



# mk Linear Motion

# One construction kit – many options





#### Profile Technology Conveyor Technology Factory Equipment Linear Motion

#### Advantages of the mk modular system

- Everything comes from one source: interchangeable modules and components for profile, conveyor and linear technology, as well as factory equipment
- Outsourcing of various project functions at a fixed price helps integrators to minimize their project costs and risks
- Coverage of all basic mechanical functions for modern factory automation
- The widest profile range on the market reduces the need for specialized design and therefore provides a cost benefit due to standardization
- High material quality, solid connecting technology and high-quality accessories guarantee high loading capacity and long service life
- The highest flexibility for system extensions or alterations due to the reusability of individual components and modules
- The degree of assembly of our products can be freely selected, guaranteeing optimum adaptation to the existing utilization of resources at all times
- The modular construction is subject to constant optimization and extension because mk itself uses it daily for the preparation of customer-specific solutions



### Table of contents

	Selection Guidelines	4
「臣	Introducing mk	6
-	Information about Linear Motion	8
<u>ព័ វ</u>	mk Gliding Assemblies	10
: ;þ	mk Track Roller Assemblies	28
-	mk Recirculating Ball Bearing Guides	94
	Application Examples	102
	Our service	110
There is	Index	114

# Selection Guidelines

e style	Gliding Assemblies	Track Roller Assemblies	Recirculating Ball Bearing Guides
Guide			
Requirement	➡ Page 10	➡ Page 28	➡ Page 94
Durability			
high short	•	•	•
Precision			
very high high medium Iow		•	•
Speed			
very high high medium Iow		•	•
Load Capacity			
very high high medium Iow	•	•	•
Stiffness			
very high high medium Iow	•	•	•
Maintenance			
limited regularly often		•	•





# Introducing mk





"We live our passion for technology – that shapes us for over 40 years"

> Maschinenbau Kitz GmbH, was founded in 1966 and is headquartered in Troisdorf, Germany, and also operates internationally; together with its subsidiaries and sales parteners as the "mk Technology Group". Backed by over 40 years of experience, mk sells mechanical modules, components for profile, conveyor and













linear technology, as well as factory equipment. These products are based on more than 250 different aluminum profiles and extensive stainless steel sheet metal work. The modular construction principle these products offer ensures full compatibility between all products. The resulting benefits include considerable cost savings during installation of the system, as well as a high degree of flexibility for future extensions and re-configurations. Our most important target markets include original machine constructions, as well as work in the automotive, electrical, packaging, pharmaceutical and food industries.



### Information about Linear Motion



#### Advantages of mk Linear Motion

- Optimal functionality thanks to the wide range of tracks designed to meet customer needs
- Material, cost and space savings due to compatibility with mk profile series: Tracks can be mounted to the existing supporting structure directly
- Fast and easy installation of linear tracks due to add-on principle
- Precision running with mk clamping profile ensures maximum parallelism of the guide rods
- High reliability due to high-quality materials and tested manfufactured parts
- Competent advice and support in design from mk sales engineers

Application Example Structural Profile Series 50 and LZR 2000-38.41-15.



# Our Guidelines



### Criteria for the selection of the right guide

#### Criteria for Gliding Assemblies

- High static load capacity
- Low maintenance, good wear resistance
- Good damping
- Compact construction
- Quiet

#### Criteria for Track Roller Assemblies

- Compensate for relatively large misalignments
- Well suited for dirty environments (dust, chips, etc.)

- Suitable for high accelerations (to a = 50 m/s<sup>2</sup>) and high speeds (to v = 10 m/s)
- Low rolling resistance
- Light to medium loads
- Economically practical solution over longer lengths through simple mounting of track
- Can be loaded in all directions (forces and moments)
- Varying preload setting using excentric bushings

#### Criteria for Recirculating Ball Bearing Guides

- 4-row recirculating ball bearings can be loaded in all directions (forces and moments)
- High load capacity, high stiffness
- Compact construction
- One track accommodates various carriage types
- Lightly preloaded (standard), available with play and higher preloads
- Medium to high accelerations (to a = 30 m/s<sup>2</sup>) and speeds (to v = 5 m/s)
- High precision of carriages



**Gliding Assemblies** 

#### **Gliding Assemblies**

- High static loading capacity due to large contact surfaces ensures low maintenance operation
- Good wear compensation
- Good damping
- Compact design
- Quiet
- For applications with need for manual adjustment



Track Roller Assemblies

#### Track Roller Assemblies

- Compensate for relatively large misalignment
- Well-suited to dirty environments
- High accelerations
- Low rolling resistance
- Simple and cost-effective mounting of the track
- Can be loaded in all directions



**Recirculating Ball Bearing Guides** 

#### Recirculating Ball Bearing Guides

- Can be loaded in all directions
- High load capacity
- High rigidity
- Compact design
- One track for different carriage types
- High accelerations
- High speeds
- High precision

# mk Gliding Assemblies





### Contents mk Gliding Assemblies

ñĭ	Linear Mod	dules	12
	Glide Bushi	ings	23
		Glide Assembly System 2000	24
	11-8	Pneumatic Glide System 2000	26

### mk Gliding Assemblies Informationen Linear Modules

#### Technical Informations

The structural beams which distinguish the two basic sizes of our Linear Modules are our standard Profile mk 2015 (50 x 50 mm) and Profile mk 2011 (100 x 100 mm). The profiles are reworked and feature a high-quality surface coating

which provides a low friction surface while enhancing the profile with added wear resistance. Standard features of the linear modules include trapezoidal spindles with POM-nuts which are protected from contaminants by a stainless steel cover strip.

These linear modules are maintenance-free. On request special configurations are possible including stainless steel spindles, trapezoidal bronze nuts, ball screws, as well as motor driven modules.





#### Choice of operating options

The linear modules are available in 3 basic, manually operated configurations.



Linear Module with Handwheel. The handwheel is operated manually with no travel information.



Linear Module with Handwheel and Scale. With this option, carriage travel can be read.



Linear Module with Handwheel and mechanical display. Carriage travel and relative position is indicated by the display.

### Motor Driven

On request, carriage modules can be motor driven. The maximum carriage speed is limited to v = 1 m/min. We can assist you in the selection process.

Example of a motor driven linear module



### Order Example

Linear Module			VST 2011-H
Ident-No.			B85.00.020
Length			L = mm
Stroke			H = mm
Drive Option	Handwheel	Scale	Display*
Base Plate	Version A	Ą	Version B
Felt Wiper	yes	no	
Clamp Handle	yes	no	

For Linear Module with two carriages, synchronous travel, please indicate choice of one or two trapezoidal nuts\*\*.

With 2nd trapezoidal nut  $Lx = .... mm (\pm 2 mm)$ 

\*For display, please indicate desired orientation and direction.

\*\*Use of one trapezoidal nut indicates that only one carriage is to be driven.



### VST 2015 with one carriage



System 2015



# VST 2015

with two carriages synchronous travel or independent

System 2015

Options:

VST with two trapezoidal nuts: both carriages synchronous travel (see directional arrows) VST with one trapezoidal nut: lower carriage manually adjustable



# VST 2015

with two carriages opposing travel





Confirm maximum load specifications with intended application \*Maximum loads per carriage



### VST 2011 with one carriage



System 2011



# VST 2011

with two carriages synchronous travel

System 2011

Options:

VST with two trapezoidal nuts: both carriages synchronous travel (see directional arrows) VST with one trapezoidal nut: lower carriage manually adjustable



# VST 2011

### with two carriages opposing travel





mk Linear Motion 21



# Examples Glide Bushings



### System 2000





#### Pallet Stop

Pneumatic Glide System 2000 integrated within a dual-lane conveyor for use as a pallet stop.

#### Swing Gate

Swing gate manufactured using Glide Assembly System 2000 used as a damping assembly above product transport.





## Glide Bushings Glide Assembly

#### System 2000

Glide Assembly System 2000 consists of glide bushings mounted to structural profile mk 2000 (50 x 50 mm), as well as an appropriate guide shaft (rod). Standard lengths: 150 mm, 200 mm, 250 mm and 300 mm. The minimum Profile Lp is 50 mm, the maximum Profile Lp is 750 mm. The Glide Assembly requires no maintenance. When ordering, please note that the various shaft options are ordered separately (see page 25).



# Accessories



### System 2000





# Glide Bushings

System 2000

The standard pneumatic unit is delivered with one cylinder with Ø 20 mm piston. A handful of components are all that is required to modify Pneumatic Glide System 2000. Various manufacturers pneumatic cylinders with 20 or 25 mm bores and strokes to 300 mm can be used. Customer standards can be accommodated as the system is based on the air cylinder. The mechanics and connection remain the same. The cylinder and connection must be ordered separately.



### Versions

Ident-No.	Description	D Bore ø [mm]	<b>F</b> x* [N]	Stroke [mm]	D Bore [mm]	<b>Lp</b> [mm]	L [mm]	Cylinder Ident-No.
B38.01.003	LPZ 2000-16.20	20	150	25	20	75	200	K501000655
If ordering with cylinder, please append			50	20	75	200	K501000657	
with appropriate Cylinder Ident-No.				80	20	75	250	K501000658
* Cylinder extension force at 6 bar (87 psi)				100	20	75	250	K501000659
			200	20	100	350	K501000662	

# Accessories



### System 2000



# mk Track Roller Assemblies





### Contents mk Track Roller Assemblies

30
32
40
40
42
46
58
64
70
82
82
85
86

# Track Roller Assemblies

General Information

### Roller Assemblies

#### **Basic Construction**

The basic elements used to construct mk Linear Systems consist of a track and a carriage. The linear track consists of a clamping profile which is mounted directly to the support profile. Attention must be paid to the series and the dimensions of the supporting profile. The carriage consists of grooved rollers mounted to the carriage plate. The available selection of the linear assemblies and modules is a function of the support profile and the guide rods. For the support profile, application suitability (with respect to deflection) and strength of the material is paramount. For proper operation of our linear systems, a maximum deflection of 1 mm/m is allowable. Deflection and strength calculations are based upon standard mechanical formulas.

