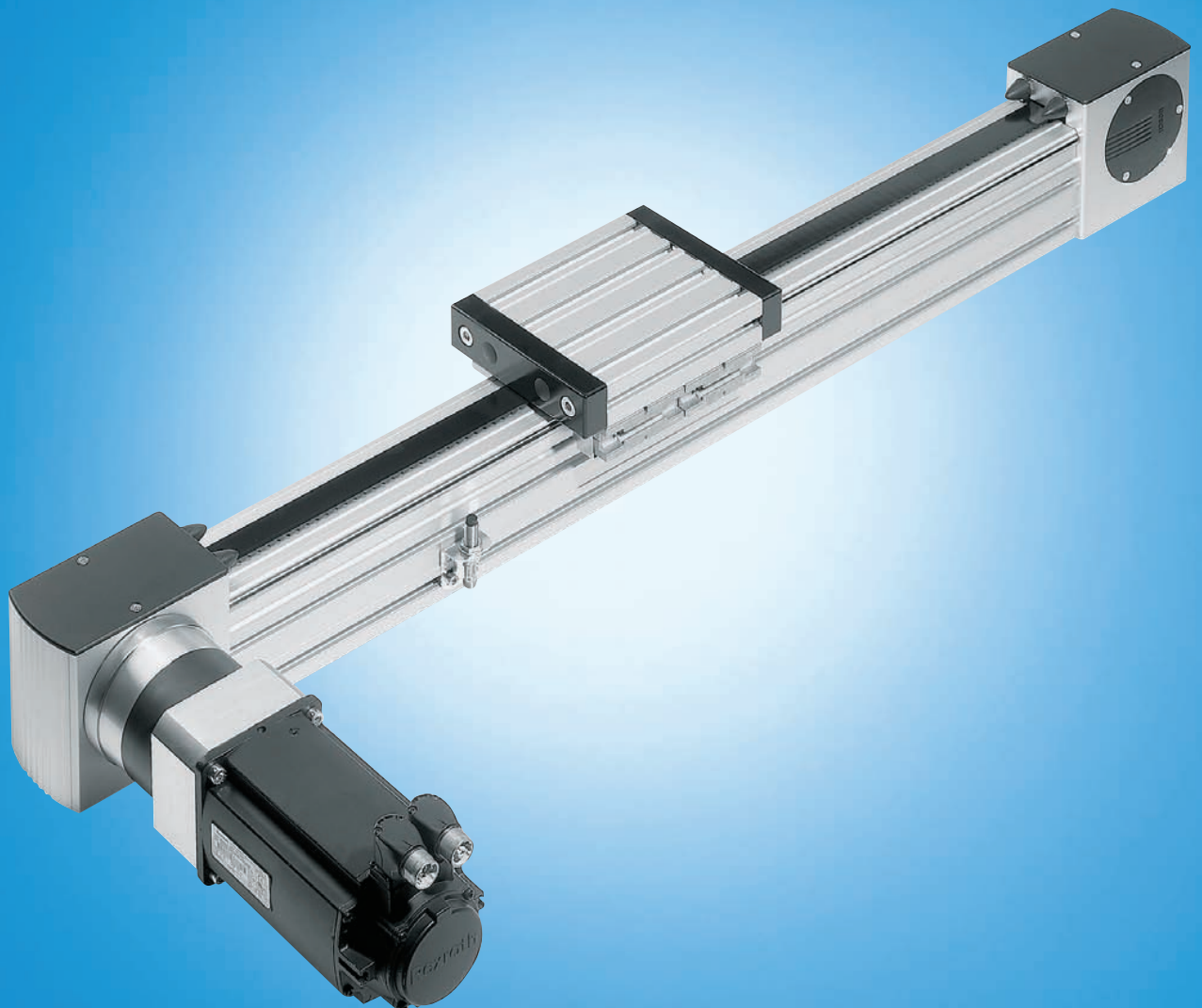


Basic Mechanic Elements


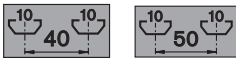












Linear Guides

Version **1.2**

The Drive & Control Company



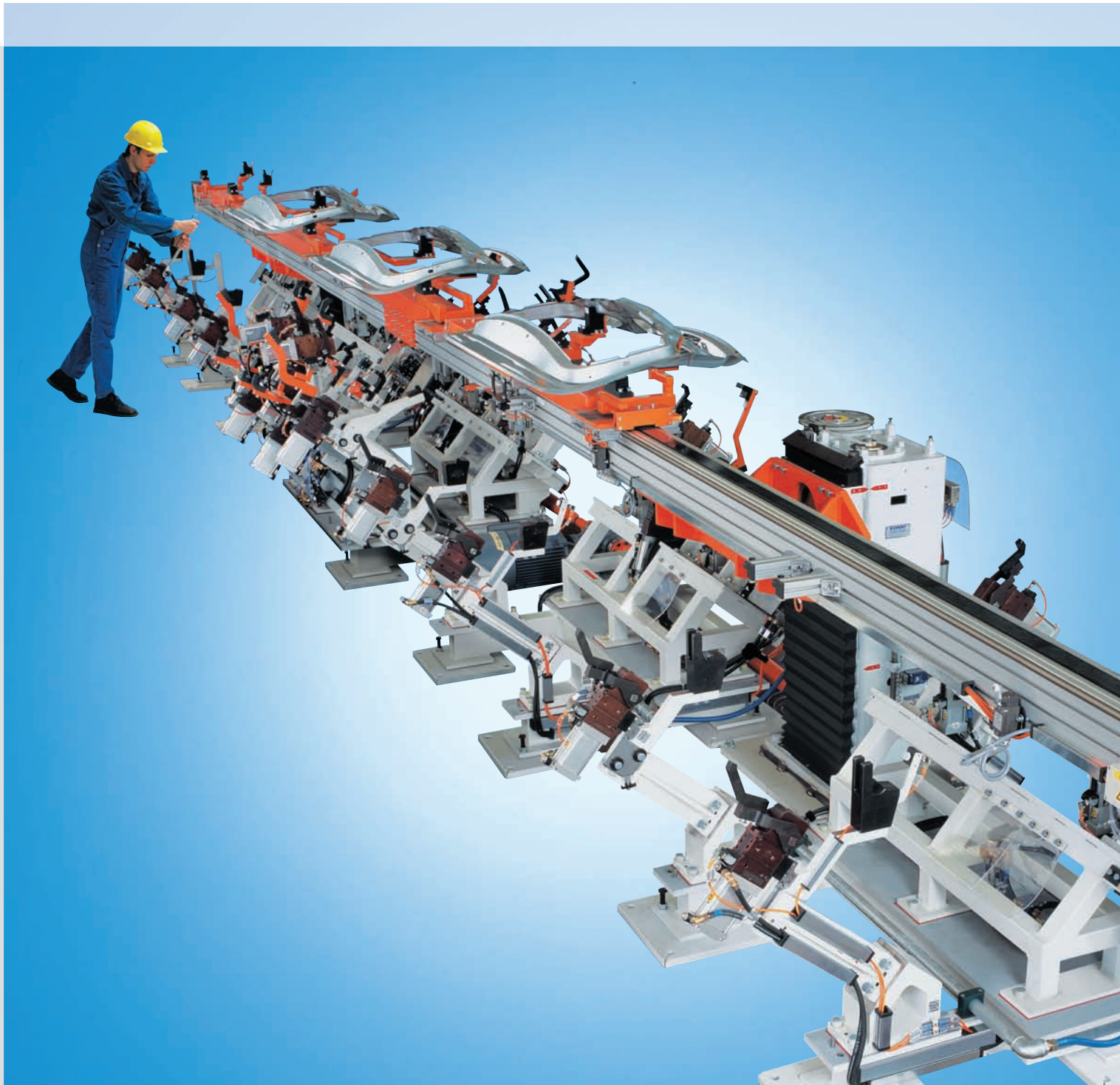
Symbols

	Width of profile groove; accessories suitable for attaching in profile groove
	Modular profile dimensions; accessories suitable for mounting in modular dimensions
	Possible connection between grooves of different widths
<div><div>Nr./No./N°</div><div>103 842 146 972</div></div>	Part number;  = product available in especially inexpensive packing units
<div><div>Nr./No./N°</div><div>Set3 842 536 057</div></div>	Order number; product available as set = typical consumption unit
<div>LE 1 x L = ... mm</div> <div>3 842 990 408 / ...</div> <div>30 mm ≤ L ≤ 5600 mm</div>	Please state profile length in your order
 3-4	Reference to another page
	ESD conductive material or conductive profile connector
M12  D17	End finishing of the profile
	Profile end finishing required
	Suitable for use in cleanrooms
	Partially assembled
	Permitted load [N]
 = 110 g	Weight

Contents

Examples for application	1
MGE cam roller guides - open system with guide bearing runner blocks	2
eLine profiled rail system - cam roller and ball runner blocks	3
Design and technical data	4
Overview of part numbers	5
Index	6

