protection class	IP 67
Ambient temperature	-30°C to +80°C

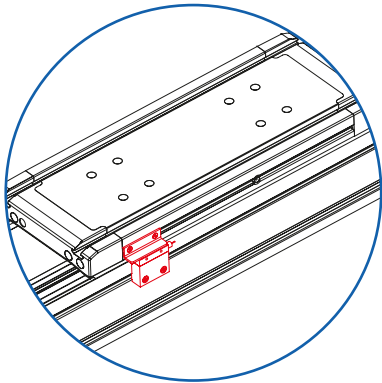


Code No.	Type	A	B	C	Version
92848	RK DuoLine 60	49	39	82	NO / NC, mechanical limit switch
91919	RK DuoLine 80	63	40	83	
92701	RK DuoLine 120	31	40	97	
91910	RK DuoLine 160	30	40	90	

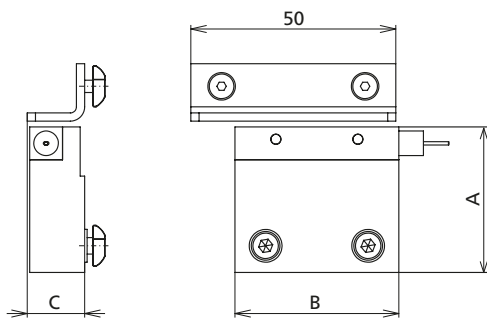
**External inductive limit switch**

- External fixing on the guide profile

**Scope of delivery:**  
Limit switch with set of fastenings



Voltage	10...30 VDC
Max. switching current	100 mA
Operating frequency	Max. 5 kHz
Mechanical lifetime	independent of operating cycles
Operating distance	2 mm
Protection class	IP 65
Cable length	2.5 m
Ambient temperature	-25°C to +70°C

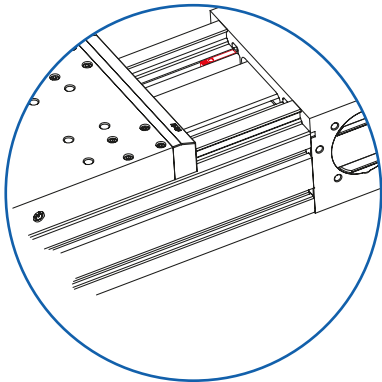


Code No.	Type	A	B	C	Version
92838	RK DuoLine 60	52,8	25	10	NO, External inductive limit switch
92819	RK DuoLine 80	71,5	25	10	
92840	RK DuoLine 120	22	40	14	
92810	RK DuoLine 160	35,5	40	14	

**Internal inductive limit switch**

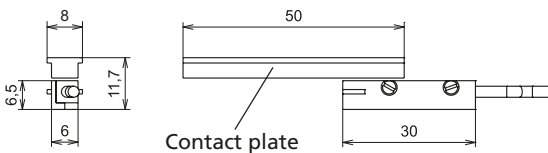
- Limit switch integrated in the guide profile - no protruding contours

**Scope of delivery:**  
Limit switch with set of fastenings



Voltage	10...30 VDC
Max. switching current	100 mA
Operating frequency	Max. 5 kHz
Mechanical lifetime	independent of operating cycles
Operating distance	1.5 mm
Protection class	IP 67
Cable length	5 m*
Ambient temperature	-25°C to +70°C

\*Other cable lengths available on request.



Code No.	Type	Version
92828	RK DuoLine 60	NC, Internal inductive limit switch
92820*	RK DuoLine 80	
	RK DuoLine 120 RK DuoLine 160	

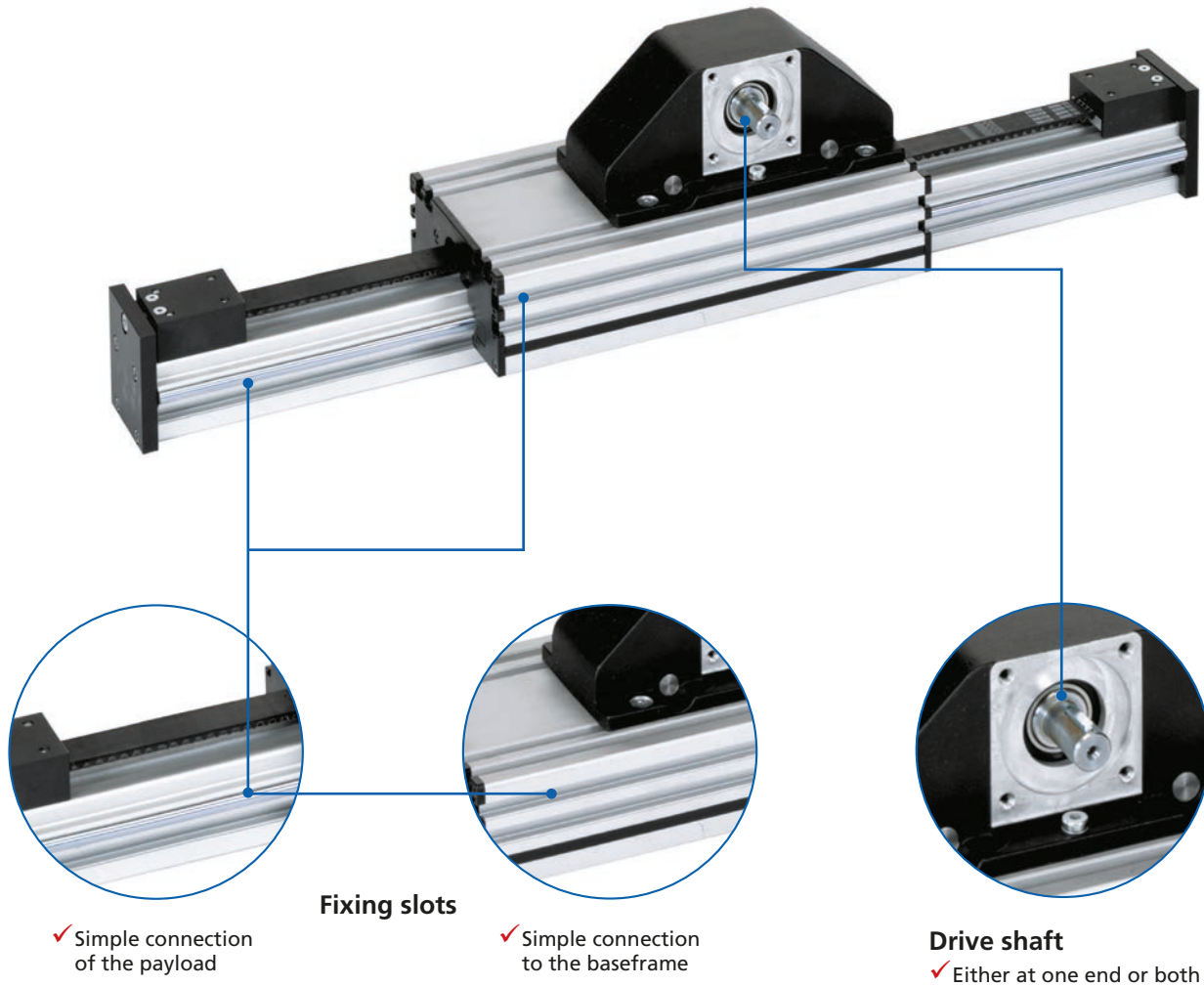
\*On this limit switch, the slot must be sealed off with a cover profile

**Cover profile**

Code No.	Version		
E00024DAC	bar	black	2.000 mm

# Roller guide actuators – SQ MT

Timing-belt unit with fixed carriage, also for large travel



## Features:

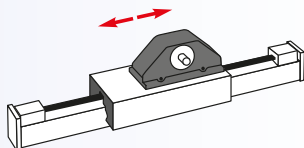
- Stroke lengths up to 18 m
- Travel speed up to 5 m/s
- Guide profile made from the BLOCAN® modular profile system

- Extruded carriage with fixing slots
- Guide block and drive move with carriage

## Options:

- Longer stroke lengths
- Second carriage, either non driven or driven separately
- Extended carriage

**Table of contents - SQ MT**

<b>Properties/Technical data</b>		<ul style="list-style-type: none"> <li>■ General information/operating conditions... 408</li> <li>■ Timing-belt ..... 408</li> <li>■ Load data..... 409</li> </ul>
<b>Versions</b> (Dimensions, order numbers) 		<ul style="list-style-type: none"> <li>■ SQ MT timing-belt unit..... 410 - 411</li> </ul>
<b>Accessories</b>	<b>Fixing</b>	<ul style="list-style-type: none"> <li>■ Slot stones ..... 412</li> </ul>
	<b>Drive</b>	<ul style="list-style-type: none"> <li>■ Motor adaptor ..... 414</li> <li>■ Coupling ..... 415</li> </ul>
	<b>Position determination</b>	<ul style="list-style-type: none"> <li>■ Mechanical limit switch ..... 416</li> <li>■ Inductive limit switch and holder ..... 417</li> </ul>

# SQ MT – Technical data

## General information/operating conditions

Design	Aluminium profile, timing-belt drive, moving profile
Guide	Rollers, external
Installation position	Any position
Repeatability	± 0.05 mm
Ambient temperature	0°C to +60°C
Protection class	IP 20

## Timing-belt

Type	Timing-belt	Pitch/width	Eff. diam. of lock washer [mm]	Max. moment via shaft [Nm]	Max. speed [m/s]	Max. acceleration [m/s <sup>2</sup> ]
SQ MT 30	GT 5MR	5/12	23.87	5	5	20
SQ MT 40	GT 5MR	5/20	27.06	8.5	5	
SQ MT 40 x 80	GT 5MR	5/20	27.06	8.5	5	
SQ MT 50	GT 5MR	5/25	38.20	20	5	
SQ MT 50 x 100	GT 5MR	5/25	38.20	20	5	
SQ MT 60	GT 8MR	8/28	56.02	55	10	
SQ MT 60 x 120	GT 8MR	8/28	56.02	55	10	
SQ MT 80	GT 8MR	8/40	61.12	90	10	
SQ MT 80 x 160	GT 8MR	8/40	61.12	90	10	

## No-load torque

[Nm]

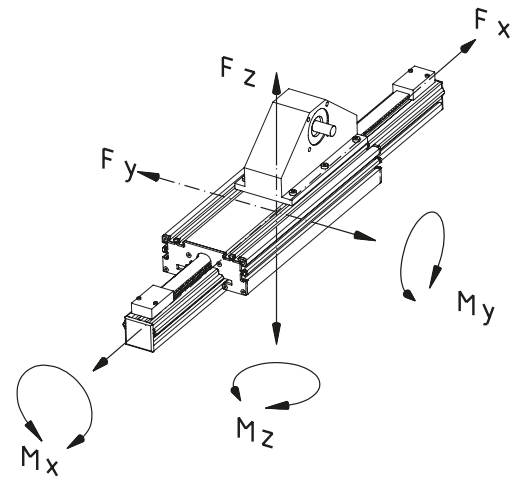
Type	SQ MT
30	0.60
40	0.70
50	0.85
60	1.00
80	1.20



**SQ MT - Technical data**
**Load data\***

- F Force [N]
- M Moment [Nm]
- I Geometric moment of inertia [cm<sup>4</sup>]

\* With reference to carriage (static values, guide element resting on full surface)



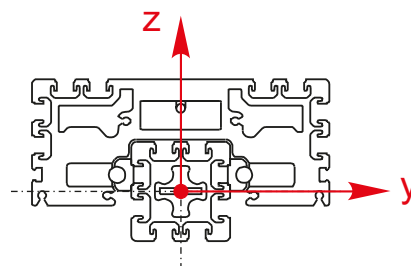
Type	Fx**	Fy	Fz	Mx	My	Mz
SQ MT 30	320	790	790	14	24	26
SQ MT 40	610	1020	1020	23	40	40
SQ MT 40 x 80	610	1020	1020	23	40	40
SQ MT 50	1000	1020	1020	28	59	59
SQ MT 50 x 100	1000	1020	1020	28	59	59
SQ MT 60	1790	2550	2550	99	171	171
SQ MT 60 x 120	1790	2550	2550	99	171	171
SQ MT 80	2810	2550	2550	124	201	201
SQ MT 80 x 160	2810	2550	2550	124	201	201

\*\* Initial tension of the timing belt 0,8 x Fx

**Geometric moment of inertia**

[cm<sup>4</sup>]

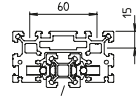
Type	Iy	Iz
SQ MT 30	3.4	3.4
SQ MT 40	11.3	11.3
SQ MT 40 x 80	19.4	76.0
SQ MT 50	29.1	29.1
SQ MT 50 x 100	43.9	180.8
SQ MT 60	51.2	51.2
SQ MT 60 x 120	94.7	372.3
SQ MT 80	155.3	155.3
SQ MT 80 x 160	292.4	1090



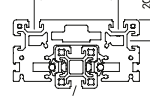
# SQ MT – Versions

## Order information:

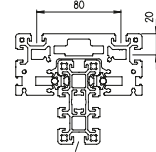
- Longer travel lengths on request
- Second non driven or separately driven carriage available on request
- Extended carriage available on request



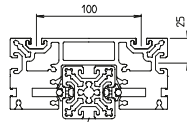
Profile S-30



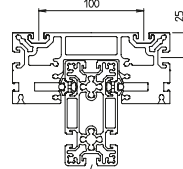
Profile S-40



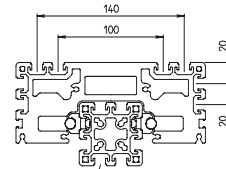
Profile S-40 x 80



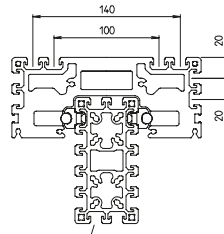
Profile F-50



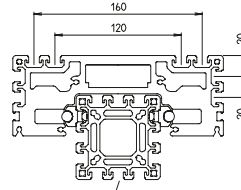
Profile F-50 x 100



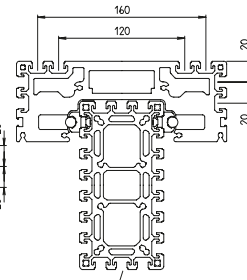
Profile F-60



Profile F-60 x 120



Profile F-80

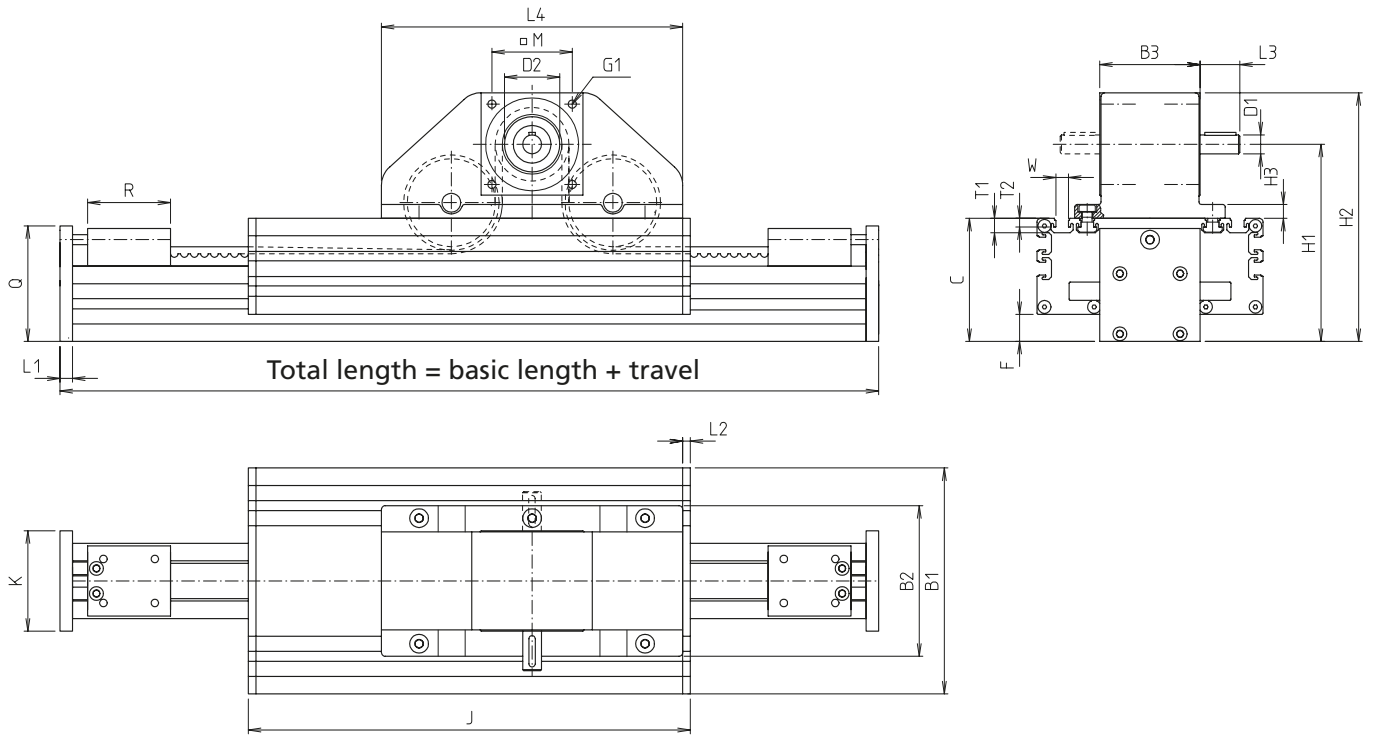


Profile F-80 x 160



Code No.	Type	Timing-belt	Basic length	B1	B2	B3	C	D1	D2	F	G1	H1	H2
FEB3030 _ A	SQ MT 30	5M-12	278	91.2	75	38	50	10	22 <sup>H7</sup>	4.5	M4	83	107
FEB4040 _ A	SQ MT 40	5M-20	352	120	100	48	65	10	28 <sup>H7</sup>	6.5	M5	104	132
FEB4080 _ A	SQ MT 40 x 80	5M-20	352	120	100	48	105	10	28 <sup>H7</sup>	46.5	M5	144	172
FEB5050 _ A	SQ MT 50	5M-25	377	150	120	58	78	14	35 <sup>H7</sup>	9	M6	119	155
FEB5010 _ A	SQ MT 50 x 100	5M-25	377	150	120	58	128	14	35 <sup>H7</sup>	59	M6	169	205
FFB6060 _ A	SQ MT 60	8M-28	524	180	120	80	98	20	70 <sup>H7</sup>	21.5	M8	157	198
FFB6012 _ A	SQ MT 60 x 120	8M-28	524	180	120	80	158	20	70 <sup>H7</sup>	81.5	M8	217	258
FFB8080 _ A	SQ MT 80	8M-40	554	200	140	100	118	25	70 <sup>H7</sup>	41.5	M8	177	218
FFB8016 _ A	SQ MT 80 x 160	8M-40	554	200	140	100	198	25	70 <sup>H7</sup>	121.5	M8	257	298

Drive shafts:  
A = 1 shaft  
B = 2 shafts



[mm]

H3	J	O	L1	L2	C	L4	M	Q	R	T1	T2	W	Max. travel	Mass [kg]	
														Basic length	per 100 mm travel
7	181	40	8	6	25	120	21	47	35	8.5	4.5	10.1	3722	2.04	0.14
8	232	47	10	6	28	150	29	60	45	11.5	7	10.1	4648	4.51	0.23
8	232	47	10	6	28	150	29	100	45	11.5	7	10.1	4648	5.06	0.39
8.5	257	60	10	6	30	160	38	73	45	11.5	7	10.1	5623	6.75	0.41
8.5	257	60	10	6	30	160	38	123	45	11.5	7	10.1	5623	7.15	0.52
11	352	80	12	6	31.5	240	64	90	66	11.5	7	10.1	17476	13.63	0.45
11	352	80	12	6	31.5	240	64	150	66	11.5	7	10.1	17476	15.93	0.90
11	382	100	12	6	31.5	240	64	115	66	11.5	7	10.1	17446	17.50	0.79
11	382	100	12	6	31.5	240	64	195	66	11.5	7	10.1	17446	20.41	1.34

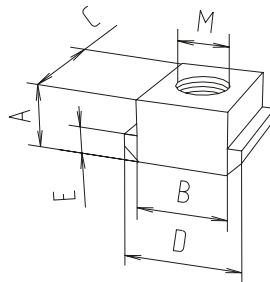
# SQ MT – Fixing

## Slot stones

- Slot stones can be inserted and positioned at the guide profile and carriage

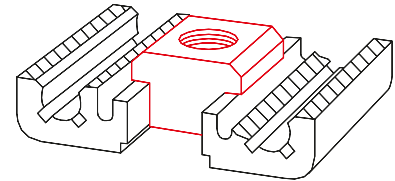
**Material:** galvanised steel

### Slot stone -N-

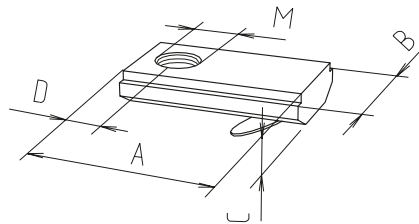


### Slot stone -N-

can be slid into the slot

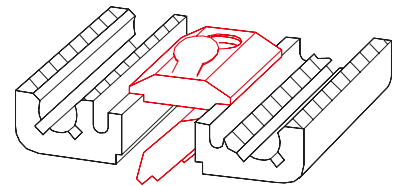


### Slot stone -K-

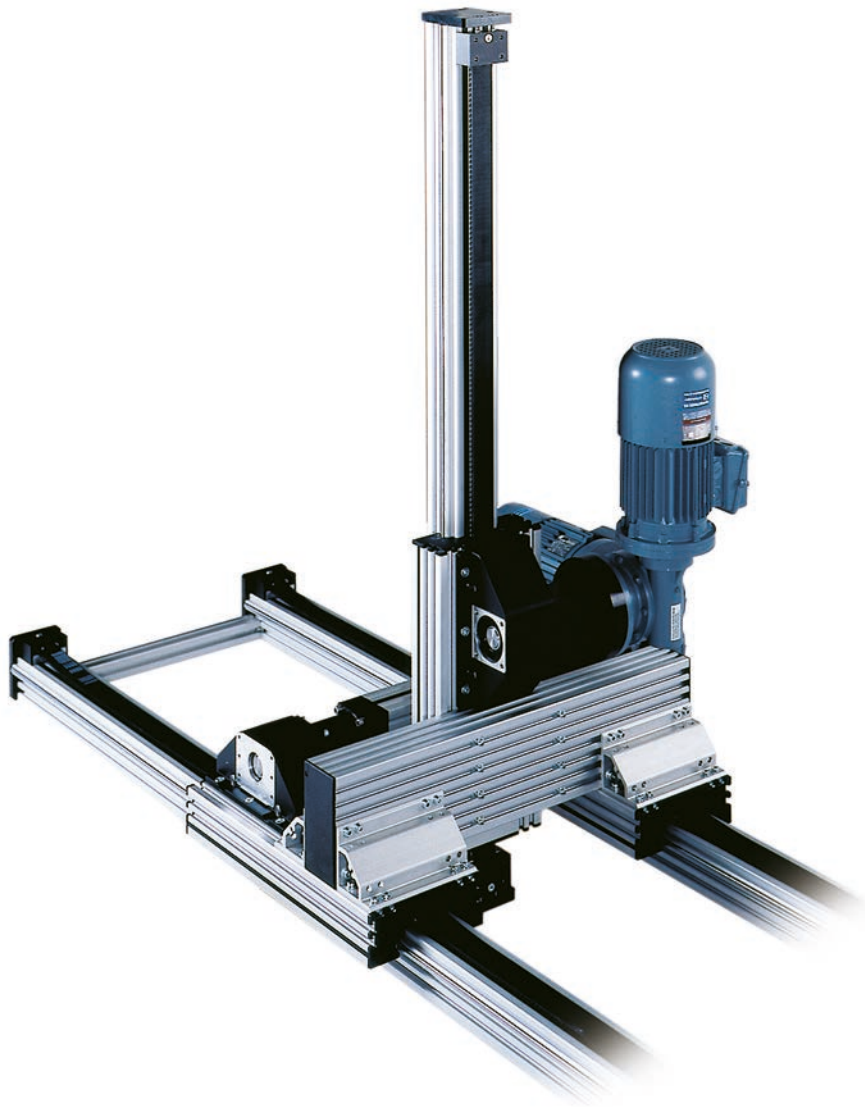


### Slot stone -K-

can be swivelled into the slot



Code No.	Type	Version	A	B	C	D	E	M	F [N]
<b>Slot stone -N-</b>									
4006201	SQ MT 30	M5	5	10	13	13	3	M5	4000
4006203	SQ MT 30	M6	5	10	13	13	3	M6	4000
4006202	SQ MT 30	M8	5	10	13	13	3	M8	4000
4026207	SQ MT 40-80	M5	8	10	13	15	4	M5	4000
4026203	SQ MT 40-80	M6	8	10	13	15	4	M6	9000
4026206	SQ MT 40-80	M8	8	10	13	15	4	M8	9000
<b>Slot stone -K-</b>									
4006211	all	M5	21	12	4	7	-	M5	5000
4006212	all	M6	21	12	4	7	-	M6	5000
4006213	all	M8	21	12	4	7	-	M8	5000
4016212	SQ MT 40-80	M6	21	14	4	7	-	M6	5000
4016213	SQ MT 40-80	M8	21	14	4	7	-	M8	8000



## Selection table - motor adaptor/coupling

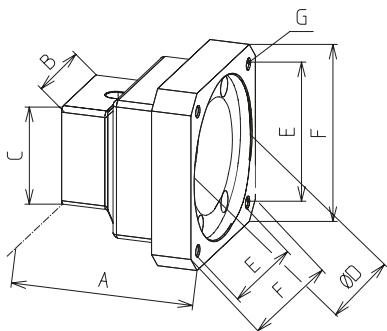
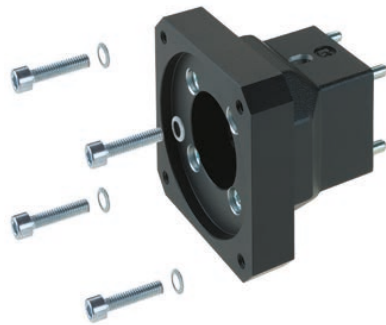
- Simple assembly
- Exact fit due to centring shoulders

**Material:** AlMgSi, black anodised

Type	Servomotor without gear			Three-phase motor	
	RK-AC 118	RK-AC 240	RK-AC 470	90/120W	180/250 W
30	949910	–	–	949913	949949
	911430 1011	–	–	910920 1012	911430 1014
40 40x80	949915	949917	–	949920	949921
	911430 1011	911430 1014	–	911430 1012	911430 1014
50 50x100	949922	949924	–	949928	949929
	911430 1114	911430 1414	–	911430 1214	911430 1414
60 60x120	949930	949932	949934	949938	949939
	911940 1120	911940 1420	911940 1920	911940 1220	911940 1420
80 80x160	–	949940	949942	949944	949945
	–	912855 1425	912855 1925	912855 1225	912855 2025

**Note:** For further details on motor versions, please refer to the chapter “Motors and controls”

## Motor adaptor

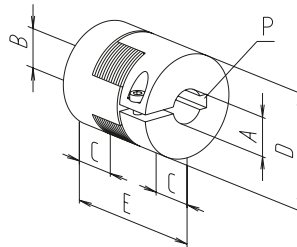


Code No.	Type	A	B	C	D	E	F	G
949910	30	63	40	40	60	53	70	M5
949913	30	65	40	40	50	65	80	M5
949949	30	70	40	40	80	100	Ø120	Ø6,6
949915	40	65	50	50	60	53	70	M5
949917	40	73	50	50	80	70,7	90	M6
949920	40	73	50	50	50	65	80	M5
949921	40	73	50	50	80	100	Ø120	Ø6,6
949922	50	66	52	52	60	53	70	M5
949924	50	73	52	52	80	70,7	90	M6
949928	50	73	52	52	50	65	80	M5
949929	50	75	52	52	80	100	Ø120	Ø6,6
949930	60	74	80	80	60	53	70	M5
949932	60	79	80	80	80	70,7	90	M6
949934	60	89	80	80	95	81,3	115	M8
949938	60	79	80	80	50	65	80	M5
949939	60	81	80	80	80	100	Ø120	Ø6,6
949940	80	86	80	80	80	70,7	90	M6
949942	80	96	80	80	95	81,3	115	M8
949944	80	86	80	80	50	65	80	M5
949945	80	86	80	80	80	100	Ø120	Ø6,6

**Coupling**

- Shaft connection without backlash
- Easy plug-in assembly

**Material:** Hub, aluminium  
Gear ring, polyurethane



[mm]

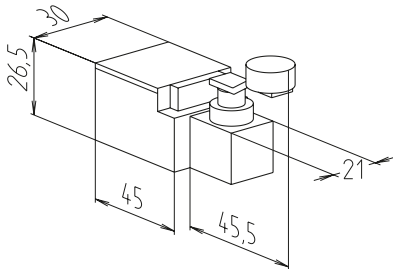
Code No.	A	B	C	D	E	P	Torque [Nm]	
							with feather key	without feather key
9109209510	9,5	10	10	20	30	- / 3x3	5	3
9109201012	10	12	10	22	30	3x3 / 4x4	5	3
9114309514	9,5	14	11	30	35	- / 5x5	12	6
9114301011	10	11	11	30	35	3x3 / 4x4	12	6
9114301012	10	12	11	30	35	3x3 / 4x4	12	6
9114301014	10	14	11	30	35	3x3 / 5x5	12	6
9114301114	11	14	11	30	35	4x4 / 5x5	12	6
9114301214	12	14	11	30	35	4x4 / 5x5	12	6
9114301414	14	14	11	30	35	5x5 / 5x5	12	6
9114301420	14	20	11	30	35	5x5 / 6x6	12	6
9119409520	9,5	20	25	40	65	- / 6x6	17	10
9119401120	11	20	25	40	65	4x4 / 6x6	17	10
9119401220	12	20	25	40	65	4x4 / 6x6	17	10
9119401920	19	20	25	40	65	6x6 / 6x6	17	10
9128559525	9,5	25	25	40	65	- / 8x7	17	10
9128551225	12	25	25	40	65	4x4 / 8x7	17	10
9128551425	14	25	30	55	78	5x5 / 8x7	60	35
9128551925	19	25	30	55	78	6x6 / 8x7	60	35

# SQ MT – Position determination

## Mechanical limit switch

- Limit switch with angle lever
- Compact design

**Material:**  
Thermoplastic, fully insulated



Max. voltage	250 V AC
Max. switching current	6 A
Max. starting current	16 A
Operating cycles	Max. 6,000/h
Mechanical lifetime	1 x 10 <sup>7</sup> switching cycles
Axis lever adjustment	locking by 360°
Protection class	IP 65
Ambient temperature	-30°C to +80°C

Code No.	Switching function
91905	NC/NO





### SQ MT - Position determination

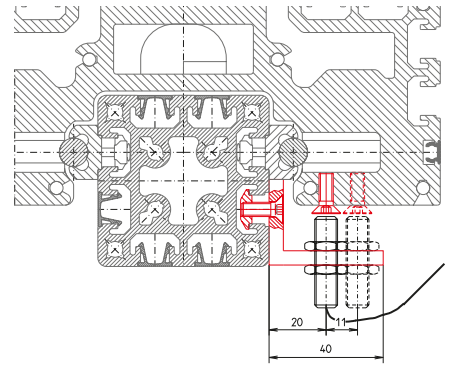
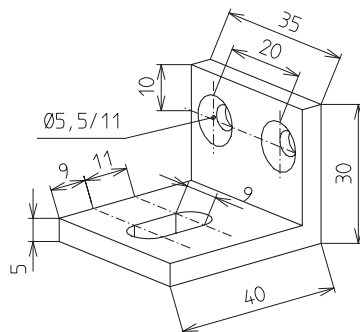
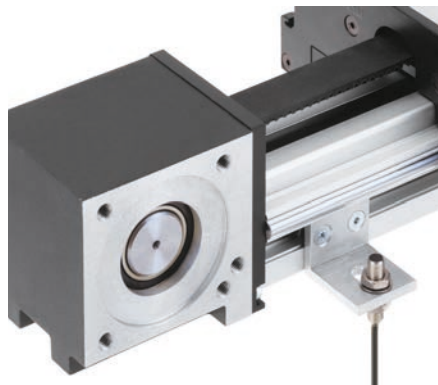
#### Holder for inductive limit switch

- Fixing bracket for limit switches
- Fixing in the profile slot of the guide profile
- Simple axial displacement and adjustment of holder is possible

**Material:**  
AlMgSi, vibratory finished

**Scope of delivery:**  
Holder with fastenings

A limit switch is not included!



Code No.	Type
92909	SQ MT 40 x 80, 60, 60 x 120, 80, 80 x 160

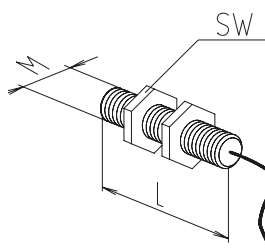
#### Inductive limit switch

- Function indicator (LED)
- Maintenance-free

**Material:** Housing: stainless steel



Type	60-80
Voltage	10 - 30 V DC
Max. switching current	150 mA
Operating distance	2 mm for steel
Protection class	IP 67
Ambient temperature	-25°C to +70°C
Cable lengths	2m

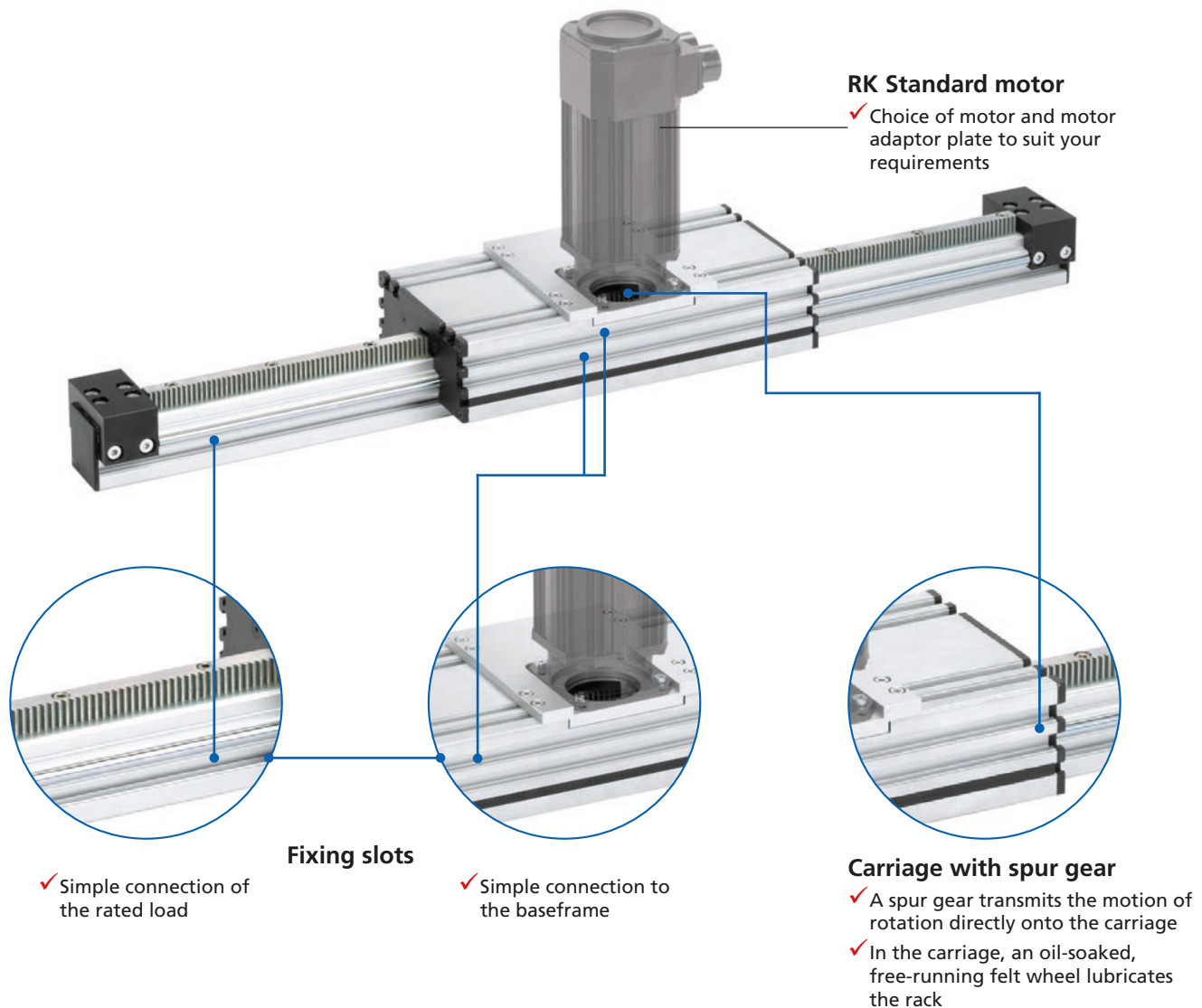


Code No.	Switching function	L	M	Wrench size (SW)
92826	Changeover	40	8x1	13

[mm]

# Roller guide actuators – SQ ZST

Rack and pinion with fixed carriage, also for larger travels up to 30 m



## Features:

- Linear power transmission via rack and spur gear
- Designed specially for large strokes of up to 30 m and more
- High positioning accuracy, even with large stroke lengths
- Travel speed up to 5 m/s
- Guide profile made from the BLOCAN® modular profile system
- Rack lubrication via felt wheel
- Suitable for RK standard motors

## Options:

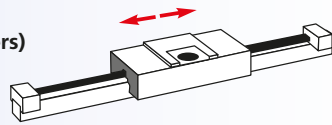
- Second non driven carriage
- Longer stroke lengths
- Additional independently driven carriages

**SQ ZST - Table of contents**

**Properties/Technical data**

- General information/operating conditions... 420
- Load data..... 421

**Versions**  
(Dimensions, order numbers)



- SQ ZST rack unit .....422 - 423

**Accessories**

**Fixing**

- Slot stones ..... 424

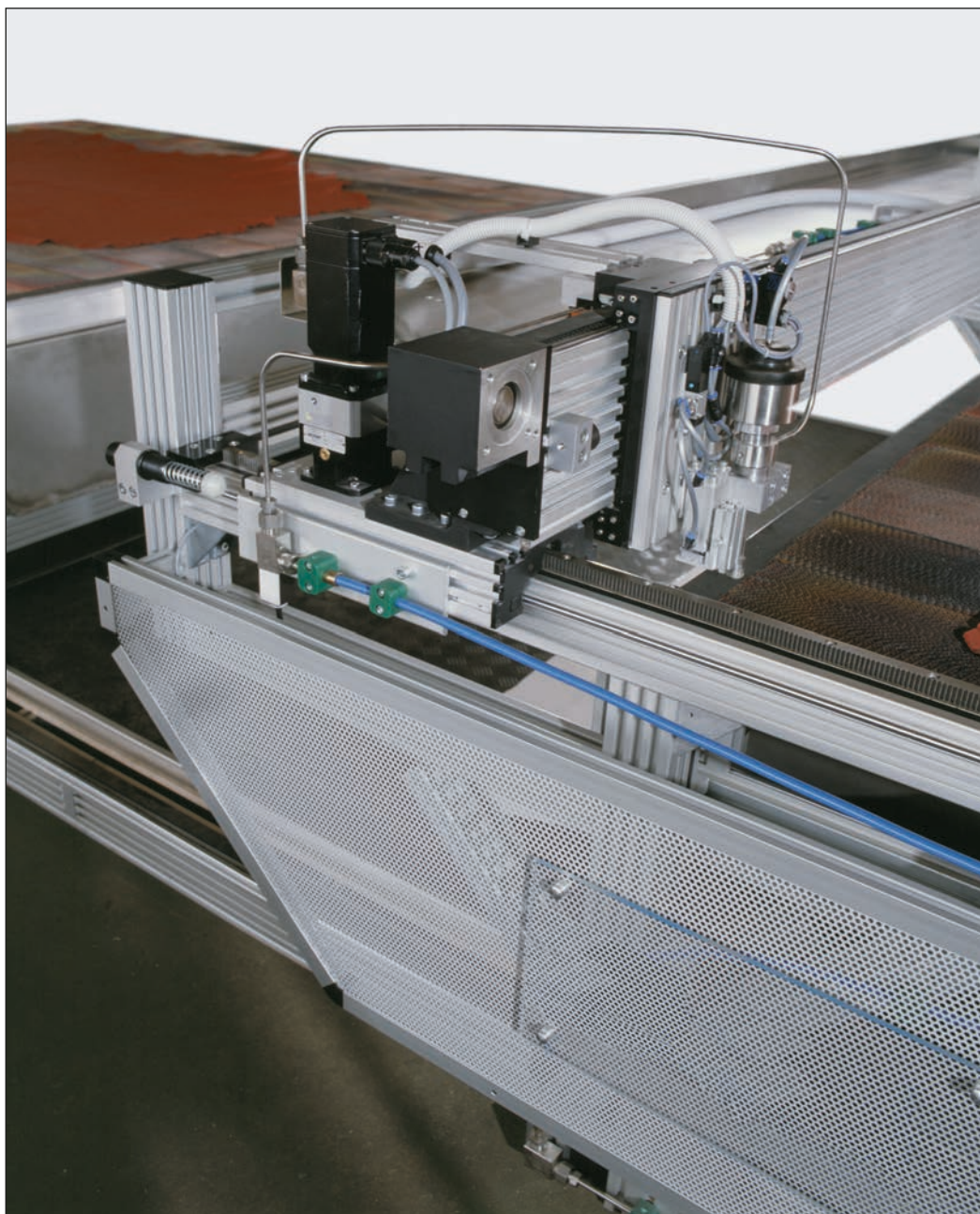
**Position determination**

- Mechanical limit switch ..... 425
- Inductive limit switch and holder ..... 425

# SQ ZST – Technical data

## General information/operating conditions

Design	Aluminium profile, rack drive, moving profile
Guide	Rollers, external
Installation position	Any position
Repeatability	± 0.05 mm
Max. travel speed	5 m/s
Ambient temperature	0°C to +60°C
Protection class	IP 20

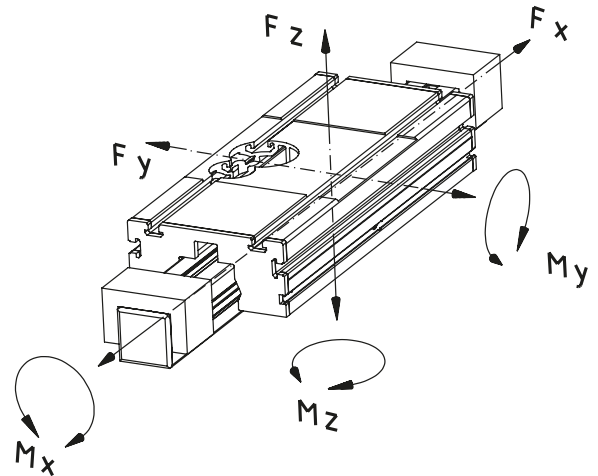


3-axis plotter, X-axis moves via an SQ ZST rack unit

**SQ ZST - Technical data**
**Load data\***

- F Force [N]
- M Moment [Nm]
- I Geometric moment of inertia [cm<sup>4</sup>]

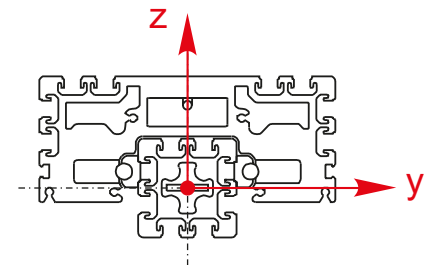
\* With reference to carriage (static values, guide element resting on full surface)



Type	F <sub>x</sub>	F <sub>y</sub>	F <sub>z</sub>	M <sub>x</sub>	M <sub>y</sub>	M <sub>z</sub>
SQ ZST 60	1132	2550	2550	99	171	171
SQ ZST 60 x 120		2550	2550	99	171	171
SQ ZST 80		2550	2550	124	201	201
SQ ZST 80 x 160		2550	2550	124	201	201

**Geometric moment of inertia**

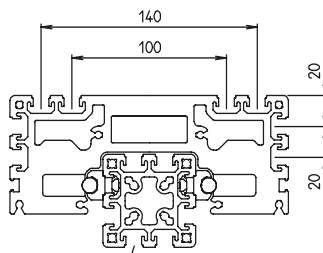
Type	I <sub>y</sub>	I <sub>z</sub>
SQ ZST 60	51.2	51.2
SQ ZST 60 x 120	94.7	372.3
SQ ZST 80	155.3	155.3
SQ ZST 80 x 160	292.4	1090



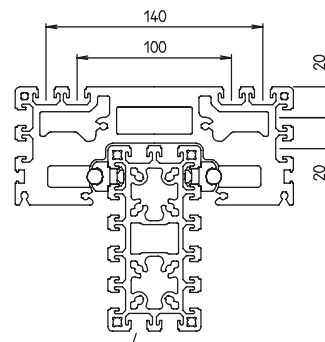
# SQ ZST – Versions

## Order information:

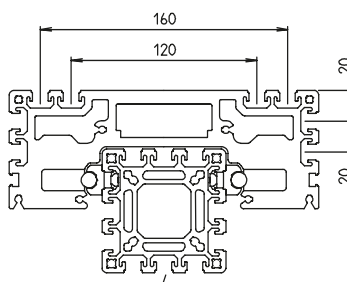
- Longer travel lengths on request
- Second non driven or independently driven carriage available on request



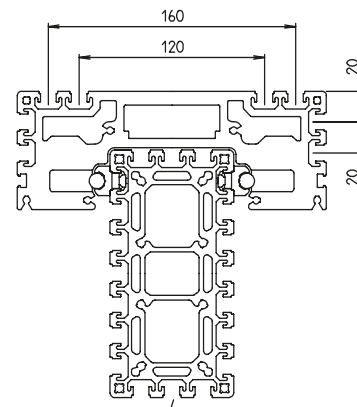
Profile F-60



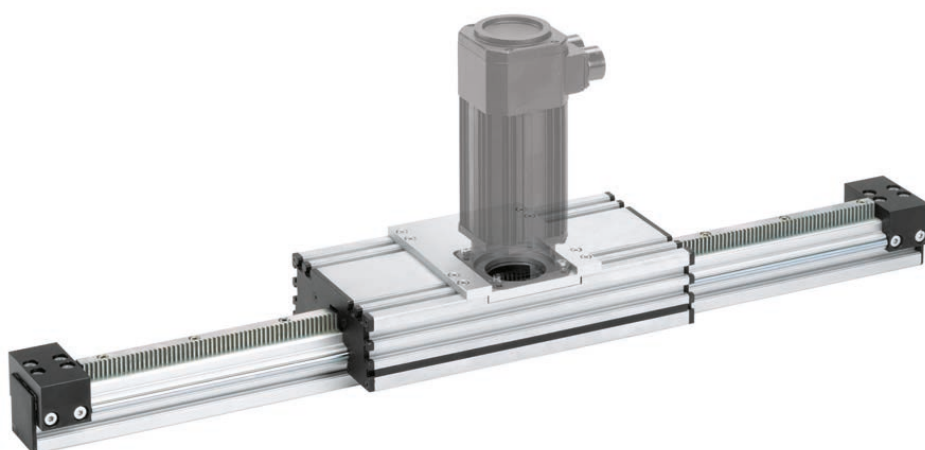
Profile F-60 x 120



Profile F-80



Profile F-80 x 160

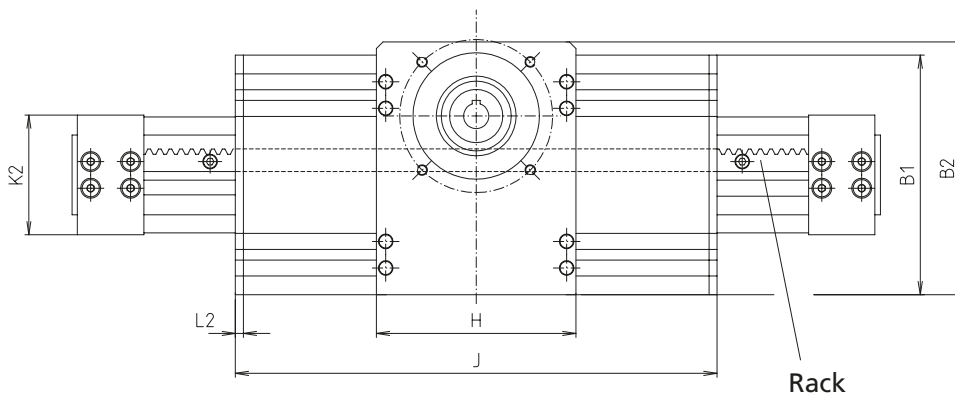
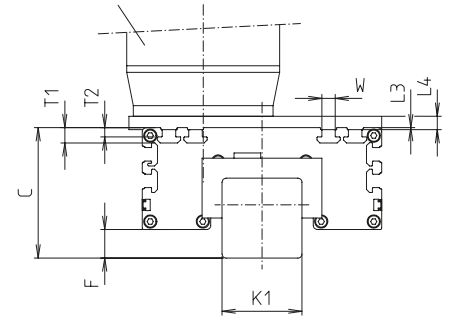
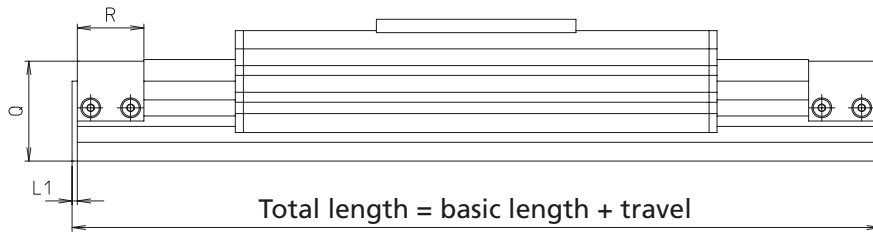


Code No.	Type	Basic length	B1	B2	C	F	H	J	K1	K2	L1
FGA6060 _ A	SQ ZST 60	470	180	depending on engine	98	21.5	150	362	60	90	4
FGA6012 _ A	SQ ZST 60 x 120	470	180		158	81.5	150	362	60	90	4
FGA8080 _ A	SQ ZST 80	470	200		118	41.5	150	362	80	110	4
FGA8016 _ A	SQ ZST 80 x 160	470	200		198	121.5	150	362	80	110	4

### For motor (see chapter "Motors and controls"):

- |                              |                        |
|------------------------------|------------------------|
| C = RK-AC 240                | I = 3-phase motor 90 W |
| D = RK-AC 240 with gear unit | K = 3-phase motor 120W |
| E = RK-AC 470                | L = 3-phase motor 180W |
| F = RK-AC 470 with gear unit | M = 3-phase motor 250W |

Optional motor  
(see chapter "Motors and controls")



[mm]

L2	C	L4	Q	R	T1	T2	W	Max. travel	Mass [kg]	
									Basic length	per 100 mm travel
6	1.5	depending on engine	75	50	11.5	7	10.1	29530	11.77	0.81
6	1.5		135	50	11.5	7	10.1	29530	13.88	1.26
6	1.5		95	50	11.5	7	10.1	29530	12.78	1.14
6	1.5		175	50	11.5	7	10.1	29530	14.28	1.34

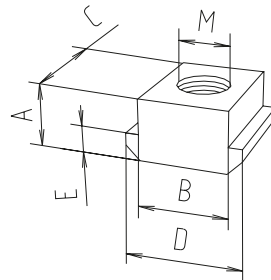
# SQ ZST – Fixing

## Slot stones

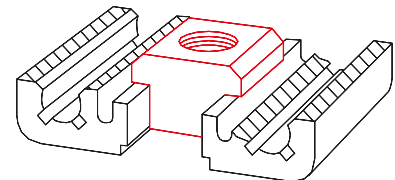
- Slot stones can be inserted and positioned at the guide profile and carriage

**Material:** galvanised steel

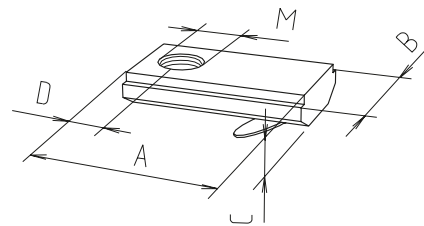
Slot stone -N-



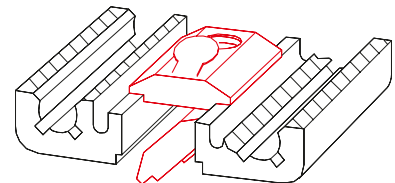
Slot stone -N- can be slid into the slot



Slot stone -K-



Slot stone -K- can be swivelled into the slot



[mm] 

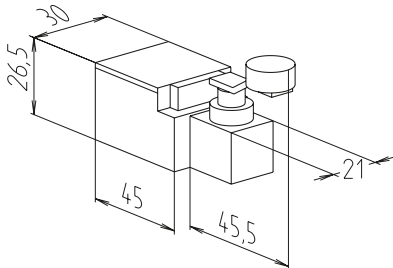
Code No.	Version	A	B	C	D	E	M	F [N]
<b>Slot stone -N-</b>								
4026207	M5	8	10	13	15	4	M5	4000
4026203	M6	8	10	13	15	4	M6	9000
4026206	M8	8	10	13	15	4	M8	9000
<b>Slot stone -K-</b>								
4006211	M5	21	12	4	7	–	M5	5000
4006212	M6	21	12	4	7	–	M6	5000
4006213	M8	21	12	4	7	–	M8	5000
4016212	M6	21	14	4	7	–	M6	5000
4016213	M8	21	14	4	7	–	M8	8000





### SQ ZST - Position determination

#### Mechanical limit switch



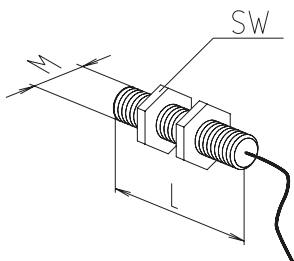
- Limit switch with angle lever
- Compact design

**Material:**  
Thermoplastic, fully insulated

Max. voltage	250 V AC
Max. switching current	6 A
Max. starting current	16 A
Operating cycles	Max. 6,000/h
Mechanical lifetime	1 x 10 <sup>7</sup> switching cycles
Axis lever adjustment	locking by 360°
Protection class	IP 65
Ambient temperature	-30°C to +80°C

Code No.	Switching function
91905	NC/NO

#### Inductive limit switch



- Function indicator (LED)
- Maintenance-free

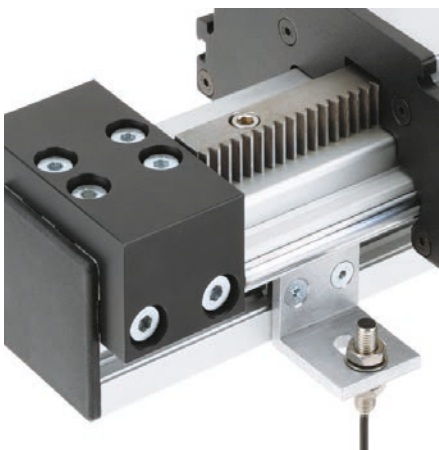
**Material:** Housing: stainless steel

Type	60-80
Voltage	10 - 30 V DC
Max. switching current	150 mA
Operating distance	2 mm for steel
Protection class	IP67
Ambient temperature	-25°C to +70°C
Cable lengths	2m

Code No.	Switching function	L	M	Wrench size (SW)
92826	Changeover	40	8x1	13

[mm]

#### Holder for inductive limit switch

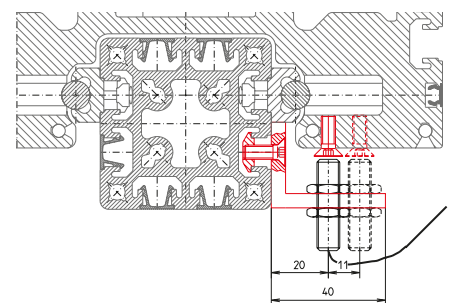
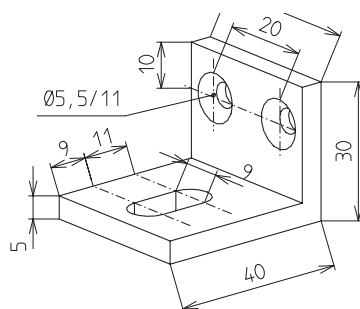


- Fixing bracket for proximity switches
- Fixing in the profile slot of the guide profile
- Simple axial displacement and adjustment of holder is possible

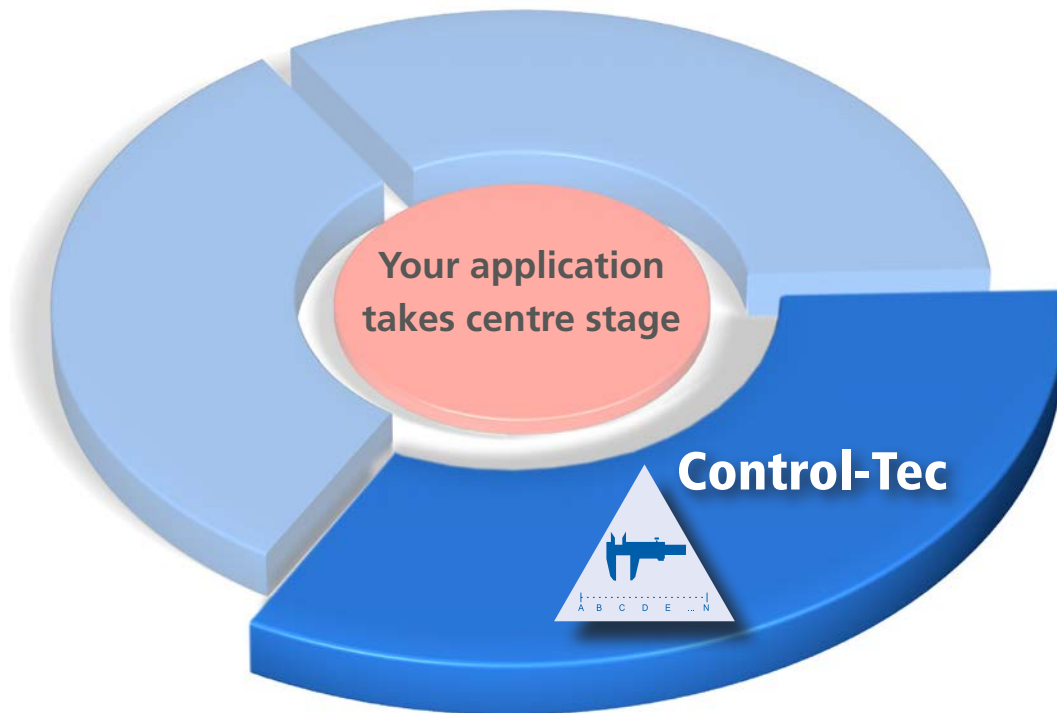
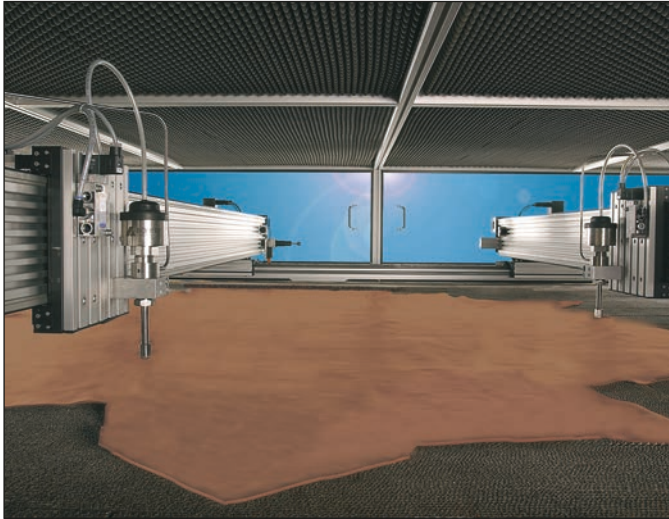
**Material:**  
AlMgSi, vibratory finished

**Scope of delivery:**  
Holder with fastenings

A proximity switch is not included!