#### Support Profiles

All linear assemblies and modules shown in this catalog are based on the structural profiles of the Profile Technology System mk 2000. When used in combination with foamed profiles, gantries can be manufactured in lengths of up to 10 meters.





### Adapter Profiles

Adapter Profiles are used in instances where a larger supporting profile is desired (or required) and the standard carriage interferes with such an arrangement. In addition, adapter profiles can be used to combine linear components of different profile series.





mk Linear Motion 30



### Stock Lengths

The maximum length of linear assemblies is 6000 mm. This may be extended using multiple support profiles, rods and clamping profiles.



#### Tracks

The load capacity of the track is based primarily on the desired guide rod diameter and appropriate roller. mk offers guide rods in four diameters. The standard guide rods (polished to h6) are precision steel shafting Cf 53 (1.1213). Optionally, X46 Cr13 (1.4034, stainless martensitic steel, corrosion resistant) or corrosion resistant galvanized Cf 53 rods are also available.



### Carriages



The mk carriage comes standard with four rollers, although optional two and three roller versions are available on request.



Standard carriage, (exterior rollers) Standard carriage, (interior rollers)

### Construction

mk Carriages are available in two additional optional configurations.





Cross-carriages

Dual-carriages

# Track Roller Assemblies

Calculations and System Selection

### Selecting Series 25 Support Profiles

#### Calculations for maximum Stress and Deflection





### Support Profiles Series 25



#### Profile mk 2025.01 25.01. ....\* 0.75 kg/m AlMgSi 0.5 F25 A 279.10 mm<sup>2</sup> ix 1.70 cm<sup>4</sup> ly 1.70 cm<sup>4</sup> Wx 1.40 cm<sup>3</sup> Wy 1.40 cm<sup>3</sup>



### Profile mk 2025.02 25.02. ....\*

1.35 kg/m AIMgSi 0.5 F25 A 501.10 mm<sup>2</sup> Ix 12.20 cm<sup>4</sup> Iy 3.30 cm<sup>4</sup> Wx 4.90 cm<sup>3</sup> Wy 2.60 cm<sup>3</sup>



#### Profile mk 2025.04 25.04. ....\*

3.75 kg/m AIMgSi 0.5 F25 A 1389.10 mm<sup>2</sup> Ix 280.00 cm<sup>4</sup> Iy 9.60 cm<sup>4</sup> Wx 37.30 cm<sup>3</sup> Wy 7.70 cm<sup>3</sup>



### Profile mk 2025.05 25.05. ....\*

2.20 kg/m AIMgSi 0.5 F25

A 816.00 mm<sup>2</sup>

lx 22.30 cm<sup>4</sup>

ly 22.30 cm<sup>4</sup>

Wx 8.90 cm<sup>3</sup>

Wy 8.90 cm<sup>3</sup>



 Profile
 mk
 2025.03

 25.03.
 ....\*

 2.55
 kg/m

 AIMgSi
 0.5

 A
 945.10

 k
 87.00

 ky
 6.40

 cm<sup>4</sup>

 Wx
 17.40

 Wy
 5.20

....\* Profile length in mm

# Track Roller Assemblies

Calculations and System Selection

### Selecting Series 40 Support Profiles

#### Calculations for maximum Stress and Deflection





### Support Profiles Series 40











#### Profile mk 2040.01 54.01. ....\*

2.00 kg/m AIMgSi 0.5 F25 A 742.20 mm<sup>2</sup> Ix 12.10 cm<sup>4</sup> Iy 12.10 cm<sup>4</sup> Wx 6.10 cm<sup>3</sup>

### Profile mk 2040.02 54.02. ....\*

3.60 kg/m AIMgSi 0.5 F25 A 1340.90 mm<sup>2</sup> Ix 83.30 cm<sup>4</sup> Iy 22.60 cm<sup>4</sup> Wx 20.80 cm<sup>3</sup> Wy 11.30 cm<sup>3</sup>

### Profile mk 2040.03 54.03. ....\*

5.60 kg/m AIMgSi 0.5 F25 A 2062.20 mm<sup>2</sup> Ix 149.60 cm<sup>4</sup> Iy 149.60 cm<sup>4</sup> Wx 37.40 cm<sup>3</sup> Wy 37.40 cm<sup>3</sup>

#### Profile mk 2040.73 54.73. ....\* <sup>5.70 kg/m</sup>

5.70 kg/m AIMgSi 0.5 F25 A 2110.00 mm<sup>2</sup> Ix 150.00 cm<sup>4</sup> Iy 150.00 cm<sup>4</sup> Wx 37.10 cm<sup>3</sup>

### Profile mk 2040.05 54.05. ....\*

4.70 kg/m AIMgSi 0.5 F25 A 1738.60 mm<sup>2</sup> Ix 256.60 cm<sup>4</sup> Iy 31.60 cm<sup>4</sup> Wx 43.80 cm<sup>3</sup> Wy 15.80 cm<sup>3</sup>



#### Profile mk 2040.06

54.06. ....\* 6.30 kg/m AlMgSi 0.5 F25 A 2318.90 mm<sup>2</sup> Ix 576.10 cm<sup>4</sup> Iy 41.40 cm<sup>4</sup> Wx 72.00 cm<sup>3</sup>

Wy 20.70 cm<sup>3</sup>

#### Profile mk 2040.07 54.07. ....\*

 D4.07.
 .....

 7.00 kg/m
 AIMgSi 0.5 F25

 A
 2579.30 mm²

 Ix
 440.70 cm<sup>4</sup>

 Iy
 208.50 cm<sup>4</sup>

 Wx
 73.40 cm<sup>3</sup>

 Wy
 52.10 cm<sup>3</sup>

### Profile mk 2040.08 54.08. ....\*

- 9.50 kg/m AIMgSi 0.5 F25 A 3504.90 mm<sup>2</sup> Ix 948.90 cm<sup>4</sup> Iy 272.10 cm<sup>4</sup> Wx 118.60 cm<sup>3</sup>
- Wx 118.60 cm<sup>3</sup> Wy 68.00 cm<sup>3</sup>
- wy 00.00 cm

#### Profile mk 2040.10 54.10. ....\*

8.30 kg/m AIMgSi 0.5 F25 A 3058.60 mm<sup>2</sup> Ix 585.20 cm<sup>4</sup> Iy 585.20 cm<sup>4</sup> Wx 97.50 cm<sup>3</sup> Wy 97.50 cm<sup>3</sup>

....\* Profile length in mm

# Track Roller Assemblies

Calculations and System Selection

### Selecting Series 50 Support Profiles

#### Calculations for maximum Stress and Deflection




### Support Profiles Series 50



#### Profile mk 2000 51.00. ....\* 2.85 kg/m AlMgSi 0.7 F28 A 1084.20 mm<sup>2</sup> lx 29.90 cm<sup>4</sup> ly 29.90 cm<sup>4</sup> Wx 12.00 cm<sup>3</sup>

#### Profile mk 2004 51.04. ....\*

4.90 kg/m AIMgSi 0.7 F28 A 1805.50 mm<sup>2</sup> Ix 200.00 cm<sup>4</sup> Iy 55.40 cm<sup>4</sup> Wx 40.00 cm<sup>3</sup> Wy 22.20 cm<sup>3</sup>



### Profile mk 2011

 $\begin{array}{rrrr} \textbf{51.11.} & \dots \textbf{*} \\ \textbf{9.70 kg/m} \\ \textbf{AIMgSi 0.7 F28} \\ \textbf{A} & 3671.30 mm^2 \\ \textbf{Ix} & 383.40 cm^4 \\ \textbf{Iy} & 383.40 cm^4 \\ \textbf{Wx} & 76.70 cm^3 \end{array}$ 

Wy 76.70 cm<sup>3</sup>



#### Profile mk 2008 51.08. ....\* 9.00 kg/m AIMgSi 0.7 F28 A 3366.40 mm<sup>2</sup> Ix 1302.50 cm<sup>4</sup> Iy 106.80 cm<sup>4</sup> Wx 130.20 cm<sup>3</sup> Wy 42.70 cm<sup>3</sup>



## Profile mk 2005 51.05. ....\*

7.00 kg/m AIMgSi 0.7 F28 A 2655.50 mm<sup>2</sup> Ix 334.80 cm<sup>4</sup> Iy 334.80 cm<sup>4</sup> Wx 67.00 cm<sup>3</sup> Wy 67.00 cm<sup>3</sup>

....\* Profile length in mm

Calculations and System Selection

### Selecting Series 60 Support Profiles

### Calculations for maximum Stress and Deflection





### Support Profiles Series 60





## Profile mk 2060.04 60.04.....\*

12.20 kg/m AlMgSi 0.7 F28 A 4515.90 mm<sup>2</sup> Ix 2657.20 cm<sup>4</sup> Iy 189.90 cm<sup>4</sup> Wx 221.20 cm<sup>3</sup> Wy 63.30 cm<sup>3</sup>



#### Profile mk 2060.07 60.07. ....\* 18.00 kg/m AIMgSi 0.5 F25

- A 6700.20 mm<sup>2</sup>
- Ix 4086.10 cm<sup>4</sup>
- ly 1177.40 cm<sup>4</sup>
- Wx 340.50 cm<sup>3</sup> Wy 169.20 cm<sup>3</sup>

....\* Profile length in mm

Linear Assemblies

### Selection Track Rollers

### Selection

The indicated static load carrying capacities may be used as a guideline for the preliminary selection of track rollers and carriages. These values are the maximum allowable unit loads and contain a static safety factor  $s_0 = 4$  against plastic deformation of the raceways and rolling elements. For stainless steel rollers, these values must be reduced by 30%.