Linear guides



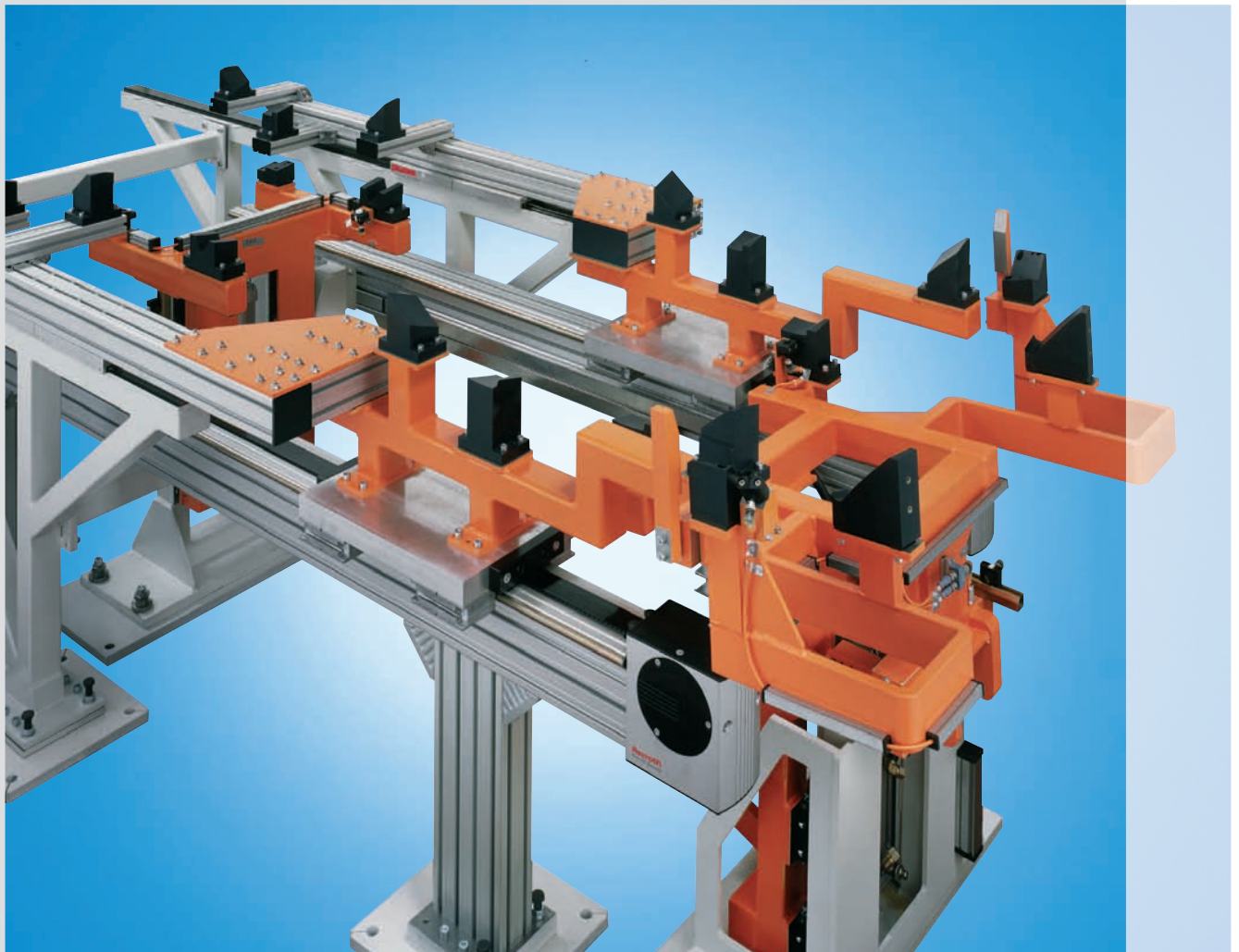
Clocked assembly of rear doors with 20 m long LF20
linear guide
**Made by Expert Montageautomation GmbH,
Lorsch, D**

Linear guides

1

Combination of cam roller guide (front) and recirculating ball bearing guide (rear) to mount interior truck doors

Made by Expert Montageautomation GmbH, Lorsch, D



Rexroth modular profile assembly system

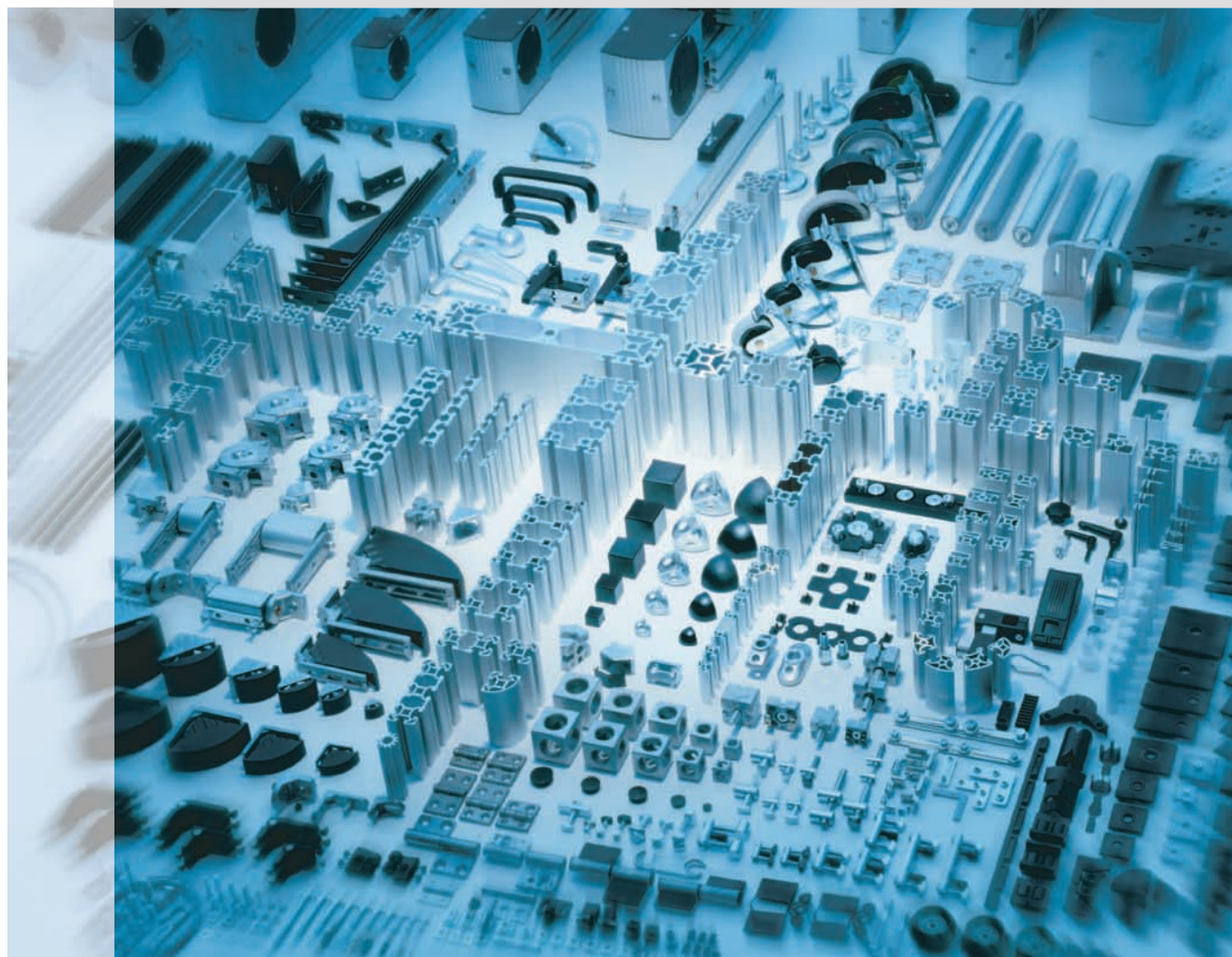
With the universally applicable components in Rexroth's modular profile assembly system, you can quickly find a successful solution for all tasks: frames, enclosures, special and series machinery, ESD-capable systems, workstations, supply of materials, etc.