Code No.	Type
92909	SQ ZST 60, 60 x 120, 80, 80 x 160



#### Features:

- ✓ High positioning accuracy
- ✓ Uniform motion
- ✓ High drive stiffness
- ✓ 3 shift operation
- ✓ IP 40 protection class



**RK ROSE+KRIEGER**



## Numerically controlled positioning applications

---

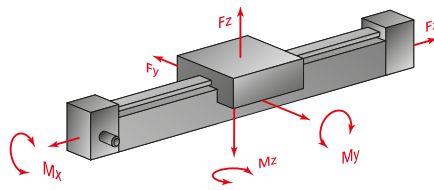
Rodless style ..... Page 430

Rodstyle ..... Page 460

# ***Control-Tec***

# Control-Tec overview

## Rodless style | Drive + Guide



Length/Strokes [mm]  
 Forces [N]  
 Moments [Nm]

### Linear actuator



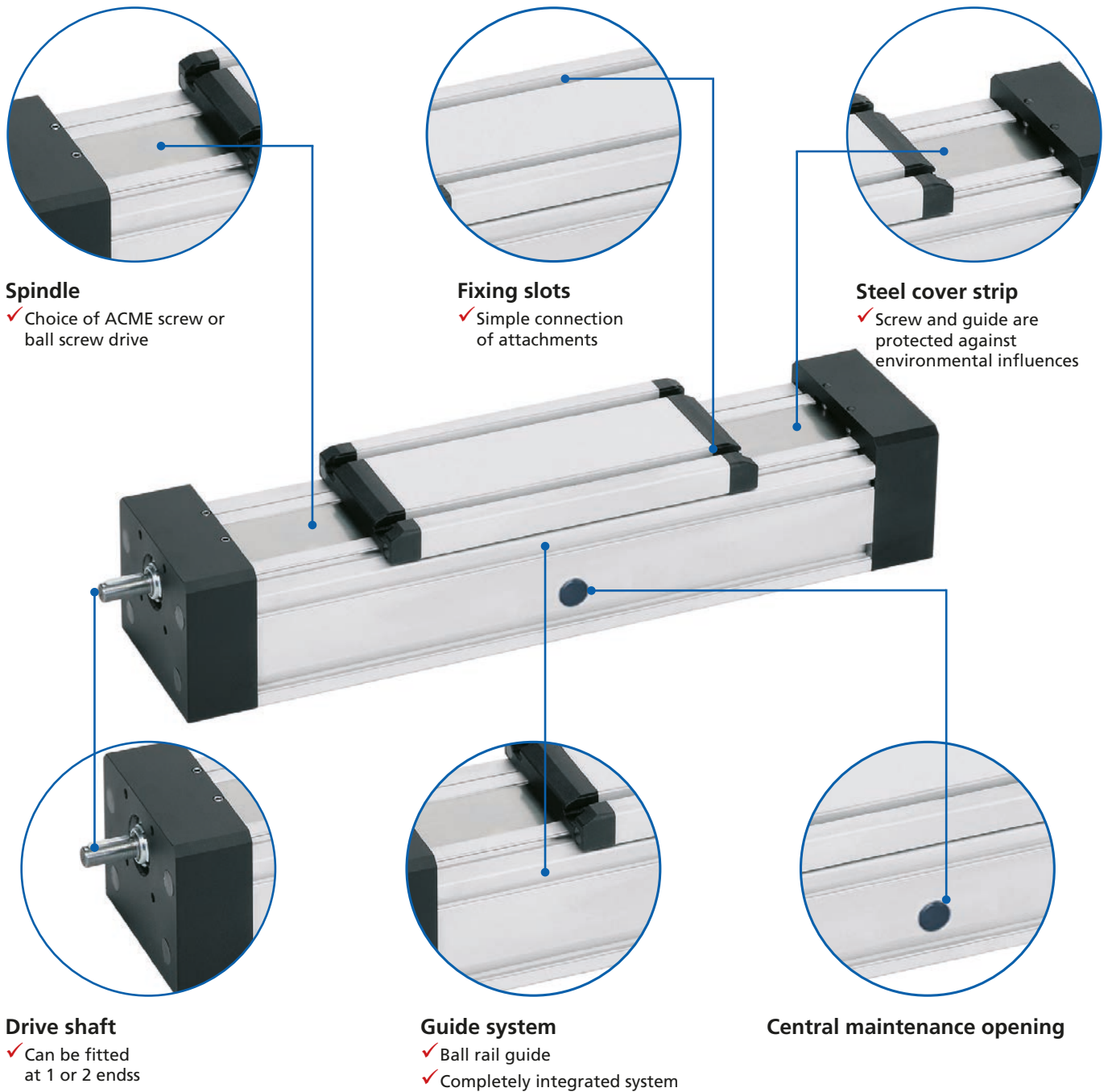
	RK DuoLine S page 430
Max. travel	2268-4400 mm
Fx max.	1400-8000 N
Fy max.	930-7000 N
Fz max.	1100-8000 N
Mx max.	45-500 Nm
My max.	65-600 Nm
Mz max.	56-500 Nm
V max.	2 m/s
a max.	20 m/s <sup>2</sup>
Repeat accuracy	± 0.04 mm
Pitch accuracy	T5 (± 0,023 / 300 mm)
Right-hand thread	Yes
Split screw	on request
Features	✓ Optimum performance, precision and features

**E-cylinder**


	LZ 70 FL/PL E-cylinder page 460	LZ 80 FL/PL E-cylinder page 460	SLZ 90 E-cylinder page 476
Max. travel	1000 mm	1005 mm	2000 mm
F <sub>x</sub> max.	5.000 N	6.200 N	25000 N
V max.	1000 mm/s	288 mm/s	1 m/s
Positioning accuracy	± 0,05 mm	± 0,05 mm	± 0,1 mm
Features	✓ The new generation of industrial linear cylinders using linear technology		✓ The powerful linear cylinder for precise positioning tasks up to 25,000 N

# Ball rail actuator – RK DuoLine S

The all-rounder with protected drive/guiding concept



## Spindle

- ✓ Choice of ACME screw or ball screw drive

## Fixing slots

- ✓ Simple connection of attachments

## Steel cover strip

- ✓ Screw and guide are protected against environmental influences

## Drive shaft

- ✓ Can be fitted at 1 or 2 ends

## Guide system

- ✓ Ball rail guide
- ✓ Completely integrated system

## Central maintenance opening

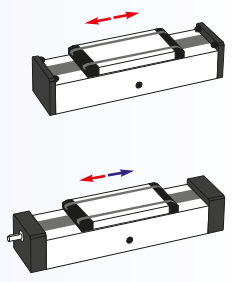
## Features:

- Internal ball rail guide
- Carriage and guide profile made of extruded aluminium
- Enclosure of internal profile area
- Central maintenance opening for lubrication
- Compact and flat design
- BLOCAN® slot geometries for fixing accessories and attachments

## Options:

- Second non driven carriage
- Extended carriage
- Alternative screw leads

## RK DuoLine S - Table of contents

<p><b>Properties/Technical data</b></p>		<ul style="list-style-type: none"> <li>■ General information/operating conditions... 432</li> <li>■ Load data..... 433</li> </ul>
<p><b>Versions</b> (Dimensions, order numbers)</p>		<ul style="list-style-type: none"> <li>■ Guide ..... 434 - 435</li> <li>■ Righthand thread..... 436 - 437</li> </ul>
<p><b>Accessories</b></p>	<p><b>Fixing</b></p> <ul style="list-style-type: none"> <li>■ Slot stones ..... 438</li> <li>■ Threaded strip..... 438</li> </ul> <p><b>Drive</b></p> <ul style="list-style-type: none"> <li>■ Motor adaptor ..... 439</li> <li>■ Coupling ..... 440</li> <li>■ Angular drive ..... 440</li> </ul> <p><b>Position determination</b></p> <ul style="list-style-type: none"> <li>■ Limit switches/bracket ..... 441</li> </ul>	

# RK DuoLine S – Technical data

## General information/operating conditions

Design	Aluminium profile, ball screw drive
Guide	recirculating ball rail
Installation position	Any position
Lead accuracy	± 0.05 mm/300 mm travel
Self-locking	No
Ambient temperature	0°C to +60°C

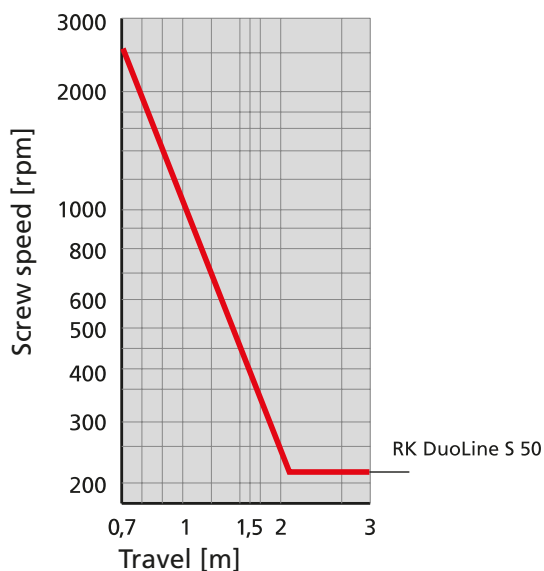
## Screw lead

[mm]

Type	Screw lead
50 x 50	10

$$\text{Required screw speed } n \text{ [rpm]} = \frac{\text{speed [m/min]} \times 1000}{\text{screw lead [mm]}}$$

## Control of screw speed (critical speed)



[Nm]

## No-load torque

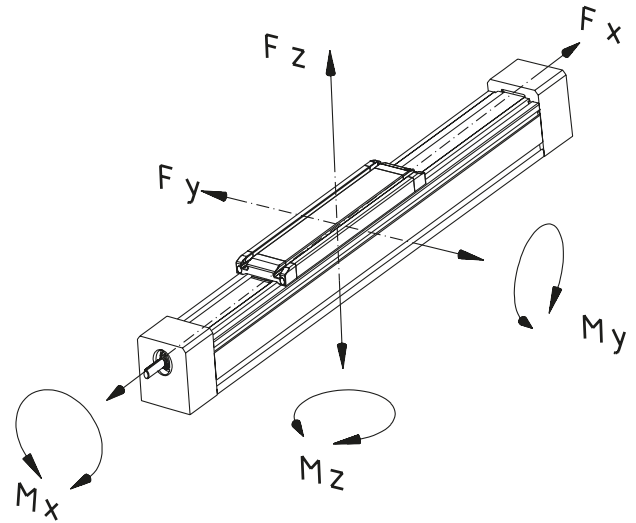
Type	Ball rail guide
RK DuoLine S 50 x 50	0.25



**RK DuoLine S - Technical data**
**Load data\***

- F Force [N]
- M Moment [Nm]
- I Geometric moment of inertia [cm<sup>4</sup>]

\* With reference to carriage (static values, guide element resting on full surface)

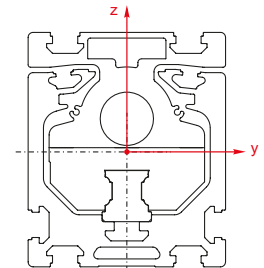


Type	F <sub>x</sub>	F <sub>y</sub>	F <sub>z</sub>	M <sub>x</sub>	M <sub>y</sub>	M <sub>z</sub>
RK DuoLine S 50 x 50, ball rail guide	1400	930	1100	45	65	56

**Geometric moment of inertia**

 [cm<sup>4</sup>]

Type	I <sub>y</sub>	I <sub>z</sub>
RK DuoLine S 50 x 50, ball rail guide	17.39	23.04



# RK DuoLine R – Versions

## Order information:

- Longer travel lengths on request
- Second or extended carriage available on request

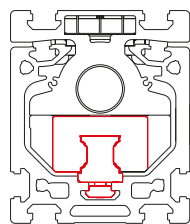
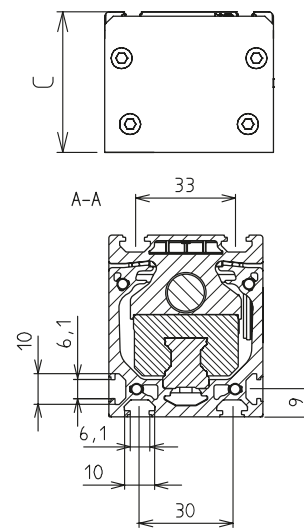
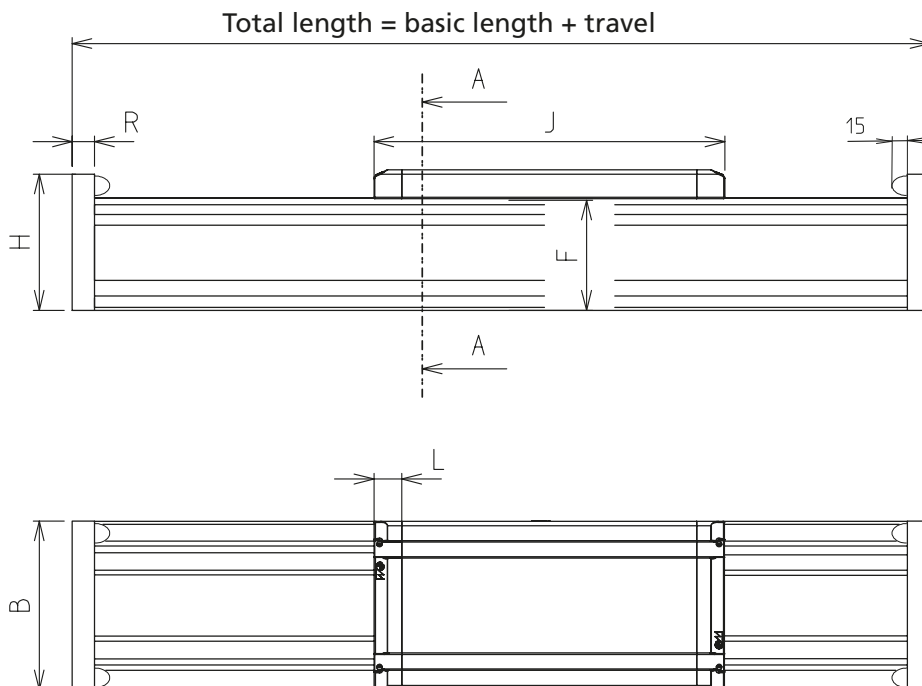
Version

■ Guide



Code No.	Type	Basic length	B	C	F	H
MPD5050 IA	RK DuoLine 50 x 50	222	50	59	49.3	57.5

----- Total length = basic length + travel [mm]



Ball rail guide  
Type 50

[mm]

J	L	R	Max. travel	Mass [kg]	
				Basic length	per 100 mm travel
140	7	34	3784	1.43	0.36

# RK DuoLine S – Versions

## Order information:

- Longer travel lengths on request
- Second non driven carriage available on request

Version

■ Righthand thread

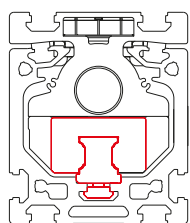
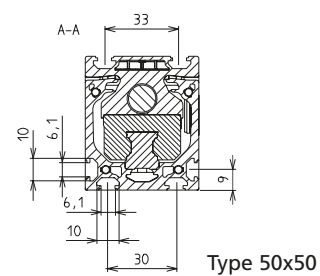
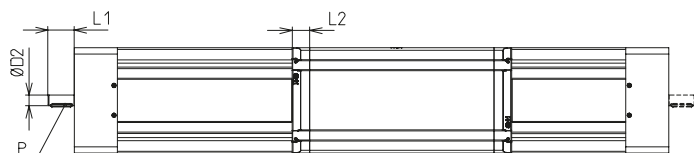
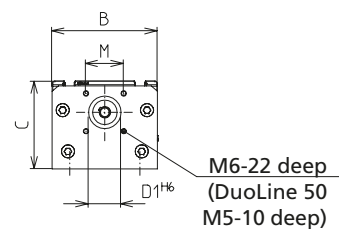
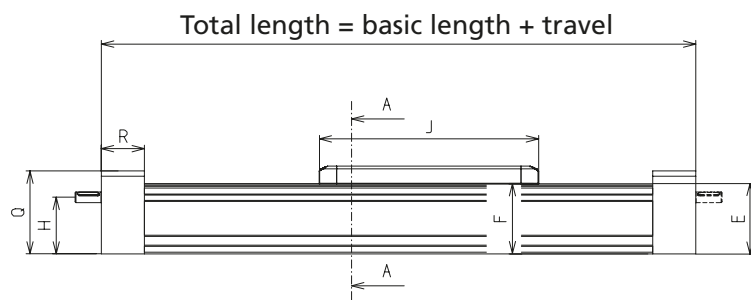


Code No.	Type	Spindle	Basic length	B	C	D1	Ø D2	E	F
TDA5050_I	50 x 50	12 x 10	208	50	59	30	8	49.2	48.5

----- Total length = basic length + travel [mm]

Shaft configuration:  
 T = 1 drive shaft  
 U = 2 drive shafts

\*\*For unit lengths >1500 mm

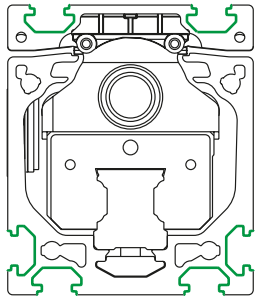


Ball rail guide  
Type 50

[mm]

H	J	L1	L2	M	P	Q	R	Max. travel	Mass [kg]	
									Basic length	per 100 mm travel
40.3	140	28.5	8	□ 29	2 x 2 x 20	58	34	2122	2.87	0.41

# RK DuoLine S – Fixing



Type 50x50

— 20 slot geometry

## Slot stones

- Profile slots in the carriage and the guide profile facilitate fixation

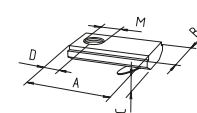
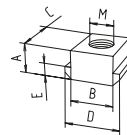
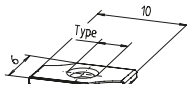
- Slot stones can be inserted and positioned at the guide profile and guide carriage

**Material:** galvanised steel

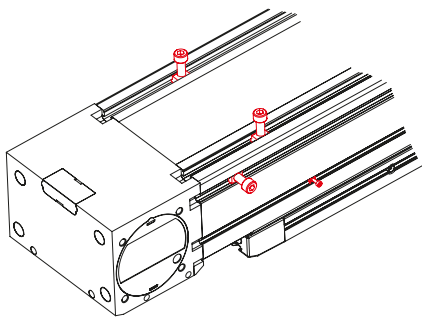
**Slot stone -B-**  
can be swivelled into the slot

**Slot stone -N-**  
can be slid into the slot

**Slot stone -K-**  
can be swivelled into the slot



[mm]



View of DuoLine from below

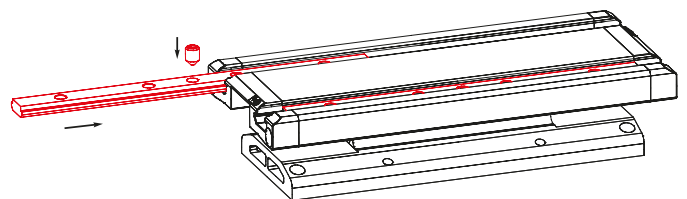
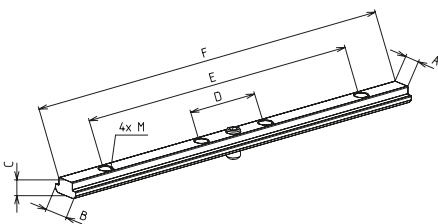
Code No.	Type	Slot geometry	A	B	C	D	E	M	F [N]
<b>Slot stone -B-</b>									
E0017CEH	M3	20							Pack of 10
E0058CEH	M4	20							Pack of 10
<b>Slot stone -N-</b>									
4006202	M8	30	5	10	13	13	3	M8	4000
4026206	M8	40	8	10	13	15	4	M8	9000
<b>Slot stone -K-</b>									
4006211	M5	30 or higher	21	12	4	7	-	M5	5000
4006212	M6	30 or higher	21	12	4	7	-	M6	5000
4016212	M6	40	21	14	4	7	-	M6	5000

## Threaded bar

- Threaded bar for lateral insertion in the profile slot

**Material:** Galvanised steel

- Fixing in carriage with set screw



[mm]

Code No.	Version	Slot geometry	A	B	C	D	E	F	M
4096500	RK DuoLine 50	20	5,5	10	3	30	80	100	M4

**Selection table**  
**Motor adaptor/coupling**

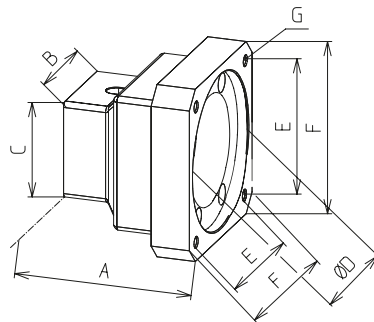
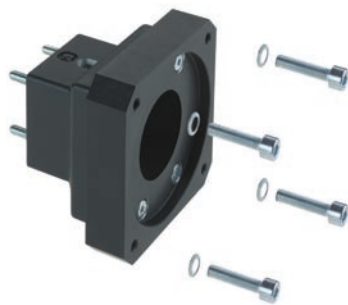
Type	Servomotor without gear			Three-phase motor	
	RK-AC 118	RK-AC 240	RK-AC 470	90/120W	180/250 W
RK DuoLine S 50	949976	949978	–	949981	949982
	911430 0811	911430 0814	–	911430 0812	911430 0814

**Note:** For further details on motor versions, please refer to the chapter "Motors and controls"

**Motor adaptor**

- Simple assembly on linear unit and motor
- Exact fit due to centering shoulders

**Material:** Aluminium, black anodised



[mm]

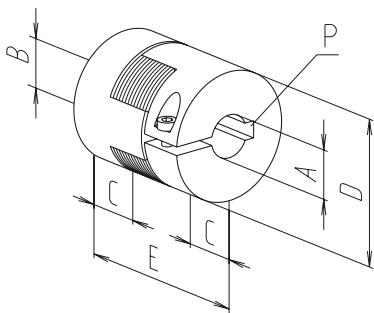
Code No.	Type	A	B	C	D	E	F	G
949976	50	65	50	50	60	53	70	M5
949978		73	50	50	80	70,7	90	M6
949981		73	50	50	50	46	80	M5
949982		73	50	50	80	100	Ø120	Ø6,6

# RK DuoLine S – Drive

## Coupling

- Small size
- Shaft connection without backlash
- Maintenance-free
- Easy plug-in assembly

**Material:** Aluminium, black anodised



[mm]

Code No.	ØA	ØB	C	ØD	E	P	Torque [Nm]	
							with key	without key
9109200695	6	9,5	11	30	35	2x2 / -	12	6
9109200612	6	12	11	30	35	2x2 / 4x4	12	6
9114300611	6	11	11	30	35	2x2 / 4x4	12	6
9114300616	6	16	11	30	35	2x2 / 5x5	12	6
9114300895	8	9,5	11	30	35	2x2 / 5x5	12	6
9114300811	8	11	11	30	35	4x4 / 4x4	12	6
9114300812	8	12	11	30	35	4x4 / 5x5	12	6
9114300814	8	14	11	30	35	2x2 / 5x5	12	6
9114309510	9,5	10	11	30	35	- / 3x3	12	6
9114309512	9,5	12	11	30	35	- / 4x4	12	6
9114301011	10	11	11	30	35	3x3 / 4x4	12	6
9114301012	10	12	11	30	35	3x3 / 4x4	12	6

## Angular drive

- Angular drives for RK DuoLine S available on request.

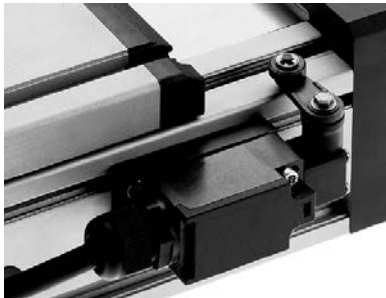




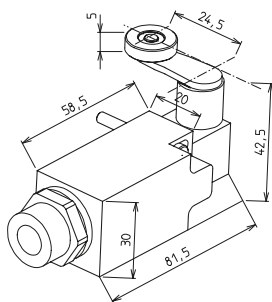
### Mechanical limit switch

- Limit switch with angle lever
- Compact design

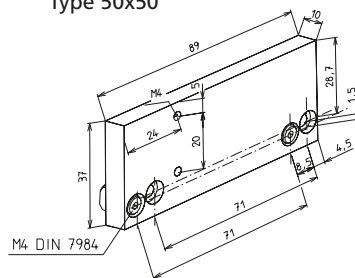
**Material:** Limit switch housing made of thermoplastic, self-extinguishing, bracket made of aluminium profile



Max. voltage	230 V AC
Max. switching current	4 A
Max. starting current	10 A
Operating frequency	Max. 5000/h
Mechanical lifetime	20 x 10 <sup>6</sup> switching cycles
Axis lever adjustment	locking by 360°
Protection class	IP 67
Ambient temperature	-30°C to +80°C



Type 50x50



Code No.	Type	Version
92792	50 x 50	NC/NO with bracket

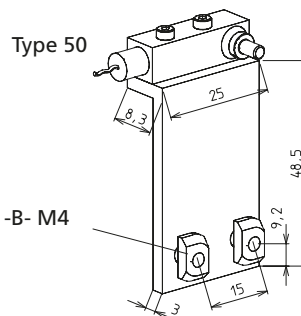
### Inductive limit switch

- Maintenance-free

**Material:** Limit switch housing made of stainless steel, bracket made of anodised aluminium



Voltage	10-30 V DC
Max. switching current	10 mA
Max. starting current	100 mA
Operating frequency	max. 5 kHz
Mechanical lifetime	independent of operating cycles
Operating distance	1.5 mm
Protection class	IP 67
Ambient temperature	-25°C to +75°C

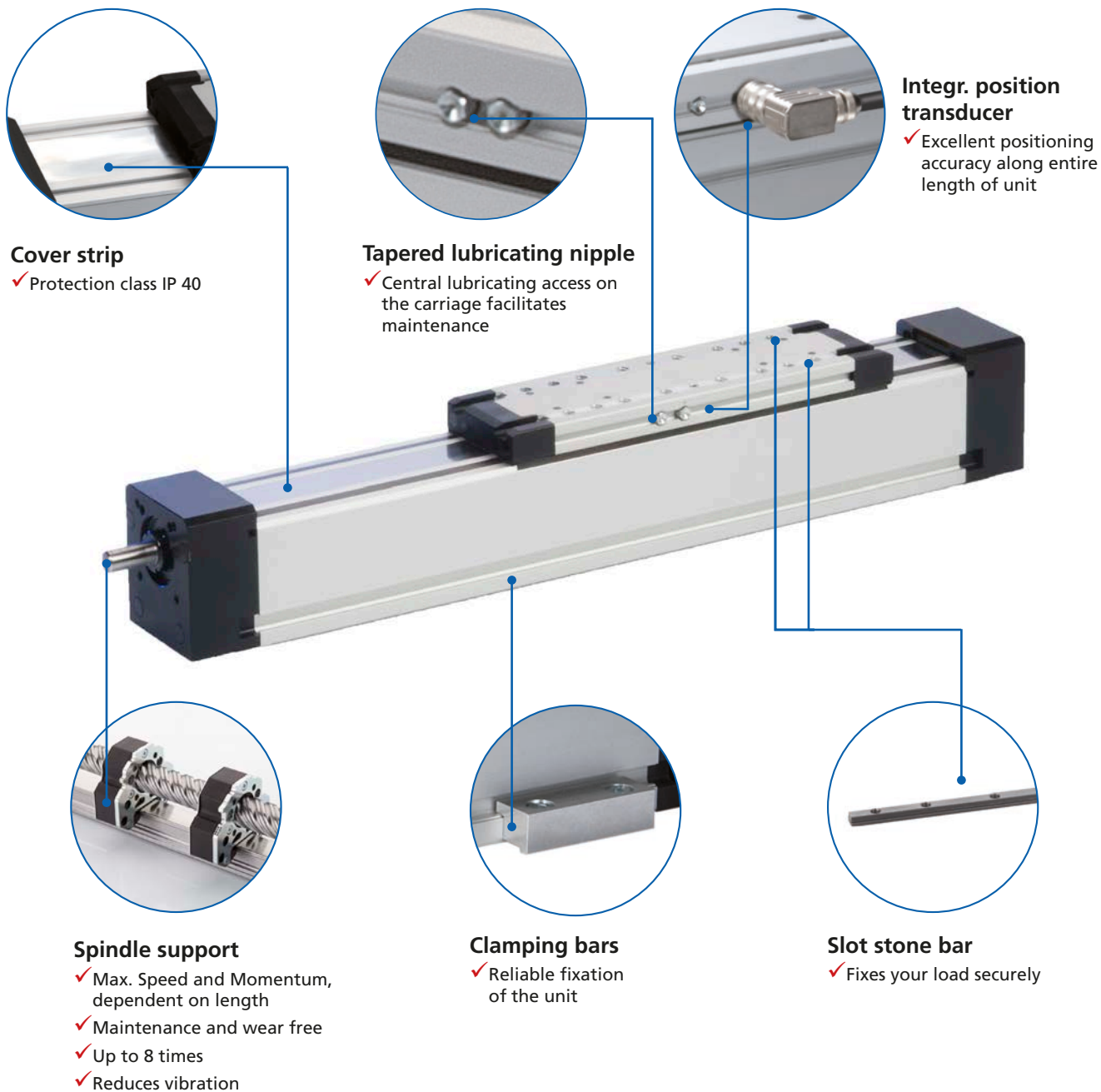


Slot stone -B- M4

Code No.	Type	Version
92830	50	NC, with bracket

# Ball rail actuator – RK DuoLine S 60/80/120/160

## Optimum performance, precision and features



### Features:

- Efficiency > 85%
- Max. travel speed regardless of length
- Central lubricating access on the carriage facilitates maintenance

### RK DuoLine S Protect

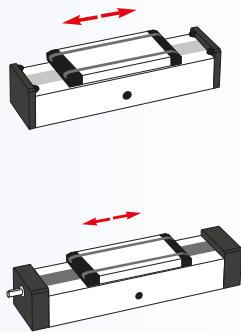
- IP 40 protection class due to steel cover strip and seals
- Positioning accuracy  $\pm 0.05$  mm when using an integrated position transducer
- Repeatability  $\pm 0.04$  mm

**RK DuoLine S 60/80/120/160 - Table of contents**

**Properties/Technical data**

- General information/operating conditions ... 444
- Load data..... 444
- Calculation of the load characteristic ..... 445

**Versions**  
(Dimensions, order numbers)



- DuoLine R guide unit ..... 446
- Right-hand thread ..... 448

**Accessories**

**Fixing**

- Clamping bar ..... 453
- Slot stone ..... 453
- Centering Sets ..... 454

**Drive**

- Motor adaptor kit ..... 456

**Position determination**

- Limit switches ..... 457

# RK DuoLine S 60/80/120/160 – Technical data

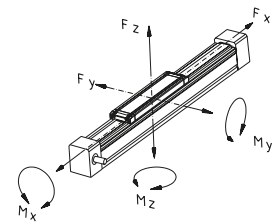
## General information / operating conditions

	RK DuoLine S 60	RK DuoLine S 80	RK DuoLine S 120	RK DuoLine S 160
Guidance system	1 Ball rail system	1 Ball rail system	2 Ball rail system	2 Ball rail system
Installation position	any position			
Max. driving torque	3,4 Nm	17 Nm	32 Nm	52 Nm
Max. speed	0.283 / 0.467 / 0.747 m/s	0.24 / 0.94 / 2.4 m/s (regardless of travel)	0,24 / 1,2 / 2,4 m/s (regardless of travel)	2 m/s (regardless of travel)
Max. acceleration	20 m/s <sup>2</sup>	20 m/s <sup>2</sup>	20 m/s <sup>2</sup>	20 m/s <sup>2</sup>
Repeat accuracy	± 0.04 mm	± 0.04 mm	± 0.04 mm	± 0.04 mm
Positioning accuracy	-	with integrated linear encoder ± (0.025 + 0.01 x L) mm; L = travel in meters		
Max. no-load torque		0.6 Nm	0.7 Nm	0.9 Nm
Drive	Ball-and-screw Ø16, Pitch 5, 10, 16mm	Ball-and-screw, Ø20, Pitch 5, 20 or 50 mm, on the right	Ball-and-screw, Ø 25, Pitch 5, 25 or 50 mm	Ball-and-screw, Ø 32, Pitch 40 mm, on the right
Pitch accuracy	T5 (± 0.023 / 300 mm)	T5 (± 0,023 / 300 mm)	T5 (± 0,023 / 300 mm)	T5 (± 0,023 / 300 mm)
Duty cycle	S3 100%	S3 100%	S3 100%	S3 100%
Ambient temperature	0 to +60°C	0 to +60°C	0 to +60°C	0 to +60°C
Degree of protection	IP 40	IP 40	IP 40	IP 40

## Dynamic load data

Force [N]

Torque [Nm]

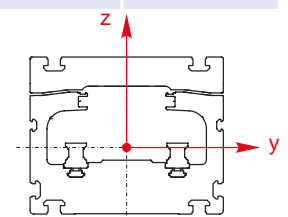


Spindle drive							
Load data	Spindle	Fx	Fy	Fz	Mx	My	Mz
Standard guide carriagew							
RK DuoLine S 60	16x5	840	700	2500	48	160	140
	16x10	1300					
	16x16	1300					
RK DuoLine S 80	20x5	950	1000	4100	100	380	350
	20x20	1420					
	20x50	2250					
RK DuoLine S 120	25x5	1240	2000	6900	205	620	560
	25x25	2700					
	25x50	3400					
RK DuoLine S 160	32x40	8000	5100	8900	500	840	810
Extended guide carriage							
RK DuoLine S 60	16x5	840	700	2500	48	250	220
	16x10	1300					
	16x16	1300					
RK DuoLine S 80	20x5	950	1000	4100	100	620	550
	20x20	1420					
	20x50	2250					
RK DuoLine S 120	25x5	1240	2000	6900	205	940	790
	25x25	2700					
	25x50	3400					
RK DuoLine S 160	32x40	8000	5100	8900	500	1200	1150

## Geometric moment of inertia

[cm<sup>4</sup>]

	Iy	Iz
RK DuoLine S 60	48.97 cm <sup>4</sup>	61.84 cm <sup>4</sup>
RK DuoLine S 80	116.76 cm <sup>4</sup>	165.75 cm <sup>4</sup>
RK DuoLine S 120	287.3 cm <sup>4</sup>	597.9 cm <sup>4</sup>
RK DuoLine S 160	437.70 cm <sup>4</sup>	1455.90 cm <sup>4</sup>

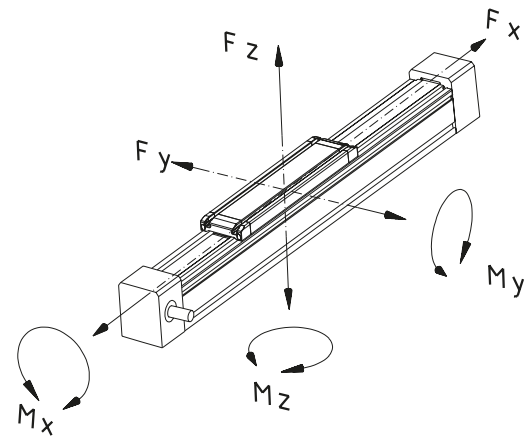


## Calculation of the load characteristic

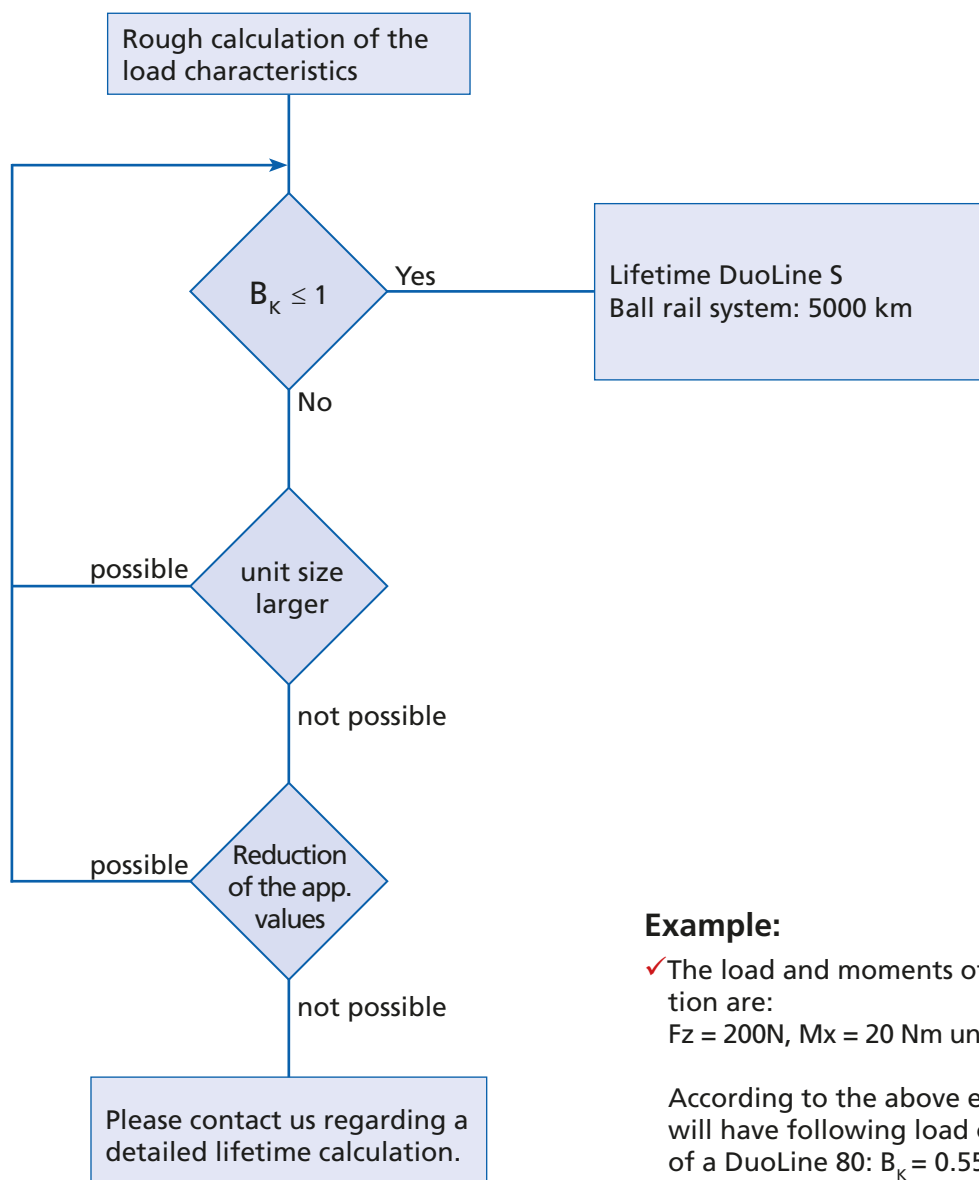
### Calculation of the load characteristic to define the lifetime

- The lifetime of linear units are in accordance with the average loads and moments of an application. The load characteristic can approximately calculated by following equation with simultaneously appearing load and moments.

$$\text{Load characteristic} = \frac{\text{Application values (z.B. } F_y)}{\text{Catalog values (z.B. } F_{y_{\max}})}$$



$$\text{Load characteristic } B_k = \frac{F_y}{F_{y_{\max}}} + \frac{F_z}{F_{z_{\max}}} + \frac{M_x}{M_{x_{\max}}} + \frac{M_y}{M_{y_{\max}}} + \frac{M_z}{M_{z_{\max}}} \leq 1$$



#### Example:

- ✓ The load and moments of the application are:  
 $F_z = 200\text{N}$ ,  $M_x = 20\text{ Nm}$  und  $M_z = 45\text{ Nm}$

According to the above equation you will have following load characteristic of a DuoLine 80:  $B_k = 0.55$ .

# RK DuoLine R 60/80/120 – Versions

## Order information:

- Longer travel lengths on request
- Integrated linear encoder as Option

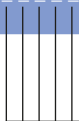
## Version

## ■ Guide

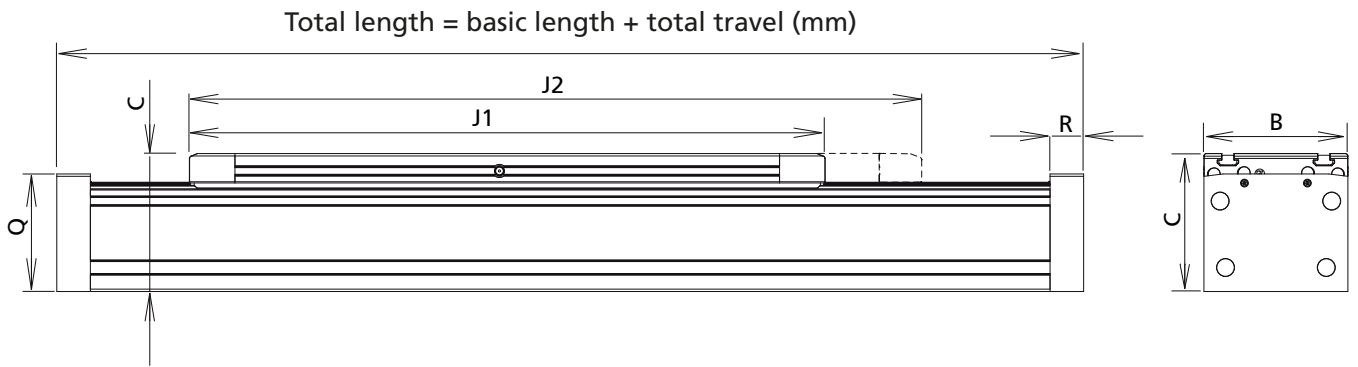
Ideal as additional / secondary support for the DuoLine with toothed belt or spindle.