The load values shown for axial load  $(F_y)$  and radial load  $(F_z)$  are for moment-free loads. The allowable moments are the result of opposing offset loads.

Combined loads must be verified separately. A combined load is a single point load which, with a 50 mm offset for example, also introduces a moment. Careful consideration must be given to combined loads which cause torsion.

When arranging track rollers, it is important that the track rollers only transfer compressive loads in the radial direction. The centric track rollers are especially suited for handling compressive loads in the Fz direction. The centric track rollers are prevented from twisting by use of a steel bushing.

### Application notes

Care must be taken that the track rollers are installed in an unloaded condition. In most cases, re-adjustment of the excentric rollers under load causes premature abrasion. For "normal" applications (to  $a = 3 \text{ m/s}^2$ ) the track rollers should be installed so that they rotate as they travel along the track, yet that you can still prevent this rotation by placing your thumb and index finger on the perimeter of the roller. For applications requiring a speed of over  $a = 3 \text{ m/s}^2$  the track rollers require further preloading, so that one can no longer manually prevent the rollers from rotating. As an additional safety measure we recommend securing the excentric bushings with adhesive in order to prevent them from slipping. Sufficient lubrication, to prevent corrosion and increased abrasion, must also be used.

### Calculations

When confirming the suitability of particular track rollers a distinction must be made between the static and the dynamic loading. Static loads are loads which are transferred at the contact point between the rod and the track roller while the roller is not rotating. That is to say that dynamic loads, or loads along other axes, must also be considered.

It makes sense to confirm first the static, then the dynamic load calculations. The allowable static axial and radial roller loads, as well as the static and dynamic safety factors of the highest loaded rollers, must be confirmed. The maximum track roller loads are technically considered mechanical contact loads (supported loads).

The static and the dynamic safety factor is derived from the relationship between the allowable load capacity  $C_w$  and the available equivalent load P.

### As Guidelines we recommend

To v = 3m/s and a = 3 m/s<sup>2</sup> full load capacity of the track rollers with  $s_O \ge 4$  and  $2 < s_D \le 5$ . For high dynamic loads with a > 10 m/s<sup>2</sup> and speeds to v = 10m/s the load values must be reduced.



### Technical details for Track Roller Assemblies L2 ΠD Ŵ m 向 <u>ה</u> Þ $\odot$ z Б Static Safety Factor: Equivalent Loads Track Roller Loads - static: $s_0 = \frac{C_{OW}}{P_0} \ge 4 = s_0$ recomm. - radial: $P_{o} = x_{o} \cdot F_{ro} + y_{o} \cdot F_{ao} [N]$ $F_{r(o)} = \pm \frac{F_{z(o)}}{2} \pm \frac{M_{y(o)}}{L_2}$ [N] - dynamic: Dynamic Safety Factor: - axial: $P = x \cdot F_r + y \cdot F_a [N]$ $s_D = \frac{C_W}{P} \ge 5 = s_D$ recomm. $\begin{array}{l} \mathsf{F}_{a(o)} \ = \ \pm \ \underline{F}_{y(o)} \ \pm \ \underline{M}_{x(o)} \ \pm \ \underline{M}_{z(o)} \ \pm \ \underline{M}_{z(o)} \ \underline{m}_{z} \ \underline{$ Factors from the Table - static: roller at rest Nominal Life Expectancy: Highest loaded roller, i.e. - dynamic: roller rotating respectively largest value $L_{h} = \left(\frac{C_{W}}{P}\right)^{3} [10^{5} \text{ m}]$

#### Load data

Ident-No.	Description Track with	Rod ø	Fro-max [N]	Fao-max [N]	х <sub>о</sub>	F <sub>r(0)</sub> y <sub>o</sub>	≥ Fa x	(0) У	F <sub>I</sub> x <sub>o</sub>	r(0) < yo	Fa(o x	) y	C <sub>ow</sub> [N]	C <sub>W</sub> [N] limited to 10⁵ m
K101100003	LR 6	6	175	60	1.2	3.6	1.0	3.1	0.9	3.6	0.5	3.9	890	1270
K101100001	LR 10	10	1000	300	1.2	4.0	1.0	3.4	0.9	4.0	0.5	4.3	5100	8500
K101100002	LR 16	16	2000	500	1.2	4.8	1.0	3.9	1.0	5.0	0.5	4.8	9500	16800
K101100006	LR 20	20	3250	825	1.2	4.9	1.0	4.0	1.1	5.0	0.5	4.9	16600	29500



Linear Assemblies

Profile Track Series 25

#### Profile Track PF 6-38.20/50

The Profile Track PF 6-38.20 with or without adapter profile, can be combined with Series 25 profiles and the carriages shown on the next page. Together they result in a linear assembly.

Ident-No.	B51.04.025	B51.04.029
Description	PF 6-38.20	PF 6-38.20/50
L1 [mm]	to 6000	to 6000
m <sub>Track</sub> [kg/m]	1.5	2.0



Profile Track PF 6-38.20



Profile Track PF 6-38.20/50 with Adapter Profile

#### Hole Spacing

Range: 75 ≤ L1 ≤ 6000

 $12.5 \le A < 37.5$ 

$$N = \frac{L1 - (2 \times A)}{50} + 1$$

L1 = Length of Profile Track

A = Distance to first hole

N = Number of screws







max. acceleration  $a = 50 \text{ m/s}^2$  with reduced

max. load offset from center 15 mm

 $\blacksquare$  for X46 Cr13 rods and track rollers load capacities reduced by 30%



Linear Assemblies

Profile Track Series 25

#### Profile Track PF 6-38.21/51

The Profile Track PF 6-38.21 with or without adapter profile, can be combined with Series 25 profiles and the carriages shown on the next page. Together they result in a linear assembly.

Ident-No.	B51.04.030	B51.04.031
Description	PF 6-38.21	PF 6-38.21/51
L1 [mm]	to 6000	to 6000
m <sub>Track</sub> [kg/m]	2.0	3.0



Profile Track PF 6-38.21

#### Hole Spacing

Range:  $100 \le L1 \le 6000$ 

$$12.5 \le A < 50$$

$$N = \left(\frac{L1 - (2 \times A)}{75} + 1\right) \times 2$$

L1 = Length of Profile Track A = Distance to first hole N = Number of screws



Profile Track PF 6-38.21/51 with Adapter Profile







max. acceleration a = 50 m/s<sup>2</sup> with reduced load

max. load offset from center 15 mm

■ for X46 Cr13 rods and track rollers load capacities reduced by 30%



Linear Assemblies

Profile Track Series 40

#### Profile Track PF 6-38.30/55

The Profile Track PF 6-38.30 with or without adapter profile, can be combined with Series 40 profiles and the carriages shown on the next page. Together they result in a linear assembly.

Ident-No.	B51.04.042	B51.04.043
Description	PF 6-38.30	PF 6-38.30/55
L1 [mm]	to 6000	to 6000
m <sub>Track</sub> [kg/m]	1.8	2.6



Profile Track PF 6-38.30



Profile Track PF 6-38.30/55 with Adapter Profile

#### Hole Spacing

Range: 75 ≤ L1 ≤ 6000

 $12.5 \le A < 37.5$ 

$$N = \frac{L1 - (2 \times A)}{50} + 1$$

L1 = Length of Profile Track

A = Distance to first hole

N = Number of screws







max. load offset from center 15 mm

for X46 Cr13 rods and track rollers load capacities reduced by 30%



Linear Assemblies

Profile Track Series 40

#### Profile Track PF 10-38.31/55

The Profile Track PF 10-38.31 with or without adapter profile, can be combined with Series 40 profiles and the carriages shown on the next page. Together they result in a linear assembly.

Ident-No.	B51.04.046	B51.04.047
Description	PF 10-38.31	PF 10-38.31/55
L1 [mm]	to 6000	to 6000
m <sub>Track</sub> [kg/m]	2.8	3.6



Profile Track PF 10-38.31



Profile Track PF 10-38.31/55 with Adapter Profile

#### Hole Spacing

Range:  $150 \le L1 \le 6000$ 

 $25 \leq A < 75$ 

$$N = \frac{L1 - (2 \times A)}{100} + 1$$

L1 = Length of Profile Track

A = Distance to first hole

N = Number of screws







max. loads for  $v \le 10$  m/s and  $a \le 10$  m/s<sup>2</sup>; with  $s_0 = 4$ 

max. acceleration a = 50 m/s<sup>2</sup> with reduced load

max. load offset from center 25 mm

■ for X46 Cr13 rods and track rollers load capacities reduced by 30%



Linear Assemblies

Profile Track Series 40

#### Profile Track PF 10-38.32/56

The Profile Track PF 10-38.32 with or without adapter profile, can be combined with Series 40 profiles and the carriages shown on the next page. Together they result in a linear assembly.