Our sales partners can assist you on-site when selecting the most economical components, which can then be quickly delivered from their local warehouses. The free-of-charge "MTpro" CAD software also allows you to plan quickly and efficiently in 3-D.

Profit from the benefits of the most successful modular profile assembly system:

- user-friendly screwed connections
- completely ESD-capable connection technology
- compatible modular system for all dimensions: 20, 30, 40, 45, 50, 60... mm
- comprehensive range of accessories
- 3-D planning software

Rexroth profile technology:
fast, stable, and safe!



Linear guides

Tried and tested in motion

1

The proven cam roller guides from the MGE modular profile system have been improved again.

The guide rods are made from stainless steel, induction hardened and polished. The MGE linear guides are now available fully preassembled in any required length.

We offer you all the components for movement from a single source:

- mounting flanges
- fine-tuned gears
- motors
- position and limit switches

**Switch units:**

Mechanical and inductive switches including brackets – quick and easy mounting on the support profile.

Operating elements:

Match the respective linear guide, used to operate the switches. Mounting on the respective belt connector.

**Flange:**

The suitable flange for every size.

**Gear:**

The suitable gear for every size. Simple mounting on the drive head using a flange.

**Motors from the Rexroth product range:**

The servomotors are designed for applications with our cam roller guides. There are two motors available for each size.

Linear guides

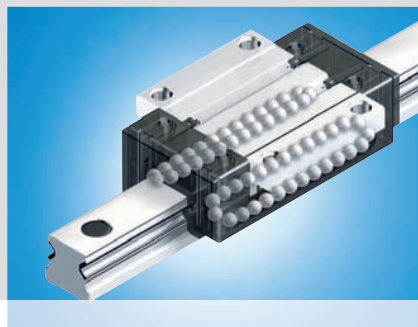
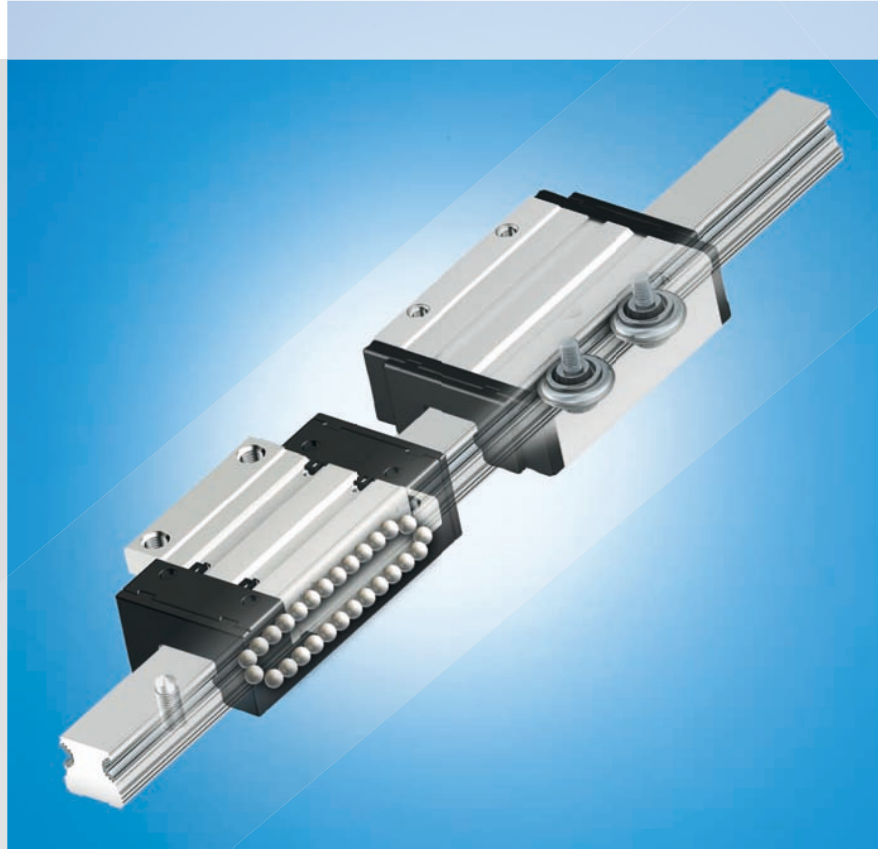
eLINE – handy precision for MGE

Profiled rail systems have a wide range of applications where high rigidity and guiding accuracy are frequently not the most important considerations.