Code No.	Type	Basic length	B	C
TD14A5T1A11A0 _ _ _ _	RK DuoLine R 60 Protect	289	60	80
TD14A5T1B11A0 _ _ _ _	RK DuoLine R 60 Protect with extended guide carriage	379		
TD14A2T1A11A0 _ _ _ _	RK DuoLine R 80 Protect	352	80	100
TD14A2T1B11A0 _ _ _ _	RK DuoLine R 80 Protect with extended guide carriage	484		
TD14A3T1A11A _ _ _ _	RK DuoLine R 120 Protect one ball rail guide	472	120	115
TD14A3T1B11A _ _ _ _	RK DuoLine R 120 Protect one ball rail guide with extended guide carriage	616		



Total length = basic length + total travel (mm)



[mm]

J1	J2	Q	R	max. travel	Mass [kg]	
					Basic length	per 100 mm travel
245	–	70	22	3587	3,73	0,54
–	335			3497	4,46	0,54
278	–	97	22	7692	5,22	0,83
–	410			7560	6,89	0,83
386	–	98	28	7584	9,76	1,19
–	530			7440	12,16	1,19

# RK DuoLine S 60/80/120/160 – Versions

## Order information:

- Second free concurrent carriage on request
- Also available without screw drive as a torque support

## Spindle unit RK DuoLine S with ball screw Control-Tec



Code No.	Type	Basic length			B	C	D1	D2
		Total length of up to 812 mm	Total length of 813-1899 mm	Total length of 1900 mm				
TD13A5A1A1_A0_---	RK DuoLine S 60 Protect	321	391	471	60	80	Ø32 <sup>H7</sup> 2.3 deep	Ø10 <sub>k7</sub>
TD13A5A1B1_A0	RK DuoLine S 60 Protect with extended guide carriage	411	481	561				

Total length = basic length + total travel (mm)

**Ball screw:**  
 1 = 16x5  
 2 = 16x10  
 3 = 16x16

Code No.	Type	Basic length			B	C	D1	D2
		Total length of up to 1171 mm	Total length of 1172-3051 mm	Total length of 3052 mm				
TD13A2A1A_A0_---	RK DuoLine S 80 Protect	370	415	495	80	100	Ø42 <sup>H7</sup> 2.3 deep	Ø14 <sub>k7</sub>
TD13A2A1B_A0	RK DuoLine S 80 Protect with extended guide carriage	502	547	627				

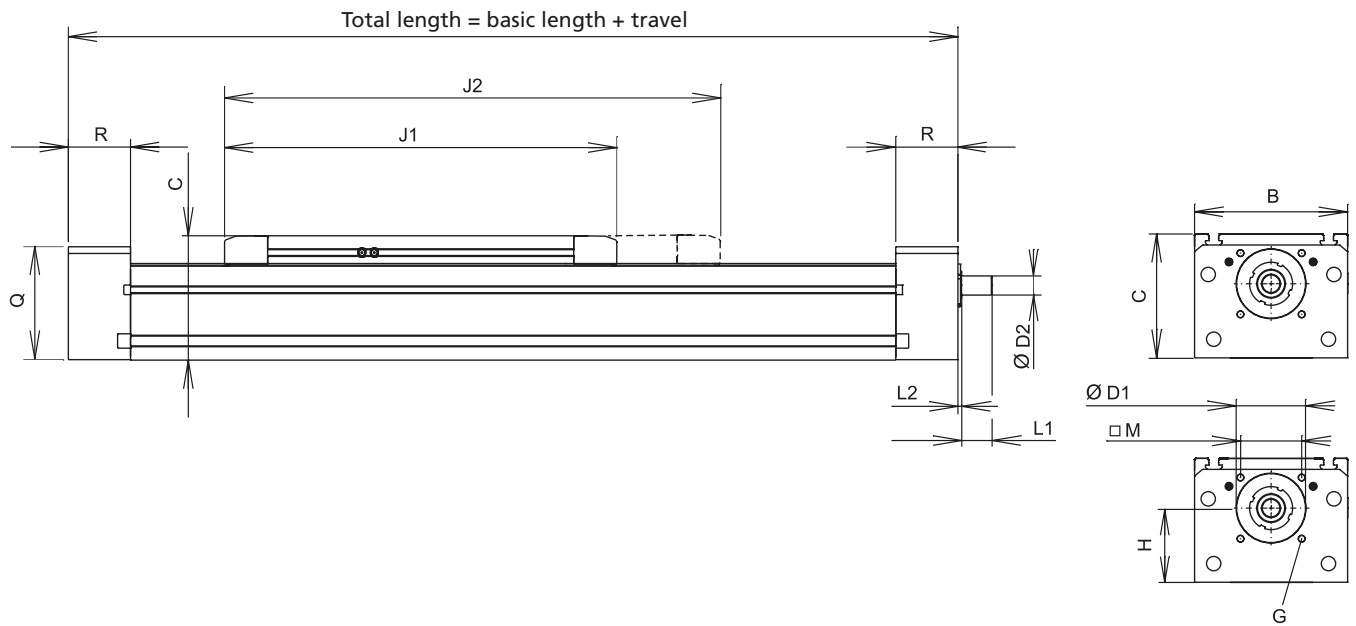
Total length = basic length + total travel (mm)

**Integrated linear encoder:**

- 1 = without
- 2 = with plug-in coupling and 20 m of cable
- 3 = with 20 m of cable

**Ball screw:**  
 3 = 20x5  
 1 = 20x20  
 2 = 20x50





[mm]

G	H	J1	J2	L1	L2	M	Q	R	max. travel	Mass [kg]	
										Basic length	per 100 mm travel
M5-10 deep	47.7	245	-	17.2	2.8	33x24	72.2	38	2664	3.44	0.60
		-	335							4.26	0.60

[mm]

G	H	J1	J2	L1	L2	M	Q	R	max. travel	Masse [kg]	
										Basic length	per 100 mm travel
M6-18 deep	57.5	278	-	30	3.8	$\square 46 \pm 0.2$	89	46	4440	6.74	0.96
M6-18 deep	57.5	-	410	30	3.8	$\square 46 \pm 0.2$	89	46	4368	8.01	0.96

# RK DuoLine S 60/80/120/160 – Versions

## Order information:

- Second free concurrent carriage on request
- Also available without screw drive as a torque support

## Spindle unit RK DuoLine S with ball screw Control-Tec

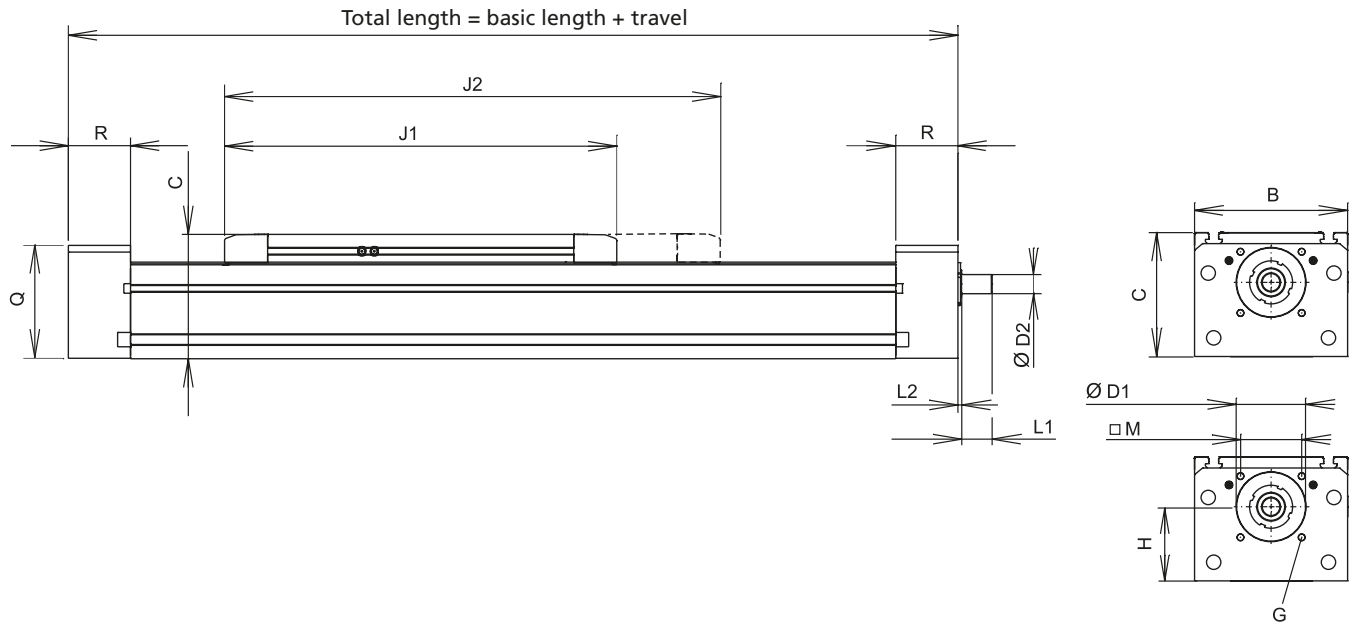


Code No.	Type	Basic length			B	C	D1	D2
		Total length of up to 3042 mm	Total length of 3043 mm					
TD13A4A1A1_A0_---	RK DuoLine S 120 Protect	498	614		120	115	Ø55 <sup>H7</sup> 2.3 deep	Ø16 <sub>K6</sub>
TD13A4A1B_A0	RK DuoLine S 120 Protect with extended guide carriage	642	758					

$\text{Total length} = \text{basic length} + \text{total travel (mm)}$   
**Ball screw:**  
 1 = 25x5  
 2 = 25x25  
 3 = 25x50  
**Integrated linear encoder:**  
 1 = without  
 2 = with plug-in coupling and 20 m of cable  
 3 = with 20 m of cable

Code No.	Type	Basic length			B	C	D1	D2
		Total length of up to 1350 mm	Total length of 1351-3350 mm	Total length of 3351 mm				
TD13A1A1A12A0_---	RK DuoLine S 160 Protect	540	602	702	160	130	Ø75 <sup>H7</sup> 2.3 deep	Ø20 <sub>K8</sub>
TD13A1A1B_2A0	RK DuoLine S 160 Protect with extended guide carriage	690	752	852				

$\text{Total length} = \text{basic length} + \text{total travel (mm)}$   
**Integrated linear encoder:**  
 1 = without  
 2 = with plug-in coupling and 20 m of cable  
 3 = with 20 m of cable



[mm]

G	H	J1	J2	L1	L2	M	Q	R	max. travel	Mass [kg]	
										Basic length	per 100 mm travel
M6-18 deep	72.7	386	-	30	2,5	□40±0.2	104	55	4591	14.57	1,49
		-	530							16.74	1,49

[mm]

G	H	J1	J2	L1	L2	M	Q	R	max. travel	Mass [kg]	
										Basic length	per 100 mm travel
M8-22 deep	78	410	-	32	3,7	□64±0.2	118	65	4300	23.26	2,21
M8-22 deep	78	-	560	32	3,7	□64±0.2	118	65	4150	26.59	2,21

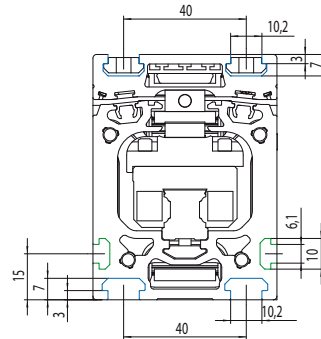
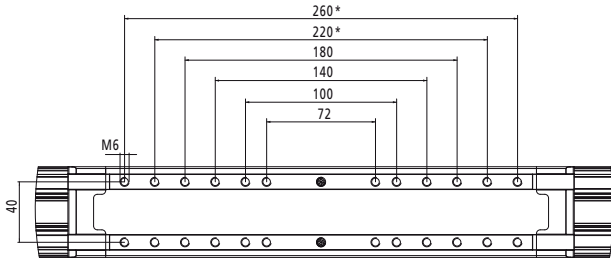
# RK DuoLine S 60/80/120/160 – Fixing

## Fixation of payload and Accessories

- Two slot stone strips have been inserted in the guide carriage on which fittings can be securely attached in a variety of ways
- Profile slots in the guide carriage and guide profiles facilitate fixation
- See next page for details of clamping strips and slot stones

### RK DuoLine R/S 60

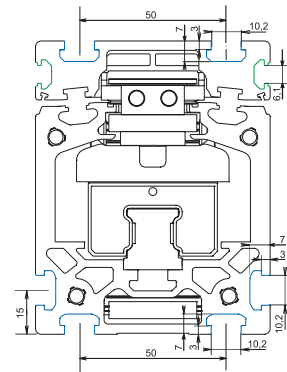
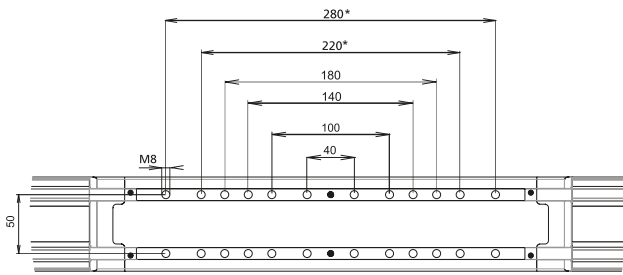
\*only with version with extended guide carriage



- 20 slot geometry
- 30 slot geometry

### RK DuoLine R/S 80

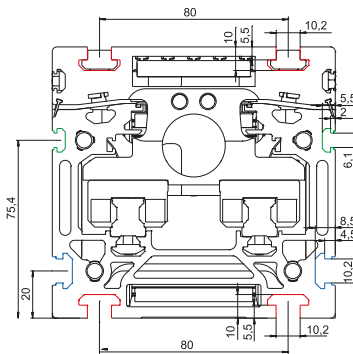
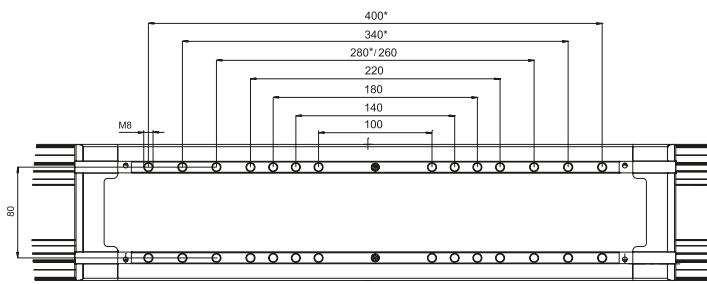
\*only with version with extended guide carriage



- 20 slot geometry
- 30 slot geometry

### RK DuoLine R/S120

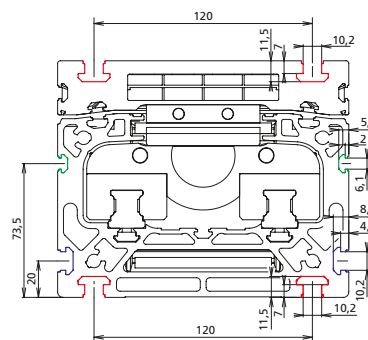
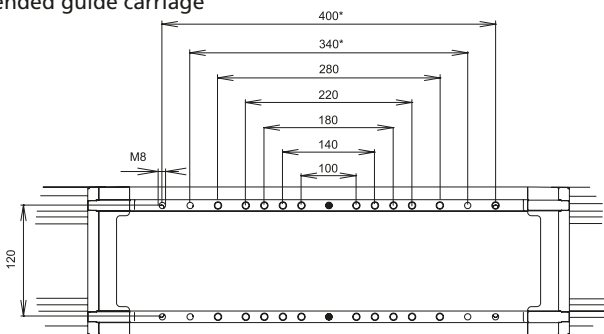
\*only with version with extended guide carriage



- 20 slot geometry
- 30 slot geometry
- 40 slot geometry

### RK DuoLine S160

\*only with version with extended guide carriage



- 20 slot geometry
- 30 slot geometry
- 40 slot geometry



Clamping bars

- Clamping bars facilitate fixation of the linear unit to the base or connection of two units to form a cross table

**Material:** Natural anodised aluminium, galvanised fastenings  
**Scope of delivery:** 2 clamping bars with fastenings

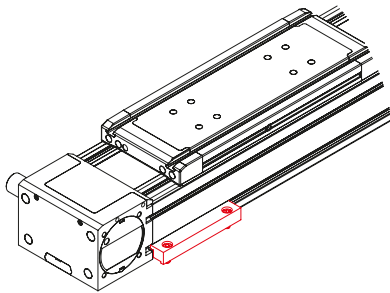


Fig. 1: Base mounting

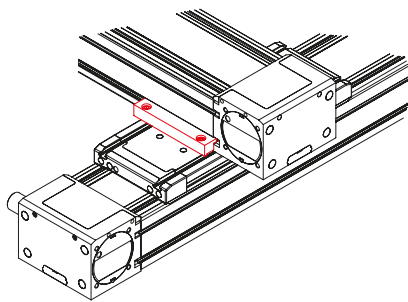
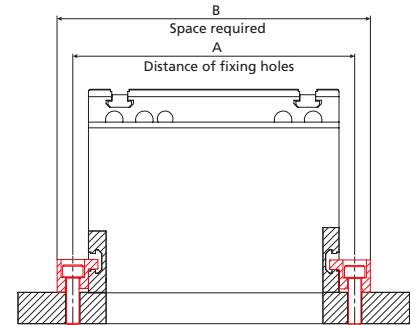
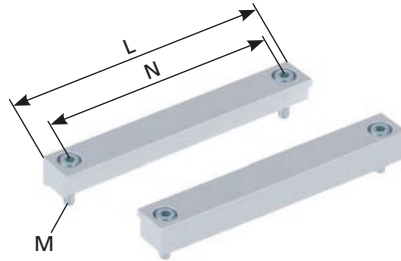


Fig. 2: Crossing units

Code No.	Type	Fig.	A	B	L	M	N
91818	RK DuoLine 60 ground assembly	1	72	91	57	M6	40
	RK DuoLine 60 crossing to 60	2					
91806	RK DuoLine 80 ground assembly	1	100	122	76	M8	50
	RK DuoLine 80 crossing to 80	2					
91812	RK DuoLine 120 ground assembly	1	140	160	116	M8	80
	RK DuoLine 120 crossing to 120	2					
	RK DuoLine 160 crossing to 120	2					
91802	RK DuoLine 160 ground assembly	1	180	200	156	M8	120
	RK DuoLine 160 crossing to 160	2					
	RK DuoLine 120 crossing to 160	2					

Slot stones

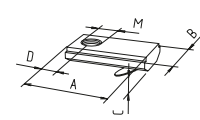
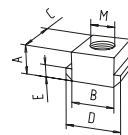
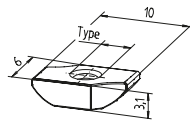
- Slot stones can be inserted and positioned on the guide profile and carriage

**Material:** galvanised steel

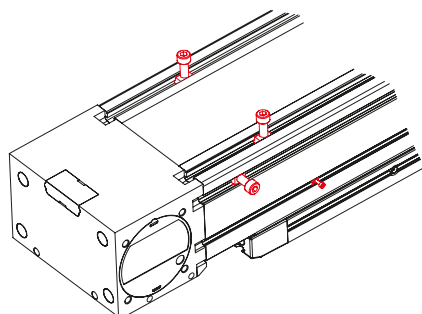
Slot stone -B- can be swivelled into the slot

Slot stone -N- can be slid into the slot

Slot stone -K- can be swivelled into the slot



[mm]



View of DuoLine from below

Code No.	Type	Slot geometry	A	B	C	D	E	M	F [N]
<b>Slot stone -B-</b>									
E00017CEH	M3	20							Pack of 10
E00058CEH	M4	20							Pack of 10
<b>Slot stone -N-</b>									
4006202	M8	from 30	5	10	13	13	3	M8	4000
4026206	M8	40	8	10	13	15	4	M8	9000
<b>Slot stone -K-</b>									
4006211	M5	from 30	21	12	4	7	-	M5	5000
4006212	M6	from 30	21	12	4	7	-	M6	5000
4016212	M6	40	21	14	4	7	-	M6	5000

# RK DuoLine S 60/80/120/160 – Fixing

## Centering Sets for RK DuoLine

- The following positions could be defined exactly during the design process per set
  - Load capacity
  - Linear unit
- Reproducible position of the load capacity
- Reduced assembly/disassembly time of the load capacity or the linear unit
- Accuracy of the centering bolts h6
- To use for all RK DuoLine linear units in Basic and Protect design from October 2015 production date

**Scope of delivery per set:**  
2 centering bolts and fixing material

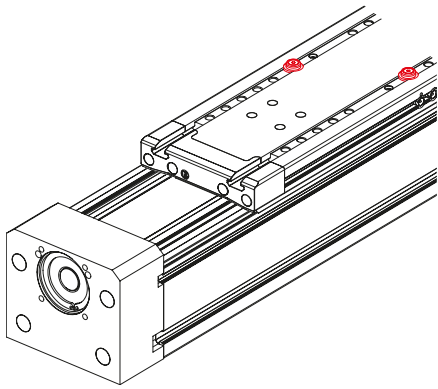


Fig. 1: Slide centering

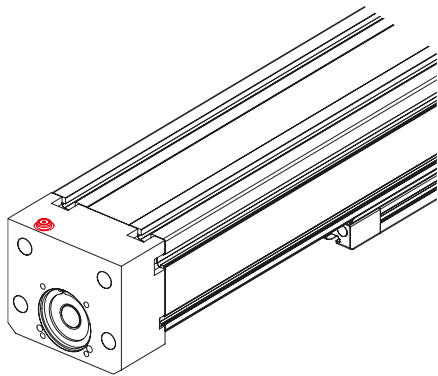
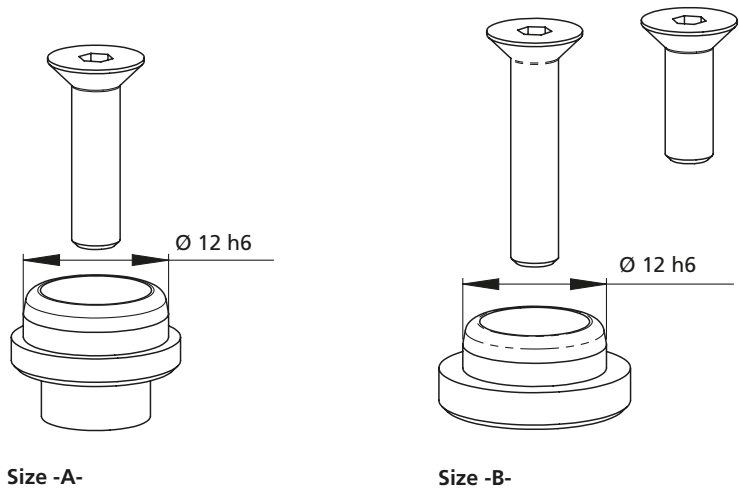
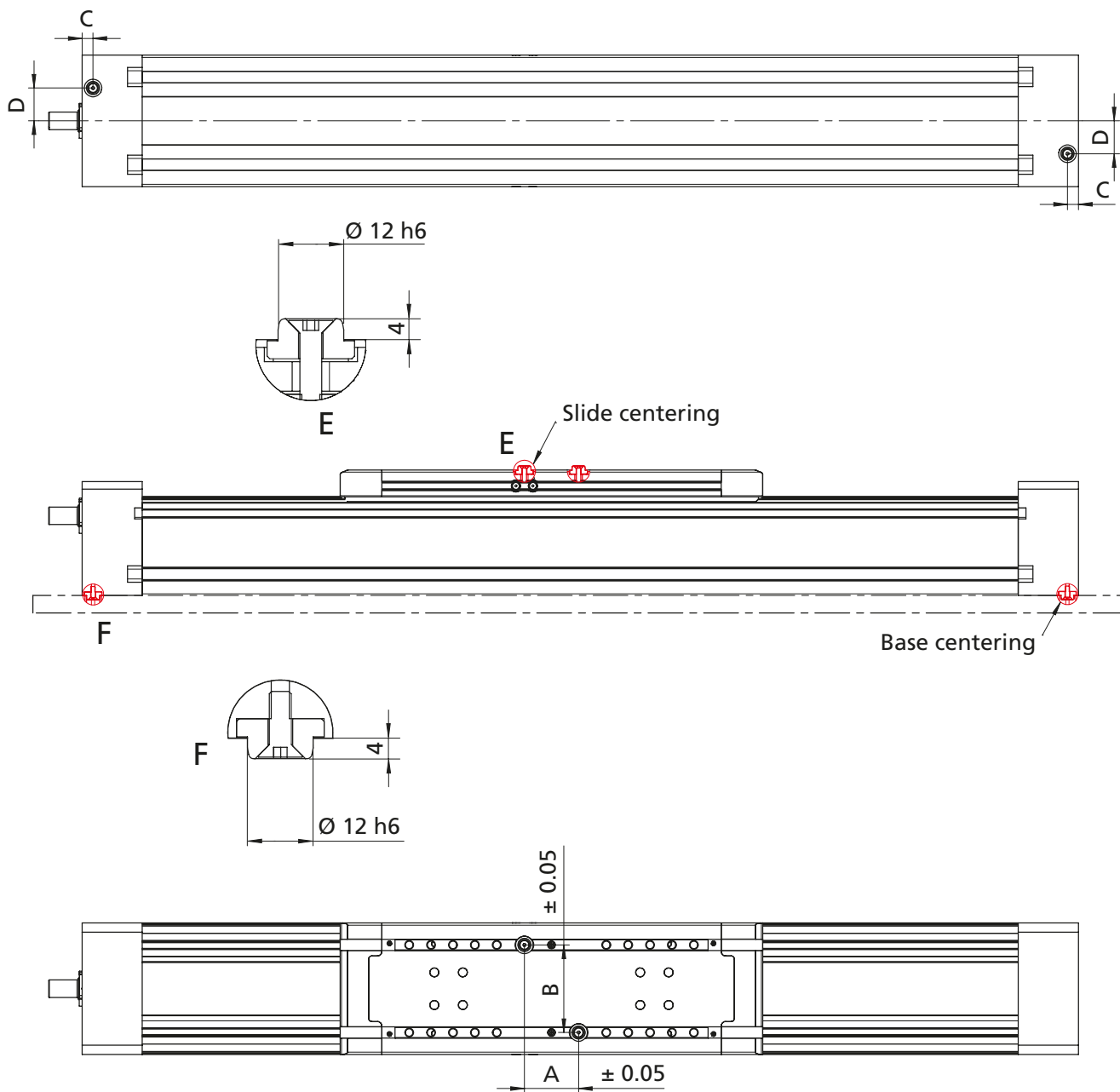


Fig. 2: Base centering



Code No.	Type	Use for
91898	Centering Set Size -A-	Slide centering RK DuoLine S 60 + S 80
91899	Centering Set Size -B-	Slide centering RRK DuoLine S 120 + S 160 Base centering RK DuoLine S 60 + S 80 + S 120 + S 160



[mm]

Type	A	B	C	D
RK DuoLine S 60	42	40	10	0
RK DuoLine S 60 with extended guide carriage	48	40	10	0
RK DuoLine S 80	*	*	10	10
RK DuoLine S 80 with extended guide carriage	70	50	10	10
RK DuoLine S 120	49.5	80	10	30
RK DuoLine S 120 with extended guide carriage	250	80	10	30
RK DuoLine S 160	70	120	10	40
RK DuoLine S 160 with extended guide carriage	366	120	10	40

**\*Note:**  
Centering on request only with special drill holes in the slide/clamp strips possible

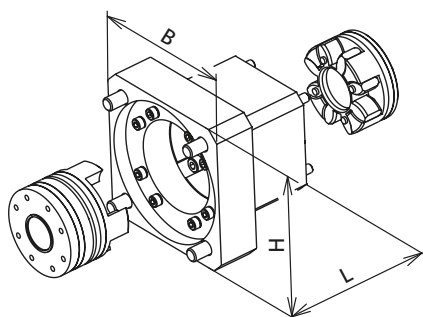
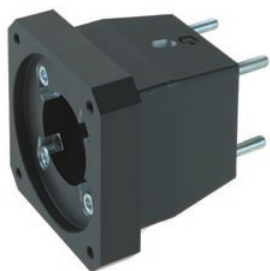
# RK DuoLine S 60/80/120/160 – Drive/Pos. determination

## Motor adapter kit for RK AC servomotors

- Servomotors from the RK standard range can be easily connected
- Complete motor adapter kits manufactured to your specifications on request

- Motor adapter kits for every motor or gear unit manufacturer

**Scope of delivery:**  
Motor adapter kit, elastomer coupling and fixation material



Type	Servo motors without gearbox				
	RK-AC 118	RK-AC 240	RK-AC 470	RK-AC 800	RK-AC 1252 RK-AC 1776 RK-AC 2521
DuoLine S 60	949391	949390	–	–	–
DuoLine S 80 ball screw	–	949367	949366	–	–
DuoLine S 120	–	949123	949124	949125	–
DuoLine S 160	–	–	–	949340	949342

Type	Servo motors with gearbox					Three phase motors	
	RK-AC 112	RK-AC 260	RK-AC 345	RK-AC 800	RK-AC 1252 RK-AC 1776 RK-AC 2521	90/120 W	180/250 W
DuoLine S 60	949392	–	–	–	–	–	–
DuoLine S 80 ball screw	949360	949364	–	–	–	949363	949365
DuoLine S 120	949121	949122	–	–	–	949126	949127
DuoLine S 160	–	–	949341	949341	949343	–	–

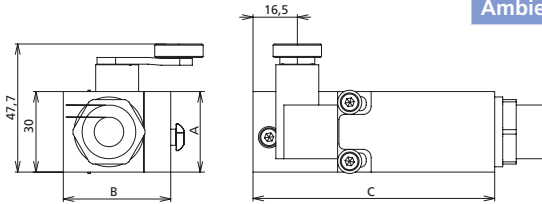
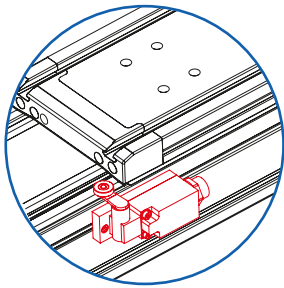




**Mechanical limit switch**

- External fixation on the guide profile

**Scope of delivery:**  
Limit switch with set of fixing items



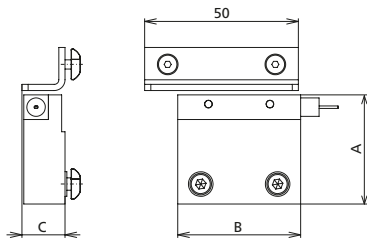
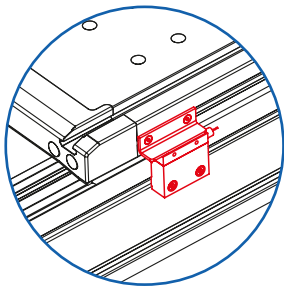
Voltage	max. 230 V AC
Max. switching current	4 A
Max. starting current	10 A
Operating frequency	max. 5000 / h
Mechanical lifetime	20x10 <sup>6</sup> cycles
Axis leverage adjustment	locking by 360°
Degree of protection	IP67
Ambient temperature	-30°C to +80°C

Code No.	Type	A	B	C	Version
92848	RK DuoLine 60	49	39	82	NO / NC, mechanical limit switch
91919	RK DuoLine 80	63	40	83	
92701	RK DuoLine 120	31	40	97	
91910	RK DuoLine 160	30	40	90	

**External inductive limit switch**

- External fixation on the guide profile

**Scope of delivery:**  
Limit switch with set of fixing items



Limit switch	external	internal
Voltage	10...30 VDC	10...30 VDC
Max. switching current	100 mA	100 mA
Operating frequency	max. 5 kHz	max. 5 kHz
Mechanical lifetime	independent of operating cycles	independent of operating cycles
Operating distance	2 mm	1.5 mm
Degree of protection	IP65	IP67
Cable length	2.5 m	5 m*
Ambient temperature	-25°C to +70°C	-25°C to +70°C

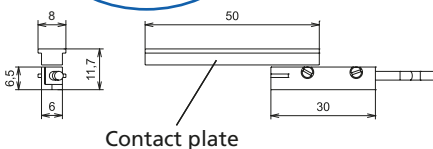
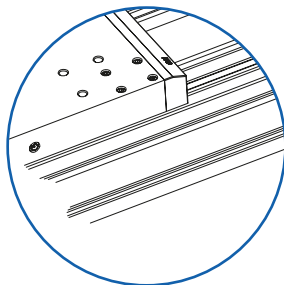
\*Other cable lengths available on request.

Code No.	Type	A	B	C	Version
92838	RK DuoLine 60	52,8	25	10	NO, External inductive limit switch
92819	RK DuoLine 80	71,5	25	10	
92840	RK DuoLine 120	22	40	14	
92810	RK DuoLine 160	35,5	40	14	

**Internal inductive limit switch**

- Proximity switch integrated in the guide profile – no protruding contours

**Scope of delivery:**  
Proximity switch with set of fixing items



Code No.	Type	Version
92828	RK DuoLine 60	NC, Internal inductive limit switch
92820*	RK DuoLine 80	
	RK DuoLine 120 RK DuoLine 160	

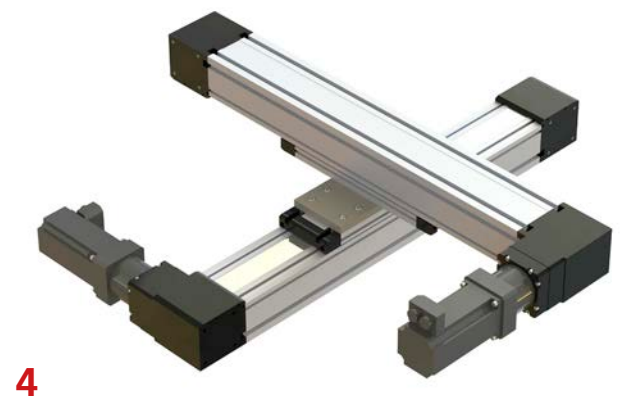
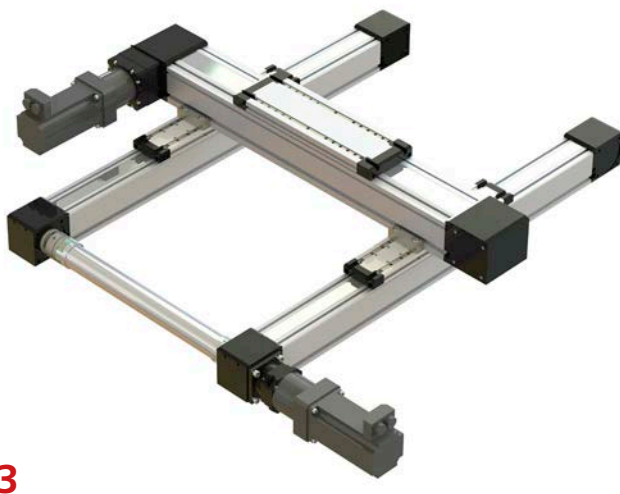
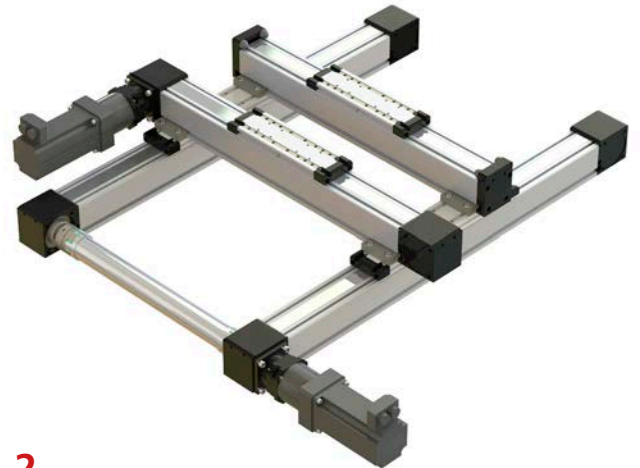
\*On this limit switch, the slot must be sealed off with a cover profile

**Cover profile**

Code No.	Version		
E00024DAC	bar	black	2.000 mm

# Assembly examples

## RK DuoLine



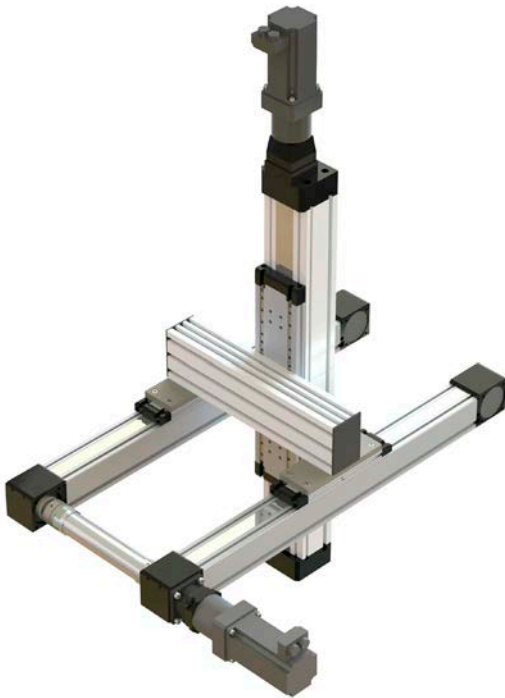
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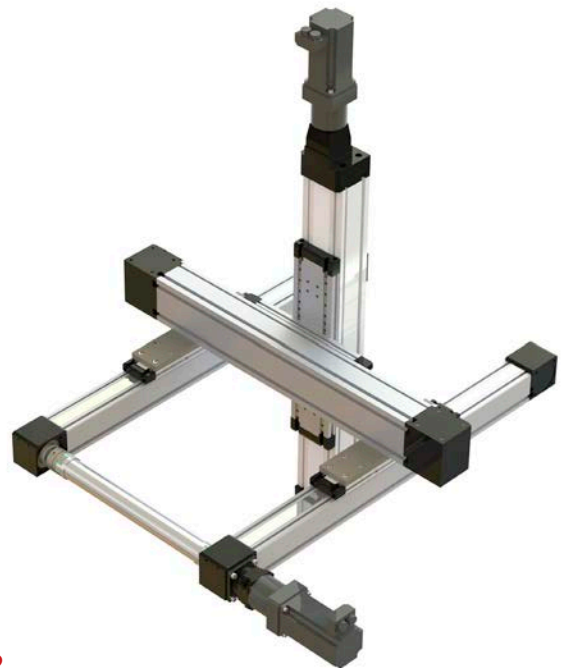
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7

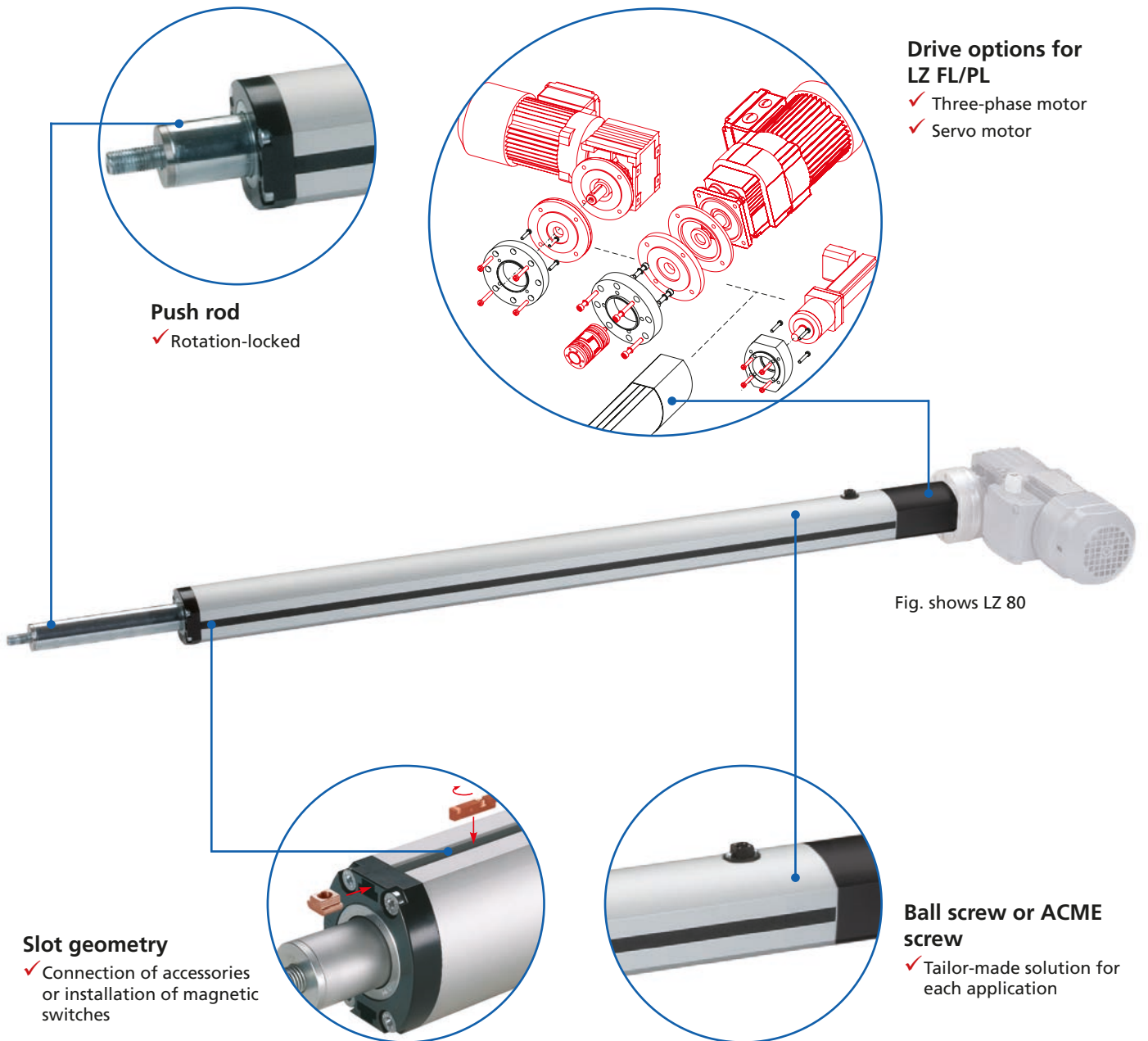


8



# Heavy duty cylinder – LZ 70/80 FL/PL

## The new generation of industrial linear cylinders



### Drive options for LZ FL/PL

- ✓ Three-phase motor
- ✓ Servo motor

### Push rod

- ✓ Rotation-locked

Fig. shows LZ 80

### Slot geometry

- ✓ Connection of accessories or installation of magnetic switches

### Ball screw or ACME screw

- ✓ Tailor-made solution for each application

### Features:

- Selectable drive (3-phase motor/servo motor)
- Flexible use of space due to different motor assembly options
- Coverable slot geometry on both sides supports a range of fixing options
- Push rod rotation locked
- Maintenance-free for up to 400 operating hours (with ball screws)
- Service life of up to 1 million double strokes (500 mm travel)
- Protection class IP 54
- Integrated magnets for external magnetic switches

### Options:

- Optional IP 65 can be supplied
- Special stroke lengths available on request
- External magnetic switches
- Angular 3-phase motor with fixing boss available on request

## LZ electric cylinders - Table of contents

<b>Properties/performance data</b>		<ul style="list-style-type: none"> <li>■ General information/operating conditions ... 462</li> <li>■ Power diagram LZ 70 ..... 462</li> <li>■ Power diagram LZ 80 ..... 464</li> </ul>
<b>Versions</b> (Dimensions, order numbers)		<ul style="list-style-type: none"> <li>■ LZ 70 FL/PL electric cylinder ..... 466 - 467</li> <li>■ LZ 80 FL/PL electric cylinder ..... 466 - 467</li> </ul>
<b>Accessories</b>	<b>Fixing</b>	<ul style="list-style-type: none"> <li>■ Clevis ..... 470</li> <li>■ Bearing block for Clevis ..... 470</li> <li>■ Swivel head ..... 470</li> <li>■ Fork attachment for Swivel head ..... 471</li> <li>■ Swivel ..... 471</li> <li>■ Bearing block for Swivel ..... 471</li> <li>■ Trunnion mounting set ..... 472</li> <li>■ Support blocks for trunnion mounting ..... 472</li> <li>■ Slot stone ..... 472</li> <li>■ Axial adjustment – RK SyncFlex A ..... 473</li> </ul>
	<b>Drive</b>	<ul style="list-style-type: none"> <li>■ Motor adaptor kit ..... 474</li> </ul>
	<b>Position determination</b>	<ul style="list-style-type: none"> <li>■ Magnetic switch ..... 475</li> </ul>

# LZ 70/80 FL/PL – Versions

## Linear cylinder with ball screw for precision positioning applications (Control-Tec)

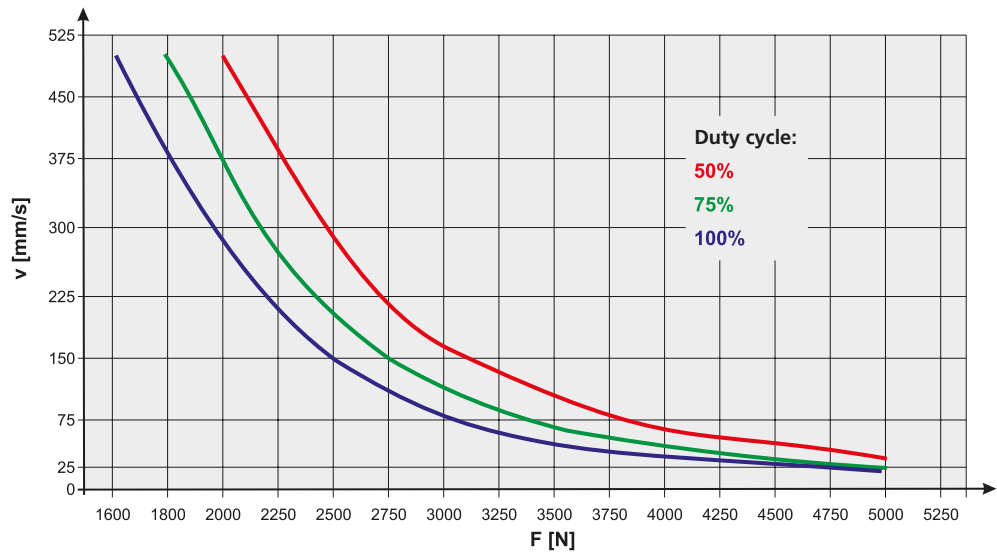
Type	LZ 70 FL / LZ 70 P FL	LZ 70 PL / LZ 70 P PL	LZ 80 FL	LZ 80 PL
Max. compressive force / tensile force	1.500 N	5.000 N	3.000 N	6.200 N
Max. driving torque	15 Nm	15 Nm	20 Nm	20 Nm
Max. speed	1.000 mm/s	500 mm/s	288 mm/s	28 mm/s
Max. acceleration	10 m/s <sup>2</sup> / 5 m/s <sup>2</sup>	10 m/s <sup>2</sup> / 5 m/s <sup>2</sup>	10 m/s <sup>2</sup>	10 m/s <sup>2</sup>
Repeatability	± 0.05 mm	± 0.05 mm	± 0.05 mm	± 0.05 mm
Max. no-load torque	0.3 / 0.54 Nm	0.3 / 0.54 Nm	-	-
Drive	Ball screw KG 20x20	Ball screw KG 20x10	Ball screw KG 20x50	Ball screw KG 20x5
Lead accuracy	T7 (±0.052mm / 300 mm)			
Duty cycle	S3 100 %	S3 100 %	S3 100 %	S3 100 %
Ambient temperature	+0°C to +60°C	+0°C to +60°C	+5°C to +40°C	+5°C to +40°C
Degree of protection	IP 54 (optional IP 65)	IP 54 (optional IP 65)	IP 54	IP 54
Continuous sound pressure level	≤ 75 dB (A)	≤ 75 dB (A)	≤ 70 dB (A)	≤ 70 dB (A)

### Speed/Force diagram – LZ 70

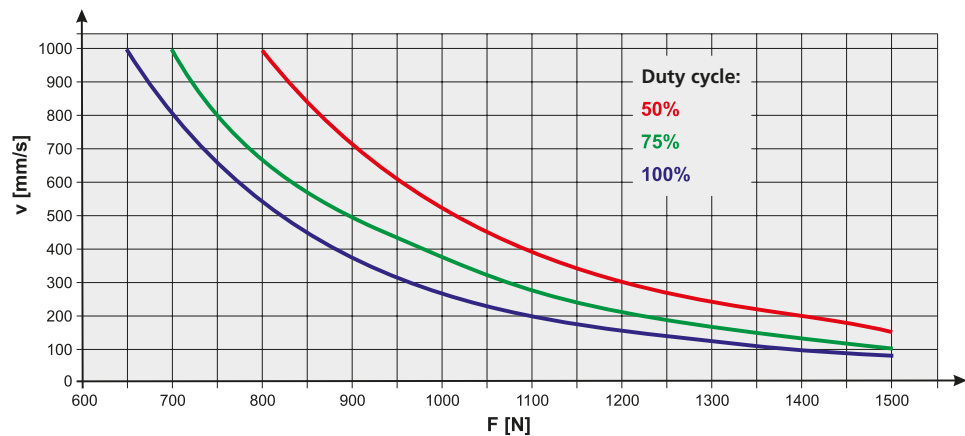
For stroke lengths >600 mm, see diagram "Critical speed"

#### LZ 70 with ball screw KG 20x10

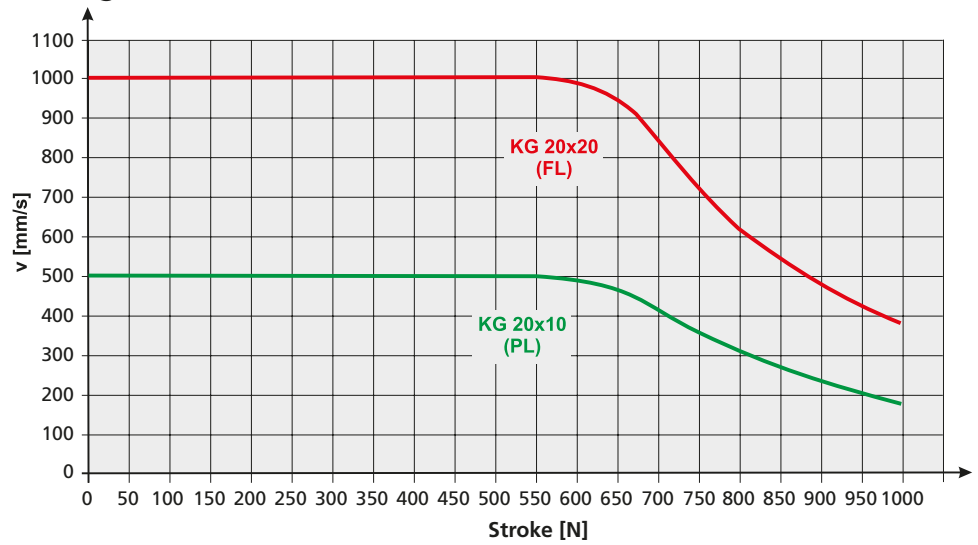
At 5000N and Stroke >800 mm see Diagram „Maximal Load“ (page 463).