Ident-No.	B51.04.048	B51.04.049
Description	PF 10-38.32	PF 10-38.32/56
L1 [mm]	to 6000	to 6000
m <sub>Track</sub> [kg/m]	4.0	5.8



Profile Track PF 10-38.32

#### Hole Spacing

Range:  $200 \le L1 \le 6000$ 

$$25 \le A < 100$$
$$N = \left(\frac{L1 - (2 \times A)}{150} + 1\right) \times 2$$

L1 = Length of Profile Track A = Distance to first hole N = Number of screws



Profile Track PF 10-38.32/56 with Adapter Profile





### Carriages LW 38.32-04 for Profile Track PF 10-38.32/56 π π Ŵ m m 面 цр ĽШ 22.5 25 M8x16 12.5 ሐ Φ ф Ф 355 M8x16 CE: $\odot$ 80 60 85 z €EE: Þ 0 Ф Æ L1 40 8 Technical Data

		L1	Fy0	F <sub>z0</sub>	IVI <sub>x0</sub>	IVI <sub>y0</sub>	IVI <sub>z0</sub>	m <sub>Carriage</sub>	Plate
Ident-No.	Description	[mm]	[N]	[N]	[Nm]	[Nm]	[Nm]	[kg]	only
B90.40.043	LW 38.32-04	180	1000	2000	40	130	65	2.8	5009CE0180
B90.40.043	LW 38.32-04	280	1000	2000	40	230	115	3.8	5009CE0280

max. loads for v  $\leq$  10 m/s and a  $\leq$  10 m/s²; with s\_0 = 4

max. acceleration a = 50 m/s<sup>2</sup> with reduced load

max. load offset from center 25 mm

for X46 Cr13 rods and track rollers load capacities reduced by 30%



Linear Assemblies

Profile Track Series 40

#### Profile Track PF 16-38.33/56

The Profile Track PF 16-38.33 with or without adapter profile, can be combined with Series 40 profiles and the carriages shown on the next page. Together they result in a linear assembly.

Ident-No.	B51.04.052	B51.04.053
Description	PF 16-38.33	PF 16-38.33/56
L1 [mm]	to 6000	to 6000
m <sub>Track</sub> [kg/m]	7.0	8.8



#### Hole Spacing

Range:  $150 \le L1 \le 450$  $450 \le L1 \le 6000$  $25 \le A \le 75$  $125 \le A \le 225$  $N = \left(\frac{L1 - (2 \times A)}{100} + 1\right) \times 2$  $N = \left(\frac{L1 - (2 \times A)}{200} + 3\right) \times 2$ 

L1 = Length of Profile Track A = Distance to first hole N = Number of screws



Profile Track PF 16-38.33/56 with Adapter Profile





## Carriages LW 38.33-04 for Profile Track PF 16-38.33/56 m m m Ŵ 22.5 M8x16 12.5 35 ίÜ a52 M8x16 -653 240 6 60 z €[] Þ L1 50 8 Technical Data

		L1	F <sub>y0</sub>	F <sub>z0</sub>	M <sub>x0</sub>	M <sub>y0</sub>	M <sub>z0</sub>	m <sub>Carriage</sub>	Plate
Ident-No.	Description	[mm]	[N]	[N]	[Nm]	[Nm]	[Nm]	[kg]	only
B90.40.044	LW 38.33-04	240	1600	4000	60	340	140	5.5	5009CF0240
B90.40.044	LW 38.33-04	400	1600	4000	60	660	260	8.0	5009CF0400

max. loads for v  $\leq$  10 m/s and a  $\leq$  10 m/s<sup>2</sup>; with s<sub>0</sub> = 4

max. acceleration a = 50 m/s<sup>2</sup> with reduced load

max. load offset from center 30 mm

for X46 Cr13 rods and track rollers load capacities reduced by 30%



Linear Assemblies

Profile Track Series 40

#### Interior Profile Track PF 6-38.75

The Profile Track PF 6-38.75, can be combined with the carriage shown on the next page. Together they result in a linear assembly.

Ident-No.	B51.04.140
Description	PF 6-38.75
L1 [mm]	to 6000
m <sub>Track</sub> [kg/m]	3.9









Linear Assemblies

Profile Track Series 40

#### Interior Profile Track PF 10-38.77

The Profile Track PF 10-38.77, can be combined with the carriage shown on the next page. Together they result in a linear assembly.

Ident-No.	B51.04.142
Description	PF 10-38.77
L1 [mm]	to 6000
m <sub>Track</sub> [kg/m]	5.6









Linear Assemblies

Profile Track Series 50

#### Profile Track PF 10-38.41/60

The Profile Track PF 10-38.41 with or without adapter profile, can be combined with Series 50 profiles and the carriages shown on the next page. Together they result in a linear assembly.

Ident-No.	B51.04.020	B51.04.015
Description	PF 10-38.41	PF 10-38.41/60
L1 [mm]	to 6000	to 6000
m <sub>Track</sub> [kg/m]	3.0	4.2



Profile Track PF 10-38.41



Profile Track PF 10-38.41/60 with Adapter Profile

#### Hole Spacing

Range:  $150 \le L1 \le 6000$ 

 $25 \leq A < 75$ 

$$N = \frac{L1 - (2 \times A)}{100} + 1$$

L1 = Length of Profile Track

A = Distance to first hole

N = Number of screws







		L1	F <sub>y0</sub>	F <sub>z0</sub>	M <sub>x0</sub>	M <sub>y0</sub>	M <sub>z0</sub>	m <sub>Carriage</sub>	Plate
Ident-No.	Description	[mm]	[N]	[N]	[Nm]	[Nm]	[Nm]	[kg]	only
B90.50.042	LW 38.41-04	150	1000	2000	25	100	50	2.2	5009CG0150
B90.50.042	LW 38.41-04	250	1000	2000	25	200	100	3.0	5009CG0250

max. loads for v  $\leq$  10 m/s and a  $\leq$  10 m/s<sup>2</sup>; with s<sub>0</sub> = 4

max. acceleration a = 50 m/s<sup>2</sup> with reduced load

max. load offset from center 25 mm

for X46 Cr13 rods and track rollers load capacities reduced by 30%



Linear Assemblies

Profile Track Series 50

#### Profile Track PF 16-38.44/61

The Profile Track PF 16-38.44 with or without adapter profile, can be combined with Series 50 profiles and the carriages shown on the next page. Together they result in a linear assembly.

Ident-No.	B51.04.004	B51.04.016
Description	PF 16-38.44	PF 16-38.44/61
L1 [mm]	to 6000	to 6000
m <sub>Track</sub> [kg/m]	6.8	8.8



Profile Track PF 16-38.44

#### Hole Spacing

Range: 150 ≤ L1 < 450 450 < L1 < 6000 25 ≤ A < 75  $125 \le A \le 225$  $N = \left(\frac{L1 - (2 \times A)}{100} + 1\right) \times 2 \qquad N = \left(\frac{L1 - (2 \times A)}{200} + 3\right) \times 2$ 

L1 = Length of Profile Track A = Distance to first hole





**Profile Track** PF 16-38.44/61 with Adapter Profile







for X46 Cr13 rods and track rollers load capacities reduced by 30%



Linear Assemblies

Profile Track Series 50

#### Profile Track PF 20-38.46/61

The Profile Track PF 20-38.46 with or without adapter profile, can be combined with Series 50 profiles and the carriages shown on the next page. Together they result in a linear assembly.

Ident-No.	B51.04.082	B51.04.083
Description	PF 20-38.46	PF 20-38.46/61
L1 [mm]	to 6000	to 6000
m <sub>Track</sub> [kg/m]	9.5	11.5



Profile Track PF 20-38.46

#### Hole Spacing

Range:  $150 \le L1 \le 450$  $450 \le L1 \le 6000$  $25 \le A \le 75$  $125 \le A \le 225$  $N = \left(\frac{L1 - (2 \times A)}{100} + 1\right) \times 2$  $N = \left(\frac{L1 - (2 \times A)}{200} + 3\right) \times 2$ 

L1 = Length of Profile Track A = Distance to first hole N = Number of screws



Profile Track PF 20-38.46/61 with Adapter Profile





### Carriages LW 38.46-04 for Profile Track PF 20-38.46/61



max. loads for  $v \le 10$  m/s and  $a \le 10$  m/s<sup>2</sup>; with  $s_0 = 4$ 

max. acceleration a = 50 m/s<sup>2</sup> with reduced load

max. load offset from center 40 mm

for X46 Cr13 rods and track rollers load capacities reduced by 30%



Linear Assemblies

Profile Track Series 60

#### Profile Track PF 16-38.36

The Profile Track PF 16-38.36, can be combined with Series 60 profiles and the carriages shown on the next page. Together they result in a linear assembly.

Ident-No.	B51.04.109
Description	PF 16-38.36
L1 [mm]	to 6000
m <sub>Track</sub> [kg/m]	9.5



Hole Spacing		150 < 1	1 < 450		_1 ≥ 450	
Range: 150 ≤ L1 < 450	$450 \le L1 \le 6000$	A n	(100 .	25,		200
25 ≤ A < 75	125 ≤ A < 225					<b></b>
$N = \left(\frac{L1 - (2 \times A)}{100} + 1\right) \times 2$	$N = \left(\frac{L1 - (2 \times A)}{200} + 3\right) \times 2$	<b>•</b>		<b>•</b>	<b>•</b>	
L1 = Length of Profile Track A = Distance to first hole N = Number of screws		<b>•</b>	<b>•</b>	0	<b>•</b>	•





max. acceleration a = 50 m/s<sup>2</sup> with reduced load

max. load offset from center 30 mm

■ for X46 Cr13 rods and track rollers load capacities reduced by 30%



Linear Assemblies

Profile Track Series 60

#### Profile Track PF 20-38.37

The Profile Track PF 20-38.37, can be combined with Series 60 profiles and the carriages shown on the next page. Together they result in a linear assembly.