Rexroth's eLINE range of profiled rail systems was developed for applications of this kind, especially where the main emphasis is on economy and durability.

Made of wrought aluminum alloy with running tracks of hardened antifriction bearing steel, the runner blocks and guide rails are characterized by their low weight, compact design, and equal load bearing capacity in all four main directions of loading.

The same guide rails are used for ball and cam roller runner blocks.



eLINE guide rails

- For ball and cam roller runner blocks
- Rail body made from wrought aluminum alloy, anodized
- Running tracks made from hardened antifriction bearing steel
- With plastic caps (provided)

eLINE ball runner blocks

- Compact light design
- Available in the three most common sizes per DIN 645-1
- Runner block body made from wrought aluminum alloy
- Hardened steel running tracks
- Steel balls per DIN 5401

eLINE cam roller runner blocks

- Compact light design
- Available in the three most common sizes per DIN 645-1
- Travel speed up to 12 m/s
- Runner block body made from wrought aluminum alloy
- 4 corrosion-resistant cam rollers as per DIN EN 10088

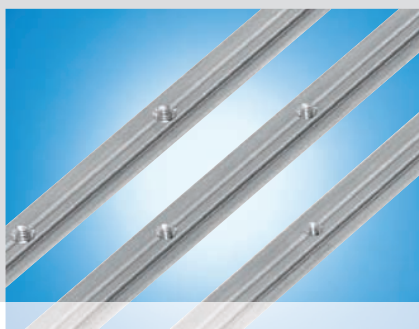
Linear guides

1

The eLINE rail systems are particularly compact linear guides for use in typical MGE modular profile system applications such as light machinery, handling technology, jigs and fixtures, assembly technology, machine enclosures, as well as trade show and shop construction.

The eLINE guide rails can be mounted in the 8 mm groove of the MGE profiles via threaded rails, while the slide profiles matched to the runner block with 8 mm grooves allow additional assembly of MGE components.

Profile caps and cover plates are available for the ends to create an attractive appearance.

**Threaded rails**

To mount the eLINE guide rails on strut profiles with 8 mm grooves.

**integrated in MGE**

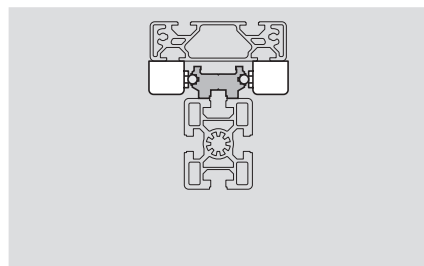
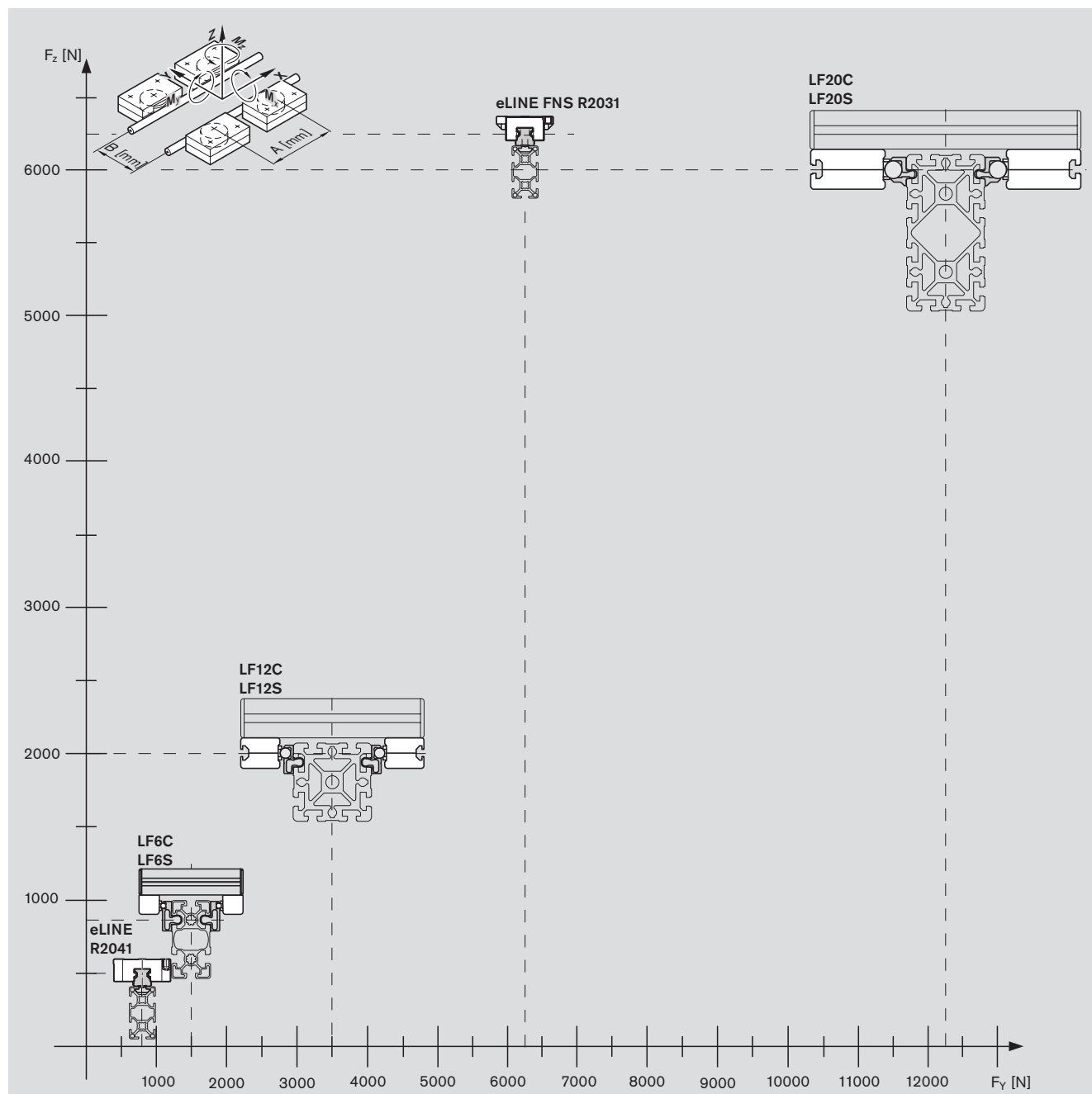
eLINE on 30x30 profile with MGE slide profile