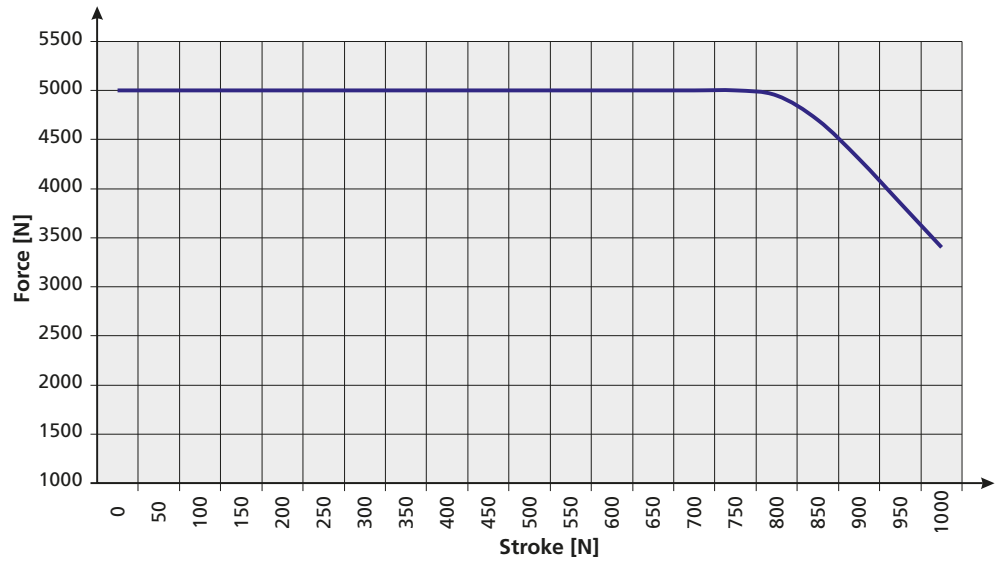
#### LZ 70 with ball screw KG 20x20



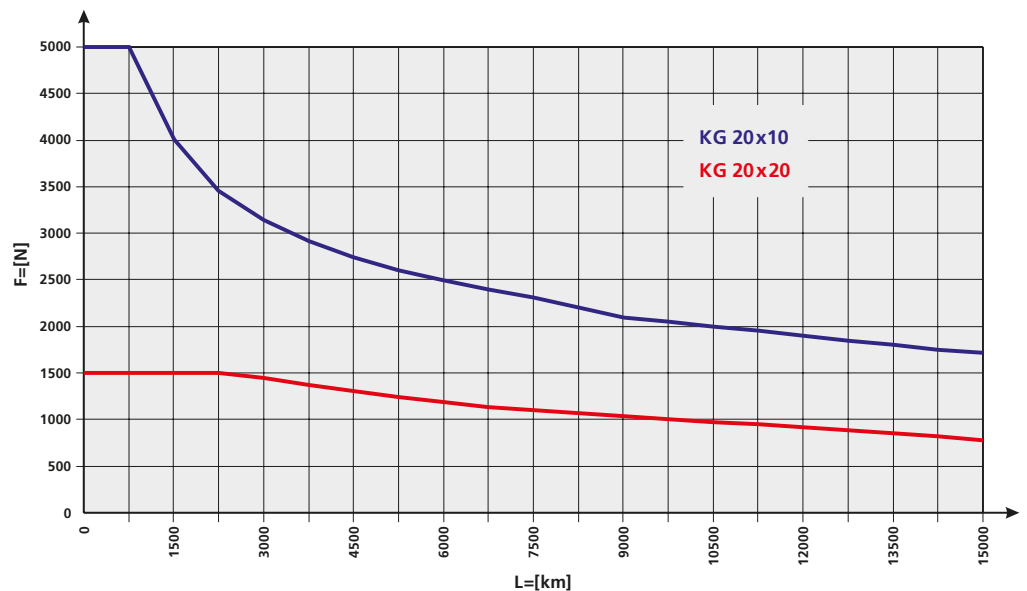
### Critical speed, Speed/Stroke diagram for KG 20x10 / KG 20x20



### Maximal Load, Force/Stroke diagram for KG 20x10



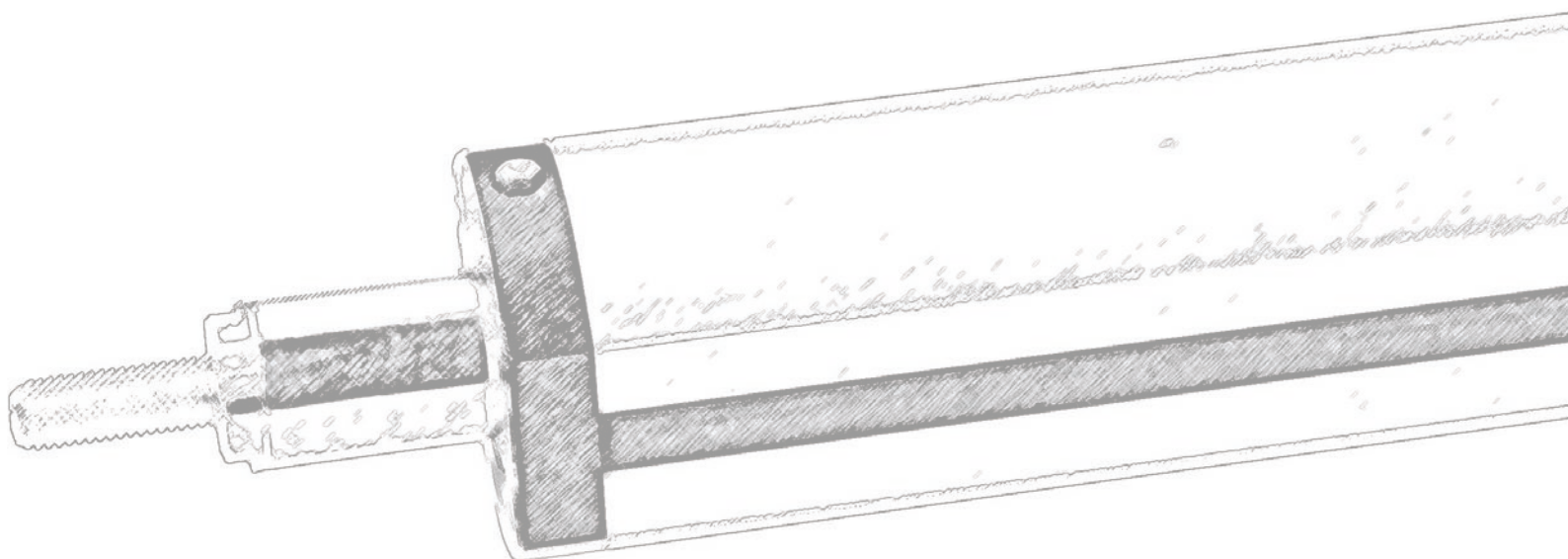
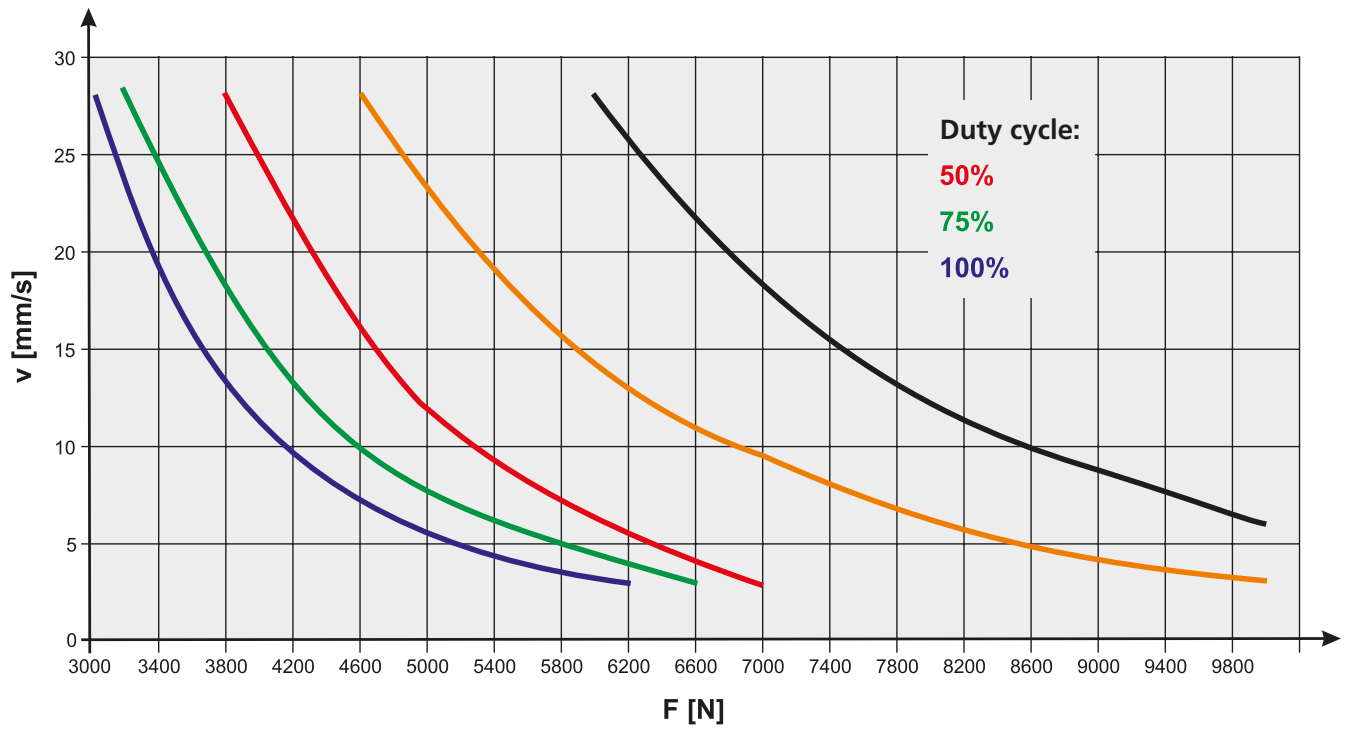
### Durability, Force/Path diagram for KG-20x10/KG-20x20



# Technical data – Control-Tec

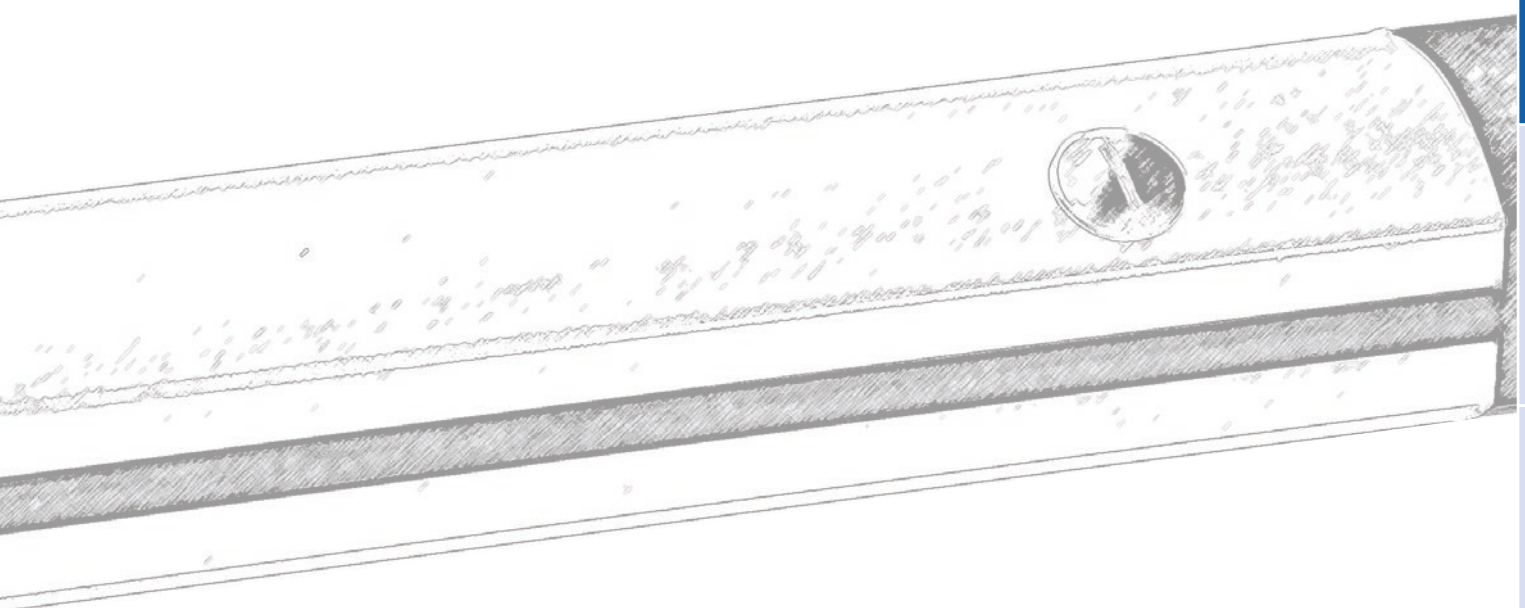
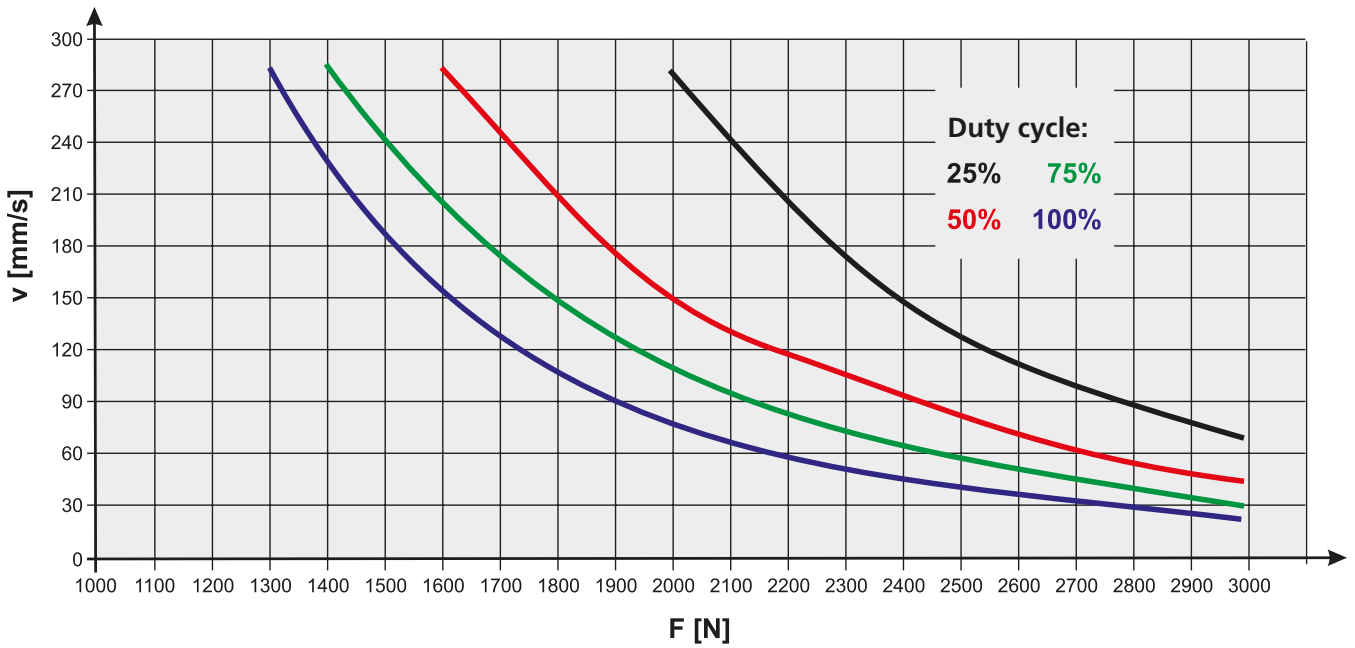
## Speed/Force diagram – LZ 80

LZ80 with ball screw KG 20x5





**LZ80 with ball  
screw KG 20x50**



# Dimensions / ordering data

## Order information:

- Maintenance opening of the LZ 70 can be moved on request

## LZ FL/PL electric cylinder with ball screw Control-Tec



Fig. shows LZ 70

Code No.	Type	Spindle	A	B	C	D
TQ1_A2A1D35AA_ _ _ _	LZ 70 PL	KG 20x10	69	77	44	47.6
TQ1_A2A1D36AA	LZ 70 FL	KG 20x20	69	77	44	47.6

Stroke [mm] freely configurable  
e.g. **0 3 9 7**

**Degree of protection LZ PL:**  
1 = IP 54  
3 = IP 65

**Degree of protection LZ FL:**  
2 = IP 54  
4 = IP 65

Travel	Installation dimension X	Weight [kg]	
		Basic length	per 100 mm travel
1 to 397 mm	Stroke + 302 mm	3.0	0.7
398 to 600 mm	Stroke + 339.5 mm	3.0	0.7
601 to 795 mm	Stroke + 377 mm	3.0	0.7
796 to 1000 mm	Stroke + 407 mm	3.0	0.7

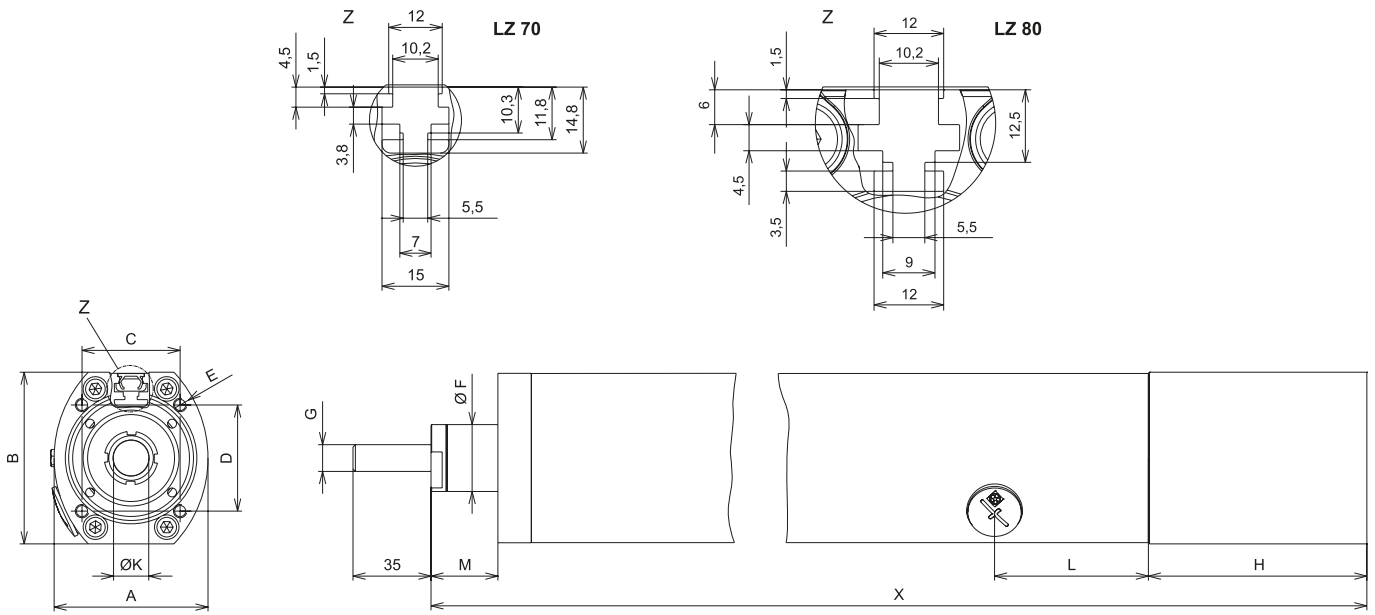
Code No.	Type	Spindle	A	B	C	D
TQ1_A1A1B12AA_ _ _ _	LZ 80 PL	KG 20x5	80	91	55	48
TQ1_A1A1B13AA	LZ 80 FL	KG 20x50	80	91	55	48

Stroke [mm] configurable in 7.5 mm increments  
e.g. **0 3 9 7 . 5**

**Degree of protection LZ PL:**  
1 = IP 54  
3 = IP 65

**Degree of protection LZ FL:**  
2 = IP 54  
4 = IP 65

Travel	Installation dimension X	Weight [kg]	
		Basic length	per 100 mm travel
7.5 to 397.5 mm	Stroke + 348.5 mm	6.5	1
405 to 600 mm	Stroke + 386 mm	6.5	1
607.5 to 795 mm	Stroke + 423.5 mm	6.5	1
802.5 to 1005 mm	Stroke + 468.5 mm	6.5	1



[mm]

E	F	G	H	K	L	M
M6	30	M12	98	12	69	30
M6	30	M12	98	12	69	30

[mm]

E	F	G	H	K	L	M
M6	40	M16	110	15	Stroke-33 (slot)	28.2
M6	40	M16	110	15	Stroke-33 (slot)	28.2

# Dimensions / ordering data

## Order information:

- Position for maintenance point for LZ 70 P upon request

## LZ P FL/PL electric cylinder with ball screw Control-Tec



Fig. shows LZ 70 P incl. Motor adapter

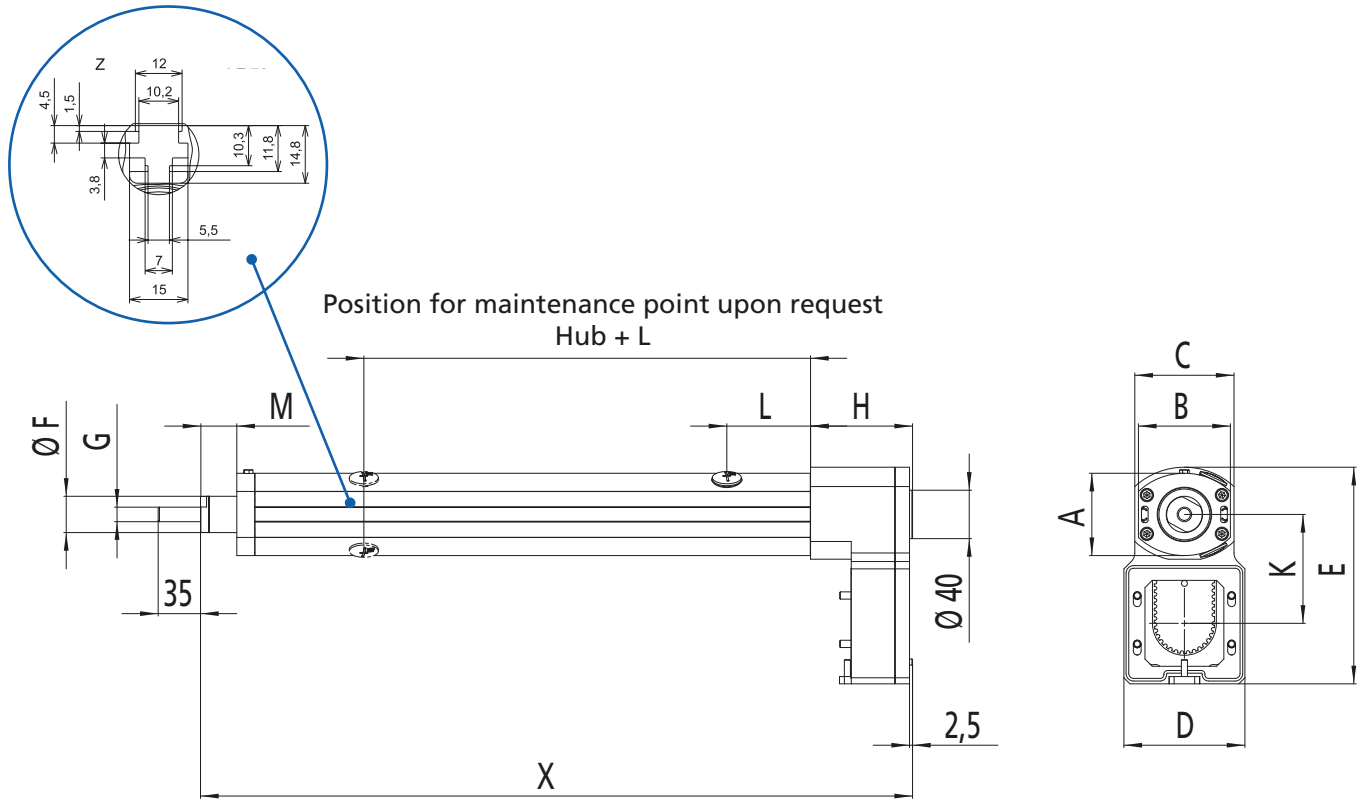
Code No.	Type	Spindle	A	B	C	D
TQ1_A2B1D35AA_ _ _ _	LZ 70 P PL	KG 20x10	69	77	82	100
TQ1_A2B1D36AA	LZ 70 P FL	KG 20x20	69	77	82	100

Stroke [mm] freely configurable  
e.g. **0 3 9 7**

Degree of protection  
**LZ P PL:**  
1 = IP 54  
3 = IP 65

Degree of protection  
**LZ P FL:**  
2 = IP 54  
4 = IP 65

Travel	Installation dimension X	Weight [kg]	
		Basic length	per 100 mm travel
1 to 397 mm	Stroke + 288,5 mm	5	0,7
398 to 600 mm	Stroke + 326 mm	5	0,7
601 to 795 mm	Stroke + 363,5 mm	5	0,7
796 to 1000 mm	Stroke + 393,5 mm	5	0,7

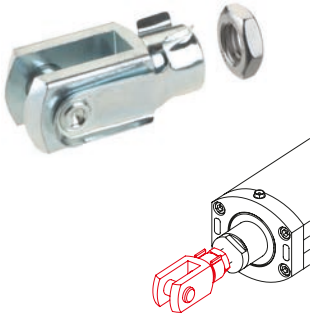


[mm]

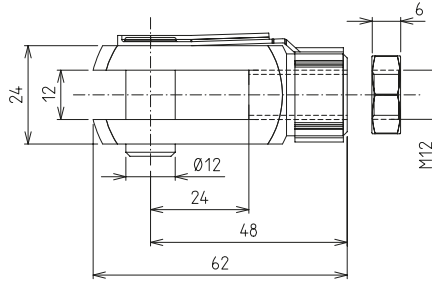
E	F	G	H	K	L	M
179	30	M12	84,5	90	69	30
179	30	M12	84,5	90	69	30

# Fixing

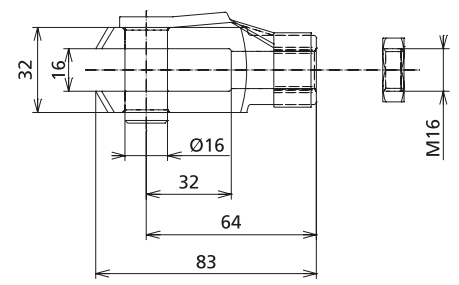
## Clevis



Clevis M12 for LZ 70

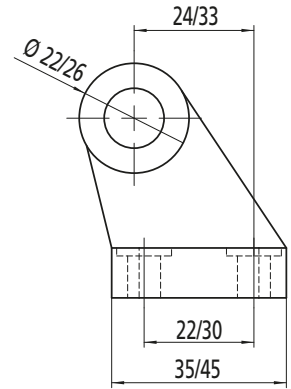
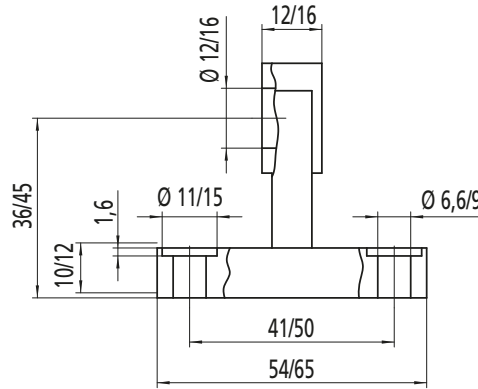
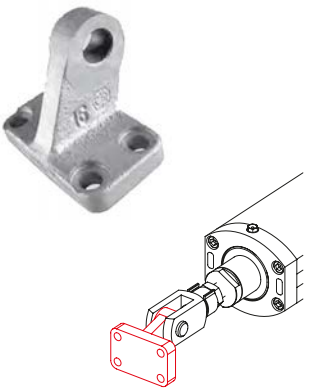


Clevis M12 for LZ 80



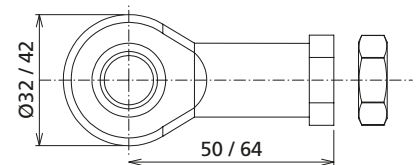
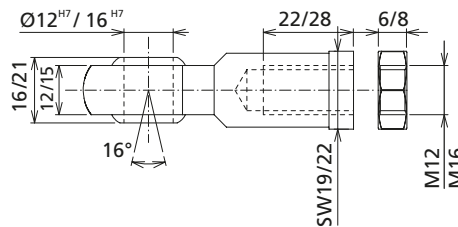
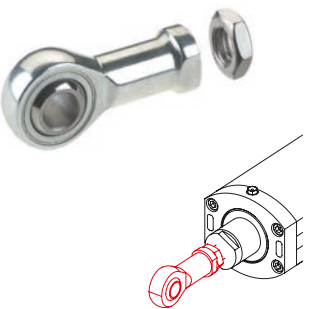
Code No.	Type	
QZD050570	LZ 70	Clevis M12
QZD050571	LZ 80	Clevis M16

## Bearing block for Clevis



Code No.	Type	
QZD050572	LZ 70	Bearing block Ø 12
QZD050573	LZ 80	Bearing block Ø 16

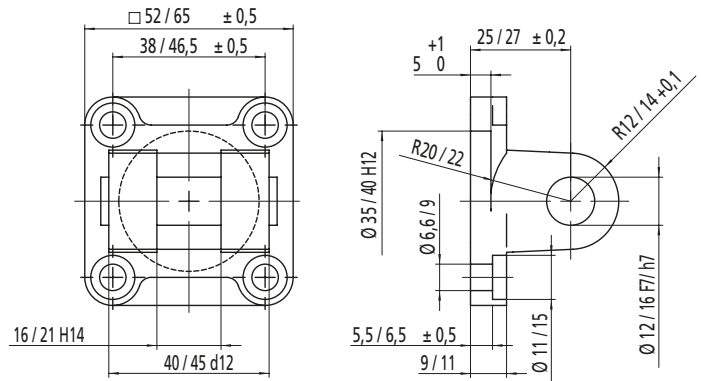
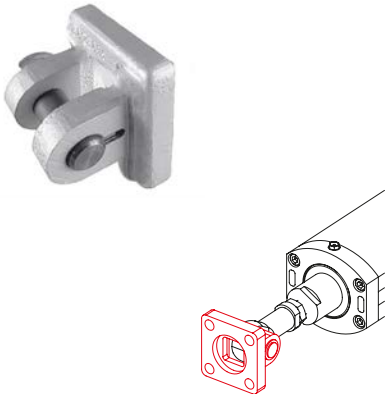
## Swivel head



Code No.	Type	
QZD050574	LZ 70	Swivel head M12
QZD050575	LZ 80	Swivel head M16

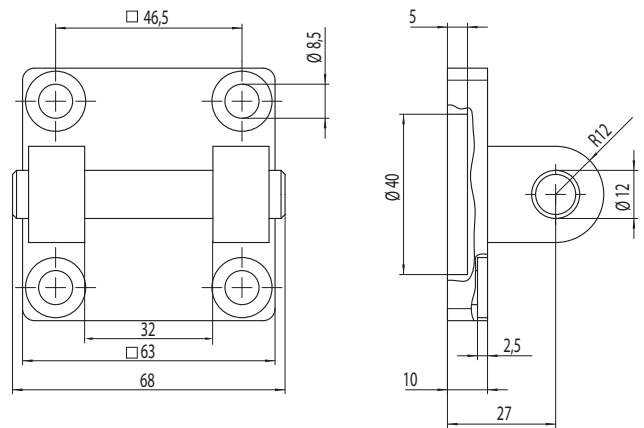
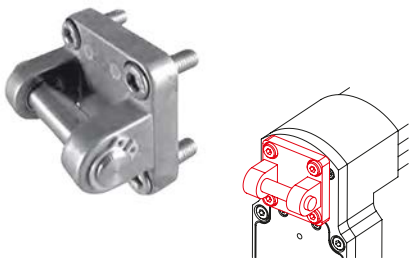


### Fork attachment for Swivel head



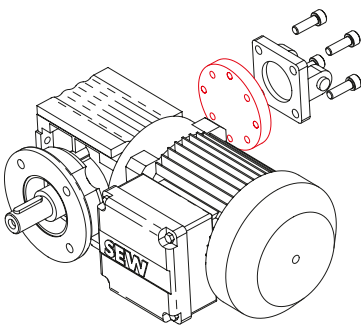
Code No.	Type	
QZD050576	LZ 70	Fork attachment $\emptyset 12$
QZD050577	LZ 80	Fork attachment $\emptyset 16$

### Swivel



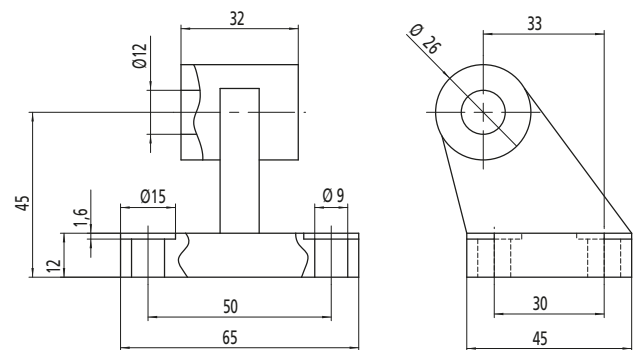
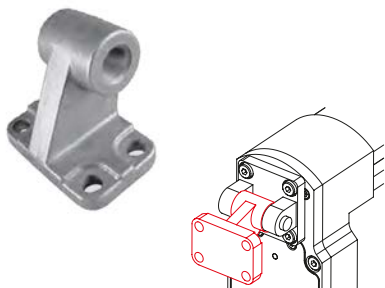
Code No.	Type	
QZD050579	LZ 70	Swivel $\emptyset 12$

For use with SEW spiro plan geared motor one of following adaptor plates is needed



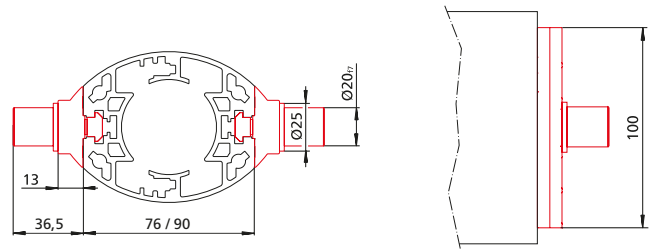
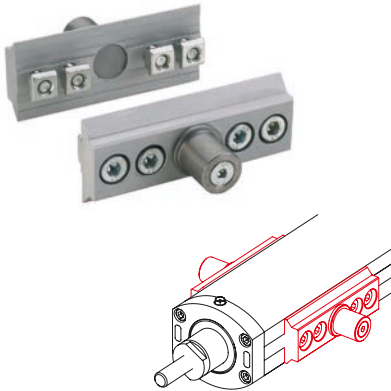
Code No.	Type	
QZD050581	LZ 70	Adaptor plates SEW WF 20
QZD050582	LZ 70	Adaptor plates SEW WF 30

### Bearing block for Swivel



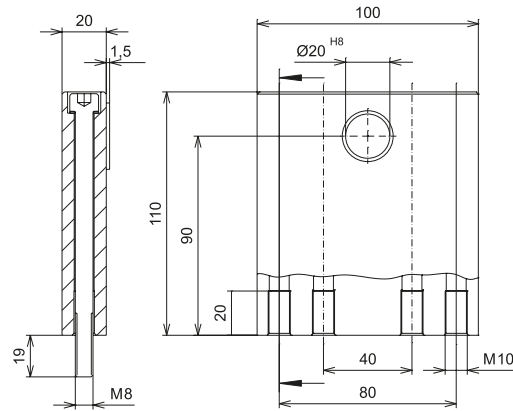
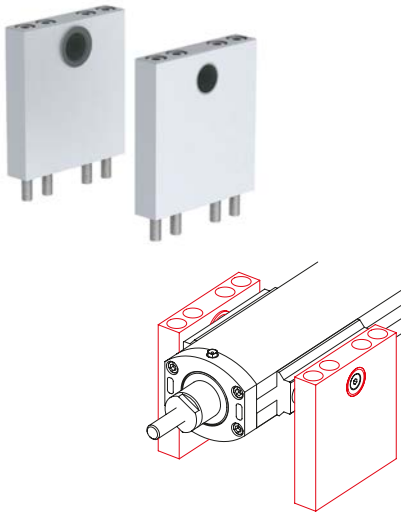
Code No.	Type	
QZD050584	LZ 70	Bearing block wide $\emptyset 12$

## Trunnion mounting set



Code No.	Type
QZD050587	Trunnion mounting set LZ 70
QZD050588	Trunnion mounting set LZ 80

## Support blocks for trunnion mounting



Code No.	Type
QZD050589	Support blocks LZ 70/80

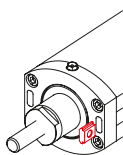
## Slot stone

- Slot stones facilitate the attachment of fittings to the cylinder.
- They can be slid into the lateral slots (Type -N-) or swivelled into the slot from above (Type -R-).



Type -N-

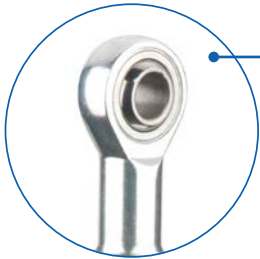
Type -R-



Code No.	Type	F [N]	
4006201	LZ 70	Slot stone -N- M5	4.000
4006203		Slot stone -N- M6	4.000
4026207	LZ 80	Slot stone -N- M5	4.000
4026203		Slot stone -N- M6	9.000
4026206		Slot stone -N- M8	9.000
4026221		Slot stone -R- M6	8.000
4026222		Slot stone -R- M8	8.000



## RK SyncFlex A – axial adjustment for LZ 70



### Levelling eye

- ✓ Eliminates distortions

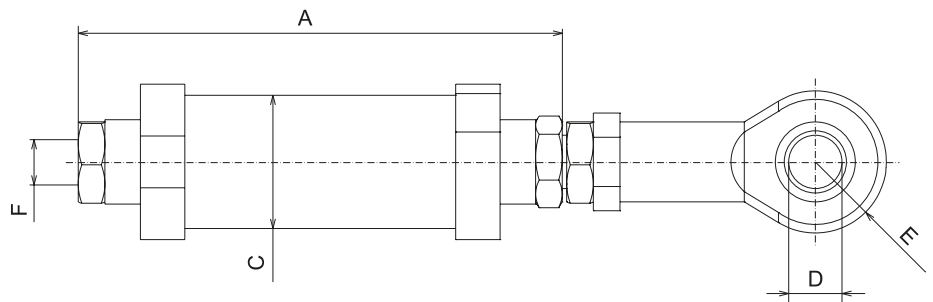
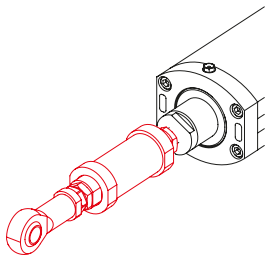
### Scope of delivery:

Axial adjustment, incl. swivel head as depicted



### Axial adjustment

- ✓ Compensates manufacturing tolerances
- ✓ Compensates installation tolerances
- ✓ Length compensation -2 mm
- ✓ Reduces commissioning times



**Note:**  
Screw depth 15 mm max.



[mm]

Code No.	Load	A	C	D	E	F
QZD050590	600 N	102	Ø30	Ø12	R16	M12
QZD050591	1,000 N	102				
QZD050592	2,000 N	103,5				
QZD050593	2,500 N	109				
QZD050594	3,000 N	107,5				
QZD050595	4,000 N	139,5				
QZD050596	5,000 N	137				

## Motor adaptor kit for 3 phase and servo motors

- Servomotors from the RK standard range can be easily connected

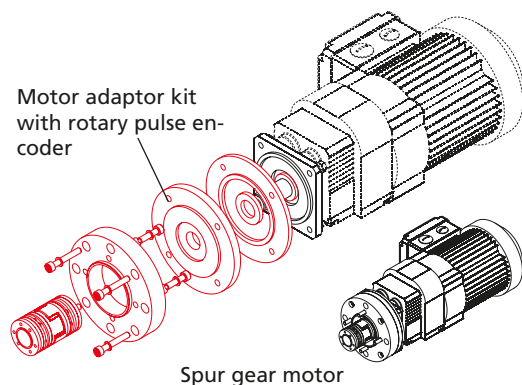
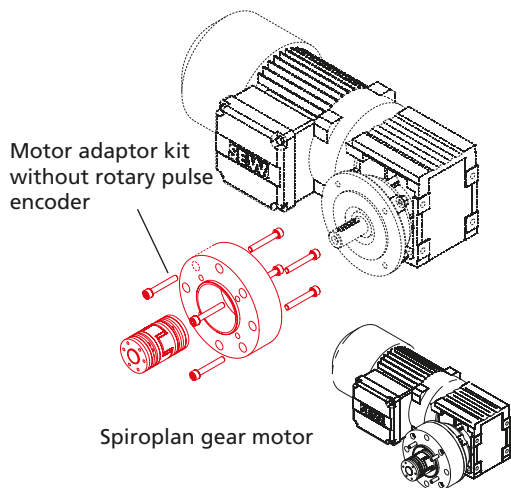
- Complete motor adaptor kits manufactured to your specifications on request

- Motor adaptors offer degree of protection IP 54 (IP 65 available on request)

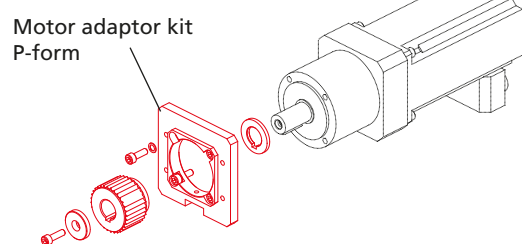
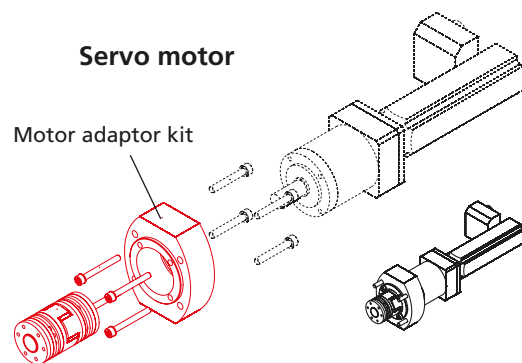
### Scope of delivery:

Motor adaptor, elastomer coupling and fastenings

### 3 phase motor



### Servo motor



Code No.	Type	Version
LZ 70 for 3 phase motor		
949088	SEW WF20DR63L2	with gear
	SEW WF20DR63M2	with gear
	SEW WF20DR63S2	with gear
	SEW WF30DRS71M2	with gear

Code No.	Type	Version
LZ 80 for 3 phase motor		
949089	SEW WF20DR63L2	with gear
	SEW WF20DR63M2	with gear
	SEW WF20DR63M4	with gear
	SEW WF30DRS71M2	with gear
	SEW WF30DRS71S4	with gear
	SEW WF30DRS80S2	with gear
949090	SEW WF20DR63L2	with gear and rotary pulse encoder
	SEW WF20DR63M2	with gear and rotary pulse encoder
	SEW WF20DR63M4	with gear and rotary pulse encoder
	SEW WF30DRS71M2	with gear and rotary pulse encoder
	SEW WF30DRS71S4	with gear and rotary pulse encoder
	SEW WF30DRS80S2	with gear and rotary pulse encoder

Note: Motor adaptor fits all SEW flanges Ø120 with shaft Ø20x40.

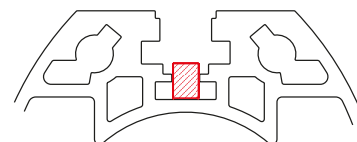
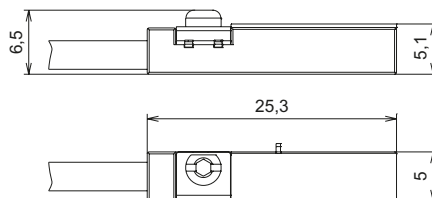
Code No.	Type	Version
LZ 70 for servo motor		
949091	RK-AC 112	with PLE 60 gear
949092	RK-AC 118	without gear
949093	RK-AC 240	without gear
949094	RK-AC 260	with PLE 80 gear
949095	RK-AC 470	without gear

Code No.	Type	Version
LZ 80 for servo motor		
949096	RK-AC 112	with PLE 60 gear

Code No.	Type	Version
LZ 70 P for servo motor		
949994	RK-AC 260	with PLE 80 gear
949995	RK-AC 345/470	without gear

## Magnetic switch

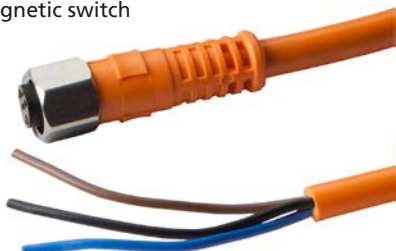
- Signals from the magnetic switch can be collected and evaluated by a customer-provided control unit (such as a PLC).
- The switch can be retrofitted in the lateral slot (protected by a cover profile as standard)
- Magnets are already integrated within the cylinder as standard.



Magnetic switch

### Magnetic switch – Technical data

Extension for magnetic switch



	NC contact
Voltage	10-30 V DC
Current consumption	< 10 mA
Output current	Max. 100 mA
Output type	PNP
Function indication	LED
Ambient temperature	-20°C to +70°C
Degree of protection	IP 67

Code No.	Type
QZD050600	Magnetic switch, NC contact, cable length 0.3 m
QZD050601	Extension for magnetic switch, cable length 5 m

LZ 70 with swivel head and trunnion

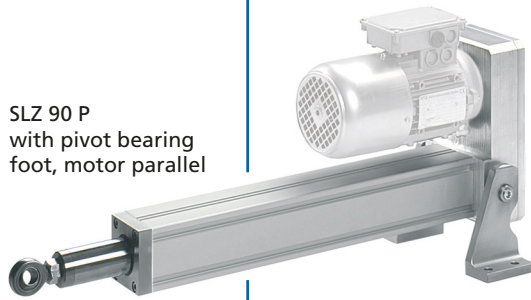


# Heavy duty cylinder – SLZ 90

The powerful linear cylinder for precise positioning tasks up to 25,000 N



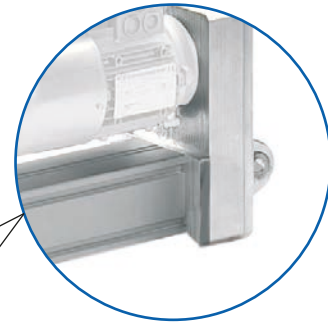
SLZ 90 S  
with pivot bearing  
foot, motor inline



SLZ 90 P  
with pivot bearing  
foot, motor parallel



SLZ 90 W  
with pivot bearing  
foot, motor rightangle



SLZ 90 version  
with fixing boss



SLZ 90 version  
with pivot bearing foot



## Drive options for SLZ 90

- ✓ 3-phase motor
- ✓ Servo motor

## Features:

- Choice of drives (3-phase motor/servo motor)
- Flexible use of space due to different motor configurations
- Forces up to 25,000 N
- Speeds up to 933 mm/s
- 100% duty cycle
- Coverable slot geometry on both sides supports a range of fixing options for attachments
- Push rod with rotation locking
- Travel up to 2000 mm
- Maintenance-free for entire lifetime of unit
- IP 54
- Internal magnets for external magnetic switches

## Options:

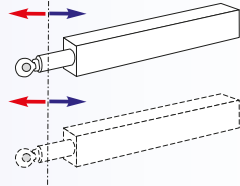
- Optional IP 65 can be supplied
- Servo motors and controls available on request
- Special stroke lengths available on request
- Motor brake

**SLZ 90 Electric cylinder - Table of contents**

**Properties/Technical data**

- General information/operating conditions... 478

**Versions**  
(Dimensions, order numbers)



- SLZ 90 electric cylinder with pivot bearing foot and fixing boss:

SLZ 90 S ..... 480 - 481

SLZ 90 P ..... 482 - 484

SLZ 90 W ..... 486 - 488

**Accessories**

**Fixing**

- Slot stone -R- ..... 489

**Position determination**

- Magnetic switch ..... 489

# SLZ 90 – Technical data

## General information/operating conditions

Type	SLZ 90 with ball screw for precise positioning/control		
	SLZ 90 S	SLZ 90 P	SLZ 90 W
Compressive force/tensile force	25,000 N	25,000 N	25,000 N
Self-locking (via motor brake)	25,000 N	25,000 N	25,000 N
Max. speed	933 mm/s	933 mm/s	126 mm/s
Design	Linear cylinder with ball screw 25 x 5, 25 x 10, 25 x 25, 32 x 5, 32 x 10, 32 x 40		
Guide	Double bearing provided by slide bushes		
Installation position	Any position, without shear forces		
Ambient temperature	-20°C to +70°C		
Repeatability	± 0.05 mm		
Duty cycle (at max. load)	100%		
Voltage	230/400 V AC		
Current consumption (max. starting current)	depending on motor selection		
Power input	depending on motor selection, up to 1.5 KW		
Protection class	IP 54 (optional IP 65)		

The data refers to a three-phase motor 230/400 V AC, 50 Hz;  
different performance data available on request.

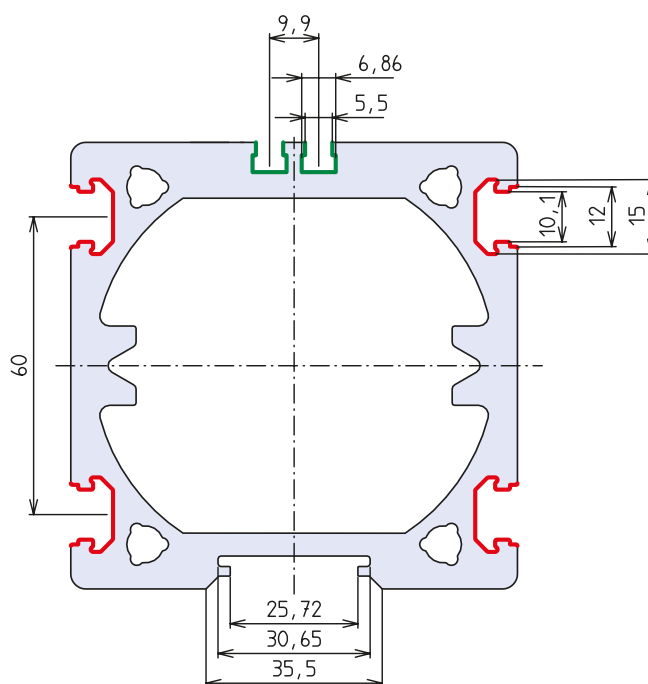
## Connecting slots - guide profile



Slot for magnetic switch, see page 489



Slot for accessory attachment  
(30 BLOCAN® slot geometry)





Adjustment of maintenance platform via SLZ 90 heavy duty cylinders.

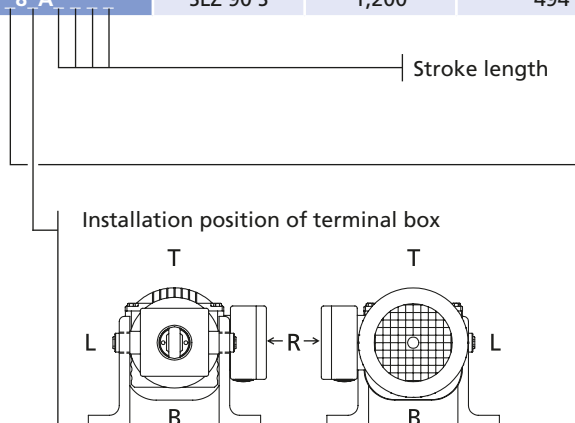
# SLZ 90 S – Versions

## Order information:

- Longer stroke lengths on request
- Other performance data and motors available on request

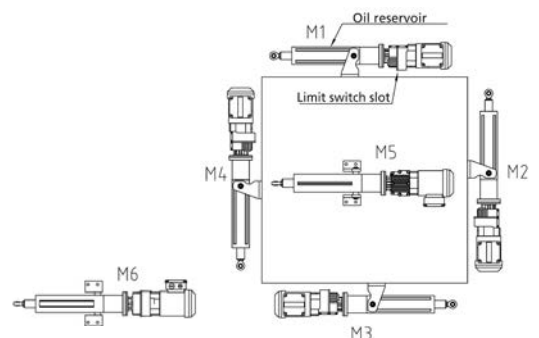
## SLZ 90 S versions with ball screw

Code No.	Type	Max. force F [N]	Max. speed [mm/s]	Max. stroke [mm]	Output [kW]	Motor selection with motor brake
<b>Ball screw 25 x 5</b>						
TQ21A1S2C_3_A_ ___	SLZ 90 S	6,500	115	800	1.1	80-4/BMG
TQ21A1S2K_3_A_ ___	SLZ 90 S	13,000	38	900	0.75	RF17DRE80S2/BE
TQ21A1S2X_3_A_ ___	SLZ 90 S	14,000	13	900	0.37	RF17DRS71S4/BE
TQ21A1S2R_3_A_ ___	SLZ 90 S	14,000	21	900	0.55	RF17DRS71M2/BE
TQ21A1S2E_3_A_ ___	SLZ 90 S	14,000	52	900	1.1	RF17DRE80M2/BE
<b>Ball screw 25 x 10</b>						
TQ21A1S2B_4_A_ ___	SLZ 90 S	3,500	233	800	1.5	80-4/BMG
TQ21A1S2E_4_A_ ___	SLZ 90 S	7,000	105	1,300	1.1	RF17DRE80M2/BE
TQ21A1S2M_4_A_ ___	SLZ 90 S	9,000	52	1,200	0.75	RF17DRE80S4/BE
TQ21A1S2S_4_A_ ___	SLZ 90 S	13,000	30	1,000	0.55	RF17DRS71M4/BE
<b>Ball screw 25 x 25</b>						
TQ21A1S2C_5_A_ ___	SLZ 90 S	1,500	583	800	1.1	80-4/BMG
TQ21A1S2F_5_A_ ___	SLZ 90 S	1,800	308	1,000	1.1	RF17DRE80M2/BE
<b>Ball screw 32 x 5</b>						
TQ21A1S2B_6_A_ ___	SLZ 90 S	8,000	116	1,000	1.5	80-4/BMG
TQ21A1S2E_6_A_ ___	SLZ 90 S	12,000	52	1,900	1.1	RF17DRE80M2/BE
TQ21A1S2X_6_A_ ___	SLZ 90 S	18,000	13	1,300	0.37	RF17DRS71S4/BE
TQ21A1S2M_6_A_ ___	SLZ 90 S	18,000	26	1,300	0.75	RF17DRE80S4/BE
<b>Ball screw 32 x 10</b>						
TQ21A1S2B_7_A_ ___	SLZ 90 S	3,500	233	1,000	1.5	80-4/BMG
TQ21A1S2E_7_A_ ___	SLZ 90 S	7,000	105	1,900	1.1	RF17DRE80M2/BE
TQ21A1S2M_7_A_ ___	SLZ 90 S	9,000	52	1,800	0.75	RF17DRE80S4/BE
TQ21A1S2N_7_A_ ___	SLZ 90 S	18,000	27	1,300	0.75	RF17DRE80S4/BE
TQ21A1S2U_7_A_ ___	SLZ 90 S	25,000	17	1,100	0.55	RF17DRS71M4/BE
<b>Ball screw 32 x 40</b>						
TQ21A1S2B_8_A_ ___	SLZ 90 S	1,000	933	900	1.5	80-4/BMG
TQ21A1S2F_8_A_ ___	SLZ 90 S	1,200	494	1,200	1.1	RF17DRE80M2/BE



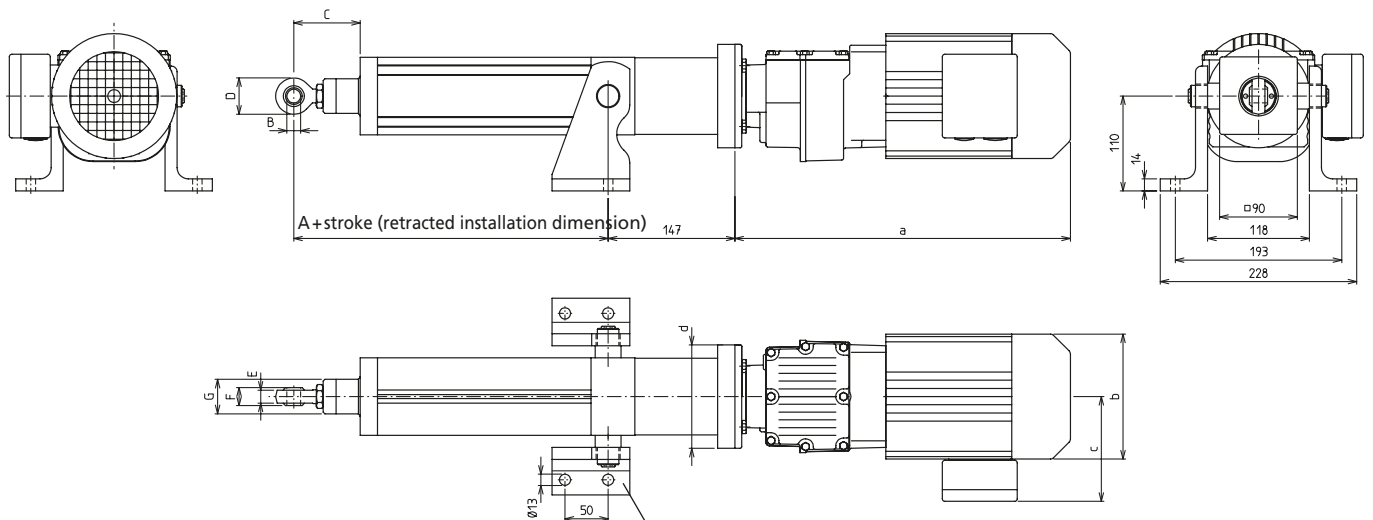
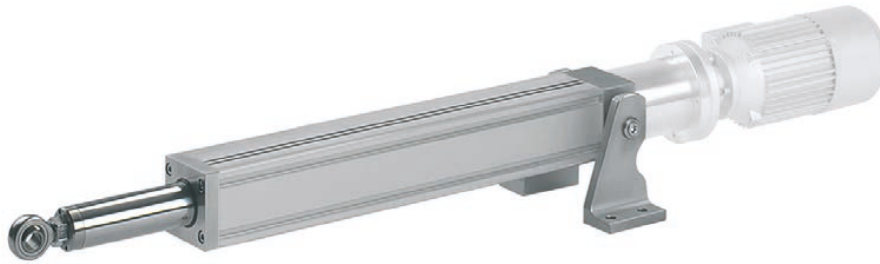
All diagrams show the terminal box in the R position

- 1 = M1
- 2 = M2
- 3 = M3
- 4 = M4
- 5 = M5
- 6 = M6





Version with pivot bearing feet



Can be turned through 360°  
The pivot bearing feet can also be mounted laterally reversed.