Ident-No.	B51.04.113
Description	PF 20-38.37
L1 [mm]	to 6000
m <sub>Track</sub> [kg/m]	10.5



Hole Spacing				-	L1 ≥ 450	
Range: 150 < L1 < 450	450 ≤ L1 < 6000	150 <u>≤</u> L	_1 < 450 (100	25 A		200
25 ≤ A < 75	125 ≤ A < 225				-	<b> </b>
$N = \left(\frac{L1 - (2 \times A)}{100} + 1\right) \times 2$	$N = \left(\frac{L1 - (2 \times A)}{200} + 3\right) \times 2$	<b>—</b>	<u> </u>	•		
L1 = Length of Profile Track A = Distance to first hole N = Number of screws		<b>•</b>	•	0	•	↓ ↓ ↓



### Carriages LW 38.37-04 for Profile Track PF 20-38.37 m Ŵ m M10x20 50 8 M10x20 -CE-3 Æ 80 300 z ==∃> Æ Б -60 L1 8 Technical Data F...o E-o Muo Muo Mao meaniana Plate 11

			·yu	• 20		iviyo	11120	mulanaye	1 1410
Ident-No.	Description	[mm]	[N]	[N]	[Nm]	[Nm]	[Nm]	[kg]	only
B90.60.044	LW 38.37-04	300	3000	6000	180	600	300	11	5009CM0300
B90.60.044	LW 38.37-04	480	3000	6000	180	1100	550	15	5009CM0480

max. loads for v  $\leq$  10 m/s and a  $\leq$  10 m/s<sup>2</sup>; with s<sub>0</sub> = 4

max. acceleration a = 50 m/s<sup>2</sup> with reduced load

max. load offset from center 40 mm

■ for X46 Cr13 rods and track rollers load capacities reduced by 30%



Linear Assemblies

Profile Track Series 60

#### Interior Profile Track PF 10-38.85

The Profile Track PF 10-38.85, can be combined with the carriage shown on the next page. Together they result in a linear assembly.

Ident-No.	B51.04.160
Description	PF 10-38.85
L1 [mm]	to 6000
m <sub>Track</sub> [kg/m]	13.2







Linear Assemblies

### Components



3865BB ....\*

3865BA ....\*

25

25

25

50

50

50

ø 10\*\*

20.5

14.5

D6912835

D0912835

 $125 \le A < 225^*$ 

 $25 \le A < 100$ 

20.5 125 ≤ A < 225\*

34.60.0101

34.60.0101

С

[mm]

25

25

25

A1

[mm]

75

75

150

200

150

200

150

200

PF 16-38.12/65 3812BA ....\* ø 16\*\* ....\* Length in mm, \*\*Ident-No. see Page 77 **B1 B2** B3\*\* Α D В н Ident-No. [mm] [mm] [mm] [mm] [mm] [mm] [mm] 6 21 9  $12.5 \le A < 50$ B51.04.027/028 23 12.5 25 B51.04.040/041 6 35 37 20 40 9  $12.5 \le A < 50$ B51.04.044/045 10 35 37.5 20 40 14.5  $25 \le A < 100$ B51.04.050/051 16 35 40 20 40 20.5  $125 \le A < 225^*$ 25 < A < 100 B51.04.070/071 10 42.5 25 50 14.5 40

45

45

42.5

3811BA ....\*

\*Applies only for the range L1 ≥ 450, \*\*Values for Adapter Profile

40

40

40

PF 10-38.11/65

16

10

16

B51.04.076/077

B51.04.100

B51.04.102

B51.04.100

B51.04.102



### Components

### Profile Track with Guide Rod both sides



with Adapter Profile

#### **Technical Data**

		consisting of				
Ident-No.	Description	Profile	Adapter Profile	Rod	Screw	Nut
B51.04.025	PF 6-38.20	3820BA*	-	ø 6**	D6912512	25.50.0500
B51.04.029	PF 6-38.20/50	3820BA*	3850BA*	ø 6**	D6912520	D05085
B51.04.042	PF 6-38.30	3830BA*	-	ø 6**	D6912516	34.12.0001
B51.04.043	PF 6-38.30/55	3830BA*	3855BA*	ø 6**	D6912525	34.12.0001
B51.04.046	PF 10-38.31	3831BA*	-	ø 10**	D6912820	34.01.0001
B51.04.047	PF 10-38.31/55	3831BA*	3855BC*	ø 10**	D6912830	34.01.0001
B51.04.020	PF 10-38.41	3841BA*	-	ø 10**	D6912820	34.01.0001
B51.04.015	PF 10-38.41/60	3841BA*	3860BA*	ø 10**	D6912830	34.01.0001
B51.04.101	PF 10-38.41/65	3841BA*	3865BC*	ø 10**	D6912835	34.60.0101

....\* Length in mm, \*\*Ident-No. see Page 77

	D	В	B1	Н	А	A1
Ident-No.	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
B51.04.025/029	6	25	29	9	12.5 ≤ A < 37.5	50
B51.04.042/043	6	40	44	9	12.5 ≤ A < 37.5	50
B51.04.046/047	10	40	45	14.5	25 ≤ A < 75	100
B51.04.020/015	10	50	55	14.5	25 ≤ A < 75	100
B51.04.101	10	50	55	14.5	25 <u>≤</u> A < 75	100

Linear Assemblies

### Components



\*Applies only for the range  $L1 \ge 450$


### Components

### Profile Track with Guide Rod both sides





with Adapter Profile

#### Technical Data

		consisting of					Closure
Ident-No.	Description	Profile	Adapter Profile	Rod	Screw	Nut	Strip
B51.04.004	PF 16-38.44	3844BA*	-	ø 16**	D0912820	34.01.0001	mk 3018
B51.04.016	PF 16-38.44/61	3844BA*	3861BA*	ø 16**	D0912830	34.01.0001	mk 3018
B51.04.082	PF 20-38.46	3846BA*	-	ø 20**	D0912825	34.01.0001	mk 3018
B51.04.083	PF 20-38.46/61	3846BA*	3861BA*	ø 20**	D0912835	34.01.0001	mk 3018
B51.04.109	PF 16-38.36	3836BA*	-	ø 16**	D69121025	34.60.0201	mk 3028
B51.04.113	PF 20-38.37	3837BA*	-	ø 20**	D69121030	34.60.0201	mk 3028

....\* Length in mm, \*\*Ident-No. see Page 77

Ident-No.	D [mm]	B [mm]	<b>B1</b> [mm]	<b>B2</b> [mm]	H [mm]	A [mm]	<b>A1</b> [mm]	C [mm]
B51.04.004/016	16	100	110	50	20.5	125 ≤ A < 225*	200	25
B51.04.082/083	20	100	115	50	25	125 ≤ A < 225*	200	25
B51.04.109	16	120	130	60	20.5	125 ≤ A < 225*	200	25
B51.04.113	20	120	135	60	25	125 ≤ A < 225*	200	25

\*Applies only for the range  $L1 \ge 450$ 

## Track Roller Assemblies

## Linear Assemblies

### Components

Internal Profile Track with Guide Rod both sides



#### Technical Data

		consisting of					Closure
Ident-No.	Description	Profile	Adapter Profile	Rod	Screw	Nut	Strip
B51.04.140	PF 6-38.75	38.75*	-	ø 6**	-	-	-
B51.04.142	PF 10-38.77	38.77*		ø 10**	-	-	-
B51.04.160	PF 10-38.85	38.85*		ø 10**	-	-	-

....\* Length in mm, \*\*Ident-No. see Page 77

Ident-No.	D [mm]	B [mm]	<b>B1</b> [mm]	<b>B2</b> [mm]	H [mm]	A [mm]	<b>A1</b> [mm]	C [mm]
B51.04.140	6	44	40	-	9	-	-	-
B51.04.142	10	40	35	-	14.5	-	-	-
B51.04.160	10	75	70	-	15	-	-	-



## Components

Carriage Plates EN AW-2017A (AlCuMg1)