**eLINE slide profiles**

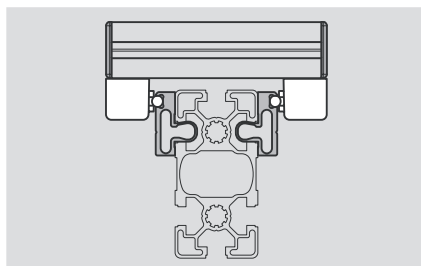
With 8 mm groove and groove distance 30 to mount an eLINE runner block. Matching caps for a clean appearance.

Linear guides

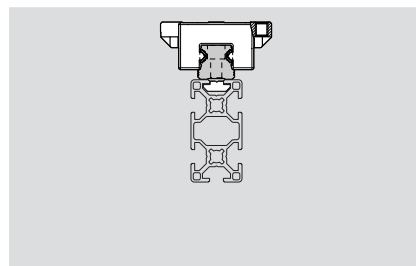
Linear guide technology



LF...S for compact dimensions



LF...C for higher moments due to a variable track width



eLINE for higher precision

MGE cam roller guides with guide bearing runner blocks

Cam roller guides with guide bearing runner blocks



2-6

00111682



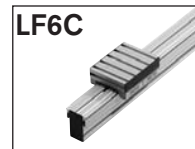
2-7

00132291



2-8

00111671



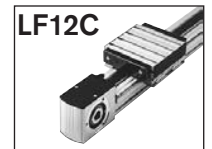
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00131869



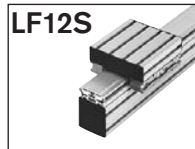
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00111683