[mm]

3-phase motors	a	b	c	d	Weight [kg]
RF17DRS71/BE	428	$\varnothing 139$	129	$\varnothing 120$	12
RF17DRE80/BE	428	$\varnothing 156$	139	$\varnothing 120$	14
80-4/BMG	306	$\varnothing 156$	131	$\varnothing 120$	13

Type	A	B	C	D	E	F	G	Weight [kg]	
								Basic length (dimension A)	Additional weight/100 mm
KG 25 x 5, 25 x 10, 25 x 25	265	$\varnothing 16$	78	42	15	21	$\varnothing 40$	11.6	1.5
KG 32 x 5, 32 x 10, 32 x 40	294	$\varnothing 20$	86	50	18	25	$\varnothing 50$	12.8	1.9

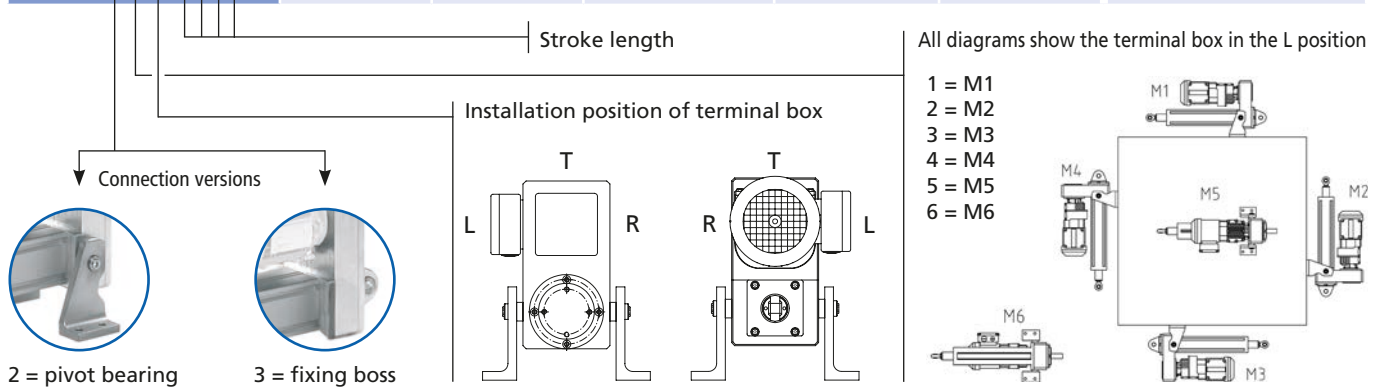
# SLZ 90 P – Versions

## Order information:

- Longer stroke lengths on request
- Other performance data and motors available on request

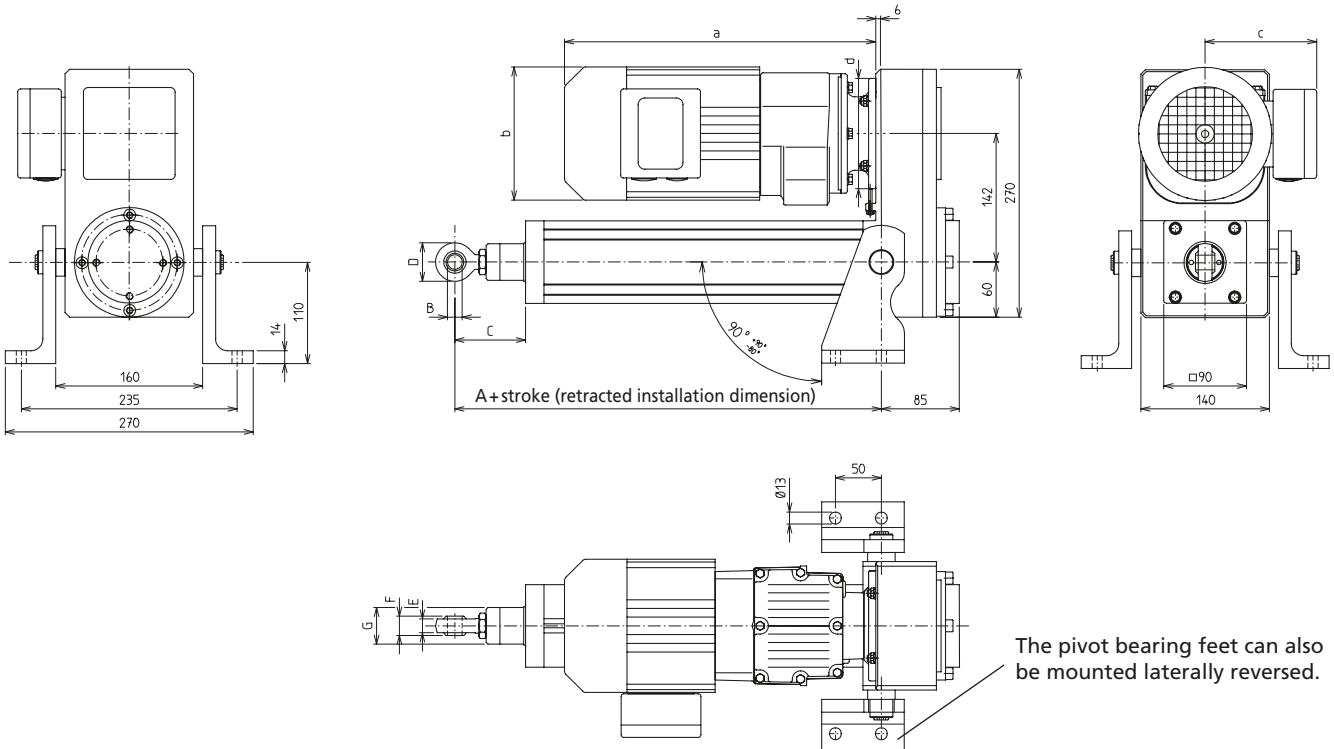
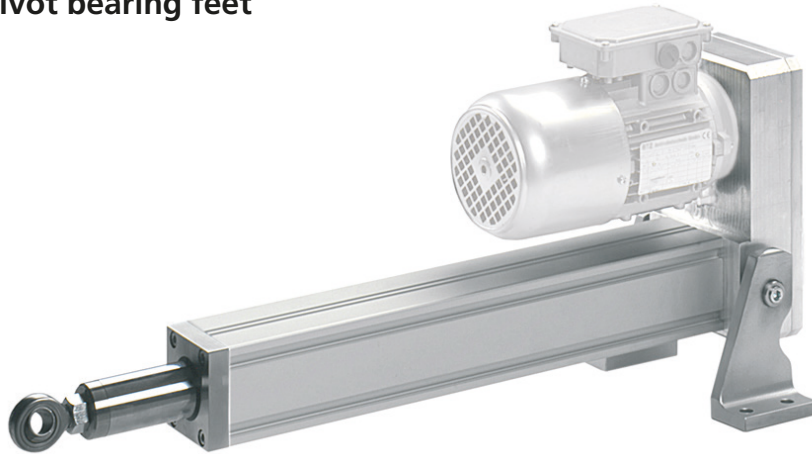
## SLZ 90 P versions with ball screw drive

Code No.	Type	Max. force F [N]	Max. speed [mm/s]	Max. stroke [mm]	Output [kW]	Motor selection with motor brake
<b>Ball screw 25 x 5</b>						
TQ21A1P_C_3_A_	SLZ 90 P	6,500	115	800	1.1	80-4/BMG
TQ21A1P_K_3_A_	SLZ 90 P	13,000	38	900	0.75	RF17DRE80S2/BE
TQ21A1P_X_3_A_	SLZ 90 P	14,000	13	900	0.37	RF17DRS71S4/BE
TQ21A1P_R_3_A_	SLZ 90 P	14,000	21	900	0.55	RF17DRS71M2/BE
TQ21A1P_E_3_A_	SLZ 90 P	14,000	52	900	1.1	RF17DRE80M2/BE
<b>Ball screw 25 x 10</b>						
TQ21A1P_B_4_A_	SLZ 90 P	3,500	233	800	1.5	80-4/BMG
TQ21A1P_E_4_A_	SLZ 90 P	7,000	105	1,300	1.1	RF17DRE80M2/BE
TQ21A1P_M_4_A_	SLZ 90 P	9,000	52	1,200	0.75	RF17DRE80S4/BE
TQ21A1P_S_4_A_	SLZ 90 P	13,000	30	900	0.55	RF17DRS71M4/BE
<b>Ball screw 25 x 25</b>						
TQ21A1P_C_5_A_	SLZ 90 P	1,500	583	800	1.1	80-4/BMG
TQ21A1P_F_5_A_	SLZ 90 P	1,800	308	1,000	1.1	RF17DRE80M2/BE
<b>Ball screw 32 x 5</b>						
TQ21A1P_B_6_A_	SLZ 90 P	8,000	116	800	1.5	80-4/BMG
TQ21A1P_E_6_A_	SLZ 90 P	12,000	52	1,500	1.1	RF17DRE80M2/BE
TQ21A1P_X_6_A_	SLZ 90 P	18,000	13	1,300	0.37	RF17DRS71S4/BE
TQ21A1P_M_6_A_	SLZ 90 P	18,000	26	1,300	0.75	RF17DRE80S4/BE
<b>Ball screw 32 x 10</b>						
TQ21A1P_B_7_A_	SLZ 90 P	3,500	233	1,000	1.5	80-4/BMG
TQ21A1P_E_7_A_	SLZ 90 P	7,000	105	1,900	1.1	RF17DRE80M2/BE
TQ21A1P_M_7_A_	SLZ 90 P	9,000	52	1,800	0.75	RF17DRE80S4/BE
TQ21A1P_N_7_A_	SLZ 90 P	18,000	27	1,300	0.75	RF17DRE80S4/BE
TQ21A1P_U_7_A_	SLZ 90 P	25,000	17	1,100	0.55	RF17DRS71M4/BE
<b>Ball screw 32 x 40</b>						
TQ21A1P_B_8_A_	SLZ 90 P	1,000	933	900	1.5	80-4/BMG
TQ21A1P_F_8_A_	SLZ 90 P	1,200	494	1,200	1.1	RF17DRE80M2/BE





Version with pivot bearing feet

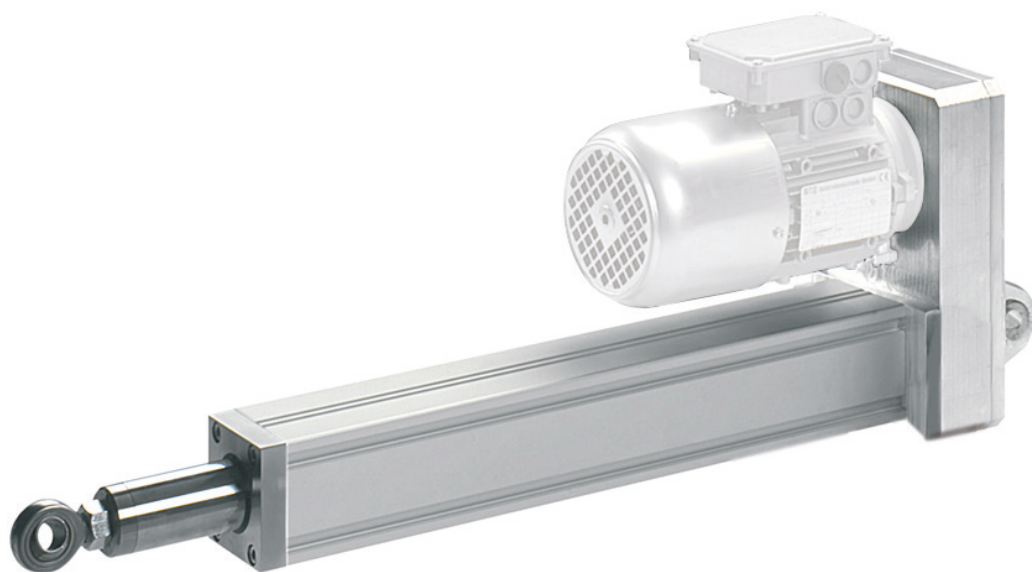


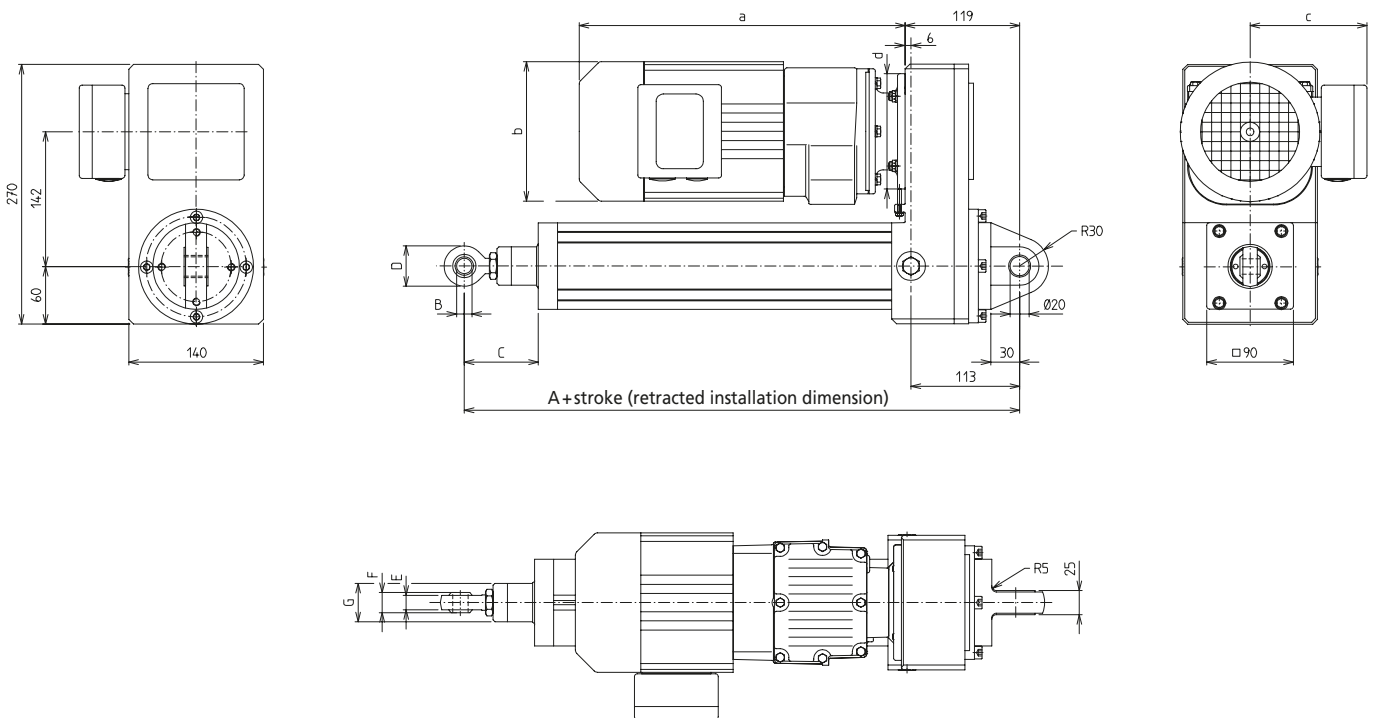
[mm]

3-phase motors	a	b	c	d	Weight [kg]
RF17DRS71/BE	428	Ø 139	129	Ø 120	12
RF17DRE80/BE	428	Ø 156	139	Ø 120	14
80-4/BMG	306	Ø 156	131	Ø 120	13

Type	A	B	C	D	E	F	G	Weight [kg]	
								Basic length (dimension A)	Additional weight/100 mm
KG 25 x 5, 25 x 10, 25 x 25	265	Ø 16	78	42	15	21	Ø 40	13.0	1.5
KG 32 x 5, 32 x 10, 32 x 40	294	Ø 20	86	50	18	25	Ø 50	13.1	1.9

# SLZ 90 P – Versions





[mm]

3-phase motors	a	b	c	d	Weight [kg]
RF17DRS71/BE	428	Ø 139	129	Ø 120	12
RF17DRE80/BE	428	Ø 156	139	Ø 120	14

Type	A	B	C	D	E	F	G	Weight [kg]	
								Basic length (dimension A)	Additional weight/ 100 mm
KG 25 x 5, 25 x 10, 25 x 25	378	Ø 16	78	42	15	21	Ø 40	11.2	1.5
KG 32 x 5, 32 x 10, 32 x 40	410	Ø 20	86	50	18	25	Ø 50	12.0	1.9

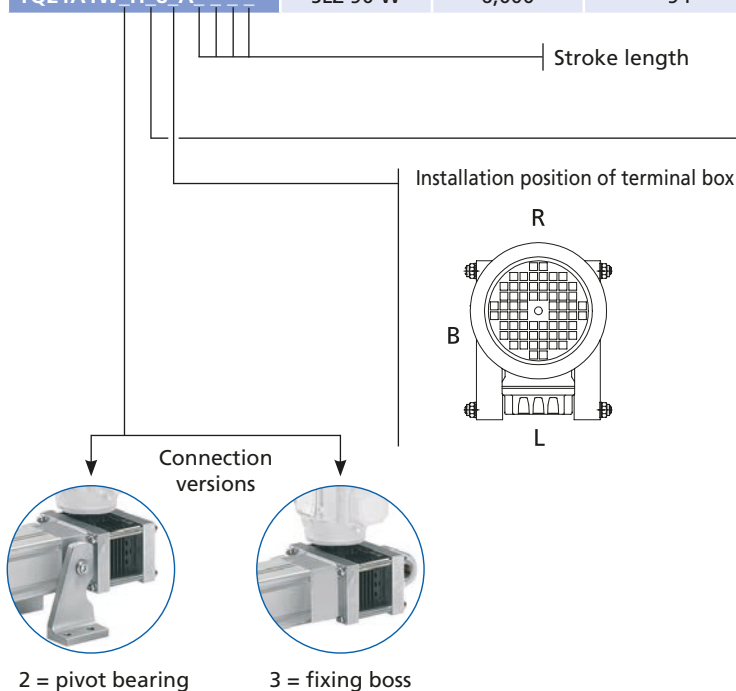
# SLZ 90 W – Versions

## Order information:

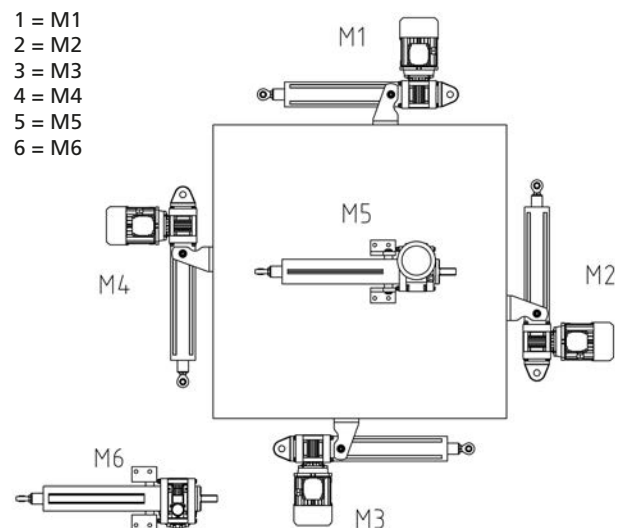
- Longer stroke lengths on request
- Other performance data and motors available on request

## SLZ 90 W versions with ball screw drive

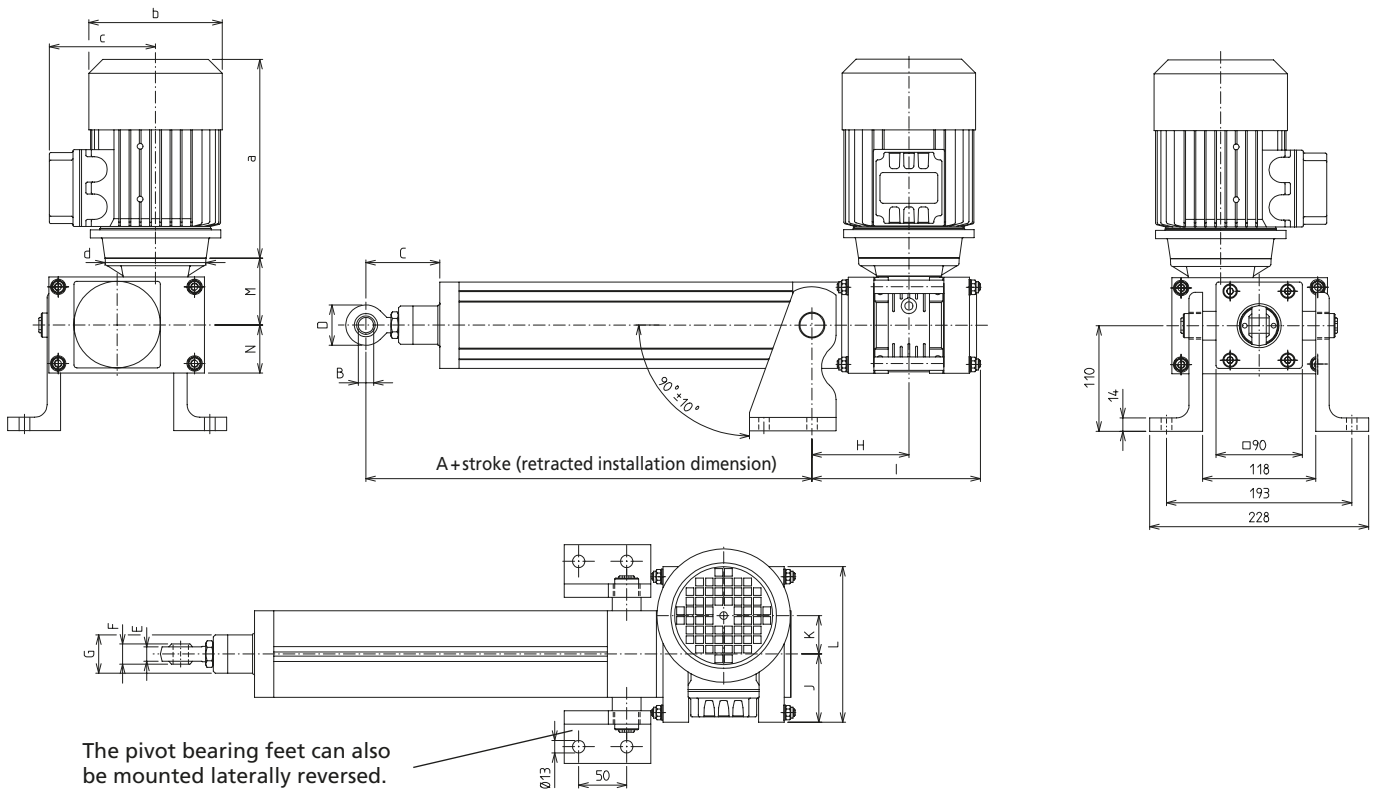
Code No.	Type	Max. force F [N]	Max. speed [mm/s]	Max. stroke [mm]	Output [kW]	Motor selection with motor brake
<b>Ball screw 25 x 10</b>						
TQ21A1W_P_4_A_ _ _ _	SLZ 90 W	5,000	45	1,500	0.37	71-4/BMG
TQ21A1W_Q_4_A_ _ _ _	SLZ 90 W	8,000	30	1,200	0.37	71-4/BMG
TQ21A1W_R_4_A_ _ _ _	SLZ 90 W	10,000	22	1,100	0.37	71-4/BMG
TQ21A1W_Y_4_A_ _ _ _	SLZ 90 W	13,000	10	1,000	0.25	63-4/BMG
TQ21A1W_S_4_A_ _ _ _	SLZ 90 W	15,000	15	900	0.37	71-4/BMG
<b>Ball screw 25 x 25</b>						
TQ21A1W_P_5_A_ _ _ _	SLZ 90 W	2,000	113	2,000	0.37	71-4/BMG
TQ21A1W_Q_5_A_ _ _ _	SLZ 90 W	4,000	75	1,800	0.37	71-4/BMG
<b>Ball screw 32 x 10</b>						
TQ21A1W_H_7_A_ _ _ _	SLZ 90 W	22,000	23	1,100	0.75	80-4/BMG
TQ21A1W_U_7_A_ _ _ _	SLZ 90 W	24,000	15	1,100	0.55	71-4/BMG
TQ21A1W_C_7_A_ _ _ _	SLZ 90 W	25,000	30	1,100	1.1	80-4/BMG
<b>Ball screw 32 x 40</b>						
TQ21A1W_C_8_A_ _ _ _	SLZ 90 W	6,000	126	1,600	1.1	80-4/BMG
TQ21A1W_H_8_A_ _ _ _	SLZ 90 W	6,000	94	1,600	0.75	80-4/BMG



All diagrams show the terminal box in the L position



Version with pivot bearing feet



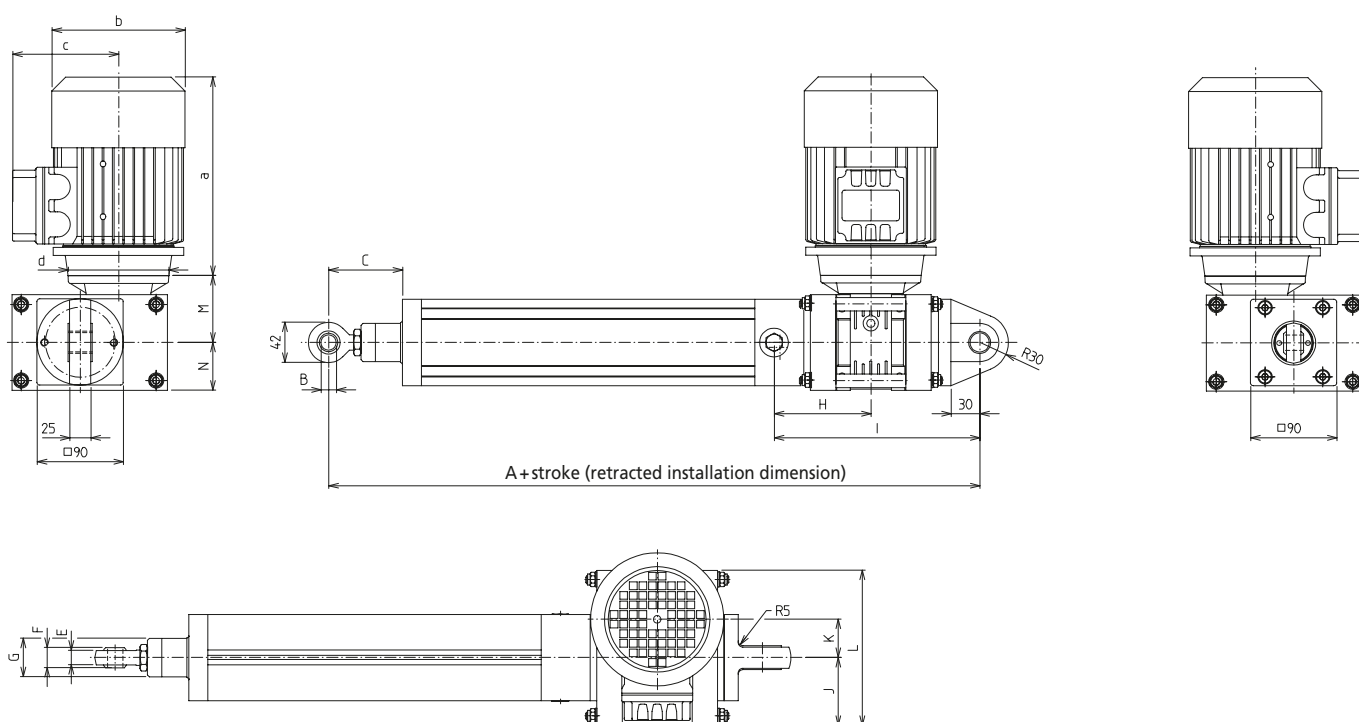
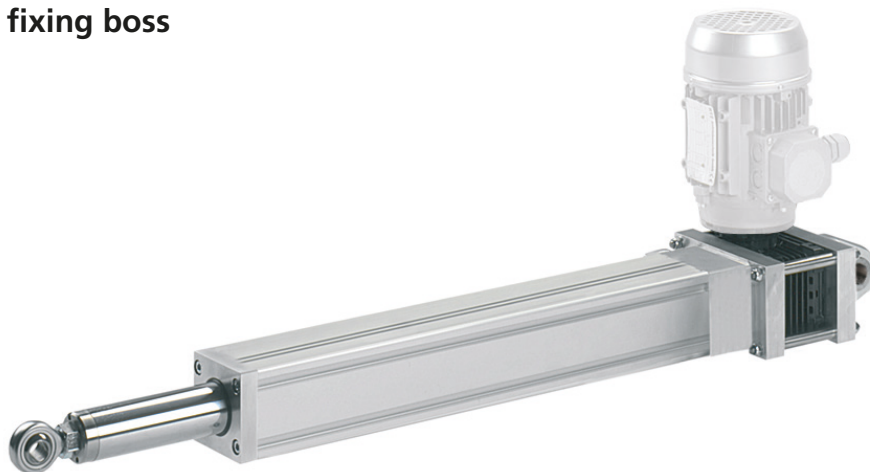
[mm]

3-phase motors	a	b	c	d	Weight [kg]
63-4/BMG	246	Ø 124	109	Ø 124	8
71-4/BMG	278	Ø 140	117	Ø 105	10
80-4/BMG	306	Ø 156	131	Ø 120	12

Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Weight [kg]	
															Basic length (dimension A)	Additional weight/ 100 mm
KG 25 x 10, 25 x 25	265	Ø 16	78	42	15	21	Ø 40	101.5	176	71	40	162	70	50	14.8	1.5
KG 32 x 10, 32 x 40	294	Ø 20	86	50	18	25	Ø 50	117.5	212	98	63	231.5	109	72	22.5	1.9

# SLZ 90 W – Fixing/Position determination

## Version with fixing boss



[mm]

3-phase motors	a	b	c	d	Weight [kg]
63-4/BMG	246	Ø 121	104	Ø 90	8
71-4/BMG	273	Ø 139	112	Ø 105	10
80-4/BMG	304	Ø 158	122	Ø 120	12

Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Weight [kg]	
															Basic length (dimension A)	Additional weight/100 mm
KG 25 x 10, 25 x 25	265	Ø 16	78	42	15	21	Ø 40	101.5	176	71	40	162	70	50	14.8	1.5
KG 32 x 10, 32 x 40	294	Ø 20	86	50	18	25	Ø 50	117.5	212	98	63	231.5	109	72	22.5	1.9

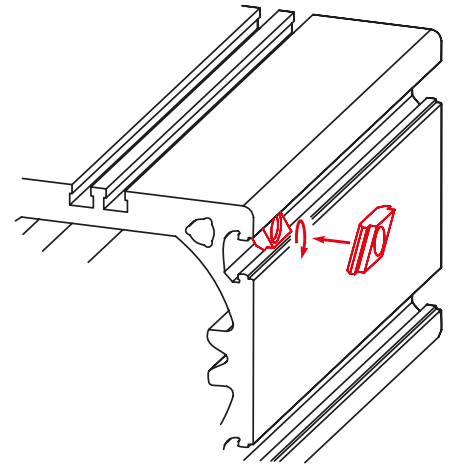
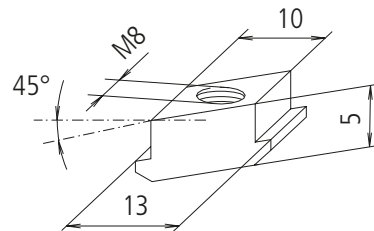


**SLZ 90 - Fixing/Position determination**
**Slot stone -R-**

- Slot stones facilitate the fitting of attachments to the cylinder.
- To this end, they can be swivelled into the slot from above (Type -R-)



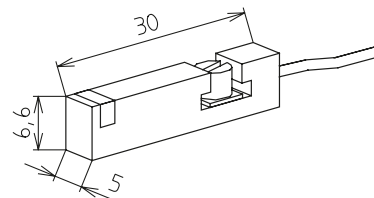
Type -R-



Code No.	Type	F [N]
4006223	Slot stone -R- M8	4,000

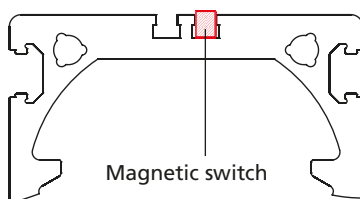
**Magnetic switch**

- Signals from the magnetic switch can be collected and evaluated by a customer-provided control unit (such as a PLC).
- The switch can be retrofitted in the lateral slot (protected by a cover profile as standard)



Code No.	Type
QZD050599	Magnetic switch, NC contact*, cable length 5.3 m

\*Magnetic switch, NO contact, available on request


**Magnetic switch – Technical data**

	NC contact
Voltage	10-30 V DC
Current consumption	< 10 mA
Output current	Max. 100 mA
Output type	PNP
Function indication	LED
Ambient temperature	-25°C to + 85°C
Protection class	IP 67

# Motors and controls



High-performance mechanical systems require the right motor and control system.

Our partners are experts in their fields and we offer a range of selected standard combinations.

However, it goes without saying that we can also tailor solutions exactly to the requirements of your application.



**RK ROSE+KRIEGER**



Motors for  
linear actuators ..... 492 - 523

Converters and controls for  
linear actuators ..... 524 - 541

# ***Motors & controls***

# Motors and controls

## Motors and controls for linear actuators

The alternative to the handwheel



Electronic handwheels



LZ S/P drive unit

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## High-performance and optimally co-ordinated drives



3-phase motors



Stepper motors



Servo motors



RK-Control 25

**Motors and controls - Table of contents**

<b>Motors for linear actuators</b>	<ul style="list-style-type: none"> <li>■ Electronic handwheels..... 494</li> <li>■ LZ S/P drive unit..... 500</li> <li>■ 3-phase motors ..... 504</li> <li>■ Stepper motors ..... 506</li> <li>■ Servo motors ..... 512</li> </ul>
<b>Accessories Drive</b>	<ul style="list-style-type: none"> <li>■ Coupling/motor adaptor for three-phase motors.520</li> <li>■ Coupling/motor adaptor for stepper motors.... 521</li> <li>■ Coupling/motor adaptor for servo motors.... 522</li> </ul>
<b>Controls for linear actuators</b>	<ul style="list-style-type: none"> <li>■ FW 3-phase frequency converter ..... 524</li> <li>■ RK control servo technology ..... 524</li> </ul>

# EHL electronic handwheel

The low-cost alternative to conventional hand adjustment



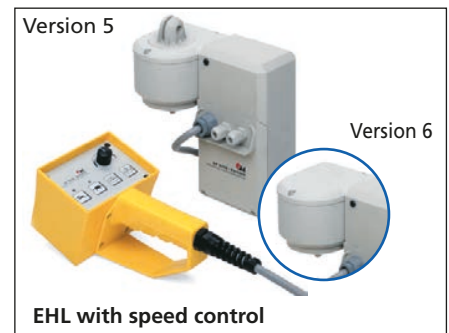
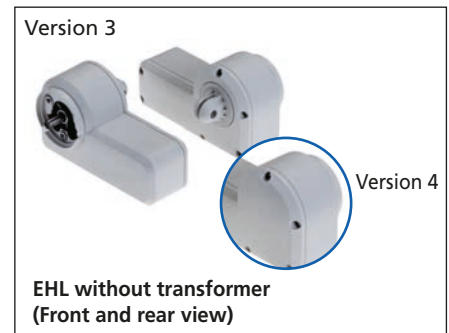
With or without clevis



## Features:

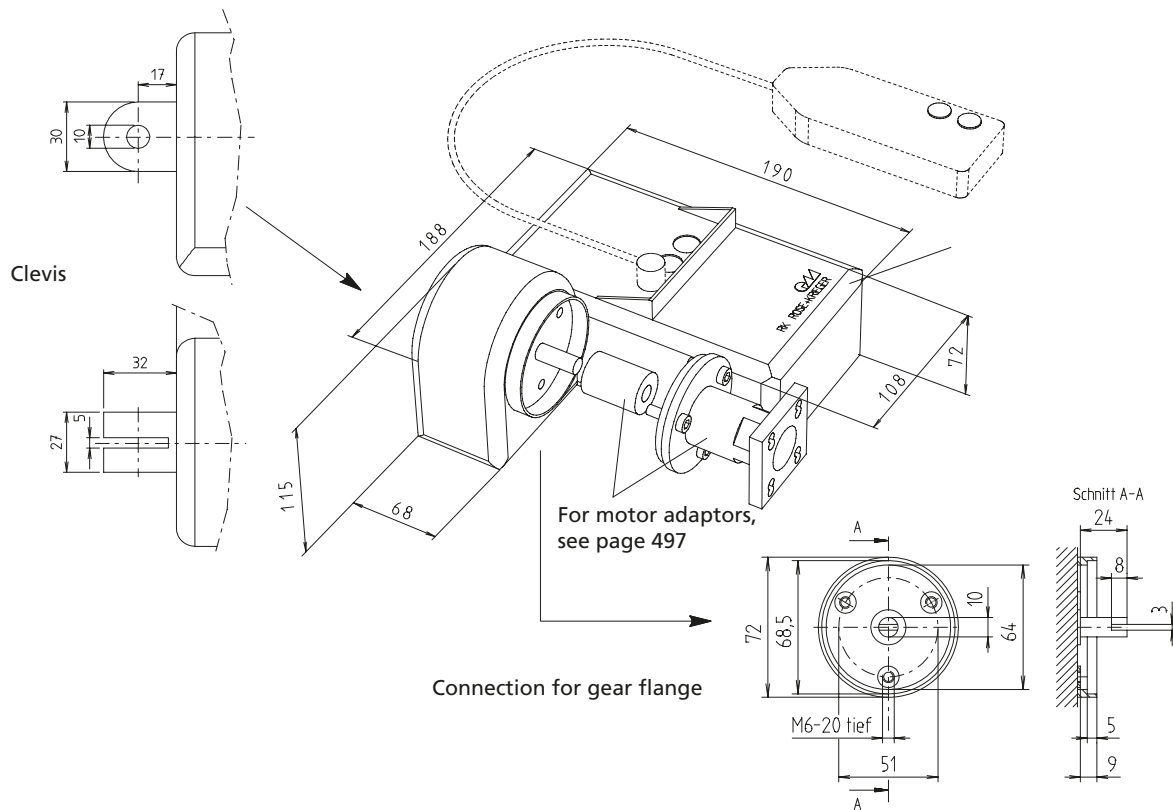
- Transformer rectifier with two different nominal speeds of 50 and 135 rpm
- Manufactured acc. to VDE, protection class II
- Wide range of versions available
- Rugged plastic housing
- Colour: Light grey, matt to RAL 7035

## Versions



## Options:

- Other adaptors available on request



**Note:** The EHL must always be operated with limit switches. This prevents the unit getting stuck and any associated defects.

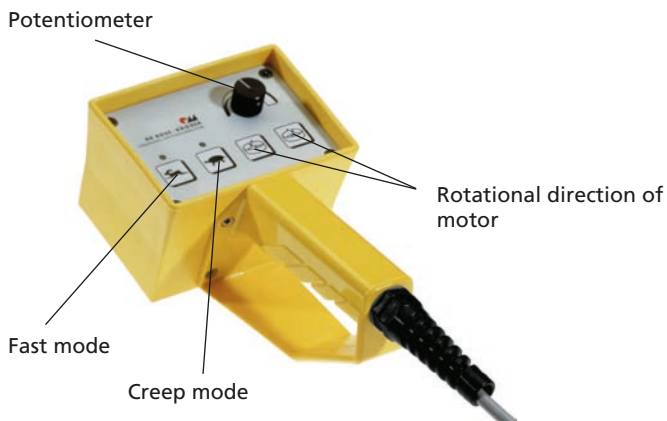
Code No.	Type	Speed [rpm]	Output torque [Nm]	Clevis	For versions see page 494
90900	EHL with transformer and hand switch	50	5.5	Yes	1
90963	EHL with transformer and hand switch	50	5.5	No	2
90911	EHL with transformer and hand switch	135	2	Yes	1
90964	EHL with transformer and hand switch	135	2	No	2
90910	EHL without transformer	1)* 50	5.5	Yes	3
90960	EHL without transformer	1)* 50	5.5	No	4
90912	EHL without transformer	2)* 135	2	Yes	3
90962	EHL without transformer	2)* 135	2	No	4
90944	EHL with rotation speed control and transformer	50	5.5	Yes	5
90965	EHL with rotation speed control and transformer	50	5.5	No	6
90945	EHL with rotation speed control and transformer	135	2	Yes	5
90966	EHL with rotation speed control and transformer	135	2	No	6
90949	EHL with rotation speed control without housing for control	50	5.5	Yes	7
90950	EHL with rotation speed control without housing for control	135	2	Yes	7
90948	Upgrade kit for all EHLs with transformer	complete with printed circuit board, rotation speed control			8

1)\* in connection with an RK transformer control (at a customer-provided supply voltage of 24 V, around 36 rpm)  
 2)\* in connection with an RK transformer control (at a customer-provided supply voltage of 24 V, around 97 rpm)

## General information/operating conditions

Duty cycle	50 %
Starting torque	5.5 Nm at 50 rpm/2 Nm at 135 rpm
Thermal protection	115 °C
Protection class	IP 20
Rotation speed control	Electronic, infinitely variable adjustment using a rotary potentiometer
Fast mode	Operating mode with nominal speed (50 or 135 rpm), rotary potentiometer <u>without</u> function
Creep mode	Infinitely variable speed adjustment using a rotary potentiometer
Drive set-up	Can be rotated in 90° increments – connecting cable must be extended

## Function description - rotation speed control



The rotation speed control is an electronic solution for infinitely variable speed adjustment using a rotary potentiometer.

**Fast mode:** The EHL is operated at nominal speed (50 or 135 rpm). The rotary potentiometer has no function.

**Creep mode:** A rotary potentiometer enables infinitely variable adjustment of the speed (0-50 or 0-135 rpm).  
e.g. in set-up mode

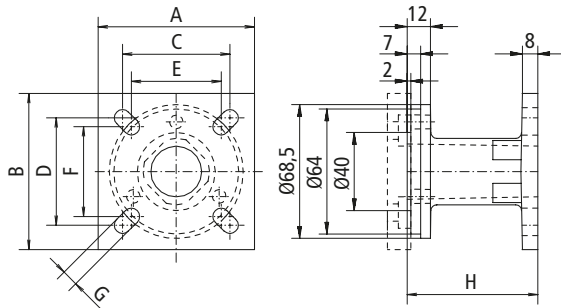
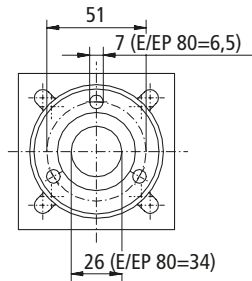
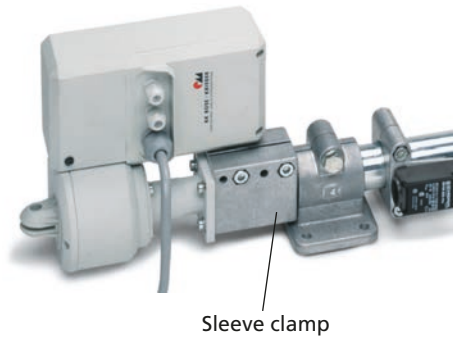
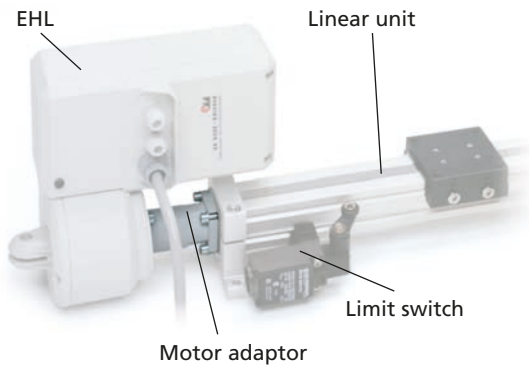
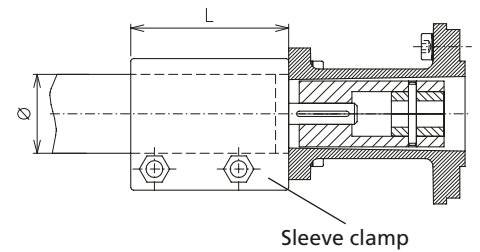
## Set-up of drive/transformer



The position of the drive in relation to the transformer can be changed, depending on the installation conditions (can be rotated in 90° increments). However, the connecting cable must be extended for this purpose.

We can also customise the EHL to suit your individual requirements. For standard version, see photo on page 494.



**Motor adaptor for linear units**
**Linear unit connection**

**EHL connection**

**Only for linear unit Type E**


[mm]

Code No.	for linear unit	PinØ unit	A	B	C	D	E	F	G	H	L	Dia-meter
92663	E 30	8	50	50	30	40	30	30	6	67	60	30
92664	E 40	12	60	60	46	46	36	36	7	67	75	40
92665	E 50	12	65	65	46	46	-	-	9	67	90	60
949666	E 60	14	80	80	55	55	46	46	9	67	110	60
92682	E 80	20	80	80	70	70	-	-	6.2	59	-	80
92667	EP 30	8	50	50	30	40	30	30	6	67	-	-
92668	EP 40/COPAS 40	12	60	60	46	46	36	36	7	67	-	-
92669	EP 50	12	65	65	46	46	-	-	9	67	-	-
92670	EP 60	14	80	80	55	55	46	46	9	67	-	-
92683	EP 80	20	92	92	64	64	-	-	8.5	59	-	-
92680	EV/AV 30	8	40	40	29	29	-	-	6	67	-	-
92671	EV/AV 40	10	40	40	29	29	-	-	6	67	-	-
92672	EV/AV 50	12	50	50	38	38	-	-	7	67	-	-
92679	EV 60	12	60	60	46	46	36	36	7	67	-	-
92673	EV/AV 80	14	80	80	55	55	46	46	9	67	-	-
92674	COPAS 20	8	46	50	30	40	-	-	7	67	-	-
92675	COPAS 30	10	60	60	46	46	36	36	7	67	-	-
92676	PLS-II 30	6	40	40	29	29	-	-	6	67	-	-
92677	PLS-II 40	8	40	40	29	29	-	-	6	67	-	-
92678	PLS-II 50	10	50	50	38	38	-	-	7	67	-	-
92679	PLS-II 60	12	60	60	46	46	36	36	7	67	-	-
92681	PLS-II 80	14	80	80	55	55	46	46	9	67	-	-

Note: To mount the motor adaptor on a Type E linear unit, a sleeve clamp is required (this is included with the adaptor). Please note that the stroke may be limited.

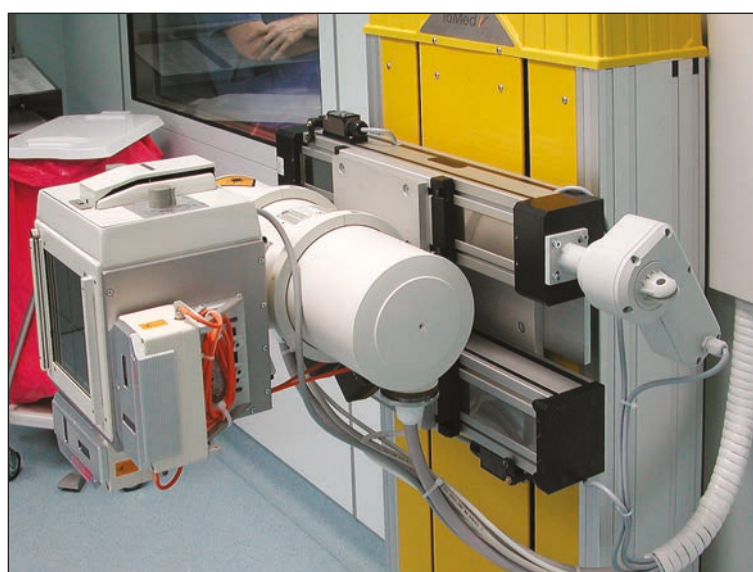
# EHL – Position determination

## Mechanical limit switch

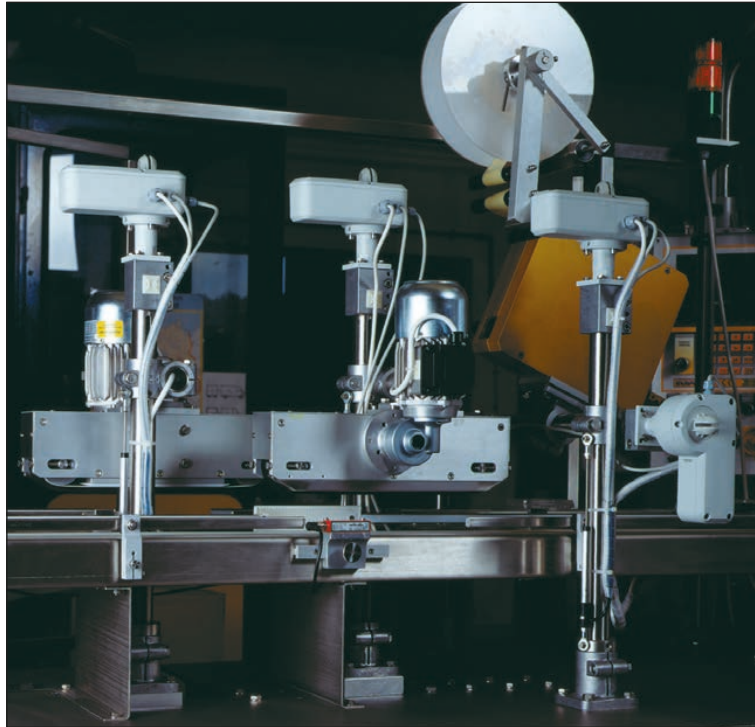


Max. voltage	250 V AC
Max. switching current	6 A
Max. starting current	16 A
Operating cycles	Max. 6000/h
Mechanical lifetime	1 x 10 <sup>7</sup> switching cycles
Axis lever adjustment	locking by 360°
Protection class	IP 65
Ambient temperature	-30°C to +80°C

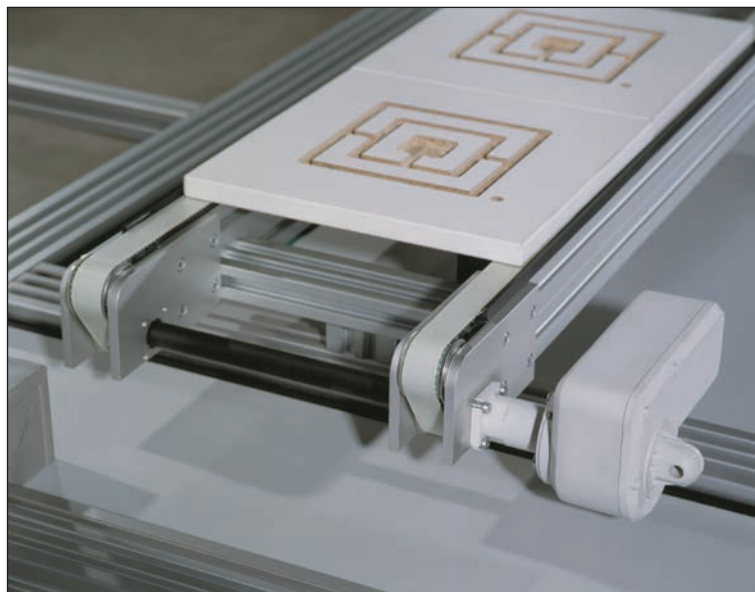
Code No.	Type
91900	NC contact/NO contact
91901	Connecting cable 3 m for limit switches, with PG gland



X-ray machine: lateral adjustment via EHL with RK DuoLine S, height adjustment via RK Easylift.