#### Technical Data

	L1	В	Н	А	B1	М	for Carriage		for Profile Tr	acks*
Description	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Ident-No.	Description	Ident-No.	Description
5009CA0075	75	75	15	12.5	25	5x12	B90.25.041	LW 38.20-04	B51.04.025	PF 6-38.20
5009CA0100	100	75	15	12.5	25	5x12	B90.25.041	LW 38.20-04	B51.04.025	PF 6-38.20
5009CB0100	100	100	15	12.5	25	5x12	B90.25.042	LW 38.21-04	B51.04.030	PF 6-38.21
5009CB0150	150	100	15	12.5	25	5x12	B90.25.042	LW 38.21-04	B51.04.030	PF 6-38.21
5009CC0100	100	100	15	12.5	25	5x12	B90.40.041	LW 38.30-04	B51.04.042	PF 6-38.30
5009CC0160	160	100	15	12.5	25	5x12	B90.40.041	LW 38.30-04	B51.04.042	PF 6-38.30
5009CD0140	140	140	22.5	25	40	8x16	B90.40.042	LW 38.31-04	B51.04.046	PF 10-38.31
5009CD0240	240	140	22.5	25	40	8x16	B90.40.042	LW 38.31-04	B51.04.046	PF 10-38.31
5009CE0180	180	180	22.5	25	60	8x16	B90.40.043	LW 38.32-04	B51.04.048	PF 10-38.32
5009CE0280	280	180	22.5	25	60	8x16	B90.40.043	LW 38.32-04	B51.04.048	PF 10-38.32
5009CF0240	240	240	22.5	35	60	8x16	B90.40.044	LW 38.33-04	B51.04.052	PF 16-38.33
5009CF0400	400	240	22.5	35	60	8x16	B90.40.044	LW 38.33-04	B51.04.052	PF 16-38.33
5009CG0150	150	150	22.5	25	60	8x16	B90.50.042	LW 38.41-04	B51.04.020	PF 10-38.41
5009CG0250	250	150	22.5	25	60	8x16	B90.50.042	LW 38.41-04	B51.04.020	PF 10-38.41
5009CI0250	250	250	22.5	35	60	8x16	B90.50.044	LW 38.44-04	B51.04.004	PF 16-38.44
5009CI0450	450	350	22.5	35	60	8x16	B90.50.044	LW 38.44-04	B51.04.004	PF 16-38.44
5009CK0300	300	300	28	50	80	10x20	B90.50.046	LW 38.46-04	B51.04.082	PF 20-38.46
5009CK0450	450	300	28	50	80	10x20	B90.50.046	LW 38.46-04	B51.04.082	PF 20-38.46
5009CL0280	280	280	22.5	35	80	8x16	B90.60.042	LW 38.36-04	B51.04.109	PF 16-38.36
5009CL0480	480	280	22.5	35	80	8x16	B90.60.042	LW 38.36-04	B51.04.109	PF 16-38.36
5009CM0300	300	300	28	50	80	10x20	B90.60.044	LW 38.37-04	B51.04.113	PF 20-38.37
5009CM0480	480	380	28	50	80	10x20	B90.60.044	LW 38.37-04	B51.04.113	PF 20-38.37
5009CN0120	120	80	14	40	60	5x12	B90.40.441	LW 38.75-44	B51.04.140	PF 6-38.75
5009CO0160	160	80	22.5	40	60	8x16	B90.44.442	LW 38.77-44	B51.04.142	PF 10-38.77
5009CP0240	190	120	22.5	60	100	8x16	B90.60.441	LW 38.85-44	B51.04.160	PF 10-38.85

\*Ident-No. and description only for track without adapter profile

The carriage plates may be used with tracks which include adapter profiles.

## Track Roller Assemblies

### Linear Assemblies

#### Components



#### Load Capacities per Roller

Value	Roller for Rod ø 6 mm	Roller for Rod ø 10 mm	Roller for Rod ø 16 mm	Roller for Rod ø 20 mm
so*	4	4	4	4
Fr	175N	1000N	2000N	3250N
Fa	60N	300N	500N	825N
static load cap. Cow	890N	5100N	9500N	16600N
dynamic load cap. C <sub>W</sub>	1270N	8500N	16800N	29500N

\* static load capacity against plastic deformation of the raceways and rolling elements. These values to be reduced by 30% for stainless steel rollers.



#### Components

### Guide Rods

The stock lengths of Cf 53 and X46 Cr13 (corrosion resistant) rods is 4000 mm, for Cf 53 galvanized rods 3000 mm.



Guide Rod 6 0.22 kg/m



Guide Rod 10 0.62 kg/m



Guide Rod 16 1.58 kg/m



Ident-Numbers

Guide Rod 20 2.47 kg/m

### The rubber wipers for 10 and 16 mm rod diameters conform to the shape of the rod and can wipe off finer particulates.

Wipers

Polyamide

the guide rods.

On request, wipers for the 10 and 16 mm diameter rods are available with felt strips and fittings for oil lubrication.

The wiper housings act as a safeguard (housing covers pinch points at the track rollers) as well as serve to remove dirt and other contaminants from



#### Technical Data

	Cf 53 1.1213	Cf 53 1.1213	X46 Cr13 1.4034	Ident-No.	d for Rod	L1 [mm]	B [mm]	H [mm]
		(galva- nized)		B03.00.014	ø 6**	25	22.5	11
ø 6 mm	7003AK*	7003DC*	7003EC*	B03.00.003	ø 10	50	46	20
ø 10 mm	7003AA*	7003DH*	7003EH*	B03.00.004	ø 16	70	64	30
ø 16 mm	7003AM*	7003DP*	7003EP*	B03.00.013	ø 20**	100	80	35
ø 20 mm	7003CM*	7003DT*	7003ET*	**wiper witho	ut rubber	seal		
* Rod ler	ngth in mm		1					

D [mm]

19

76

37 56

## Track Roller Assemblies

## Linear Assemblies

### Components

#### Clamping Profiles 25 40 50 60 mk 2038.20 0.44 kg/m AIMgSi 0.7 F28 38.20. ....\* Cut Used with Guide Rod ø 6 mm 25 40 50 60 mk 2038.30 0.79 kg/m AIMqSi 0.7 F28 Stock length 38.30.6100 38.30. ....\* Cut Used with Guide Rod ø 6 mm 25 40 50 60 mk 2038.31 1.07 kg/m AIMgSi 0.7 F28 Stock length 38.31.6100 38.31. ....\* Cut Used with Guide Rod ø 10 mm 25 40 50 60 mk 2038.41 1.36 kg/m AIMgSi 0.7 F28

Stock length 38.20.6100

38.41.6100

38.41. ....\*





40

80

50

100



0.88 kg/m AIMqSi 0.7 F28

Stock length 38.21.6100 38.21. ....\* Cut

Used with Guide Rod ø 6 mm

#### 25 40 50 60

mk 2038.32 0.44 kg/m AIMqSi 0.7 F28

Stock length 38.32.6100

38.32. ....\*

Used with Guide Rod ø 10 mm

Cut

#### 25 40 50 60

mk 2038.33 2.96 kg/m AIMqSi 0.7 F28 Stock length 38.33.6100 38.33. ....\* Cut

Used with Guide Rod ø 16 mm

#### 25 40 50 60

mk 2038.44 3.09 kg/m AIMgSi 0.7 F28

#### Stock length 38.44.6100 38.44. ....\*

Cut Used with

Guide Rod ø 16 mm

Stock length Cut Used with Guide Rod ø 10 mm



#### Components

### Clamping Profiles









	25 40 50	60	
	mk 2038.4 3.97 kg/m AIMgSi 0.7 F2	46 8	
	Stock length	38.46.0	5100
	Cut	38.46.	*
	Used with Guide Rod ø 2	20 mm	
ſ	25 40 50 mk 2038.3 3.62 kg/m	60 36	

AIMgSi 0.7 F28 Stock length 38.36.6100 38.36. ....\* Cut

Used with Guide Rod ø 16 mm

#### 25 40 50 60 mk 2038.37 4.60 kg/m

AIMqSi 0.7 F28 Stock length 38.37.6100 38.37. ....\* Cut

mk 2038.01 0.42 kg/m

Stock length 38.01.6100 38.01. ....\* Cut

Used with Guide Rod ø 6 mm





#### 25 40 50 60

mk 2038.05 0.75 kg/m AIMgSi 0.7 F28

#### Stock length 38.05.6100

38.05. ....\* Cut

Used with Guide Rod ø 6 mm

#### 25 40 50 60

mk 2038.06 1.12 kg/m AIMqSi 0.7 F28

Cut

Stock length 38.06.6100

Used with Guide Rod ø 10 mm

#### 25 40 50 60

mk 2038.07 1.50 kg/m AIMgSi 0.7 F28

Cut

Stock length 38.07.6100

38.07. ....\*

Used with Guide Rod ø 16 mm

#### 25 40 50 60

mk 2038.11 1.27 kg/m AIMgSi 0.7 F28

Cut



38.11. ....\*

Used with Guide Rod ø 10 mm





## Track Roller Assemblies

## Linear Assemblies

### Components

#### Clamping Profiles 25 40 50 60 25 40 50 60 mk 2038.12 mk 2038.85 1.77 kg/m 11.85 kg/m AIMgSi 0.7 F28 AIMgSi 0.7 F28 ø60 Stock length 38.12.6100 Stock length 38.85.6100 38.12. ....\* 38.85. ....\* Cut Cut Used with Used with Guide Rod Guide Rod ø 16 mm ø 10 mm, Guided inside 20 25 40 50 60 mk 2038.75 3.41 kg/m AIMgSi 0.7 F28 Stock length 38.75.6100 38.75. ....\* Cut 80 Used with Guide Rod ø 6 mm, Guided inside 25 40 50 60 mk 2038.77 4.34 kg/m AIMgSi 0.7 F28 Stock length 38.77.6100 1 38.77. ....\* Cut Used with 80 Guide Rod ø 10 mm, Guided inside



### Components

### Adapter Profiles





25 40 50	60
mk 2038.5 0.89 kg/m AIMgSi 0.7 F2	51 8
Stock length	38.51.6100
Cut	38.51*

Stock length 38.50.6100

38.50. ....\*

25 40 50 60 mk 2038.50 0.46 kg/m AIMgSi 0.7 F28

Cut



25 40 50	60					
mk 2038.56						
1.67 kg/m AlMaSi 0 7 F2	8					
Allvigst 0.7 T2	0					
Stock length	38.56.6100					
Cut	38.56*					



mk 2038.60 1.04 kg/m AIMgSi 0.7 F28 Stock length **38.60.6100** 

Cut <b>38.60</b> *
--------------------



25 40 50	60
mk 2038.5	55
0.77 kg/m	
AIMgSi 0.7 F2	8
Stock length	38.55.6100
Cut	38.55*



50

#### 25 40 50 60

mk 2038.65 1.00 kg/m AIMgSi 0.7 F28 Stock length **38.65.6100** Cut **38.65.....\*** 

#### 25 40 50 60

mk 2038.61 1.90 kg/m AIMgSi 0.7 F28

Stock length	38.61.6100
Cut	38.61*



How to Order

	LZR 2025-38.20-16
System Designation	
Support Profile	
Clamping Profile	
Timing Belt Width	

### Order Example

Linear Module	LZR 2025-38.20-16
Ident-No.	B38.25.001
Stroke	=mm
Overall Length	L =mm
Carriage Length	L <sub>1</sub> =mm
Hollow Drive Shaft	ø =mm
Linear Speed	v =m/s
Acceleration	a =m/s <sup>2</sup>

# Track Roller Assemblies

Linear Module

## General Information

## LZR Linear Modules with Timing Belts

The linear modules take the track roller carriages to another level, creating a fully modular assembly. Basic elements include the supporting and track profiles, the carriage wagon, as well as the required timing belt drive components including tails and profile connections.