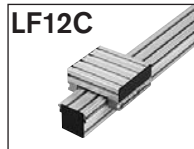
2-15

00111680



2-16

00111672



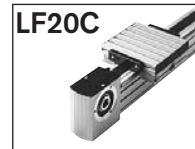
2-16

00111669



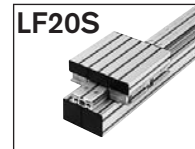
2-22

00111684



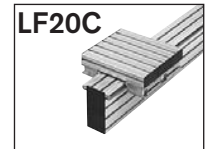
2-23

00111681



2-24

00111673



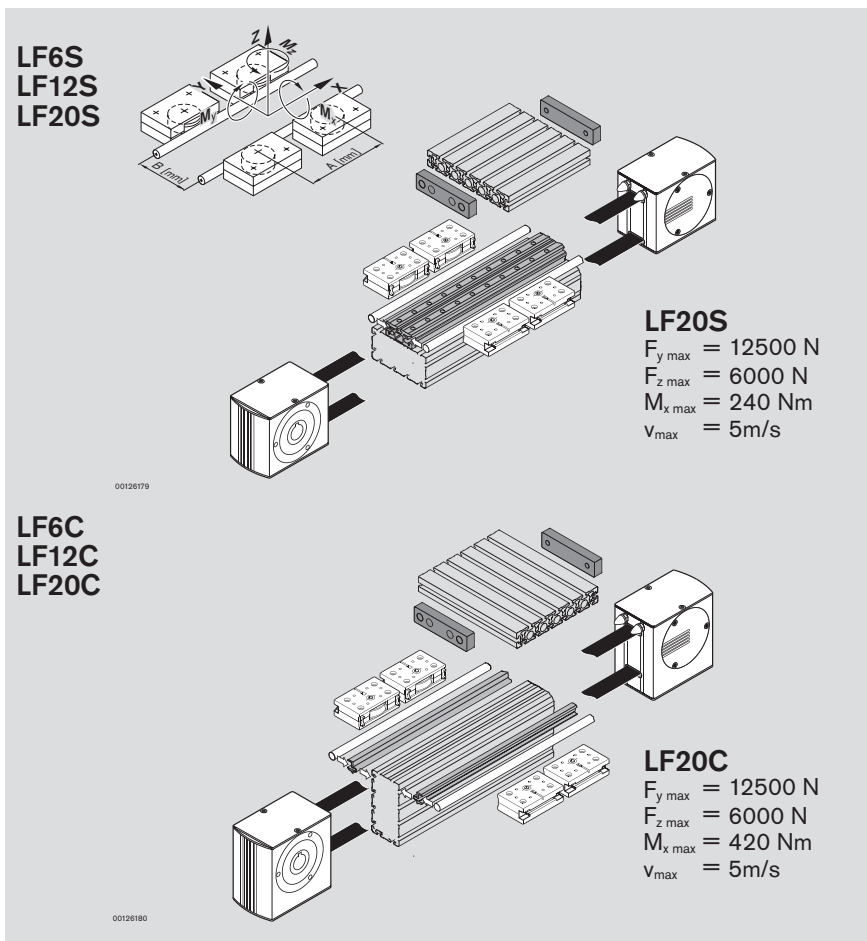
2-24

00111670

MGE cam roller guides with guide bearing runner blocks

Linear guides

In order to create linear guides from the modular systems, you will find all the components in our product line for constructing cam roller guides. Cam roller guides are suitable for applications with high speeds and medium loads, in particular for the construction of handling devices, supply systems, guides in work machines, as well as for many other applications. The high load capacities guarantee performance reserves for all loads. You can drive all models with toothed belts.

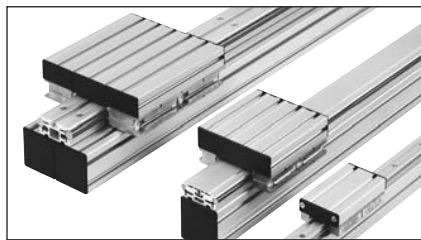


Cam roller guides

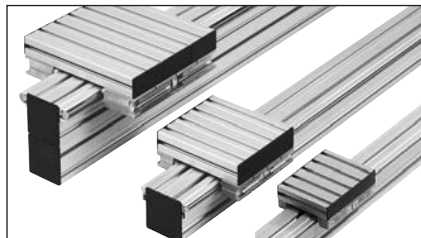
We offer two types of cam roller guides: The "LF...S" variant with guide rails in fixed widths is mounted on the profile groove of Rexroth profiles or on a flat surface.

For the "LF...C" variant, the guide rods are clipped into the selected Rexroth profile. With this variant, you can implement any runner block width and thus even construct large sliding doors.

LF...S



LF...C

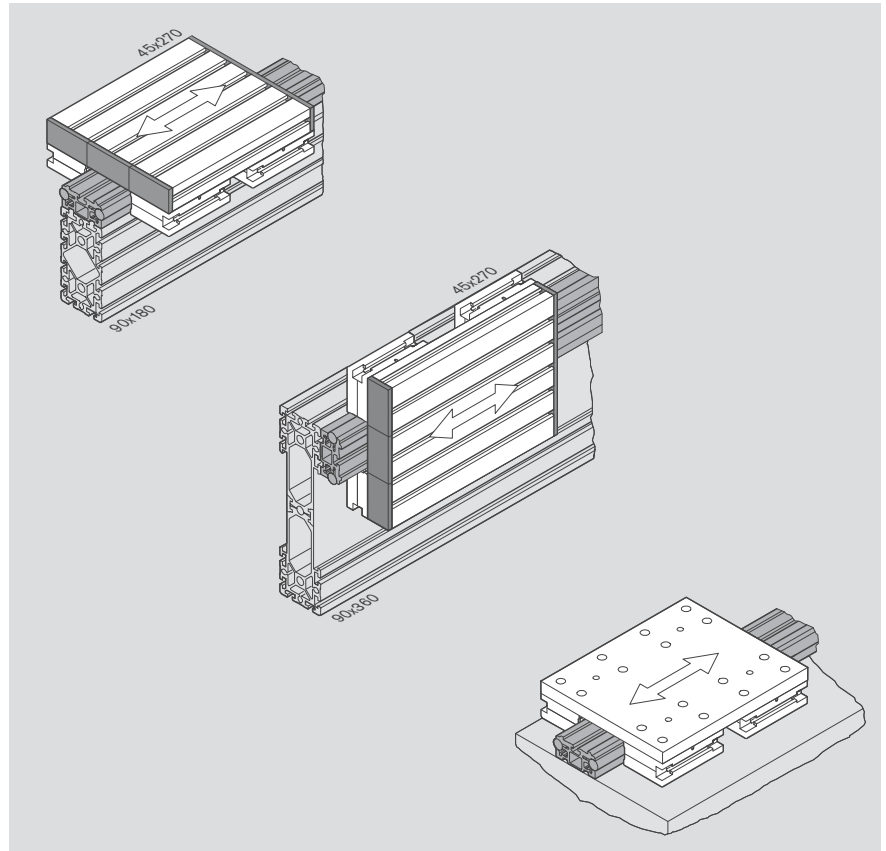


MGE cam roller guides with guide bearing runner blocks

Cam roller guides LF...