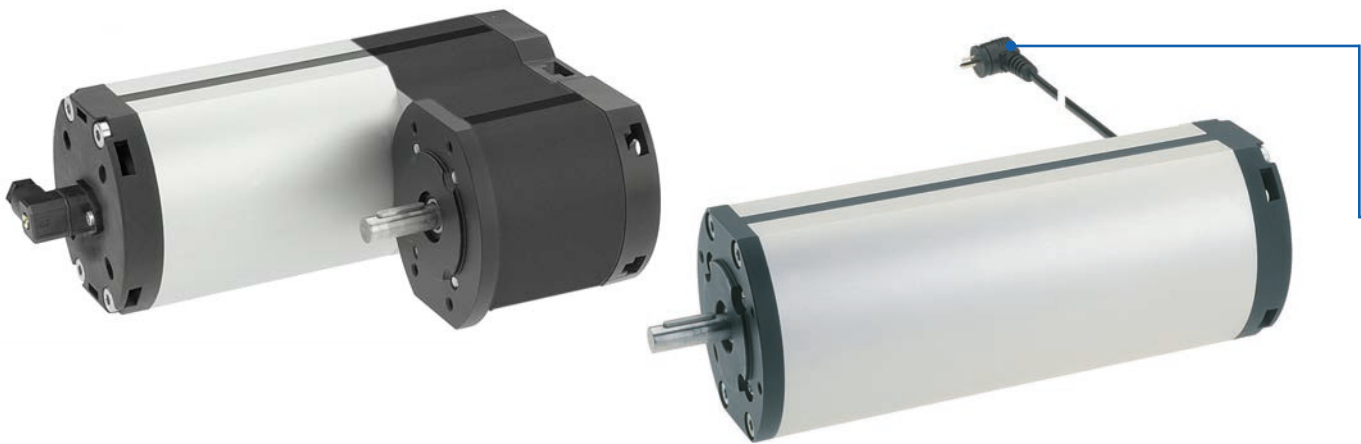
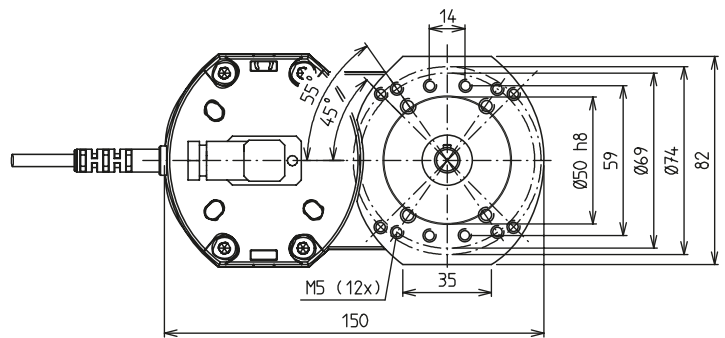
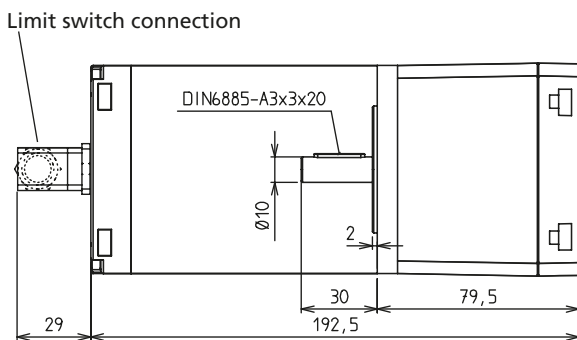
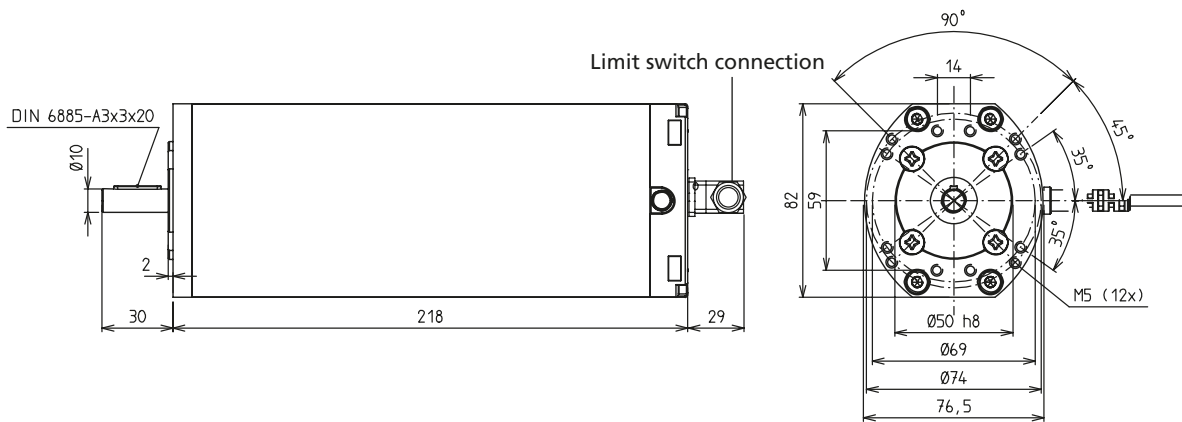
Labelling machine: The height adjustment is controlled by a series linear unit with EHL.



Transfer system: drive for material feed.

# LZ S/P – Drive unit/technical data

The high-performance drive units of the LZ S series (rod shaped) and LZ P (parallel mounted motor) for the control of linear axes



## Features:

- Rotation speed control with MultiControl mono supported (with elec. connection "a")
- RK synchronous control supports storage of up to 25 memory positions (with elec. connection "c")
- Synchronous travel supported

- Compact design
- Housing made of aluminium
- Attractive design

## Options:

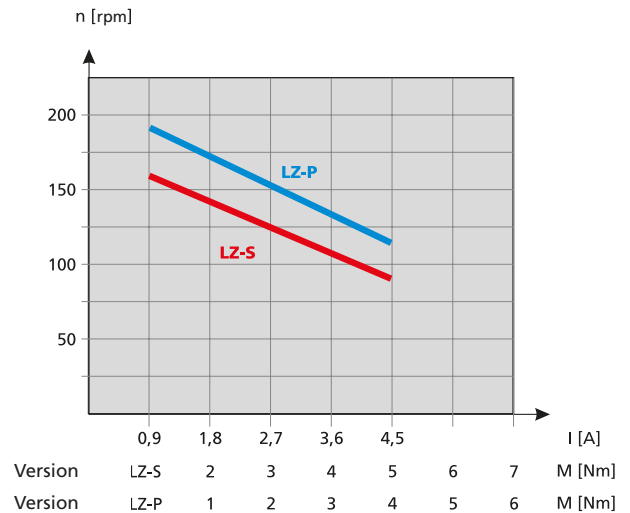
- Three different options for electrical connection
- Various adaptors available on request

## General information/operating conditions

Voltage	24-36 V DC
Current consumption	Max. 4.5 A
Protection class	IP 54
Ambient temperature	-10°C to +60°C
Duty cycle	at nominal load, 20% (max. 5 mins operating time, 20 mins rest time)

### Power diagram\*

\*All data were determined using an RK transformer control (at room temperature). If the unit is operated from a fixed voltage source, these values may vary slightly.



### Electrical connection Choice of:

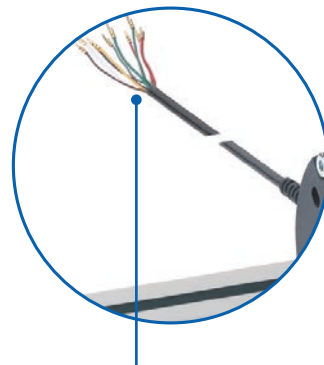
#### External control

✓ Connecting cable is fed out of the cylinder and connects to a control (range of connecting options)



#### Elec. connection "a"

✓ Connection (2.5 m) to RK transformer control, MultiControl mono or external fixed voltage source. Only power cable is fed out.



#### Elec. connection "b"

✓ All connecting cables (approx. 1 m) fed directly out of the unit (motor, 2-channel Hall sensor) e.g for connection to a PLC



#### Elec. connection "c"

✓ Connection (2.5 m) to PM synchronous control

**Note:** The drive units must not be driven against the mechanical stops! All versions support the connection of customer-supplied limit switches. While it is possible to operate the units without limit switches, we do not recommend it.

Code No.	Type	Electrical connection	Max. output torque [Nm]	Max. speed 2500 rpm	Weight [kg]
90980	LZ S	a	5	160	1.8
90981	LZ S	b	5	160	1.8
90984	LZ S	c	5	160	1.8
90982	LZ P	a	4	196	3.0
90983	LZ P	b	4	196	3.0
90985	LZ P	c	4	196	3.0

# LZ S/P – Drive

## Controls

For dimensions and other technical data, please refer to the chapter "Motors and controls"

- Input voltage 230 V AC
- Output voltage 24/36 V DC

Transformer control  
120 VA



approx. 24 V DC

MultiControl



24/36 V DC

Code No.	Version	
QZA07C13BQ021	Transformer control 120 VA, up to max. I = 3 A current output at 10% duty cycle	Controls up to 2 drives
QSTAACA1AA000	MultiControl mono connection A, up to max. I = 10 A current consumption, 24 V DC	Controls up to 2 drives
QSTACCA1AA000	MultiControl mono connection C, up to max. I = 12 A current consumption, 36 V DC	Controls up to 2 drives
QST35C02AA000*	Synchronous control RK MultiControl duo, up to max. I = 12 A current output at 15% duty cycle	1-2 drives synchronised
QST35C04AA000*	Synchronous control RK MultiControl quadro, up to max. I = 12 A current output at 15% duty cycle	1-4 drives synchronised

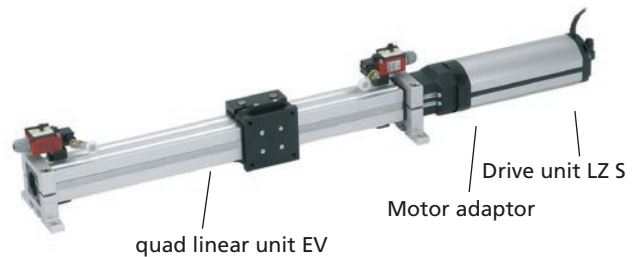
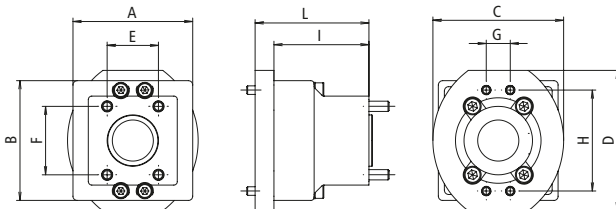
\*For connection of a synchronous control, the drive unit must be fitted with electrical connection "c"

Accessories	
QZD0702844000*	Straight connecting cable (4 m) with 5-pin connector and open cable end

\*for the connection of a parallel hand switch or an external potentiometer (in the case of the MultiControl mono)

## Motor adaptor for linear units

Further adaptors available on request



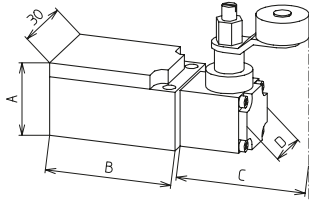
Application example:  
Synchronous operation of two quad linear units by means of drive units LZ S

Linear unit	LZ S Code No.	LZ P Code No.	Coupling Code No.	A	B	C	D	E	F	G	H	I	L
E 30	949700	949701	9109200810	56	74	76.4	82	–	–	56.5	39.6	65	134
E 40	949702	949703	9114301012	89.2	66	76.4	82	–	–	56.5	39.6	78	129
E 50	949704	949705	9114301012	66	84	76.4	82	–	–	56.5	39.6	78	129
E 60	949706	–	9114301014	80	103	76.4	82	–	–	52.3	52.3	92	143
E 80	on request		9119401020	on request									
EP(X)30	949710	949711	9109200810	70	70	76.4	82	30	40	14	59	55.5	66.5
EP(X)40	949712	949713	9114301012	70	70	76.4	82	46	46	52.3	52.3	73.5	81.5
EP(X)50	949714	–	9114301012	70	70	76.4	82	46	46	52.3	52.3	73	81
EP(X)60	949716	–	9114301014	80	80	76.4	82	55	55	52.3	52.3	68	81
EP(X)80	949717	–	9119401020	on request									
EV 30	949720	949721	9109200810	70	70	76.4	82	21	21	14	59	54.5	65.5
EV 40	949722	949723	9114301010	70	70	76.4	82	29	29	14	59	61	72
EV 50	949724	949725	9114301012	70	70	76.4	82	38	38	14	59	60	73
EV 60	949726	949727	9114301012	70	70	76.4	82	43	43	14	59	62	73
EV 80	949728	949729	9114301014	80	80	76.4	82	64	64	52.3	52.3	68.5	81.5

[mm]

## Mechanical limit switch

**Material:**  
thermoplastic, fully insulated



Type	18-60
Max. voltage	250 V AC
Max. switching current	6 A
Max. starting current	16 A
Operating frequency	Max. 6000/h
Mechanical lifetime	10 million switching cycles
Axis lever adjustment	locking at 10° increments
Protection class	IP 65
Ambient temperature	-30°C to +80°C

Code No.	Type	Switching function	A	B	C	D
91905	18-60	NC contact/NO contact	26.5	45	45.5	21

[mm]

## Hand switches/accessories



Code No.	Version	Fig.
<b>Hand switch for transformer control</b>		
QZB02C03AD031	Hand switch with 1 m spiral cable – 6 function keys	2
<b>Hand switch for transformer or synchronous control</b>		
QZB02C03AB031	Hand switch with 1 m spiral cable – 2 function keys	1
QZB00D04AB041	Hand switch with 1 m spiral cable – 2 function keys	7
QZB00A00AB051	Table hand switch with 1 m cable – 2 function keys	11
QZB00A00BC011	Membrane keyboard with 1 m spiral cable – 2 function keys	12
QZB02C01AE114	Foot switch – 2 function keys	13
QZB00D07BK141	Radio-controlled hand switch – 2 function keys	14
<b>Hand switch for synchronous control</b>		
QZB00D04AD041	Hand switch with 1 m spiral cable – 6 function keys	8
<b>Accessories for hand switches with spiral cable</b>		
QZD000072	Bracket for hand switch	3
QZD000074	Hand switch drawer	9

# 3-phase motors – Technical data



## General information/operating conditions

Type	90 W	120 W	180 W	250 W
Motor speed [rpm]	1400	2800	1400	2800
Torque without gear unit [Ncm]	28	41	68	68
Braking voltage [V]	220	220	220	220
Nominal current [A]	0.4	0.45	0.7	0.81
Permitted dynamic shaft load [N]				
axial	80	80	100	100
radial	120	120	150	150
Protection class	IP 54	IP 54	IP 54	IP 54
Weight [kg]	4.5	4.5	6.5	6.0
Weight with brake [kg]	5.3	5.3	7.3	7.0

Code No.	Type
9121 _ _ _ _	90 W
9123 _ _ _ _	120 W
9124 _ _ _ _	180 W
9125 _ _ _ _	250 W

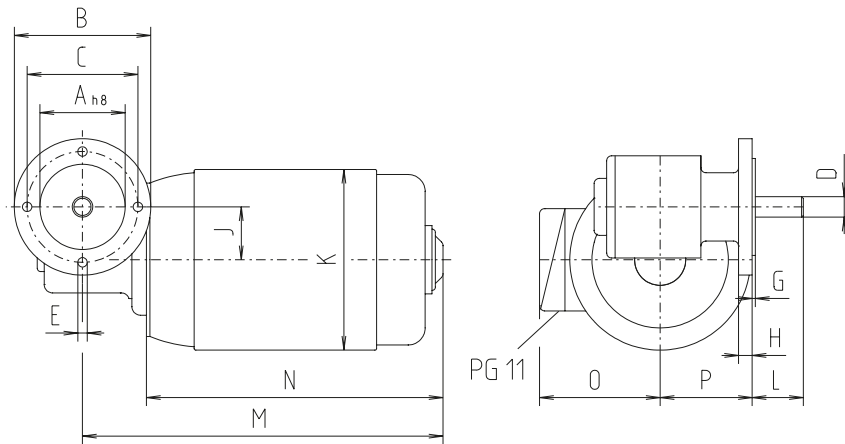
**Order example:**  
 Three-phase motor 120 W  
 2:1 pole-changing, gear 7:1  
 9123 2 07

### Gear selection (see next page)

05 = gear 5:1  
 07 = gear 7:1  
 10 = gear 10:1  
 11 = gear 11:1  
 15 = gear 15:1  
 17 = gear 17:1  
 18 = gear 18:1  
 : = :  
 : = :

0 = Standard  
 1 = Brake  
 2 = 2:1 pole-changing (not with 90 W)





[mm]

Motor	Connection dimensions						Dimensions							Shaft dimensions	
	A	B	C	E	G	H	J	K	M	N	O	P	D	L	
90 W, 380/220 V	50	80	65	5.5	2.5	8	31	110	203	166	92	54	12	30	
90 W, with brake	50	80	65	5.5	2.5	8	31	110	238	201	92	54	12	30	
120 W, 380/220 V	50	80	65	5.5	2.5	8	31	110	203	166	92	54	12	30	
120 W, with brake	50	80	65	5.5	2.5	8	31	110	238	201	92	54	12	30	
120 W, pole-changing	50	80	65	5.5	2.5	8	31	110	238	201	92	54	12	30	
180 W, 380/220 V	80	120	100	M6	3	10	33	124	232	190	108	66	14	33	
180 W, with brake	80	120	100	M6	3	10	33	124	268	226	108	66	14	33	
180 W, pole-changing	80	120	100	M6	3	10	33	124	268	226	108	66	14	33	
250 W, 380/220 V	80	120	100	M6	3	10	33	124	232	190	108	66	14	33	
250 W, with brake	80	120	100	M6	3	10	33	124	268	226	108	66	14	33	
250 W, pole-changing	80	120	100	M6	3	10	33	124	268	226	108	66	14	33	

### Gear selection

	Eff. torque [Nm]														
Transmission:	100:1	75:1	55:1	50:1	38:1	30:1	24:1	20:1	18:1	15:1	12:1	10:1	7:1	5:1	2.5:1
90/1400 rpm	18	13	15	11	11	9	7.2	7.5	6.7	6.1	5.2	4.3	3.3	2.4	1.3
120/2800 rpm	14	10	10	8.2	8.1	6.5	5.3	5.2	4.8	4.2	3.6	3.0	2.3	1.7	0.9
Transmission:	75:1	56:1	38:1	32:1	30:1	24:1	20:1	17:1	15:1	11:1	7:1	5:1			
180/1400 rpm	23	21	20	19	17	15	14	13	11	9.3	6.4	4.8			
250/2800 rpm	18	16	15	14	13	11	10	9.6	8.3	6.8	4.6	3.5			



### Chain-type motor connecting cable

Code No.	Type
957050	Motor cable 4 x 1.5 + 2 x (2 x 0.75) mm for connection to a frequency converter, any length

- Length:
- 0 2 5 = 2.5 m
  - 0 5 0 = 5.0 m
  - 0 7 5 = 7.5 m
  - 1 0 0 = 10.0 m
  - 1 2 5 = 12.5 m
  - 1 5 0 = 15.0 m
  - 2 0 0 = 20.0 m
  - 2 5 0 = 25.0 m

# Stepper motors

## Order information:

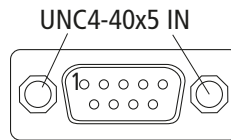
- Further stepper motors available on request



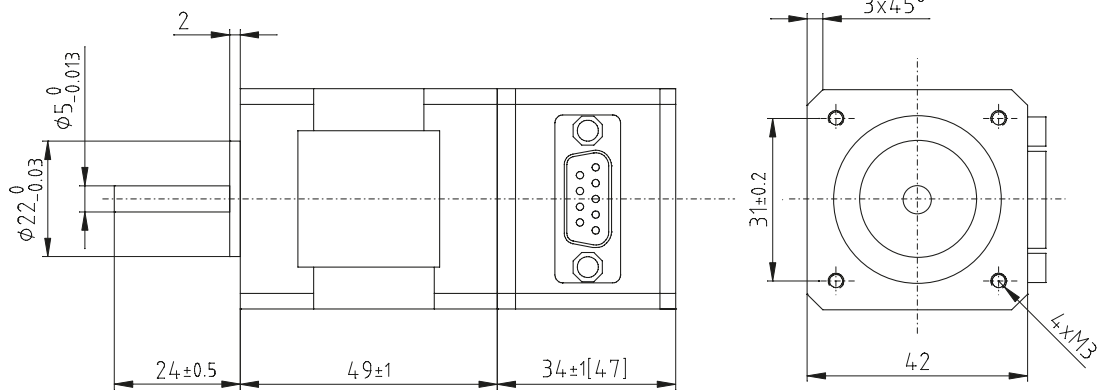
## General information/operating conditions

Type	PD 42
No. of steps	200/400/800/1000/1600/2000
Max. torque [Ncm]	36
Holding torque [Ncm]	40
Max. starting frequency [kHz]	1.2
Nominal current/feeder [A]	1.8
Weight [kg]	0.43

PD 42



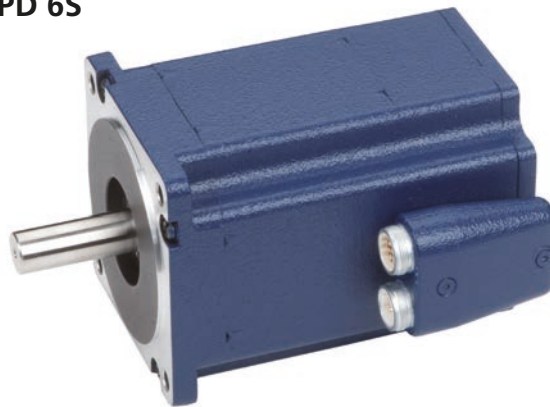
PIN No.	Function
1 -	POW + 24 V
2 -	DIR (rotational direction) + 5 V
3 -	CLK Clock + 5 V
4 -	CLK Clock + 24 V
5 -	POW GND
6 -	DIR (rotational direction)
7 -	DIR (rotational direction) + 24 V
8 -	CLK Clock
9 -	NC



Code No.	Type
95842PD2	PD2-T42
957030050	Motor cable PD42, 5 m

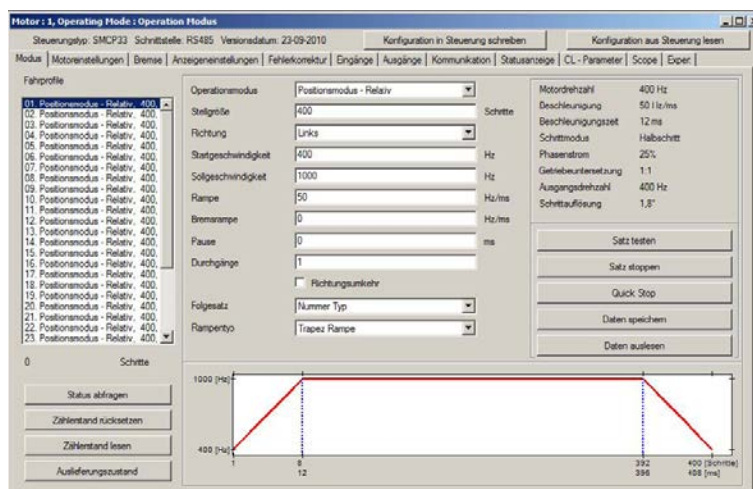
# Plug & Drive stepper motor PDS6 with integrated power electronics

PD 6S



## Features:

- Up to 16 motion sequences (position and speed profiles) can be stored in the motor, selected via digital inputs, stopped and started.
- Using an analogue input, the speed, position and torque can also be controlled.
- Motor programming via RS485.
- Standard protocol as per CANopen/DSP 402 via CAN bus.
- Simple start-up and configuration using free Windows software.
- Position feedback and monitoring with integrated encoders with 500 pulses per motorrevolution.



Input of various motion sequences in the clearly structured programming software

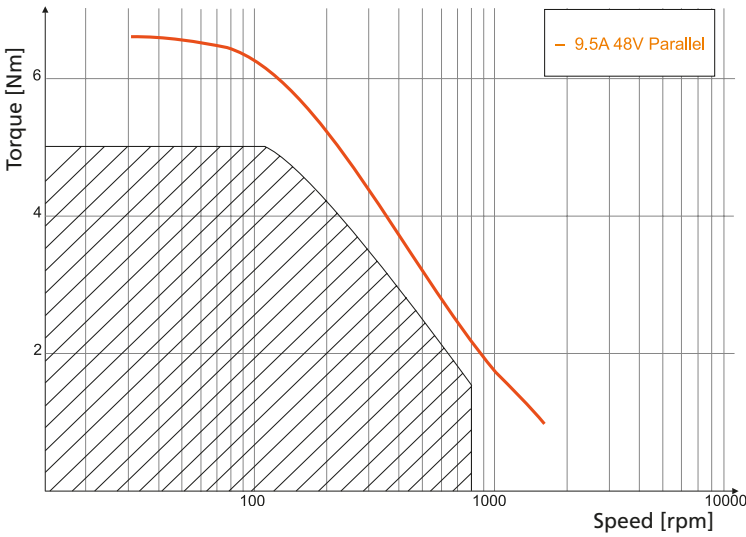
Relative and absolute positions can be saved in the set table. Travel speed and acceleration and deceleration ramp can be freely selected for any position.

Code No.	Type
958200PD6S	PD 6S

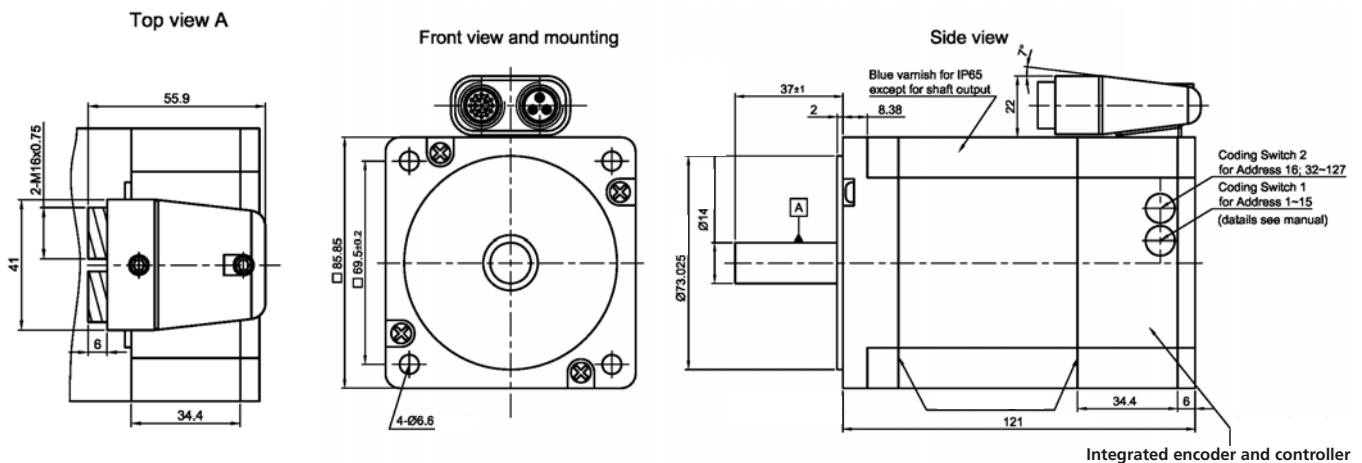
## General information/operating conditions

Operating voltage	24 to 48V / DC
Interface:	RS485 or CANopen
Operating modes	Position, speed, flag position, clock direction
Operating mode	1/1, 1/2, 1/4, 1/5, 1/8, 1/10, 1/32, 1/64, adaptive (1/128)
Position monitoring	Automatic error correction up to 0.9°
Inputs	6 optocoupler inputs (5-24V) / 1 analogue input
Outputs	3 open drains
Rotor moment of inertia	1.9 kg cm <sup>2</sup>
Temperature range	0°C to +40°C
Motor weight	3.4 kg

## Torque curve



▨ Optimal operating conditions at 48V and continuous operation  
 — Maximum value



# Stepper motor PD6S - Accessories

## Programming cable



Code No.	Type	Length
957038	USB auf RS485	1,8m

## Circuit capacitor



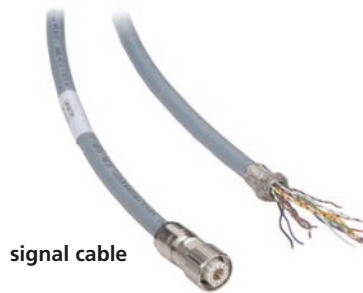
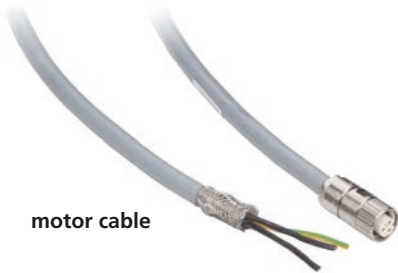
Code No.	Type	
957039	Circuit capacitor 10.000µf / 63V	PD 6S

## Switching power supply

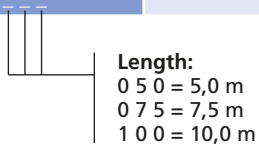


Code No.	Type	
957035	Switching power supply 48V / 10A output current	Power electronic PD 6S (1 motor)
957036	Switching power supply 48V / 20A output current	Power electronic PD 6S (2-3 motors)
957037	Switching power supply 24V / DC 2,5A	Control electronics PD 6S (1-3 motors)

Motor cable / signal cable

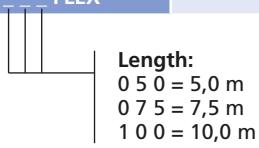


Code No.	Type	
957051 _ _ _	motor cable	PD 6S, choice of lengths
957053	signal cable	PD 6S, choice of lengths



Cables for use in cable drag chains

Code No.	Type	
957052 _ _ _ FLEX	motor cable	PD 6S, choice of lengths
957054 _ _ _ FLEX	signal cable	PD 6S, choice of lengths

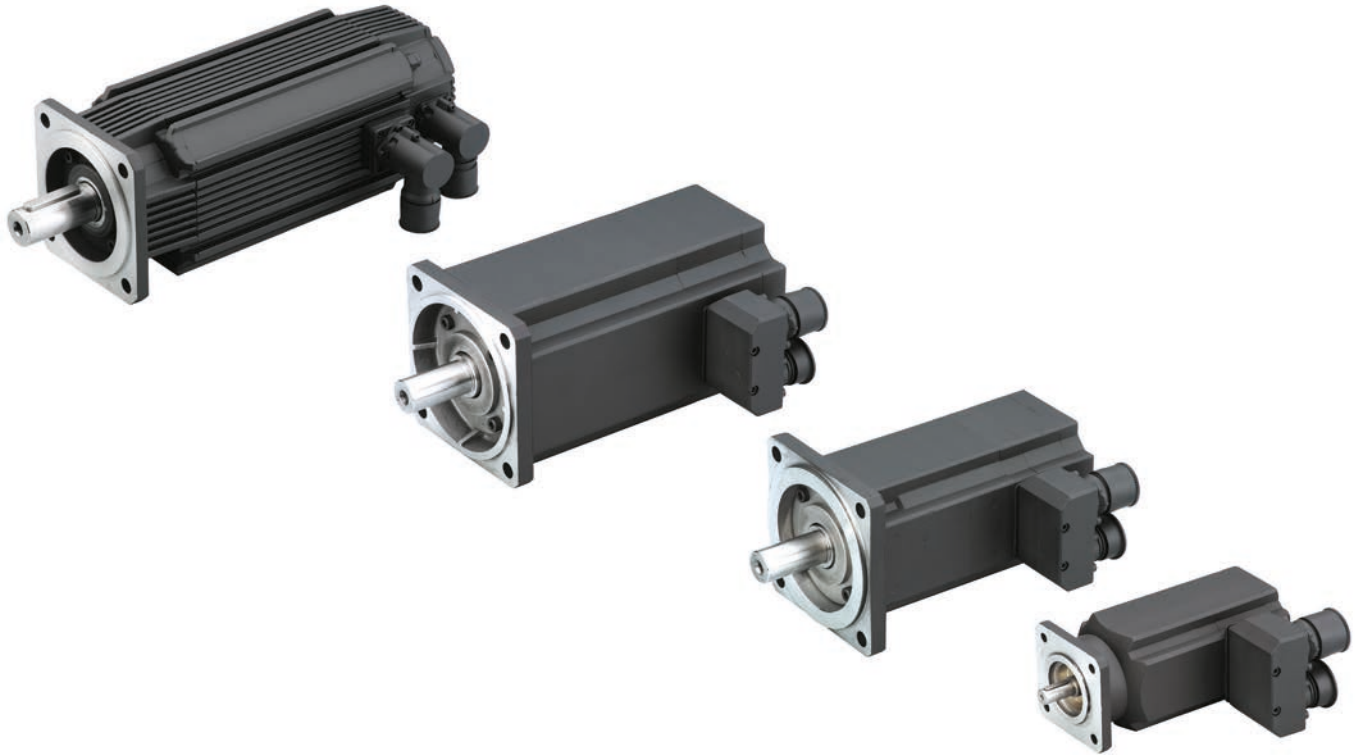


Note: Other cable lengths on request

# Servo motors

## Order information:

- Further motors available on request
- Encoder available as an option.

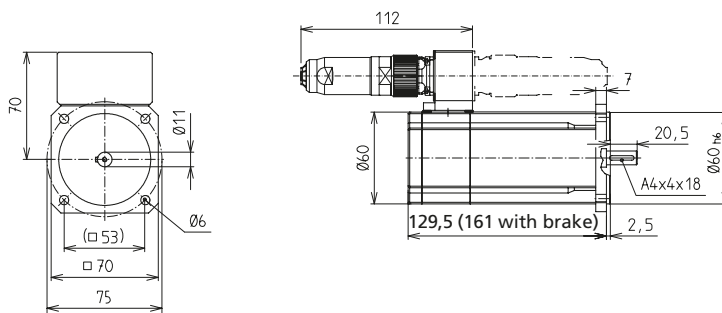


## General information/operating conditions

Type	RK-AC 112	RK-AC 118	RK-AC 240	RK-AC 260	RK-AC 280	RK-AC 345	RK-AC 470	RK-AC 800	RK-AC 1252	RK-AC 1776	RK-AC 2521	
Nominal speed [rpm]	6000	3300	3300	4300	2500	4500	3000	3000	3000	3000	2000	
Torque [Nm]	1,12	1,18	2,4	2,6	2,8	3,45	4,7	8	12,52	17,76	25,21	
Nominal current [A]	2,4	1,46	2,8	2,8	2,5	5,4	4,6	4,8	7,38	10,35	9,95	
Nominal output [KW]	0,7	0,49	0,83	1,17	0,73	1,625	1,48	2,51	3,93	5,57	5,51	
Moment of inertia [kgmm <sup>2</sup> ]	30,2	30,2	140	140	140	336	336	900	1600	2150	2700	
Brake torque [Nm]	2,2	2,2	5	5	5	11	11	11	28	28	28	
Continuous standstill torque [Nm]	1,4	1,4	3	3	3	6	6	10	14,99	22,01	27,99	
Torque constant [Nm/A]	0,81	0,81	0,85	0,68	1,11	0,64	1,02	1,66	1,78	1,80	2,65	
Weight [kg]	without brake	1,5	1,5	3,5	3,5	3,5	4,7	4,7	7,7	17,5	22,7	28
	with brake	1,8	1,8	4,2	4,2	4,2	5,3	5,3	9,7	22,5	27,7	33
Servo motors	without gearbox		●	●			●					
	with gearbox	●			●	●		●	●	●	●	
Suitable for:	RK-Control 2S 2,5 A		RK-Control 2S 6,3 A		RK-Control 2S 2,5 A	RK-Control 2S 6,3 A		RK-Control 2S 7,5 A		RK-Control 2S 15 A		



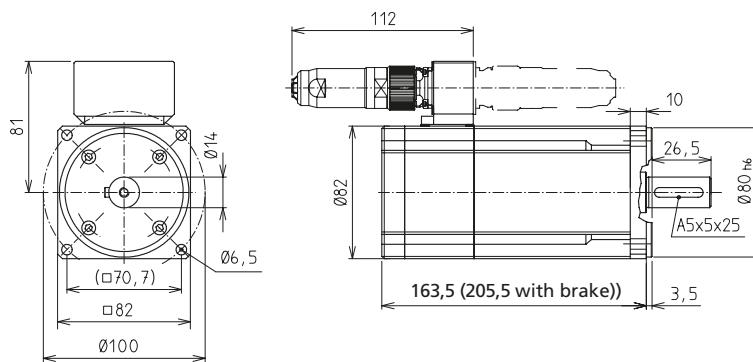
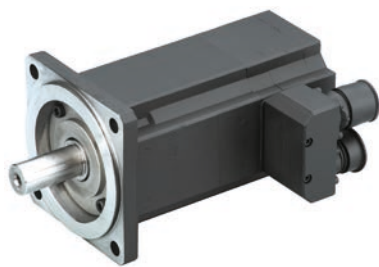
**RK-AC 118**



Code No.	Type
95801_00 SMH	RK-AC 118

0 = Standard  
1 = with brake

**RK-AC 240**

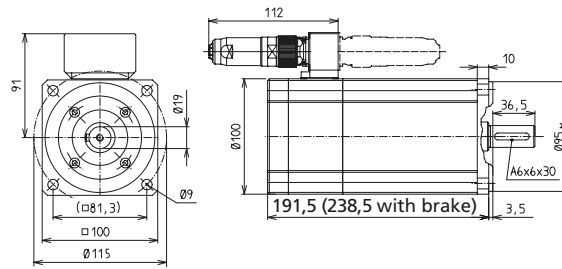
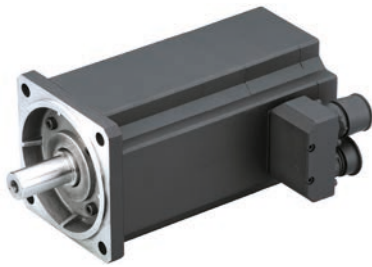


Code No.	Type
95802_00 SMH	RK-AC 240

0 = Standard  
1 = with brake

# Servo motors

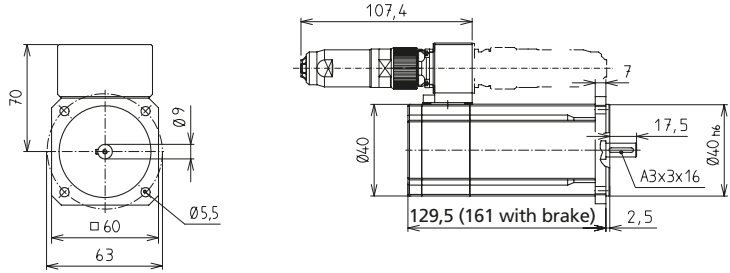
## RK-AC 470



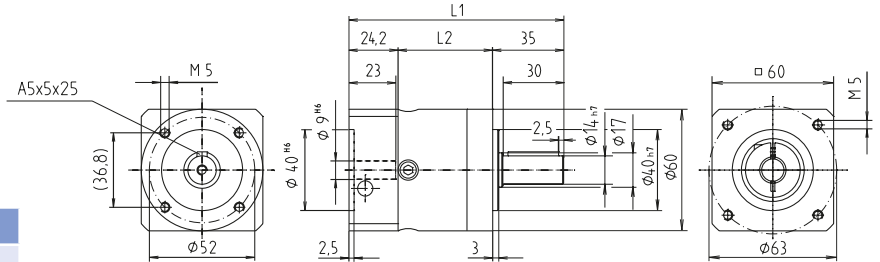
Code No.	Type
95803_00 SMH	RK-AC 470

0 = Standard  
1 = with brake

**RK-AC 112**



**Gear unit**  
**1-step i = 3:1/5:1/8:1**  
**2-step i = 9:1/12:1/15:1/20:1/25:1**



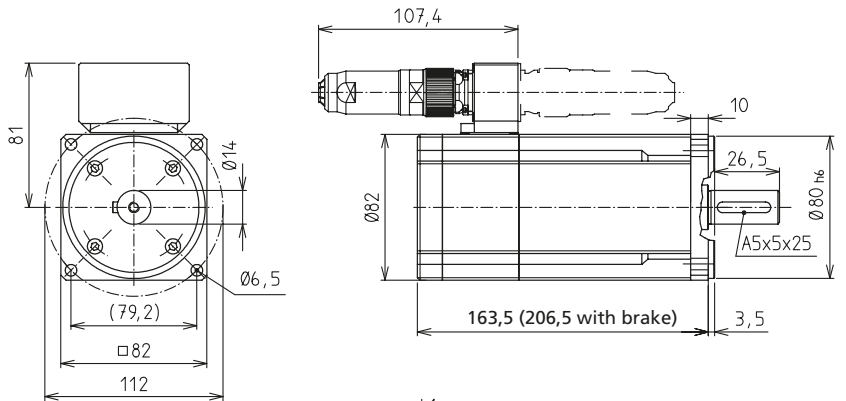
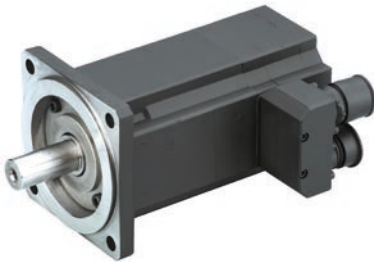
Code No.	Type
95811 SMH	RK-AC 112

**Gear selection:**  
 03 = gear 3:1  
 05 = gear 5:1  
 08 = gear 8:1  
 09 = gear 9:1  
 12 = gear 12:1  
 15 = gear 15:1  
 20 = gear 20:1  
 25 = gear 25:1

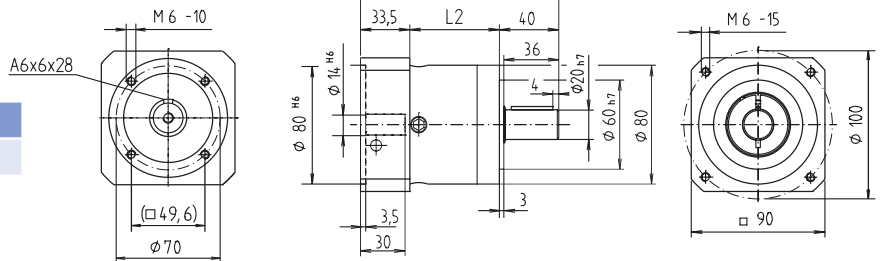
0 = Standard  
 1 = with brake

PLE 60	1-step 3:1 - 8:1	2-step 9:1 - 25:1
<b>Backlash</b>	< 16 arcmin	< 20 arcmin
<b>Max. average input speed</b>	4.500 min <sup>-1</sup>	4.500 min <sup>-1</sup>
<b>L1</b>	106	118,5
<b>L2</b>	47	59,5

**RK-AC 260**



**Gear unit**  
**1-step i = 3:1/5:1/8:1**  
**2-step i = 9:1/12:1/15:1/20:1/25:1**



Code No.	Type
95812 SMH	RK-AC 260

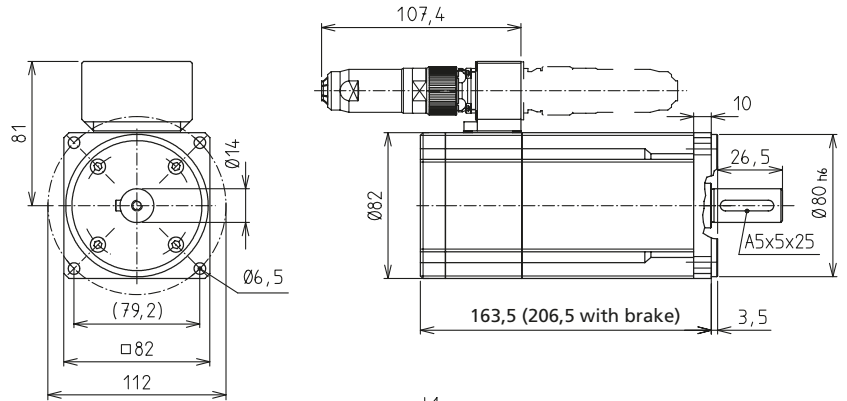
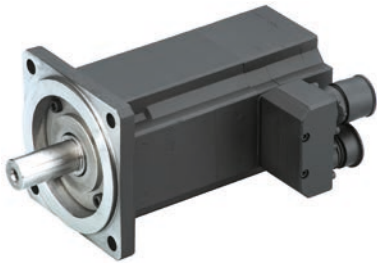
**Gear selection:**  
 03 = gear 3:1  
 05 = gear 5:1  
 08 = gear 8:1  
 09 = gear 9:1  
 12 = gear 12:1  
 15 = gear 15:1  
 20 = gear 20:1  
 25 = gear 25:1

0 = Standard  
 1 = with brake

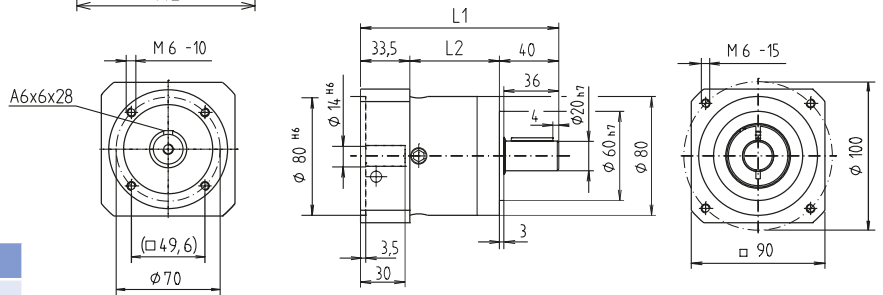
PLE 80	1-step 3:1 - 8:1	2-step 9:1 - 25:1
<b>Backlash</b>	< 9 arcmin	< 14 arcmin
<b>Max. average input speed</b>	4.000 min <sup>-1</sup>	4.000 min <sup>-1</sup>
<b>L1</b>	133,5	151
<b>L2</b>	60	77,5

# Servo motors

## RK-AC 280



**Gear unit**  
1-step  $i = 3:1/5:1/8:1$



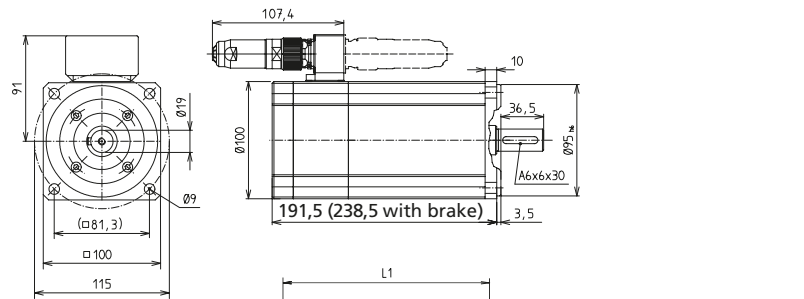
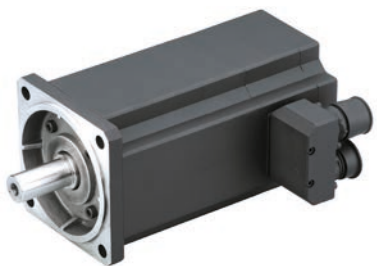
Code No.	Type
95818 SMH	RK-AC 280

**Gear selection:**  
03 = gear 3:1  
05 = gear 5:1  
08 = gear 8:1

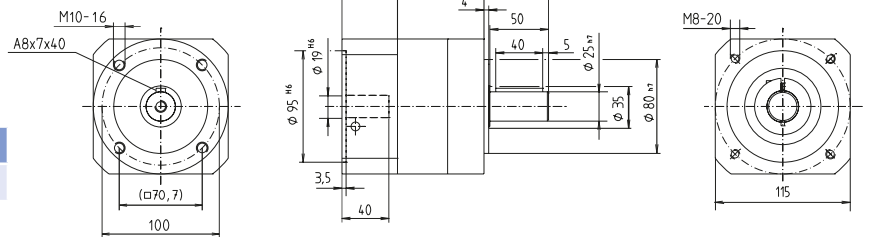
0 = Standard  
1 = with brake

PLE 80	1-step 3:1 - 8:1
Backlash	< 9 arcmin
Max. average input speed	4.000 min <sup>-1</sup>
L1	133,5
L2	60

## RK-AC 345



**Gear unit**  
1-step  $i = 3:1 / 5:1 / 8:1$   
2-step  $i = 9:1 / 12:1 / 15:1 / 20:1 / 25:1$



Code No.	Type
95813 SMH	RK-AC 345

**Gear selection:**  
03 = gear 3:1  
05 = gear 5:1  
08 = gear 8:1  
09 = gear 9:1  
12 = gear 12:1  
15 = gear 15:1  
20 = gear 20:1  
25 = gear 25:1

0 = Standard  
1 = with brake

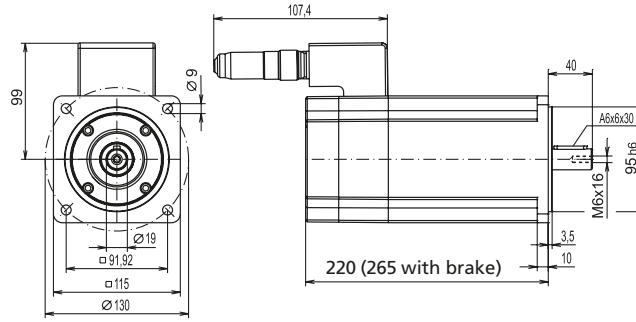
PLE 120	1-step 3:1 - 8:1	2-step 9:1 - 25:1
Backlash	< 8 arcmin	< 12 arcmin
Max. average input speed	3.500 min <sup>-1</sup>	3.500 min <sup>-1</sup>
L1	176,5	203,5
L2	74	101