As a standard, the LZRs are designed to be motor driven. With the appropriate hollow shaft, the tail housings enable motors to be installed directly on any side of the LZR. Available options include output shafts for the direct mounting of hollow shaft motors, adapters for gearboxes and couplings, as well as components for indirect drives.

For electromechanical drives using stepper or servo motors we recommend using one-piece drive shafts, available as options.

Combinations of linear modules to manufacture 2- and 3-axis systems, as well as gantries and other customer-specific applications are available.

## Achievable Precision of Linear Modules with Timing Belts

For LZRs using a type 8M-30 timing belt, the following no-load values are achievable:

Repeatability:	0.1 mm
Positional Accuracy:	± 0.2 mm
Hysteresis:	0.2 mm

These values will vary depending on stroke length and application.



#### General Information

#### Remarks to the Load Data

For information regarding the track roller guides, refer to the information beginning on page 42.

Remarks to the Load Data for Timing Belts Standard timing belts used are PU (Polyurethane) with steel cord tension members. Other types, including conductive belts, are available.

The maximum speed of v = 10 m/s of linear assemblies can be achieved using timing belts with no reduction of the load capacities.

As of a > 10  $m/s^2$  the values for the standard load factors must be reduced (due to the physical limitations of the timing belts).

The allowable tension loads are based on a 0.4 % stretch of the timing belt.

The breaking strength of the belts is significantly higher. The normally usable belt pull strength (Fu) and required pretension (Fv) is approximately:

Fallowable =  $F_v + F_u$  with  $F_v = F_u$ 

Timing Belt	AT 5-16	5M-15	8M-30
Fbreaking	3900 N	3600 N	14900 N
Fallowable	1200 N	1150 N	4000 N
$F_v = F_u$	600 N	575 N	2000 N

The usable starting torque results from the maximum usable belt pull strength, of the engaged teeth and the pitch diameter of the drive pulley.

#### Values for the mk LZR Modules:

Timing Belt	AT 5-16	5M-15	8M-30
DPitch	41.4 mm	50.9 mm	71.3 mm
Z	26	32	28
M <sub>Drive</sub>	12 Nm	15 Nm	70 Nm

### Motor Selection/Drive Design

For the motor selection several factors must be considered, including the timing belt (especially the allowable belt pull strength and required stiffness), as well as the motor - especially the starting torque, the revolutions per minute and the resulting performance.

The most important consideration is the required driving force. As a simple starting point for the calculations, the transition point from acceleration to constant speed can be used.

Constant acceleration (a = constant):  $v = a \cdot t = \sqrt{2 \cdot a \cdot s}$ Constant speed (v = constant):  $V = \frac{S}{+}$ Max. drive force:  $F_{Drive} = F_a + F_{Roll} + F_{Empty} + F_{Additional}$  $F_a = m \cdot (a+g)$ with m = moving masses in kg a = constant acceleration in m/s<sup>2</sup>  $\alpha = 10 \text{ m/s}^2$ , for vertical travel  $g = 0 m/s^2$ , for horizontal travel  $F_{Roll} = F_N \cdot \mu_{Roll}$ with  $F_N = F_G$  for horizontal travel  $\mu_{Roll}$  = 0.05 for lightly preloaded track roller F<sub>Empty</sub> = 50 to 100 N depending on Linear Module and pretension of timing belt FAdditional = Additional customer load  $F_{Drive} = m \cdot (a+q) + F_N \cdot 0.05 + 100 N + F_{Additional}$ **Timing Belt Selection:** Indicated  $F_{Drive} < F_{u}$ For Motor Selection: Ν

$$\begin{split} \mathsf{M}_{req} &= \frac{\mathsf{F}_{Drive} \cdot D_{pitch} \ [m]}{2 \cdot \eta} \\ \mathsf{n}_{req} &= \frac{\mathsf{v} \cdot 60}{D_{pitch} \ [m] \cdot \pi} \\ \mathsf{P}_{req} &= \frac{\mathsf{F}_{Drive} \cdot \mathsf{v}}{\eta} \end{split}$$

with D<sub>pitch</sub> in m of Pulley

 $\eta$  = 50 to 75% depending on selected drive (gear reducer, motor, etc.) v in m/s

## Track Roller Assemblies

Linear Module









\* Maximum stroke between fixed stops.

\*\* Variable length, depends on pre-tension of timing belt (achieved by moving tail stock).

\*\*\*  $F_x = F_{allowable}$ ;  $F_u = 600 \text{ N} = F_v$ 

Type LZR 2000-38.41-15 with Carriage Wagon







Type LZR 2004-38.41-30 with Carriage Wagon



\*\*  $F_x = F_{allowable}$ ;  $F_u = 2000 N = F_v$ 





\* Maximum stroke between fixed stops.

\*\*  $F_x$  =  $F_{allowable};\ F_u$  = 2000 N =  $F_v$ 

Type LZR 2005-38.44-30 with Carriage Wagon



\* Maximum stroke between fixed stops.

\*\*  $F_x = F_{allowable}$ ;  $F_u = 2000 N = F_v$ 





\* Maximum stroke between fixed stops.

\*\*  $F_x$  =  $F_{allowable};\ F_u$  = 2000 N =  $F_v$ 

Type LZR 2011-38.44-30 with Carriage Wagon



\* Maximum stroke between fixed stops.

\*\*  $F_x = F_{allowable}$ ;  $F_u = 2000 N = F_v$ 





Type LZR 2011-38.44-30 with side mounted Carriage Wagon

\* Maximum stroke between fixed stops.

\*\*  $F_x$  =  $F_{allowable};\ F_u$  = 2000 N =  $F_v$ 

## mk Recirculating Ball Bearings





## Contents mk Recirculating Ball Bearing Guides



## mk Recirculating Ball Bearing Guides







Order	Example	Guideway	
-------	---------	----------	--

Guideway	KU 25.10
Ident-No.	B51.04.404
Size	=mm
Length	L =mm
Order Example Carriage	
Carriage	KU 25.11
Ident-No.	K116041125
Size	=mm
Carriage	normal

#### General Information

### Recirculating Ball Bearings

#### Typical Construction

The mk Recirculating Ball Bearing Assemblies consist of one Guideway and a Carriage with recirculating ball bearings.

The carriages are made of hardened polished steel, and the ball tracks are sealed on all sides with plastic returns which guide the four ball rows. The carriage can be placed directly onto the end of the guideway.

The recirculating ball bearing assemblies can be loaded from all directions, and are very stiff, high load capacity linear guides.

The standard guide carriages offered by mk are lightly preloaded and are therefore suitable for the most common applications. If several carriages are to run on the same guideway, in a parallel arrangement for example, we recommend using carriages with no preload and some play to compensate for alignment errors and for smoother carriage travel.

For high stiffness and variable loads we recommend carriages with high preloads and precise, stiff mounting surfaces. mk supplies these versions on request.

The indicated maximum load values include a safety factor  $s_0 = 5$  against plastic deformation at ball contact, as well as  $s_0 = 2$  for the track mounting using 8.8 socket screws.





## Recirculating Ball Bearings

Guideway KU 25.10

Guideway KU 25.10 is designed to be used with Carriage KU 25.11 or KU 25.13. Each element must be ordered separately.

Guideway KU 25.10 is especially suited for use with mk Series 40 and 50 profiles. Because of the narrow mounting area, it is not suitable for the 14 mm T-slots of Series 60.



Guideway KU 25.10 with mounting hardware B51.04.404

Hole Spacing: Guideway L to 1980 mm single piece

Range of A:  $20 \le A < 50$ 

 $N = \frac{L - (2 \times A)}{60} + 1 (+1 \text{ each break})$ 

L = Length of the Guideway

A = Distance to first mounting hole (symmetric)

N = Number of mounting screws





## Carriages



B=Thru-hole for M6 screw DIN 6912 B1=Thru-hole for M6 screw DIN EN ISO 4762

#### Load Data

Ident-No.	Description	F <sub>y0</sub> [N]	F <sub>z0</sub> * [N]	<b>M<sub>x0</sub></b> [Nm]	<b>М<sub>у0</sub></b> [Nm]	Mz0 [Nm]	C <sub>0</sub> [N]	C [N]	m <sub>Carriage</sub> [kg]
K116041125	KU 25.11	7000	7000	75	75	75	37.000	17.900	0.71
K116041325	KU 25.13	7000	7000	75	75	75	37.000	17.900	0.56

\*Reduce side load to 2000 N for track mounted to structural profiles using 8.8 screws only - with no additional mechanical track supports.



Recirculating Ball Bearings

Guideway KU 30.10

Guideway KU 30.10 is designed to be used with Carriage KU 30.11 or KU 30.13. Each element must be ordered separately.

Guideway KU 30.10 is especially suited for use with mk Series 60.