# Servo motors with gear

**RK ROSE+KRIEGER**

## RK-AC 800



### Gear unit

1-step  $i = 3:1 / 5:1 / 8:1$

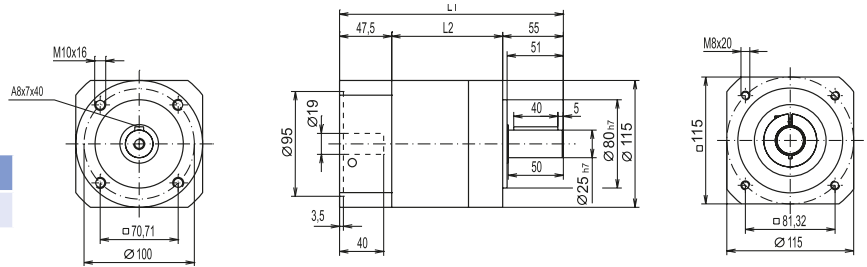
2-step  $i = 9:1 / 12:1 / 15:1 / 20:1$

Code No.	Type
95814 SMH	RK-AC 800

#### Gear selection::

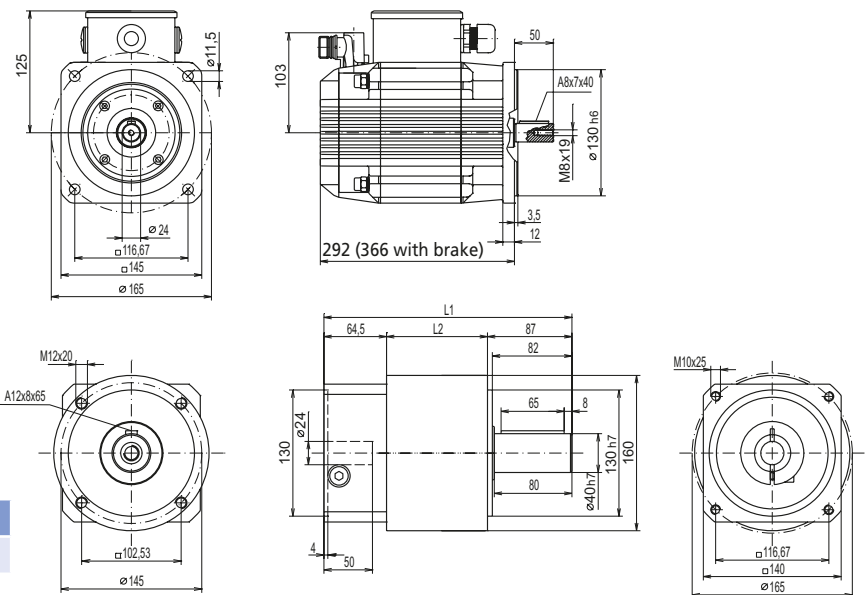
- 03 = gear 3:1
- 05 = gear 5:1
- 08 = gear 8:1
- 09 = gear 9:1
- 12 = gear 12:1
- 15 = gear 15:1
- 20 = gear 20:1

0 = Standard  
1 = with brake



PLE 120	1-step 3:1 - 8:1	2-step 8:1 - 20:1
Backlash	< 8 arcmin	< 12 arcmin
Max. average input speed	3.500 min <sup>-1</sup>	3.500 min <sup>-1</sup>
L1	176,5	203,5
L2	74	101

## RK-AC 1252



### Gear unit

1-step  $i = 3:1/5:1/8:1$

2-step  $i = 9:1/12:1/15:1/20:1$

Code No.	Type
95815 SMH	RK-AC 1252

#### Gear selection:

- 03 = gear 3:1
- 05 = gear 5:1
- 08 = gear 8:1
- 09 = gear 9:1
- 12 = gear 12:1
- 15 = gear 15:1
- 20 = gear 20:1

0 = Standard  
1 = with brake

PLE 160	1-step 3:1 - 8:1	2-step 9:1 - 20:1
Backlash	< 6 arcmin	< 10 arcmin
Max. average input speed	1,700-2,900 rpm	1,950-3,000 rpm
L1	255.5	305
L2	104	153.5

# Servo motors

## RK-AC 1776

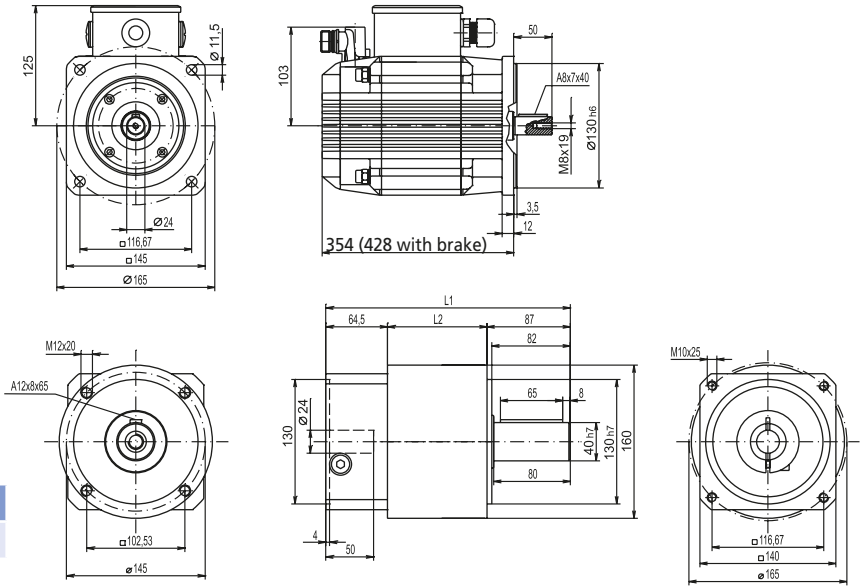


**Gear unit**  
 1-step  $i = 3:1/5:1/8:1$   
 2-step  $i = 9:1/12:1/15:1/20:1$

Code No.	Type
95816 SMH	RK-AC 1776

**Gear selection:**  
 03 = gear 3:1  
 05 = gear 5:1  
 08 = gear 8:1  
 09 = gear 9:1  
 12 = gear 12:1  
 15 = gear 15:1  
 20 = gear 20:1

0 = Standard  
 1 = with brake



PLE 160	1-step 3:1 - 8:1	2-step 9:1 - 20:1
<b>Backlash</b>	< 6 arcmin	< 10 arcmin
<b>Max. average input speed</b>	1,700-2,900 rpm	1,950-3,000 rpm
<b>L1</b>	255.5	305
<b>L2</b>	104	153.5

## RK-AC 2521

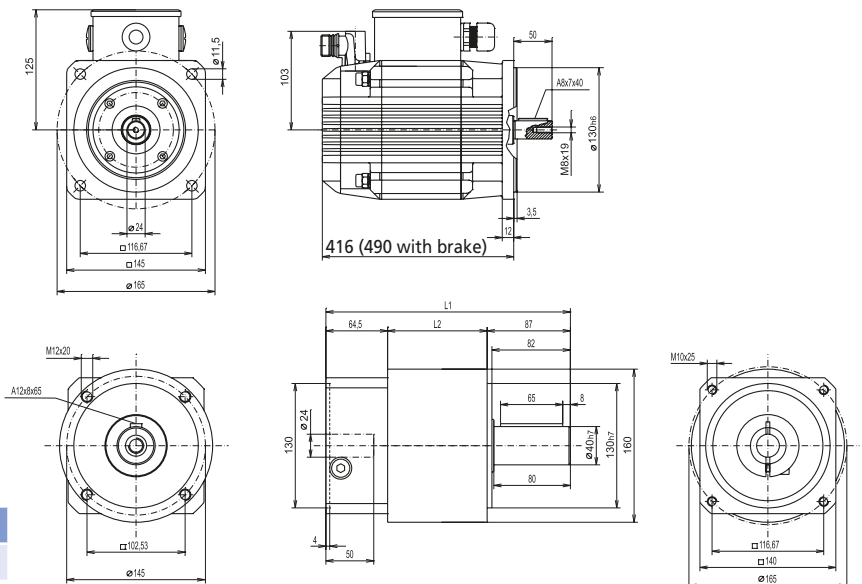


**Gear unit**  
 1-step  $i = 3:1/5:1/8:1$   
 2-step  $i = 9:1/12:1/15:1/20:1$

Code No.	Type
95817 SMH	RK-AC 2521

**Gear selection:**  
 03 = gear 3:1  
 05 = gear 5:1  
 08 = gear 8:1  
 09 = gear 9:1  
 12 = gear 12:1  
 15 = gear 15:1  
 20 = gear 20:1

0 = Standard  
 1 = with brake




PLE 160	1-step 3:1 - 8:1	2-step 9:1 - 20:1
<b>Backlash</b>	< 6 arcmin	< 10 arcmin
<b>Max. average input speed</b>	1,700-2,900 rpm	1,950-3,000 rpm
<b>L1</b>	255.5	305
<b>L2</b>	104	153.5

**Motor cables/resolver cables**




Code No.	Type	
95702511 _ _ _	Motor cable	RK-AC 112-800, choice of lengths
95702611	Resolver cable	RK-AC 112-800, choice of lengths

- 
- Length:**  
 0 2 5 = 2.5 m  
 0 5 0 = 5.0 m  
 0 7 5 = 7.5 m  
 1 0 0 = 10.0 m  
 1 2 5 = 12.5 m  
 1 5 0 = 15.0 m  
 2 0 0 = 20.0 m  
 2 5 0 = 25.0 m  
 : :  
 : :

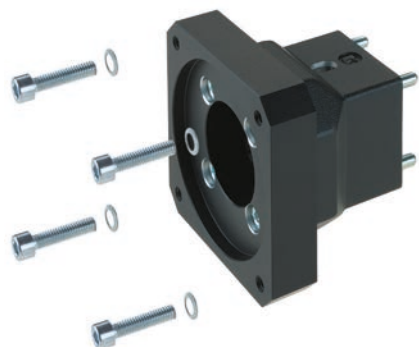
**Cables for use in cable drag chains**

Code No.	Type	
95702511 _ _ _ FLEX	Motor cable	RK-AC 112-800, choice of lengths
95702611 _ _ _ FLEX	Resolver cable	RK-AC 112-800, choice of lengths

- 
- Length:**  
 0 2 5 = 2.5 m  
 0 5 0 = 5.0 m  
 0 7 5 = 7.5 m  
 1 0 0 = 10.0 m  
 1 2 5 = 12.5 m  
 1 5 0 = 15.0 m  
 2 0 0 = 20.0 m  
 2 5 0 = 25.0 m  
 : :  
 : :

# 3-phase motors – Drive

## Motor adaptors/couplings for 3-phase motors



Type	Three-phase motor	
	90/120 W	180/250 W
EP(X) 30	949623	–
	911940 0812	–
EP(X) 40	949614	94914
	911430 1212	911430 1214
EP(X) 50	949614	949414
	911430 1212	911430 1214
EP(X) 60	–	949616
	–	911940 1414
EP(X) 80	–	949909
	–	911940 1420
COPAS 20	949623	–
	911940 0812	–
COPAS 30	949614	949048
	911430 1012	911430 1014
COPAS 40	949614	949048
	911430 1212	911430 1214
EV 30	949603	–
	910920 0812	–
EV 40	94937	94916
	911430 1012	911430 1014
EV 50	949605	94935
	911940 1212	911430 1214
EV 60	94976	949077
	911940 1212	911430 1214

Type	Three-phase motor	
	90/120 W	180/250 W
EV 80	94958	94940
	911940 1214	911940 1414
PLS 30	94981	–
	910920 0612	–
PLS 40	949100	949101
	911430 0812	911430 0814
PLS 50	949605	94935
	911430 1012	911430 1014
PLS 60	949107	949108
	911430 1212	911430 1214
PLS 80	94958	94940
	911940 1214	911940 1414
RK DuoLine S 50	949981	949982
	911430 0812	911430 0814
RK DuoLine S 80	949859	949858
	911940 1212	911430 1214
DuoLine S 80 x 120	949060	949061
	911940 1212	911430 1214
PLZ 30	94995	949948
	910920 1012	911430 1014
PLZ 40	94987	94988
	911430 1012	911430 1014
PLZ 50	94905	949527
	911430 1214	911430 1414

Code No. Motor adaptor:  
**94976**

Code No. Coupling with  
specification of pin dia-  
meter

1st end = 12 mm

2nd end = 25 mm:

**911940 1225**

For further details of dimensions, please refer to the chapter on the relevant linear unit.



## Motor adaptors/couplings for 3-phase motors

Type	Three-phase motor	
	90/120 W	180/250 W
PLZ 60	94956	94950
	911940 1220	911940 1420
PLZ 80	949329	949114
	912855 1225	912855 1425
PLZ-i 30	949504	–
	910920 0612	–
PLZ-i 40	949516	949517
	911430 0812	911430 0814
PLZ-i 50	949526	949527
	911940 1012	911940 1014
PLZ-i 60	949547	949548
	911940 1212	911430 1214
PLZ-i 80	949547	949567
	911940 1214	911430 1414
SQZ 30	94995	–
	910920 1012	–
SQZ 40, 40 x 80	94987	94988
	911430 1012	911430 1014
SQZ 60, 60 x 120	949029	949030
	911940 1215	911940 1415
SQZ 80 x 160	94956	94950
	911940 1220	911940 1420
SQZ 80	949695	949697
	912855 1225	912855 1425

Type	Three-phase motor	
	90/120 W	180/250 W
SQ MT 30	949913	949949
	910920 1012	911430 1014
SQ MT 40, 40 x 80	949920	949921
	911430 1012	911430 1014
SQ MT 50, 50 x 100	949928	949929
	911430 1214	911430 1414
SQ MT 60, 60 x 120	949938	949939
	911940 1220	911940 1420
SQ MT 80, 80 x 160	949944	949945
	912855 1225	912855 2025
LMZ	949039	949114
	912855 1225	912855 1425
DuoLine Z 50	949974	949975
	911940 1012	911940 1014
DuoLine Z 80	949958	949959
	911940 1220	911940 1420
DuoLine Z 120 x 80	949043	949808
	912855 1225	912855 1425
MultiLine	949968	949969
	912855 1230	912855 1430



Code No. Motor adaptor:  
**949695**

Code No. Coupling with  
specification of pin dia-  
meter  
1st end = 12 mm  
2nd end = 25 mm:  
**912855 1225**

## Motor adaptors/couplings for stepper motors

Type	Stepper motor	
	PD 42	PD 56
PLM	91462	91472
	910714 0505	910714 0506
RK Kompakt 80	91301	91302
	910714 0505	910714 0506
RK Kompakt 120	91303	91309
	910714 0505	910714 0506

Code No. Motor adaptor:  
**91472**

Code No. Coupling with  
specification of pin dia-  
meter  
1st end = 5 mm  
2nd end = 6 mm:  
**910714 0506**

# Servo motors – Drive

## Motor adaptors/couplings for servo motors\*

Type	Servo motor without gear unit			Servo motor with gear unit		
	RK-AC 118	RK-AC 240	RK-AC 470	RK-AC 112	RK-AC 260	RK-AC 345
EP(X) 30	949200	–	–	–	–	–
	911430 0811	–	–	–	–	–
EP(X) 40	949201	949221	–	–	–	–
	911430 1112	911430 1214	–	–	–	–
EP(X) 50	949202	949222	–	–	–	–
	911430 1112	911430 1214	–	–	–	–
EP(X) 60	949203	949223	949239	–	–	–
	911430 1114	911940 1414	911940 1419	–	–	–
EP(X) 80	949901	949903	949905	–	–	–
	911940 1120	911940 1420	911940 1920	–	–	–
COPAS 20	949218	949328	949327	–	–	–
	911430 0811	911940 0814	911940 0819	–	–	–
COPAS 30	949220	949238	949084	–	–	–
	911430 1011	911430 1014	911430 1019	–	–	–
COPAS 40	949220	949238	949051	–	–	–
	911430 1112	911430 1214	911940 1920	–	–	–
EV 30	949204	–	–	–	–	–
	911430 0811	–	–	–	–	–
EV 40	949205	949280	–	–	–	–
	911430 1011	911430 1014	–	–	–	–
EV 50	949206	949225	–	–	–	–
	911430 1112	911430 1214	–	–	–	–
EV 60	949052	949087	949080	–	–	–
	911430 1112	911940 1214	911940 1219	–	–	–
EV 80	949401	949226	949240	–	–	–
	911430 1114	911940 1414	911940 1419	–	–	–
PLS 30	949207	–	–	–	–	–
	911430 0611	–	–	–	–	–
PLS 40	949208	949227	–	–	–	–
	911430 0811	911430 0814	–	–	–	–
PLS 50	949209	949228	–	–	–	–
	911430 1011	911430 1014	–	–	–	–
PLS 60	949210	949229	949241	–	–	–
	911430 1112	911940 1214	911940 1219	–	–	–
PLS 80	949404	949230	949242	–	–	–
	911430 1114	911940 1414	911940 1419	–	–	–
DuoLine S 50	949976	949978	–	–	–	–
	911430 0811	911430 0814	–	–	–	–
DuoLine S 80	949850	949852	949854	–	–	–
	911430 1112	911940 1214	911940 1219	–	–	–
DuoLine S 80x120	949053	949055	949057	–	–	–
	911430 1112	911940 1214	911940 1219	–	–	–
PLZ 30	949211	–	–	949426	–	–
	910920 1011	–	–	911430 1014	–	–
PLZ 40	949212	949231	–	949427	949428	–
	911430 1011	911430 1014	–	911430 1014	911940 1020	–
PLZ 50	949213	949232	–	949429	949430	–
	911430 1114	911430 1414	–	911940 1414	911940 1420	–
PLZ 60	949214	949233	949243	949431	949432	949433
	911940 1120	911940 1420	911940 1920	911940 1420	911940 2020	912855 2025

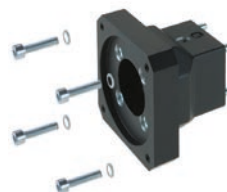
\* Motor adaptors and couplings for servo motors  
 RK-AC 800, RK-AC 1252, RK-AC 1776 and  
 RK-AC 2552 are available on request.

## Motor adaptors/couplings for servo motors\*

Type	Servo motor without gear unit			Servo motor with gear unit		
	RK-AC 118	RK-AC 240	RK-AC 470	RK-AC 112	RK-AC 260	RK-AC 345
PLZ 80	–	949234	949244	949434	949435	949436
	–	912855 1425	912855 1925	912855 14225	912855 2025	912855 2525
PLZ-i 30	949501	–	–	–	–	–
	911430 0611	–	–	–	–	–
PLZ-i 40	949510	949512	–	–	–	–
	911430 0811	911430 0814	–	–	–	–
PLZ-i 50	949520	949522	–	–	–	–
	911430 1011	911430 1014	–	–	–	–
PLZ-i 60	949540	949542	949544	–	–	–
	911430 1112	911940 1214	911940 1219	–	–	–
PLZ-i 60	949540	949542	949544	–	–	–
	911430 1112	911940 1214	911940 1219	–	–	–
PLZ-i 80	–	949560	949562	–	–	–
	–	911940 1414	911940 1419	–	–	–
SQZ 30	949215	–	–	–	–	–
	911430 1011	–	–	–	–	–
SQZ 40 40x80	949216	949235	–	949438	949439	–
	911430 1011	911430 1014	–	911430 1014	911940 1020	–
SQZ 80x160	949217	949236	949245	949440	949441	949442
	911430 1115	911940 1415	911430 1519	911940 1415	911940 1520	912855 2025
SQZ 80x16	–	949237	949246	949443	949444	949445
	–	911940 1420	911940 1920	912855 1420	912855 2020	912855 2025
SQZ 80	–	949683	949687	949681	949685	949686
	–	912855 1425	912855 1925	912855 1425	912855 2025	912855 2525
SQ MT 30	949910	–	–	–	–	–
	911430 1011	–	–	–	–	–
SQ MT 40 40x80	949915	949917	–	–	–	–
	911430 1011	911430 1014	–	–	–	–
SQ MT 60 60x120	949922	949924	–	–	–	–
	911430 1114	911430 1414	–	–	–	–
SQ MT 60 60x120	949930	949932	949934	–	–	–
	911430 1120	911940 1420	911430 1920	–	–	–
SQ MT 80 80x160	–	949940	949942	–	–	–
	–	912855 1425	912855 1925	–	–	–
LMZ	–	949037	949038	949449	949450	949451
	–	912855 1425	91285 1925	912855 1425	912855 2025	912855 2525
DuoLine Z 50	949971	–	–	949452	–	–
	911940 1011	–	–	911430 1014	–	–
DuoLine Z 80	–	949952	949954	949453	949454	–
	–	911940 1420	911940 1920	911940 1420	911940 2020	–
DuoLine Z 120x80	–	949041	949042	949455	949456	949457
	–	912855 1425	912855 1925	912855 1425	912855 2025	912855 2525
MultiLine	–	949962	949964	949446	949447	949448
	–	912855 1430	912855 1930	912855 1430	912855 2030	912855 2530

Code No. Motor adaptor:  
**949962**

Code No. Coupling with  
 specification of pin dia-  
 meter  
 1st end = 14 mm  
 2nd end = 30 mm:  
**912855 1430**



For further details of dimen-  
 sions, please refer to the chap-  
 ter on the relevant linear unit.

# Converters and controls for linear actuators



## FW 3-phase frequency converter

- ✓ Supports full Profibus connection

### Features: FW 3-phase frequency converter

- Supports full Profibus connections
- Includes all components required for operation of three-phase motors - pre-wired and ready for connection



## RK-Control servo technology

- ✓ Innovative and flexible device technology

### Features: RK-Control servo technology

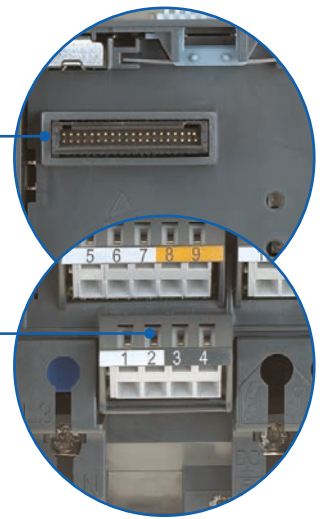
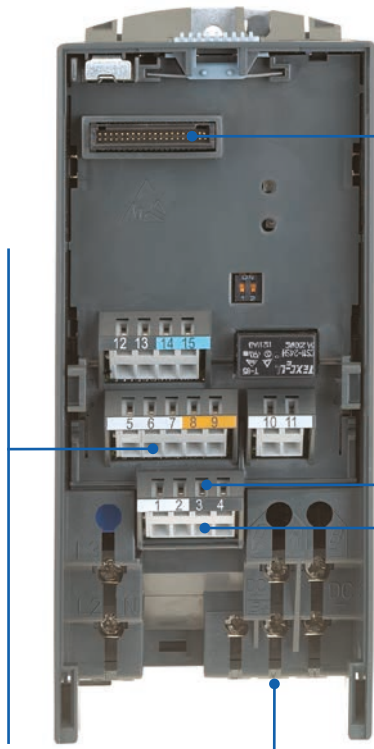
- Can be tailored to your applications
- Ideal drive controller for dynamic and high-precision single and multiple solutions
- Reliable and cost-effective solutions

**Converters and controls for linear actuators - Table of contents**

<p><b>FW 3-phase frequency converter</b></p>	<ul style="list-style-type: none"> <li>■ Description/operating conditions ..... 527</li> <li>■ Application example..... 529</li> <li>■ Accessories..... 528</li> </ul>
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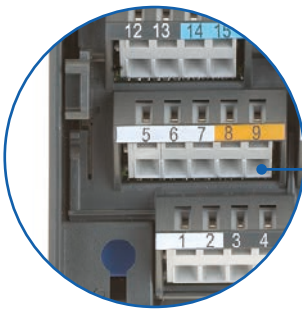
# FW 3-phase frequency converter

## Frequency converter 120/250 W

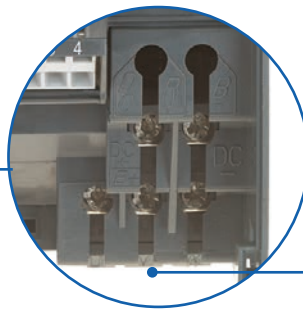


### Connection for control panel via standard interface

✓ Innovative and flexible technology



### Digital inputs and outputs



### Motor connection

✓ Low-noise motor



### Analogue input

✓ Frequency control

### Features:

- Manual operation via front panel or I/O
- Parameter input via front panel
- Integrated EMI filter (class A)
- Simple commissioning due to self adjusting
- Programmable acceleration/ deceleration

- 3 programmable isolated digital inputs (e.g. for fixed frequencies)
- Integrated serial interface RS485 (USS protocol)
- Analogue output/input
- Storage of 7 fixed frequencies

### Options:

- Separate plain text control panel available with multiple languages (optional)
- Various adaptors available on request

### General information/operating conditions

Voltage	230 V AC (47-63 Hz)
Output frequency	0-650 HZ
Frequency resolution	0.01
Overload capability	150% for 60 s
Interfaces	RS485 analogue 0-10 V, various fieldbuses (optional), RS232 (optional)
Protection class	IP 20
Dimensions H x W x D	147 x 73 x 141 mm
Ambient temperature	-10°C to +50°C

### Frequency converter 120/250 W

Code No.	Type	Version*
957500	Frequency converter FW 120	for motors 90 and 120 W
957501	Frequency converter FW 250	for motors 180 and 250 W

\* Other outputs available on request

### Motor for cable drag chains



Code No.	Type
957050	Motor cable 4 x 1.5 + 2 x (2 x 0.75) mm for connection to a frequency converter; range of lengths

- Length:
- 0 2 5 = 2.5 m
  - 0 5 0 = 5.0 m
  - 0 7 5 = 7.5 m
  - 1 0 0 = 10.0 m
  - 1 2 5 = 12.5 m
  - 1 5 0 = 15.0 m
  - 2 0 0 = 20.0 m
  - 2 5 0 = 25.0 m

# FW 3-phase frequency converter/accessories

## Plain text control panel

- Upload/Download
- Storage of up to 10 parameter records of the frequency converters
- Up to 31 frequency converters can be controlled via RS485 (USS protocol) using a plain text control panel
- Switch between multiple languages

Code No.	Type
957510	Plain text control panel

## Profibus module

- Supports full connection to Profibus ( $\leq 12$  V baud)
- Optional external supply with 24 V DC
- Connection via 9-pin SUB-D connector, customer-supplied

Code No.	Type
957513	Profibus module

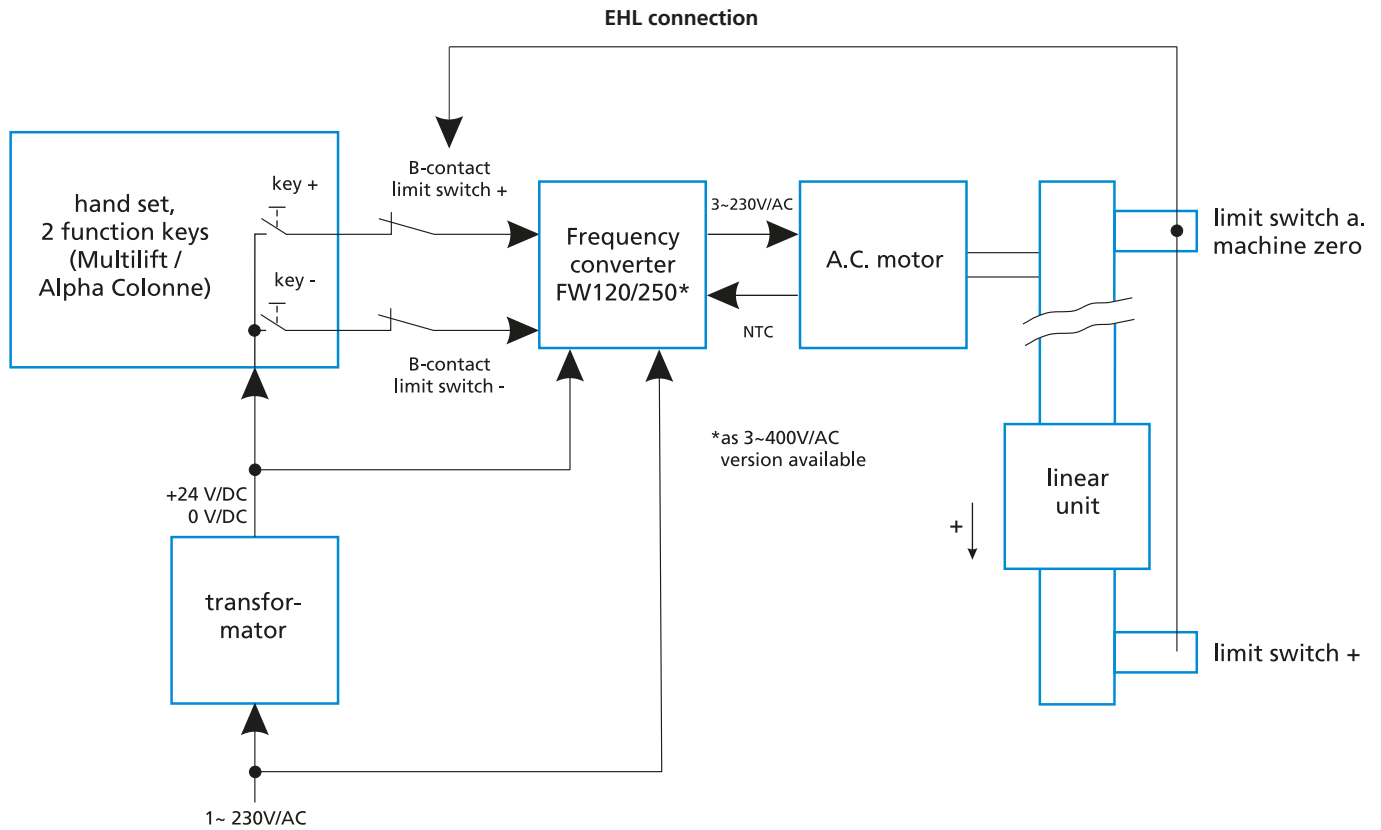
## PC converter

- Control of a frequency converter directly from PC
- Connection via 9-pin SUB-D connector, included in assembly kit
- RS232 standard cable (3 m)

Code No.	Type
957512	PC converter (assembly kit)



**Application example FW120/250**  
**EHL simulation for special performance requirements or speeds**



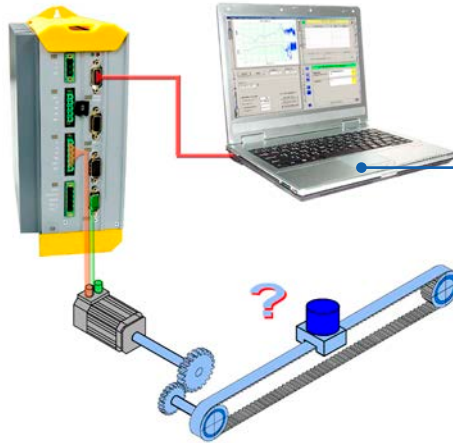
- The frequency converter FW 120 or 250 is supplied via the transformer 24 V DC
- Two digital inputs are set on the frequency converter via the 2-key hand switch (1 x clockwise rotation, 1 x anticlockwise rotation)
- 2 types of speed setpoints:
  - 1) a fixed frequency set on the frequency converter
  - 2) (4.7 kilohms, customer-supplied, infinitely variable frequency through to max. speed) controlled via potentiometer

Pressing the “+” key on the hand switch, moves the carriage in the + direction as far as the + limit switch, at most. The NC contact in the limit switch interrupts the hand switch signal. Then only return travel in the opposite direction is possible. We recommend the use of limit switches in order to prevent damage to the linear unit, the motor and the frequency converter.

The application example is based on the use of standard components and offers a cost-effective unit for simple movement tasks. Alternatively, you can also connect a 4-key hand switch. This provides two speeds in each direction.

# RK-Control 2S

Innovative and flexible technology  
for dynamic and high-precision single and multiple solutions



Commissioning and  
control optimisation



Motor manager



Control optimisation

## Features:

- Quick and easy run in
- Guided parameterization
- All connections located on the front
- Optimally co-ordinated performance classes and technology functions
- Increased lifetime due to jerk-limited setpoint generation
- Low development costs due to safety technology
- Optimum motion control – minimal lag error
- Internal network filter
- Run in software included free of charge

**Standard**

- 8 digital inputs/4 digital outputs
- RS232/RS485 interface
- 2 analogue inputs
- 2 analogue outputs
- CE, UL, cUL

**Enhancements**

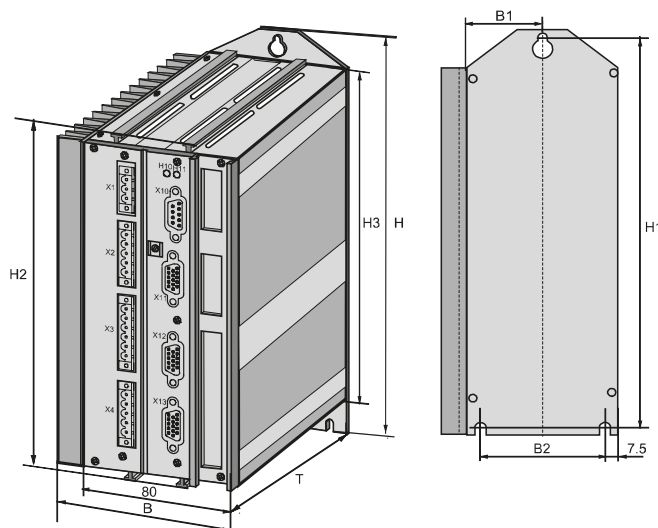
- Optimally co-ordinated technology functions
- Expansion with an additional 12 inputs/outputs (input and output both freely configurable)
- Supports all standard fieldbuses



**Performance levels**

Device: RK-Control 2S	Current [A <sub>rms</sub> ]		Line voltage ± 10%, 50-60 Hz	Output [kVA]	Suitable for: servo motors
	I <sub>cont</sub>	I <sub>peak</sub> (< 5 s)			
2.5 A	2.5	5.5	1 * 230/240 VAC	1.0	RK-AC 112, 118 and 210
6.3 A	6.3	12.6		2.5	RK-AC 240, 260, 345 and 470
7.5 A	7.5	15	3 * 400/480 VAC	6.2	RK-AC 800, 1252
15 A	15	30		11.5	RK-AC 2521, 1776

**Size/weight**



[mm]

Device: RK-Control 2S	Dimensions					Clearances			Weight [kg]
	H	B	T	H2	H3	B1	B2	H1	
2.5 A	222	84	172	203	191	40	65	210	2.0
6.3 A	222	100	172	203	191	40	65	210	2.5
7.5 A	279	115	172	259	248	40	65	267	4.3
15 A	279	158	172	259	248	39	80	267	6.8

## Connection to superordinated controls

Connection can be implemented via digital inputs and outputs.

Digital inputs/outputs	
The digital I/Os can be expanded by a further 12 I/Os (optional). This enables control of the full range of 31 motion functions, instead of just the 3 motion functions (e.g. • positions).	

In addition, the following fieldbus types are also supported:

Profibus	
Profibus – characteristics	
DP versions:	DPV0/DPV1
Baud rate:	Up to 12 MHz
Profibus ID:	C320

CANopen	
CANopen – characteristics	
Baud rate [kBit/s]:	20 ... 1000
Service Data Object:	SDO1
Process Data Objects:	PDO1, ... PDO4

DeviceNet	
DeviceNet – characteristics	
I/O - data:	up to 32 byte
Baud rate [kBit/s]:	125 ... 500
Participants:	up to 63 slaves

Powerlink	
Ethernet Powerlink – characteristics	
Baud rate:	100 Mbits (FastEthernet)
Cycle time:	1 ms

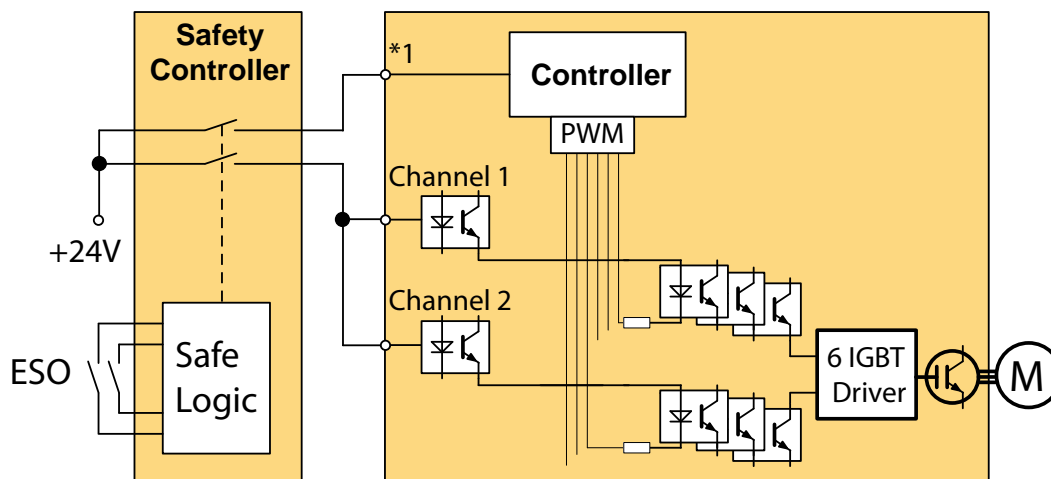
EtherCAT	
EtherCAT – characteristics	
Baud rate:	100 Mbits (FastEthernet)
Cycle time:	1 ms

### Safety technology

The standard EN ISO 13849-1 introduced the term Performance Levels for the design of safety-relevant controls. In compliance with the safety category 3 PL d as defined in EN ISO 13849-1, the RK Control 2S can be used for the following functions:

#### Safe standstill function (zero-torque drive)

- Safe Torque Off (STO)



### STO function on RK-Control 2S

In combination with an external emergency stop module (optional), the STO function on the RK Control 2S can be implemented as illustrated.

All safety motion functions require the use of a special external safety module SMX11 with the RK-Control 2S in conjunction with high-resolution absolute value encoders in the servo motors.

The SMX11 safety module and servo motors with absolute value encoders are available on request.

#### Safe movement functions

- Safe Torque Off, STO
- Safe Stop 1, SS1
- Safe Stop 2, SS2
- Safe Limited Speed, SLS
- Safe Operating Stop, SOS
- Safe Limited Increment SLI
- Safe Direction, SDI

# RK-Control 2S – Drive/positioning

## Device technology

### Functions: positioning version

With its generally analogue interface, or alternatively step/direction or encoder actuating signals, the RK-Control 2S offers simple and cost-effective access to the world of servo drive technology. The central control unit, e.g., PLC

or PC, remains the same. This means that the RK-Control 2S is the ideal way to migrate from analogue  $\pm 10\text{ V}$  drives to intelligent digital servo drives.

### You can choose from a range of operating modes:

#### $\pm 10\text{ V}$ - input

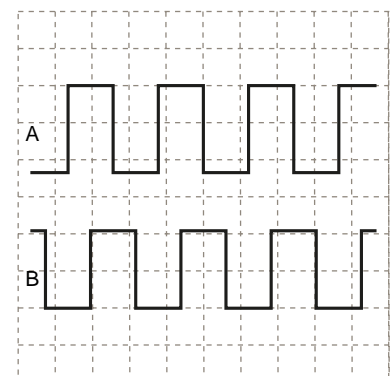
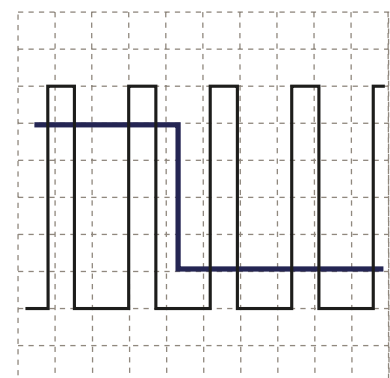
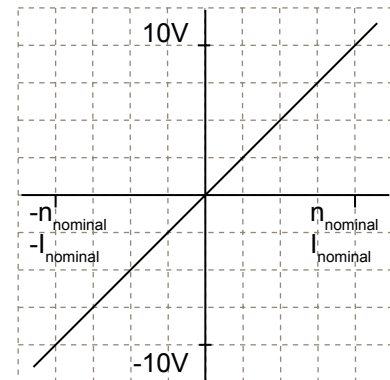
- $\pm 10\text{ V}$  set speed with encoder simulation as actual position feedback
- $\pm 10\text{ V}$  set current with encoder simulation as actual position feedback and configurable locking functions

#### Step/direction input

- Step/direction signals as 24 V level or
- Step/direction signals in accordance with RS422

#### Encoder input

- RS422
- 24 V level





# RK-Control 2S

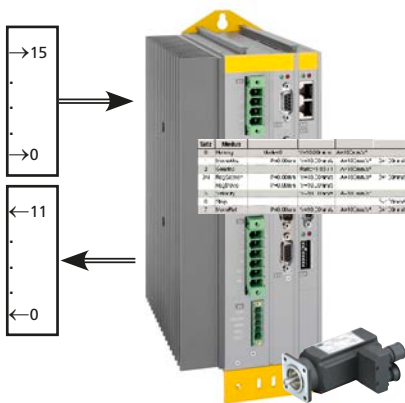
## Functions: positioning version

Due to its excellent functionality, the positioning version of RK-Control 2S forms an ideal basis for many applications in high-performance motion automation.

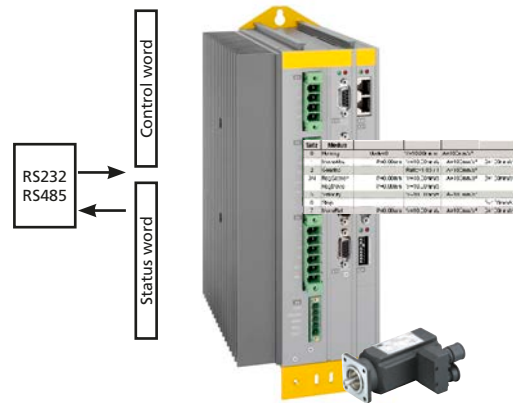
- Up to 31 motion functions can be created with the supplied PC software.
- The number of the available motion functions depends on the optional extension of the selected or unselected digital inputs and outputs.
- Storage of the motion profiles is non-volatile
- Adjustable jerk limitation
- Optional expansion of digital inputs/outputs
- Comprehensive selection of machine zero modes for adaptation of the RK-Control 2S for your application

## Motion control via inputs/ outputs or serial

- Up to 31 motion functions via set table
- Status bits for each motion set



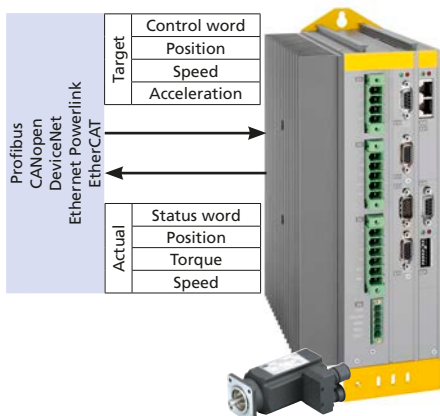
Via digital inputs and outputs



Via RS232/RS 485 by means of control and status word

## Motion control via field bus

- Direct set specification via bus telegram or
- set selection (31 motion functions in set table)
- Status bits for each motion set
- Operating modes:
  - Speed controller
  - Direct positioning
  - Positioning with set selection
- Profile-compliant via Profibus, CANopen, DeviceNet, Ethernet Powerlink, EtherCAT

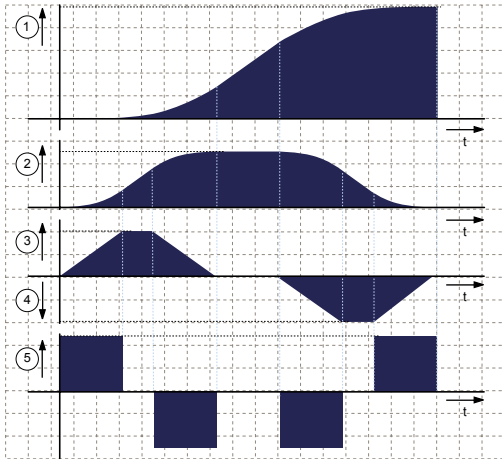


# RK-Control 2S – Positioning

## Motion functions of positioning version

### Absolute/relative positioning

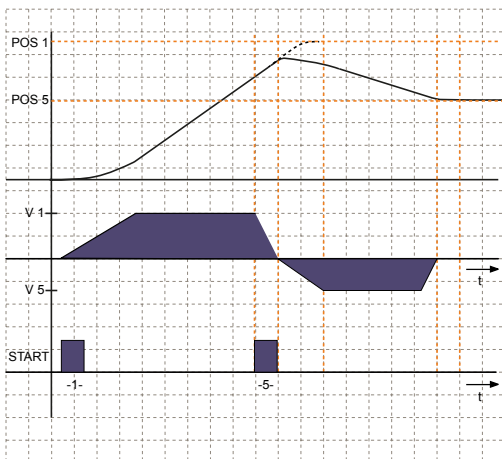
MoveAbs and MoveRel



A motion set defines a complete movement with all configurable parameters:

- (1) Target position
- (2) Traversing speed
- (3) Maximum acceleration
- (4) Maximum delay
- (5) Maximum jerk

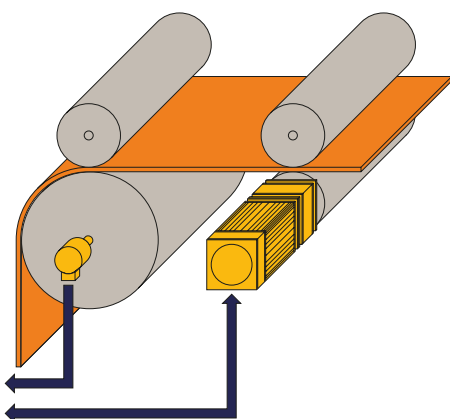
### Dynamic positioning



- During positioning, you can switch to a new motion profile – the transition is dynamic.

### Electronic gears

Gearing



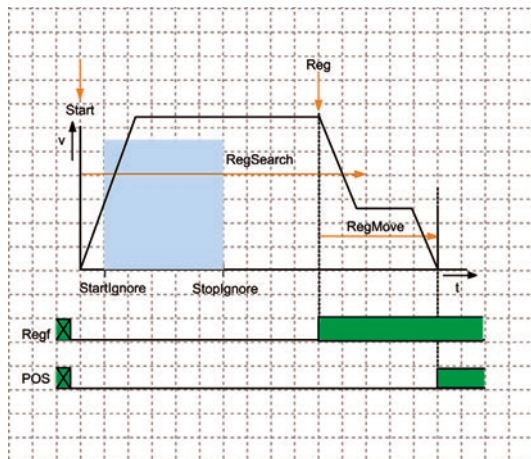
Synchronisation of two linear units via:

- Encoder simulation at the master and
- encoder input at the slave
- Motion synchronised to a leading axis with any
- transmission ratio
- $\pm 10$  V analogue input
- Step/direction input
- Encoder input



## Registration mark-related positioning

Reg Search, RegMove



2 motions are defined for registration mark-related positioning:

- **RegSearch:** Search for an external signal – from a registration mark, such as an identification mark on a product.
- **RegMove:** an external signal interrupts the search motion, which is immediately followed by the second motion.
- Accuracy of mark detection < 1µs

## Input of motion sets via set table

2/3 Satztable

Satz	Modus						
0	Homing	Mode=0	V=10.00mm/s	A=100mm/s <sup>2</sup>			000
1	MoveAbs	P=10.00mm	V=10.00mm/s	A=100mm/s <sup>2</sup>	D=100mm/s <sup>2</sup>	J=1000000mm/s <sup>3</sup>	1XX
2	Velocity		V=30.00mm/s	A=100mm/s <sup>2</sup>			X1X
3	Gearing		Ratio=0.25 / 1	A=1000mm/s <sup>2</sup>			XX1
4	Stop				D=100mm/s <sup>2</sup>	J=1000000mm/s <sup>3</sup>	XX0
5/6	RegSearch	P=50.00mm	V=10.00mm/s	A=100mm/s <sup>2</sup>	D=100mm/s <sup>2</sup>	J=1000000mm/s <sup>3</sup>	0XX
	RegMove	P=60.00mm	V=10.00mm/s				X0X
7	MoveRel	P=-100.00mm	V=10.00mm/s	A=100mm/s <sup>2</sup>	D=100mm/s <sup>2</sup>	J=1000000mm/s <sup>3</sup>	11X
8	Gearing		Ratio=0.33 / 1	A=100mm/s <sup>2</sup>			XX1
9	MoveAbs	P=20.00mm	V=10.00mm/s	A=100mm/s <sup>2</sup>	D=100mm/s <sup>2</sup>	J=1000000mm/s <sup>3</sup>	XXX
10	Stop				D=100mm/s <sup>2</sup>	J=1000000mm/s <sup>3</sup>	0XX
11	MoveAbs	P=40.00mm	V=10.00mm/s	A=100mm/s <sup>2</sup>	D=100mm/s <sup>2</sup>	J=1000000mm/s <sup>3</sup>	1XX
12/13	RegSearch	P=100.00mm	V=10.00mm/s	A=1000mm/s <sup>2</sup>	D=1000mm/s <sup>2</sup>	J=1000000mm/s <sup>3</sup>	000
	RegMove	P=0.00mm	V=10.00mm/s				111
14	MoveRel	P=-40.00mm	V=10.00mm/s	A=100mm/s <sup>2</sup>	D=100mm/s <sup>2</sup>	J=1000000mm/s <sup>3</sup>	XXX
15	Stop				D=100mm/s <sup>2</sup>	J=1000000mm/s <sup>3</sup>	XXX
16	Velocity		V=25.00mm/s	A=100mm/s <sup>2</sup>			XXX
17	Gearing		Ratio=1.00 / 1	A=100mm/s <sup>2</sup>			XX1
18/19	RegSearch	P=70.00mm	V=10.00mm/s	A=100mm/s <sup>2</sup>	D=100mm/s <sup>2</sup>	J=1000000mm/s <sup>3</sup>	0XX
	RegMove	P=0.00mm	V=10.00mm/s				1XX
20	MoveAbs	P=0.00mm	V=10.00mm/s	A=100mm/s <sup>2</sup>	D=100mm/s <sup>2</sup>	J=1000000mm/s <sup>3</sup>	XXX
21	Gearing		Ratio=0.13 / 1	A=100mm/s <sup>2</sup>			XXX
22	MoveAbs	P=0.00mm	V=10.00mm/s	A=100mm/s <sup>2</sup>	D=100mm/s <sup>2</sup>	J=1000000mm/s <sup>3</sup>	XXX
23	Stop				D=100mm/s <sup>2</sup>	J=1000000mm/s <sup>3</sup>	XXX
24	Empty						000

< Zurück   Weiter >   Abbrechen   Hilfe

### Speed control

Velocity

- Defined by the speed and the acceleration

### Stop movement

Stop

- The Stop set interrupts the current motion set

# RK-Control 2S – Positioning

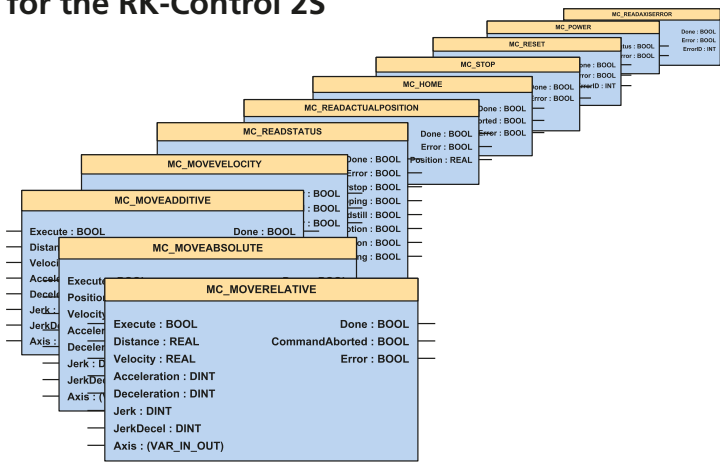
## Functions: positioning with function blocks

- Device-specific function blocks:
  - for generating an input process image
  - for generating an output process image
  - as access to motion set table



- PLC open function blocks
- Programmable according to IEC 61131-3
- Programming system: Codesys
- Up to 6,000 instructions
  - IEC 61131-3 standard modules, such as timers, triggers, counters, etc.

## Function blocks for the RK-Control 2S



- Absolute positioning
- Stop
- Reading the axis error
- Relative positioning
- Machine zero
- Acknowledgement of errors
- Additive positioning
- Energising the output stage
- Reading the current position
- Continuous positioning
- Reading the device status
- Electronic gears

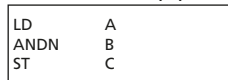
## IEC 61131-3

IEC 61131-3 is the only globally supported programming language for industrial automation that is company and product-independent.

IEC 61131-3 includes graphical and textual programming languages.

- Instruction list
- Structured text
- Ladder diagram
- Sequential function chart
- Function block diagram

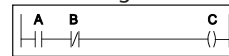
Instruction list (IL)



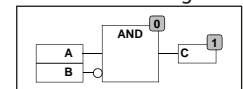
Structured text:



Ladder diagram:

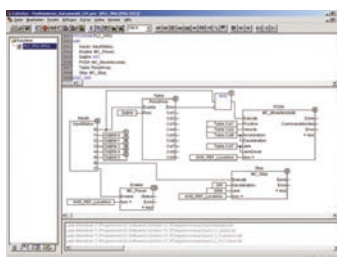


Function block diagram:



## Programming with CoDeSys

CoDeSys is a development environment for programming that enables considerable time savings when creating your application.



- Globally established high-performance development environment
- Complete offline simulation
- Visual elements
- Data exchange between devices of different manufacturers
- Complete online functionality
- Sophisticated technical features
- Comprehensive project management
- Included free of charge

**Order data - RK-Control 2S**

Code No.	Control	Standard	Positioning	Positioning with function blocks	Fieldbus	Additional I/O
79391A1A11	2.5A	-	•	-	-	-
79391A1B11	2.5A	-	•	-	-	•
79391A2A11	2.5A	-	•	•	-	-
79391A3A11	2.5A	-	•	-	Profibus DP	-
79391A4A11	2.5A	-	•	•	Profibus DP	-
79391A5A11	2.5A	-	•	-	CANopen	-
79391A6A11	2.5A	-	•	•	CANopen	-
79392A1A11	6.3A	-	•	-	-	-
79392A1B11	6.3A	-	•	-	-	•
79392A2A11	6.3A	-	•	•	-	-
79392A3A11	6.3A	-	•	-	Profibus DP	-
79392A4A11	6.3A	-	•	•	Profibus DP	-
79392A5A11	6.3A	-	•	-	CANopen	-
79392A6A11	6.3A	-	•	•	CANopen	-
79393A1A11	7.5A	-	•	-	-	-
79393A1B11	7.5A	-	•	-	-	•
79393A2A11	7.5A	-	•	•	-	-
79393A3A11	7.5A	-	•	-	Profibus DP	-
79393A4A11	7.5A	-	•	•	Profibus DP	-
79393A5A11	7.5A	-	•	-	CANopen	-
79393A6A11	7.5A	-	•	•	CANopen	-
79394A1A11	15A	-	•	-	-	-
79394A1B11	15A	-	•	-	-	•
79394A2A11	15A	-	•	•	-	-
79394A3A11	15A	-	•	-	Profibus DP	-
79394A4A11	15A	-	•	•	Profibus DP	-
79394A5A11	15A	-	•	-	CANopen	-
79394A6A11	15A	-	•	•	CANopen	-


**Initiator box**



■ For the wiring of initiators or limit switches to the RK-Control 2S

■ Prefabricated and shielded cables with connector for the RK-Control 2S

Code No.	Type	For control unit
95706011	Initiator box Drag chain-compatible	All RK-Control 2S units

	<b>Cable length:</b>	
	0 2 5 = 2.5 m	1 2 5 = 12.5 m
	0 5 0 = 5.0 m	1 5 0 = 15.0 m
	0 7 5 = 7.5 m	2 0 0 = 20.0 m
	1 0 0 = 10.0 m	


# RK-Control 2S

## Shielded cables



- Prefabricated with connectors from RK-AC 112 to RK-AC 800 and ring terminals from RK-AC 1252 to RK-AC 2521
- The connectors of motor and feedback cables contain a special surface shield


Code No.	Type	For motors
<b>Cable for fixed, static installation</b>		
95702611_ _ _	Resolver cable	All RK-AC servo motors
95702511_ _ _	Motor cable	Servo motors from RK-AC 112 to RK-AC 800
95702711_ _ _		Servo motors from RK-AC1252 to RK-AC2521
<b>Cables for use in drag chains</b>		
95702611_ _ _ FLEX	Resolver cable	All RK-AC servo motors
95702511_ _ _ FLEX	Motor cable	Servo motors from RK-AC 112 to RK-AC 800
95702711_ _ _ FLEX		Servo motors from RK-AC1252 to RK-AC2521


**Cable length** (cable lengths > 20 m available on request):  
 0 2 5 = 2.5 m    0 7 5 = 7.5 m    1 2 5 = 12.5 m    2 0 0 = 20.0 m  
 0 5 0 = 5.0 m    1 0 0 = 10.0 m    1 5 0 = 15.0 m

## Interface cable



Code No.	Type	For control unit
957010	Interface cable SSK 1	RS232, PC <-> RK-Control 2S


**Cable length** (cable lengths > 20 m available on request):  
 0 2 5 = 2.5 m    0 7 5 = 7.5 m    1 2 5 = 12.5 m    2 0 0 = 20.0 m  
 0 5 0 = 5.0 m    1 0 0 = 10.0 m    1 5 0 = 15.0 m

## Ballast resistors



- The energy generated during braking is initially absorbed by the internal storage capacity of the RK-Control 2S. If this capacity is insufficient, the braking energy is discharged via a ballast resistor

Code No.	Type	For control unit	
95701011	Ballast resistor BRM 08/01	100 ohms, 60 W continuous	RK-Control 2S 2.A
95700811	Ballast resistor BRM 05/01	56 ohms, 180 W continuous	RK-Control 2S 6.3A and 7.5A
95702311	Ballast resistor BRM 05/02	56 ohms, 570 W continuous	RK-Control 2S 7.5A
95700511	Ballast resistor BRM 10/02	47 ohms, 1500 W continuous	RK-Control 2S 15A

## Network filter

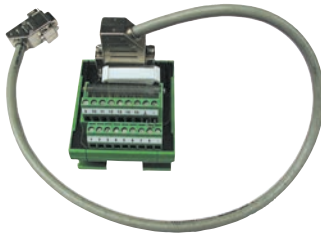


- If the length of the motor cable does not exceed 10 m, the internal network filter in the RK-Control 2S is sufficient to ensure adherence to the emission limit values for CE-compliant operation
- If the length of the motor cable is > 12.5 m, the network filters shown below are required

Code No.	Type	For control unit	
95710811	Network filter 16 FC 10	16 FC 10	RK-Control 2S 2.5A and 6.3A
95710911	Network filter 16 FCD 10	16 FCD 10	RK-Control 2S 7.5A and 15A



### Terminal block



- For the further wiring of inputs and outputs + additional inputs and outputs
- An extra terminal block is required for additional inputs and outputs
- Can be mounted in control cabinet on a standard DIN rail
- Incl. 2.5 m prefabricated cable, from the RK-Control 2S to the terminal block

Code No.	Type	Cable length	For control unit
95701611	Terminal block	2.5 m	All RK-Control 2S units

### Display & Diagnostics



- Device swapping without PC
- Supply via RK-Control 2S
- Hot-pluggable

Code No.	Type	For control unit
95703211	Control module	BDM01/01
		All RK-Control 2S units

### Fieldbus connector



- Profibus: Connector with 2 cable inputs (1 x for incoming and 1 x for continuing Profibus cable), one switch for activating the terminating resistor
- CANbus: Connector with 2 cable inputs (1 x for incoming and 1 x for continuing CANbus cable), one switch for activating the terminating resistor

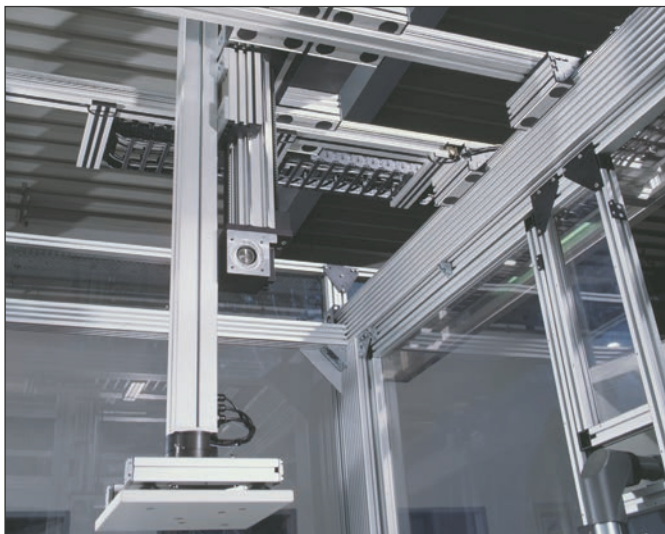
Code No.	Type	
95703311	Profibus connector	BUS08/01
95703411	CANbus connector	BUS10/01
		Without cable

### switching power supply



- The switching power supply is required if no 24 V DC is available

Code No.	Type	For control unit
957061	switching power supply 24 V DC, 5A	All RK-Control 2S units
957062	switching power supply 24 V DC, 10 A	All RK-Control 2S units



The wide range of possible applications demonstrates how useful and practical it is to standardise our range at component level. This is often not possible or practical at module level.

The following shows a few basic modules that we have already successfully implemented.

Please contact us for further details!



Our product consultants can help you choose the optimum solution for your requirements or develop something completely new.



**RK ROSE+KRIEGER**



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Linear Technology ..... Page 544 - 545

Connecting Technology ..... Page 546

Profile Technology ..... Page 548

# ***Modules***

# Modules - Linear Technology

We offer a range of electric motors for our electric cylinders and linear actuators. Of course, other drives can also be used.



**Linear actuator with motor**



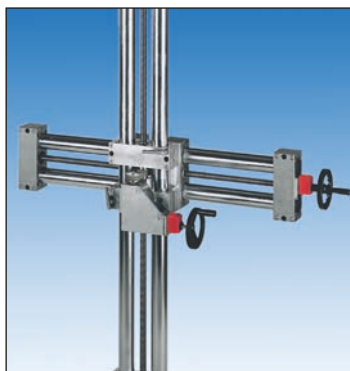
**Electric cylinder with motor**

We also stock suitable connecting and fixing elements for parallel or two/three-dimensional linear actuator combinations.

You too can benefit from our experience!



**Parallel actuator module**



**Two-actuator module**



**Three-actuators module**



The movement of two or more lifting columns in a single module can be carried out as a parallel or synchronous adjustment.

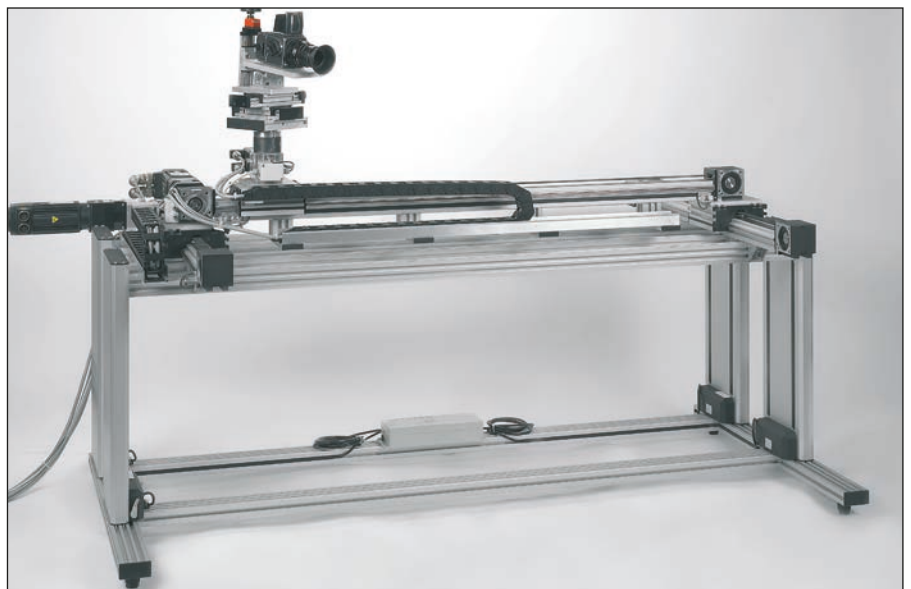
We have the controls and the compensating elements and can tell you how to implement them successfully.



Parallel adjustment, 2-columns



Synchronous adjustment, 4-columns



# Modules - Connecting Technology

It rather defeats the object to modularise or standardise variable, reliable and permanent connections.

Benefit from our experience so that your connection is successfully maintained.





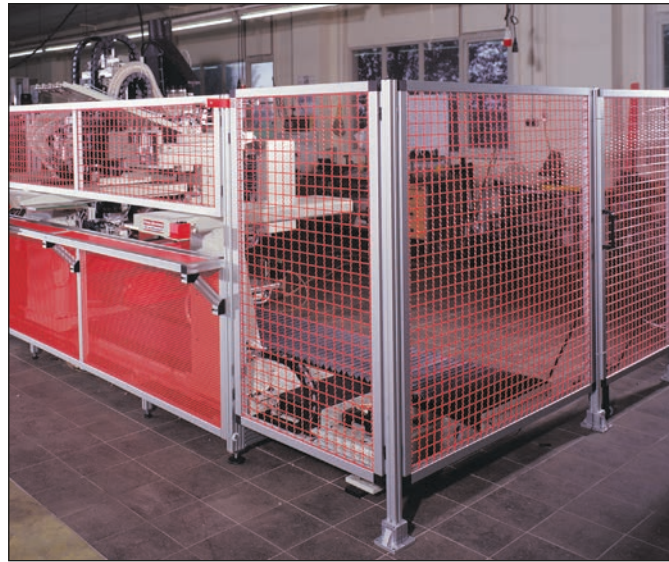
# Modules - Profile Technology

Our safety guard elements and assembly workplaces are an excellent compromise between cost and variability.

The applications are as varied as the tasks that are performed with the products.

Our products offer you an ideal balance between modularity and individuality.









Belastung

Gesamtlänge (mm)	Ausführung	
E 10		
E 20		
E 30		
E 40		
E 50		
E 60		
E 80		
AE 30		300 N
AE 40		400 N

\* Bezogen auf „geschlossenen“ Führungsschlitzen - Führungsschlitzen

Belastungsdaten\* - A / AS -

	Fy		
	Fx	300	1000
Gesamtlänge (mm)	300	300	1000
Ausführung			
A/AS 30	1500 N		
A/AS 40	1800 N		
A/AS 50	2000 N		
A/AS 60	2000 N		

\* Bezogen auf „geschlossenen“ Führungsschlitzen (Durchbiegung d...)



Geschwin

Ausführung
E / AE
E / AE
A / AS

**Lubricants, Enquiry Forms, Application Examples, Glossary, Index**

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**Appendix**

## Lubricants



Copper paste

All RK Rose+Krieger products are lubricated prior to delivery.

Re-lubrication intervals will depend on the number of operating hours, work loads and environmental conditions (large fluctuations in temperature, high air humidity, aggressive environment, etc.).

The lubricants listed below are used during the manufacture and assembly of our linear components. To ensure smooth running and a long lifetime, we recommend the following products:

### For screws and ball bearings

#### Lithium soap + mineral oil

DIN 51502                    KP1K -30  
Temperature range: -30° to +120°C  
Consistency class        NLGI 1

#### Corresponds to the following manufacturer names:

Shell	Alvania EP1
ESSO	Beacon EP1
BP	Energrease LS EP1
Fina	Marsan L1
Elf	Epexa 1
Mobil	Mobilux EP1

### For screws and ball bearings

#### Copper paste

Temperature range: -60° to +1100°C

#### Corresponds to the following manufacturer names:

OKS	OKS 245
Klüber	Wolfracout CP
Molykote	Molykote Cu 7439 PLUS

### For COPAS angular drives and PLS profile linear units

#### Industrial gear oil

DIN 51517 Part 3  
AGMA, No. 2EP-No. 8EP  
ISO VG 220

#### Corresponds to the following manufacturer names:

Shell	Omala Oil 220
ESSO	Spartan EP 220
BP	Energol GR-XP 220
Fina	Giran 220
Elf	Reduct elf SP 220
Apig	Blasia 220
Mobil	Mobilgeur 630

#### Automotive gear oil

DIN 51512  
SAE J306  
SAE 90 GL4

#### Corresponds to the following manufacturer names:

Shell	Spirax EP 90
ESSO	Geur Oil GPD 85-90
BP	Energear EP 90
Fina	Pontonic N85-90
Elf	Trans elf EP 90
Apig	Rotra HY 90
Mobil	Mobilube GX-A 85-90



## Piston grease gun



Code No.	Type
95930	For oil and grease lubrication

**Fax: +49 (0)571 9335-119**

**Telephone: +49 (0)571 9335-0**  
**e-mail: anfrage.vertrieb@rk-online.de**

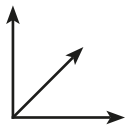
Company ..... Cust. No. ....  
 Street ..... City.....  
 Telephone..... Fax .....

Contact..... Dept. ....

Remarks .....

.....

Sketch



No. of single actuators ..... of which  horizontal  vertical

Weight load ..... N

Positioning accuracy ...../300 mm Repeatability: ..... mm

The linear unit  is fully supported  is supported on end elements only  .....

Travel/stroke .....

Speed v = ..... m/min.

Acceleration a = ..... m/s<sup>2</sup> Time: ..... sec.

Cycle time t = ..... sec. Please specify motion sequence if known!

Drive  handwheel  motor

Limit switch  no  yes

Positioning control  no  yes (for further details, please refer to the enquiry form "Controls")

Ambient conditions .....

Submission of offer/date: .....

Remarks: .....

.....

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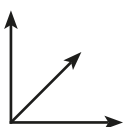
Street ..... City .....

Telephone ..... Fax .....

Contact ..... Dept. ....

Remarks .....

1.) Application (motion sequence, explanation, sketch of linear unit, installation position of linear unit, mechanism of action of load, applicable requirement specifications, factory standards. – Please also refer to the application examples on page 560.)



2.) Selection criteria

3.) Max. weight load of carriage ..... N

4.) Travel speed of axes

x-axis:	$v_x =$ .....	m/min.
y-axis:	$v_y =$ .....	m/min.
z-axis:	$v_z =$ .....	m/min.

5.) Min. acceleration time of axes

x-axis:	$t_x =$ .....	sec.
y-axis:	$t_y =$ .....	sec.
z-axis:	$t_z =$ .....	sec.

6.) Strokes of axes

x-axis:	$s_x =$ .....	mm
y-axis:	$s_y =$ .....	mm
z-axis:	$s_z =$ .....	mm

7.) Control/motor  yes (for further details, please refer to the enquiry form "Controls")

8.) Drag chain  yes  no

9.) Baserframe  yes (sketch)  no

10.) Positioning accuracy ..... mm Repeatability ..... mm

11.) Ambient conditions .....

Submission of offer/date: .....

Remarks: .....

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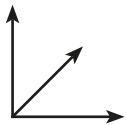
Company ..... Cust. No. ....  
Street ..... City.....  
Telephone..... Fax .....

Contact..... Dept. ....

Remarks .....

.....

**1) Application** (Sketch of motion sequence or explanation)



**2.) Drive type known?**

- yes
- three-phase motor
- stepper motor
- servo motor+ control
- no (see Item 3.)
- with frequency converter

**3.) Position control**

If master control system installed, control via

- yes
- no
- pulse/direction (standard)
- inputs/outputs (positioning)
- fieldbus type .....
- autonomous program sequence in motor power section

Travel to ..... positions is required (positioning via function blocks)

The positions are always the same  yes  no

Cycle time max. .... sec.

Cable length between motor and control..... m

Submission of offer/date: .....

Remarks: .....

.....

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 Street ..... City .....  
 Telephone ..... Fax .....  
 Contact ..... Dept. ....  
 Remarks .....

Lifting column       Electric cylinder

- 1.) Where is the lifting column/electric cylinder to be positioned? .....
- 2.) Lifting force [N] ..... Load on during 2.1 pushing  and/or 2.2 pulling
- 3.) Travel mm] ..... Lifting speed desired ..... mm/s
- 4.) Lifetime [DH] .....
- 5.) Operating cycles = No. of double strokes (forwards and backwards movement)  
 per  minute    hour    day   average...../max. ....
- 6.) Voltage ..... volt      direct-current (DC)  
 ..... volt      single phase AC ..... Hz  
 ..... volt      three-phase AC ..... Hz
- 7.) Position indication
  - 7.1 in the limit positions       yes       no
  - 7.2 continuously by potentiometers       yes       no
- 8.) Parallel connection
  - 8.1 Do you wish to operate two or more systems with a single switch/protection device?  yes .....  no
  - 8.2 Do you require synchronous operation of two or more systems?       yes, quantity .....  no
- 9.) Environment
  - 9.1  dry    dusty    damp
  - 9.2 IP protection class ...../temperature ..... °C
- 10.) Limit positions
  - 10.1 Do you require in-built limit switches?       yes       no
  - 10.2 Do you want to limit the travel by means of external limit switches?       yes       no
  - 10.3 Do you want the limit switch(es) to be adjustable?       yes       no
  - 10.4 Do you require additional switches for intermediate positions?       yes       no
  - 10.5 Do you require closing pressure?       yes       no
- 11.) Limited installation dimensions?  
 If yes, please enclose sketch showing installation situation.       yes       no
- 12.) No. of units required .....
- 13.) Are you already using similar systems?       yes       no

Submission of offer/date: .....

Remarks: .....

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Telephone ..... Fax .....

Contact ..... Dept. ....

Remarks .....

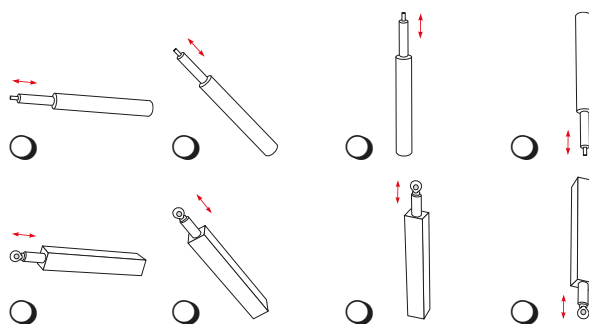
1.) What is the cylinder required to move? .....

2.) Type/Model/Orientation

LZ70 FL     LZ70 PL

LZ80     LZ80 FL     LZ80 PL

SLZ90 S     SLZ90 P     SLZ90 W



3.) Max. lifting force [N] .....

4.) Static load [N] .....

5.) Lifting speed [mm/s] .....

6.) Stroke length [mm] .....

7.) Type of fastening  Eye bolt pivot bearing foot (SLZ90 only)  Eye bolts (not for SLZ90 S)

8.) Ambient temperature ..... °C  
(standard -20°C to +60°C)

9.) Operating voltage [V] .....

10.) Required protection class .....  
(standard: IP 54)

11.)  Frequency converter operation planned

12.) Operating cycles = no. of double strokes (forwards and backwards movement)

per  minute     hour     day

average...../max. ....

13.) Radial forces [N] .....  
(avoid if possible)

14.) No. of units required .....

15.) Is there a risk of personal injury if the drive fails?  
(avoid if possible) .....

16.) Compliance with any specific regulations required?  
.....

Submission of offer/date: .....

Remarks: .....

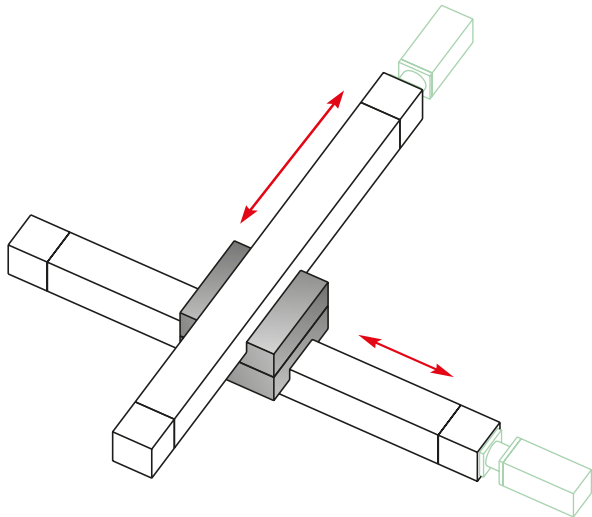


# Application examples

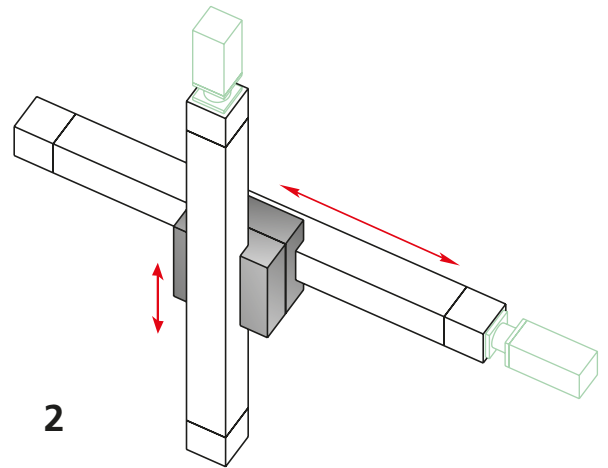
## Application examples

You can use the numbers below instead of the sketch in the enquiry form (see pages 554-558).

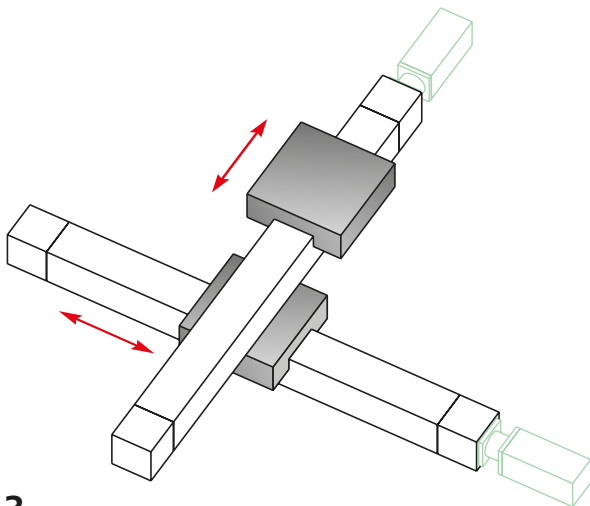
↔ Profile movement  
↔ Carriage movement



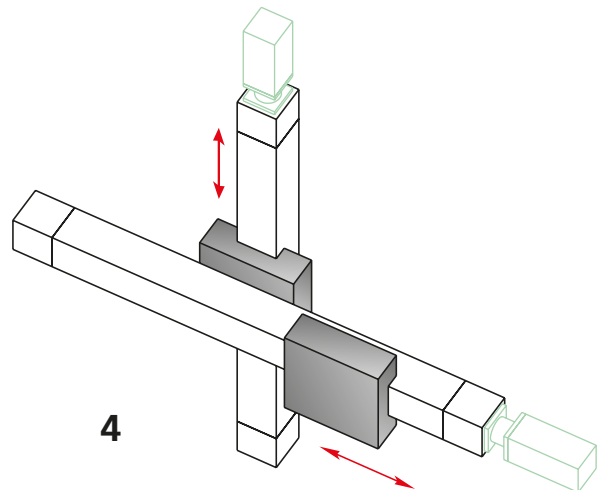
1



2

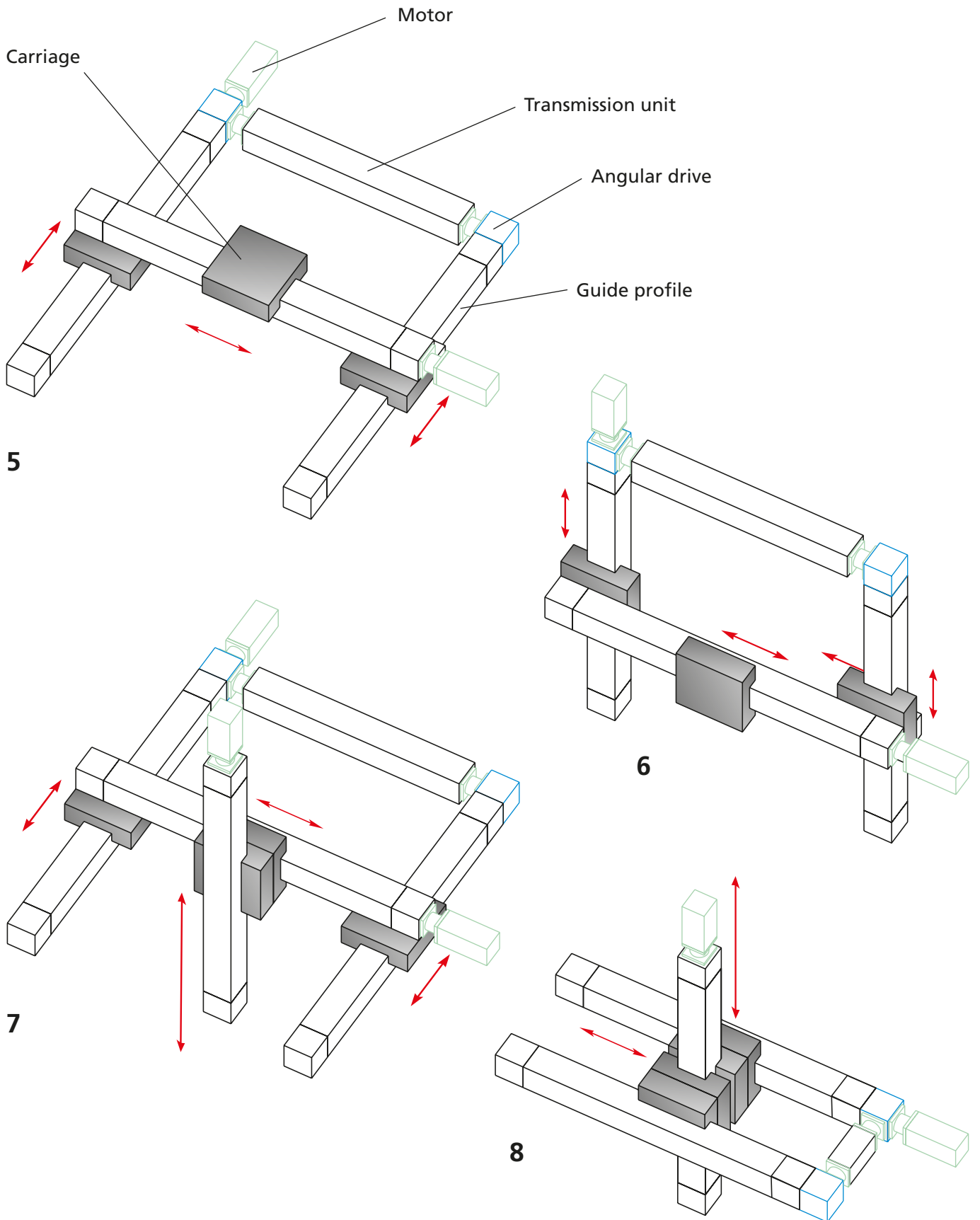


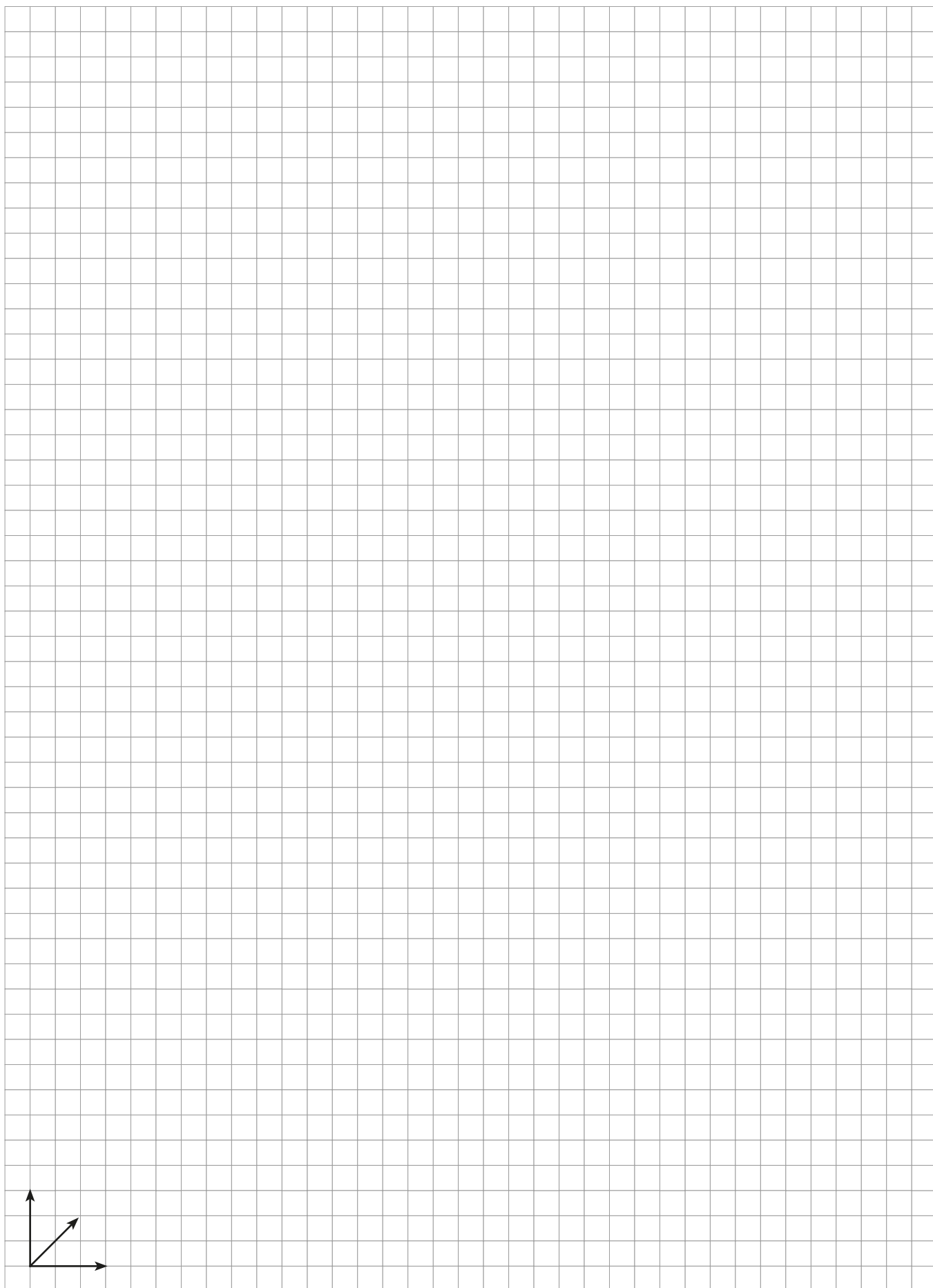
3

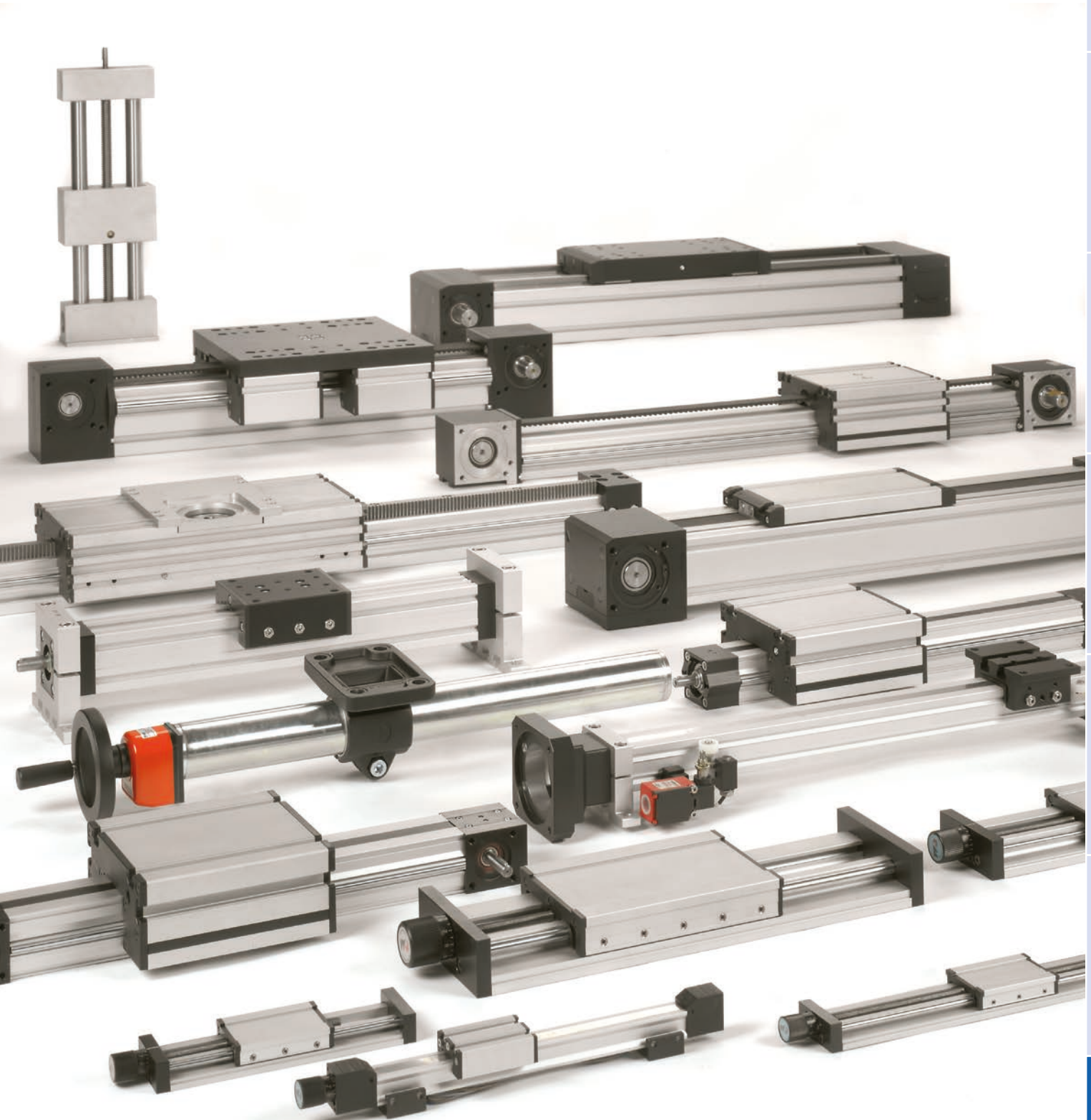


4









Introduction

Selection aid

Move-Tec

Place-Tec

Control-Tec

Motors/  
Controls

Modules

Appendix

**Adjustment load:** Each drive type has a different, structurally-dependent, adjustment load. This variable defines the maximum compressive and tractive force that a drive can handle (for linear drives). The adjustment load is always a so-called dynamic load. The drive still performs reliable adjusting movements under the specified maximum load. The adjustment load is defined in terms of Newtons (N), whereby the following applies: 1 kg » 10 N.

**Ambient temperature:** RK linear units are designed for ambient temperatures of up to +80°C. Linear units are not suitable for temperatures below freezing point.

It is important to check the ambient conditions of each individual case (temperature, temperature fluctuations, installation position, load, air humidity, etc.), and to check that the necessary accessories (motor, proximity switch, etc.) meet all requirements.

Timing belts should be protected against exposure to UV rays to prevent premature ageing.

**Backlash:** In the case of spindle units, backlash is caused by flank clearance between the spindle and the lead nut. Flank clearance is the play required due to manufacturing tolerances, thermal expansion and lubrication. This play is approx. 0.2 mm for ACME screw drives and approx. 0.1 mm for ball screw drives. In the case of ball screw drives, it is also possible to use (on request) pre-tensioned lead nuts that are low backlash or backlash-free.

**Basic length:** This value is used to dimension the length of a linear unit. The basic length corresponds to the total length of a linear unit without travel. Please specify the total length (basic length + travel) in millimetres when you place your order.

**BLOCAN:** Product name of the RK Rose+Krieger aluminium profile system with patented connection system, which permits the quick and easy assembly of very different structures. These profiles are available in a wide range of cross-sections and sizes.

**Carriage:** Components that are to be positioned can be fixed to the carriage, which is moved along the guide profile on rollers, ball rail systems or slide guides. Different models are available, depending on the application.

**Checkback signal:** A technical means for the detection of the current position and speed of the drive. A

distinction is made between the relative (incremental) and absolute (analogue) method.

**Incremental (relative):**

A so-called Hall sensor generates a fixed number of electrical impulses for each distance travelled. The control then calculates up-to-date information on the current position and speed relative to a defined reference point. In order to ensure the reliable operation of the drive, it is essential that a correct reference value is always available. However, if this reference value is lost, such as in the unlikely event of a power failure or a malfunction, it is essential to specify a new reference point.

**Analogue (absolute):**

In this case, the position/speed is detected using a so-called potentiometer. This electronic component is permanently coupled to the drive movement and adjusts its resistance value according to the current position. The control uses this information to calculate the current position and speed. This type of position determination does not require a reference point as all potentiometer values are constantly available.

**Control:** The control combines the various functions required to operate the drive. The switching signals of a hand switch are converted to control functions for the connected drives. At the same time, the control contains facilities for power supply and various protection devices to protect against overloads and short-circuits.

Transformer control:

The hand switch controls electromechanical relays, which, in turn, control the drive currents (the most common control technology).

**Duty cycle (max):** This technical variable defines the maximum time period that a drive can be operated continuously. This maximum period must be followed by a specified idle time. Both values are defined in the specified duty cycle (DC) in relation to one another. In the case of drive systems, 2/18 min has become standard in the field of drive technology, i.e. 2 minutes of continuous operation must be followed by 18 minutes idle time. It therefore follows that if the unit is operated for a shorter period, the idle time can also be shortened respectively. It is essential to ensure adherence to these specifications for periodic duty; failure to do so may cause the unit to overload and trigger protection equipment.

**Timing-belt/rack:**

The timing-belt and the linear roller guide used are both suitable for a duty cycle of up to 100%.

**Acme and ball screw drive:**

The following values have been proven in the field. The upper limit for an acme screw drive should be

$\leq 30\%$  per hour, while a ball screw drive supports a duty cycle of up to 100%.

**Slide and roller guide:**

The upper limit for a slide guide should be  $\leq 30\%$  per hour, while a linear ball bearing and guideway assembly supports a duty cycle of up to 100%.

**Guide profile:** This profile is the base body of a linear unit. The carriage moves along the profile and is positioned either manually or by means of a spindle or timing-belt. The guide profile comprises an extruded aluminium profile specially designed for a linear unit or a profile from the BLOCAN range.

**Hand switch:** The operator can use this device to control the full range of drive functions. A press of the button generates switching signals, which are converted to corresponding control signals in the control system.

**Standard:**

The hand switch is directly connected to the control system via a connecting cable; transmission of the switching signals is hard-wired.

**Infra-red (IR)/radio:**

Instead of the standard hand switch, an infra-red/radio receiver is connected to the control interface. The switching signals sent by the IR/radio remote control are picked up by the receiver and relayed on to the control. The IR transmitter and receiver must always have visual contact as data transmission is performed via light signals in the infra red range.

**Installation dimension:** This dimension specifies the installation length of the respective drive. Installation length = Basic length + Travel

**Installation position:** The linear units can be installed in any position. However, it must be ensured that all forces and moments fall within the tolerance range of the respective unit and do not exceed the maximum values. Ensure compliance with any pertinent installation and assembly instructions.

**Lifting column:** Single actuator with a special, often design-oriented linear guide. This actuator is able to reliably withstand lateral forces and ensure the necessary stability even in a fully extended position while taking the maximum torques into account.

**Load values:** All maximum forces and moments specified in various chapters refer to middle (axial) or up-

per edge (radial) of the carriage.

**Memory synchronous drive:** This kind of actuator is equipped with a position and stroke detection system. Information on the current position of the drive is continuously transmitted back to a synchronised control system. This memory drive is generally used in applications where the stored data can be retrieved with the simple press of a button. They are also required in applications with synchronous/memory controls.

**Neoprene timing-belt properties:** Moderate chemical resistance (solvents, oils etc.), optimised GT tooth shape compared to HTD, excellent running behaviour, low noise level, maximum load-bearing capacity (can withstand high loads up to 120°C), not suitable for clean room applications.

**No-load torque:** The moment that the drive must produce in order to move the carriage (without load). The values specified in the catalogue are empirical reference values, which may vary due to manufacturing tolerances.

**Positioning accuracy:** The ability of the linear unit drive to reach a set (absolute) position once from any starting point. For tolerances, please refer to the respective chapter.

**Power cable feedthrough:** Additional voltage tap for the supply of external devices.

**Protection class:** The impermeability of electronic devices against the penetration of foreign bodies and liquids is defined by means of a two-digit IP code. The first number refers to the level of ingress protection against solid materials, such as dust, and the second to ingress protection against liquids. The most common protection classes are IP 20 (touch protection); IP 44 (water spray protection); IP 66 (water jet protection).

**PU timing-belt properties:** Good chemical resistance (solvents, greases, petrol etc.), available in black or white (on request), good load-bearing qualities, HTD tooth shape, reduced load-bearing capacity from 60°C, suitable for clean rooms, food-safe versions available on request.

**Self-locking:** The self-locking function is often required to prevent undesired reverse movements.

**Spindle units:** The self-locking function is influenced

by the coefficient of friction and the lead angle. If the lead angle is smaller than the coefficients of friction, the spindle drive is self-locking. The coefficients of friction may be subject to certain manufacturing tolerances (differences in the finish quality of the spindle/nut, lubrication). Clamping devices (clamping lever) may be required for safety reasons.

**ACME screw drive:** Only self-locking to a certain degree. Check each case individually, particularly in the case of vertical installation.

**Recirculating ball screw drives:** These are not generally self-locking. It is therefore necessary, particularly in the case of vertical installation, to install suitable motors with holding brakes, or, if using a handwheel to make adjustments, to ensure an additional locking device is fitted.

**Timing-belt units:** These types are not generally self-locking. It is therefore necessary to install suitable motors with holding brakes, especially if the linear unit is installed vertically.

**Service life of drives:** The lifetime depends on the drives used and the application.

Depending on the system, there is a considerable difference between the lifetime of ball screw drives and acme screw drives. The lifetime of the drives is also affected by the control systems used and the associated duty cycles. As a guideline for acme screw drives, a stroke of 500 mm, with adherence to the permitted loads and duty cycles, we estimate a lifetime of 10,000 double strokes. Any changes of application will effect a corresponding change in the expected lifetime of the drive. Ball screw drives are expected to have a considerably longer lifetime. Please contact us if you require any further advice and we will be happy to assist.

**Service life of linear units:** The lifetime of linear units with timing belt or ball screw drive depends on the application and expected operating factors. Under normal conditions (adherence to the permitted load, moments, speed, duty cycle and temperature, as well as clean ambient conditions) and with adherence to maintenance intervals, a linear unit can achieve a lifetime of at least 10,000 operating hours. However, it must be taken into account that the travel path should be at least 2-3 times the length of the carriage.

**Straightness/torsion:** The aluminium profiles used for RK Profile linear units are extruded profiles, which may show some deviations with regard to straightness and torsion due to the production process. The permitted range of deviation is specified in DIN 17615. While, in a worst case scenario, the deviations of the RK profile linear units may correspond to the speci-

fied limit values, as a general rule, they will fall well within the tolerance range. In order to achieve the desired guiding accuracy, it may be necessary to use levelling plates to align the linear unit or to affix it to a precisely aligned supporting surface.

**Stroke:** In the case of lifting columns and electric cylinders, the maximum travel is referred to as stroke.

**Stroke length:** The stroke length corresponds to the maximum distance travelled by the carriage. The design must take into account acceleration and deceleration distances, space for limit switches and any overshoot.

**Speed:** The maximum speed that can be achieved by the linear unit is determined by the feed constant of the mechanical drive element and the drive speed. In practice, the necessary acceleration and deceleration distances must be taken into account with reference to operating parameters (acceleration, load to be moved). Maximum linear speeds are often not attainable due to the required acceleration and deceleration distances or the theoretically required drive values.

The maximum possible speeds can be found in the relevant chapters for individual product ranges.

**Synchronous control:**

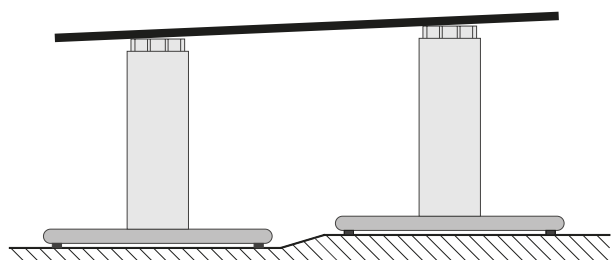
The synchronous operation of several drives at the same speed is possible even in the case of widely ranging loads. This technology is always used if a single adjusting movement is implemented via more than one drive (such as the height adjustment of workplaces).

**Synchronous operation:** Synchronised drives are used for the simultaneous movement of several mechanically connected columns. "Standard" drives are generally not able to meet the requirements of such applications.

The following section contains some brief information on the best way to set up a synchronous system. More detailed information on this subject can be downloaded at our web site [www.rk-rose-krieger.com](http://www.rk-rose-krieger.com) (Service/Download Documents/Technical Manuals).

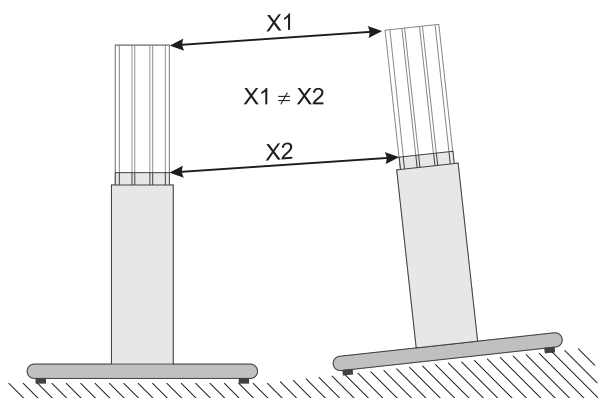
The following errors can occur during set-up:

**Different heights:**



A rigid connection between the lifting columns aligns them at the same height. Fixing the table frame in place may cause the lifting columns to distort.

**Parallel alignment:**



If the lifting columns are not parallel, the distance between the two upper fixing points will change during the movement. But a rigid connection keeps this distance constant, and this means that the lifting columns are subject to very strong forces.

**Distorted table frame:**

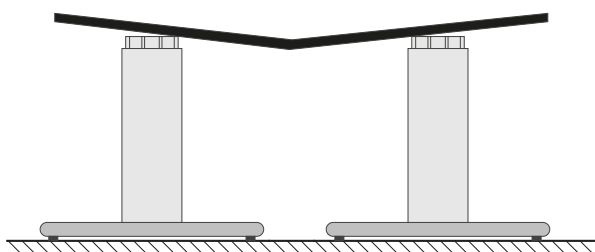
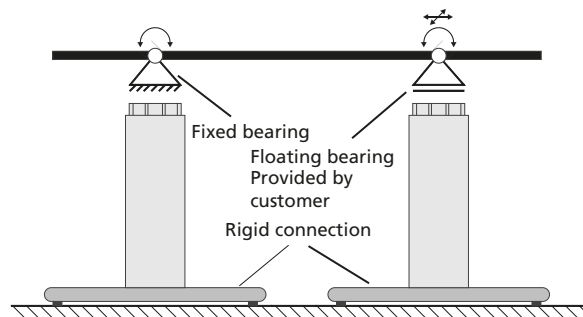


Table frames are generally made of welded steel tubes and connecting plates that connect to the lifting columns. If the connecting plates are not lying flat on the lifting column, the synchronous system will distort during screw attachment.

Failure to address these mechanical errors may impair the running properties of the drive, shorten lifetime

or damage the lifting column. If using an electronic control system, this may cause the output of error messages and render the system inoperable.

**Ideal set-up:**



Surfaces at the foot and top of the columns must be at the same height, parallel to one another and as flat and even as possible, the columns themselves must also be aligned so that they are completely parallel. Existing tolerances and height differences due to control deviations are offset by means of a customer-provided floating bearing.

**Repeatability:** Repeatability is the ability of the linear unit drive to return to a once reached position within the given tolerance limits under identical conditions.

Factors that influence repeatability (and positioning accuracy) include: load, speed, delay, direction of movement and temperature.

**Weight:** The weight specified in the catalogue is a theoretical value, which may vary due to technical modifications or manufacturing tolerances.

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