Guideway KU 30.10 with mounting hardware B51.04.406

L1 = Length of the Guideway

A = Distance to first mounting hole (symmetric)

N = Number of mounting screws





## Carriages



B1=Thru-hole for M8 screw DIN 6912 B1=Thru-hole for M8 screw DIN EN ISO 4762

#### Load Data

Ident-No.	Description	F <sub>y0</sub> [N]	F <sub>z0</sub> * [N]	<b>M<sub>x0</sub></b> [Nm]	My0 [Nm]	<b>M</b> z0 [Nm]	C <sub>0</sub> [N]	C [N]	m <sub>Carriage</sub> [kg]
K116041130	FW 30.11	10000	10000	140	140	140	55.000	27.500	1.4
K116041330	FW 30.13	10000	10000	140	140	140	55.000	27.500	1.09

\*Reduce side load to 3500 N for track mounted to structural profiles using 8.8 screws only - with no additional mechanical track supports.



Exhibit for displaying combined LZR 2005 with foamed combination profile as support profile and cross-carriage with support rollers



VST 2011 for manual adjustment of the conveyor height and double VST 2015 with timing belt coupling for width adjustment of the ZRF-P 2040.02 cycle conveyor









VST 2011 with digital display for width adjustment of the GUF-P 2000 AC side conveyor



VST 2011 with digital display for width adjustment of the pneumatic centering unit on the modular belt conveyors



VST 2011 for motor drive with manual swiveling unit on LZR 2005-38.44-30



Double LZR 2011 -38.44-30 as changeable table for raw material plates. Product changes in two planes one above the other



Linear module with duplex chain based on LZR 2005-38.44-30 as lift for pallet transport



Two-axis application, Z axis with cross-carriage and Omega drive









Connection of Y axis to X axis with adapter plate and console



Linear assembly for manual lane width adjustment and clamping of the pneumatic centralizer and the electromotive turning unit



Drive X axis LZR 2004-38.41 with power split



Lifts with 2-lane timing belt conveyor based on LZR 2005-38-44 with internally-arranged carriages



Lift with synchronous conveyor belt for transporting plastic bins. LZR 2005-38.44-30 linear module with two side carriages



Lift from LZR 2005-38.44-30 linear module with motor-driven adjusting unit mounted on the carriage





Linear Module with dual-carriage, asynchronous gearmotor, variable speed and triplex-chain as lift with timing belt conveyor



Linear module with double carriage, toothed belt and servo motor as lift with toothed belt conveyor



Lift for chain conveyors, storage system consisting of linear module with counterweight



Electromotive VST 2015 with recirculating ball bearing guide



X-Z Gantry with magnetic grippers and frame with integrated guarding



X-Y-Z Gantry for machine loading with swiveling axis and vacuum gripper




X-Z Gantry with vacuum gripper as handling and loading system of steel. Two independent loading systems on common X axis with guide rollers and riding rack drive



X-Z Axis combination with pneumatic drive and suction device for loading and unloading drink crates



X-Z Gantry with gripper for transferring crankshafts. X axis as LZR with support roller and timing belts, Z axis with timing belt Omega drive and fall arrest

## *Our service* Range of performance

#### mk Parts



## Reduce your planning time by using the "mk Parts" CAD parts library!

- Online at www.mk-group.com
- Off-line in the "mk QuickDesigner" software package
- Free access to CAD data
- Simple processing with native and neutral CAD formats
- Automatic part list information for the components
- Part configuration online
- Shopping cart function for online requests

#### mk Config



#### Quick and easy design of your guarding!

- Contained in the "mk QuickDesigner" software package
- Conveniently create guarding without costly design
- Cost optimization through automatic selection of default fields
- Exporting of 3D drawings for further processing or enhancement in your CAD system

### mk Comparison- and Selection Tool: Conveyor Technology and Linear Motion



Immediately obtain your matching mk conveyor or linear technology system online based on your requirements!

- Online selection tool for determining the optimal system based on the parameters entered
- Comparison of up to 3 systems at a glance
- Motor selection program
- Direct link to our e-catalog



### mk Profile Technology Online Shop



### Order profiles, connectors and accessory elements at mk-group.com/shop - 24 hours a day!\*

- Visual parts selection prevents confusion
- Search function by name or ID number
- Direct price calculation
- Order online

\*Only for commercial customers of the German market

### mk Online Order Tracking



#### Check the status of your order at any time - online!

As a registered user, you can view the history of your orders at mk in our online shop. Follow the status of your online or off-line orders. Find out, for example, whether your order is currently in assembly or whether it has already been shipped.

### mk Quick Delivery Programm (QDP)



#### We deliver your GUF-P MINI and GUF-P 2000 fast!

- Top adherence to delivery dates and availability thanks to optimized storage and a lean manufacturing process
- We cover a wide range of applications due to standardization and modularization of these units
- Fast delivery of spare parts
- Price advantage

*Our service* We're there where you need us





Headquarters, Troisdorf, Germany

Every hour of downtime for you or one of your customers costs you money and reputation. Therefore, we are on your side in the planning and design phase, as well in after-sales business as a partner. Our international network of production, sales and service sites make it possible to quickly respond to your requirements and make the service you are used to possible. Our site addresses are available on our website at www.mk-group.com/contact.

Copyright © 2008 Maschinenbau Kitz GmbH, all rights and technical modifications reserved. Reproduction, in whole or in part, only with the expressed, written consent of Maschinenbau Kitz GmbH. Legal venue is Siegburg, Germany. Current as of 07.2011. Issue 2.0.



## Information material

Our catalogs are organized by our four main business areas. Various product flyers complement our catalogs.

Current information about mk products and other interesting topics are also available on our website at <u>www.mk-group.com</u>.

#### mk Profile Technology Catalog



More than 250 combinable system profiles made of high-quality alloys, perfected and stability-oriented connectors, as well as a comprehensive range of accessories is available in our comprehensive 300-page mk profile technology catalog.

### mk Conveyor Technology Catalog



20 different conveyor systems from belt, timing belt, chain and flat top chain conveyors to roller conveyors are available in our 320+ page mk conveyor technology catalog. Our mk INOX conveyor technology catalog includes belt and flat top chain conveyors, as well as roller conveyors made of stainless steel.

#### mk Linear Motion Catalog



mk linear technology stands for optimal, needs-based design. Gliding assemblies, track roller assemblies and recirculating ball bearings are displayed on 130 pages. You have the choice between profile and linear guides, as well as complete linear modules.

#### mk Factory Equipment Catalog



Building on our profile technology, a comprehensive range of modules for individual factory equipment is on 160 pages. It includes guarding, system workstations, guard rails, treads and platforms in modular design.

#### CD mk QuickDesigner



#### Mini-CD mk E-Catalog



The handy Mini-CD contains all mk catalogs in the form of an eBook. You can conveniently page and search through the catalogs on your screen, as well as save them as PDF files.

# Component Index

Adapter profiles	81	- Profiles Track Series 25	42, 44
Application examples	102	- Profiles Track Series 40 46, 48,	50, 52, 54, 56
Carriage		- Profiles Track Series 50	58, 60, 62
- LW 38.20-04	43	- Profiles Track Series 60	64, 66, 78
- LW 38.21-04	45	- Selection Track Rollers	40
- LW 38.30-04	47	- Technical details for Track Roller As	semblies 41
- LW 38.31-04	49	Linear module	
- LW 38.32-04	51	- General information	82
- LW 38.33-04	53	- LZR 2025-38.20-16, Series 25	85
- LW 38.36-04	65	- LZR 2000-38.41-15, Series 50	86, 87
- LW 38.37-04	67	- LZR 2004-38.41-30, Series 50	88
- LW 38.41-04	59	- LZR 2004-38.44-30, Series 50	89
- LW 38.44-04	61	- LZR 2005-38.44-30, Series 50	90, 91
- LW 38.46-04	63	- LZR 2011-38.44-30, Series 50	92, 93
- LW 38.75-44	55	Linear Modules System 2011	18
- LW 38.77-44	57	- VST 2011 with one carriage	19
- LW 38.85-44	69	- VST 2011 with two carriages	20, 21
-plates	75	Linear Modules System 2015	14
Carriages, recirculating ball bearings	99, 101	- VST 2015 with one carriage	15
Clamping profiles	78-80	- VST 2015 with two carriages	16
Components, track roller assemblies		Pneumatic glide system	
- Carriage plates	75	- System 2000	26
- Guide rods	77	- System 2000, accessories	27
- Guide rods	77	Profiles -	
- Guide rollers	76	- Adapter -	81
- Profile track	70-74	- Clamping -	78-80
Glide assembly		- Support -	33, 35, 37, 39
- System 2000	24	Recirculating ball bearings	
- System 2000, accessories	25	- Carriages	99, 101
Glide bushings		- General information	97
- Examples	23	- Guideways	98, 100
- Glide Assembly System 2000	24, 25	Support profiles	
- Pneumatic Glide System 2000	26, 27	- Series 25	33
Gliding assemblies	10-27	- Series 40	35
Guide rods, components	77	- Series 50	37
Guide rollers, components	76	- Series 60	39
Guideways		Track roller assemblies	28-93
- KU 25.10	98	- General information	30
- KU 30.10	100	- Selecting Series 25 Support Profiles	32
Linear assemblies		- Selecting Series 40 Support Profiles	34
- Components	70-74	- Selecting Series 50 Support Profiles	36



- Selecting Series 60 Support Profiles	38	
- Pneumatic Glide System 2000	26, 27	

Maschinenbau Kitz GmbH Headquarters of the mk Technology Group Glockenstraße 84 53844 Troisdorf Germany Phone +49 228 4598-0 Fax +49 228 453145

www.mk-group.com info@mk-group.com