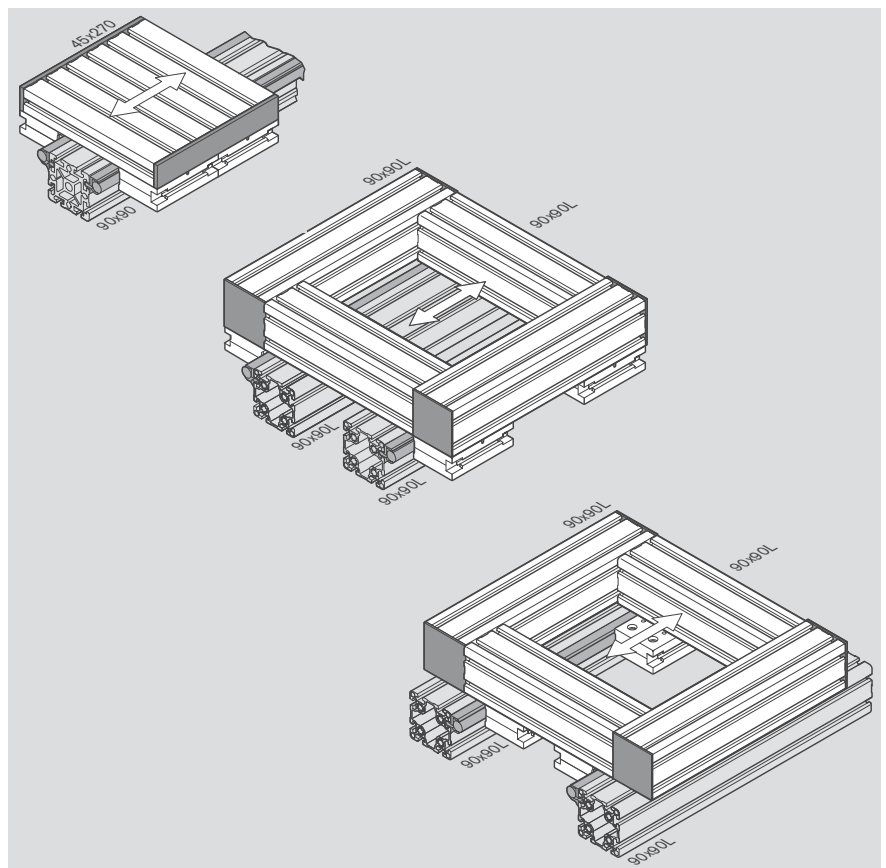
Cam roller guide LF...S with guide rail

- Aluminum rail with VA guide rods
- Simple mounting on strut profile or directly on flat surface, e.g. on a machine,
- Great accuracy, dimensional accuracy and resistance against torsion
- Lighter and more economical than VA guide rods
- Light runner block with resistance against torsion
- Any runner block lengths
- High permissible speed
- Any stroke lengths can be created



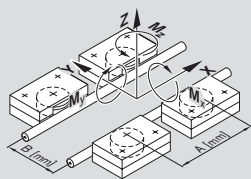
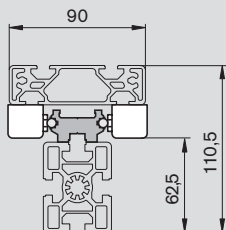
Cam roller guide LF...C with clamping profile

- Aluminum clamping profile with VA guide rods
- Simple mounting on strut profile
- Optimally adjustable to loads
- Light runner block with resistance against torsion
- Freely selectable runner block lengths and widths
- High permissible speed
- Any stroke lengths can be created
- Higher moments due to a C design and a variable track width

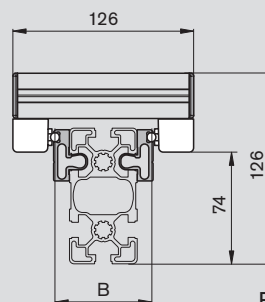


MGE cam roller guides with guide bearing runner blocks

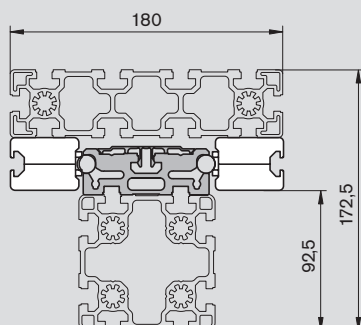
Overview of LF S and LF C

**LF6S**

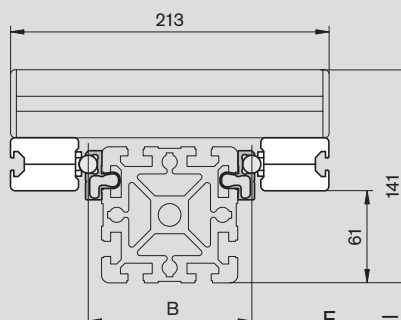
$$\begin{aligned} F_{y \max} &= 1400 \text{ N} \\ F_{z \max} &= 850 \text{ N} \\ M_{x \max} &= 13,6 \text{ Nm} \\ v_{\max} &= 5 \text{ m/s} \end{aligned}$$

LF6C

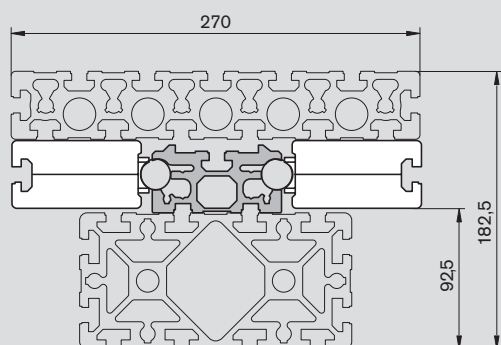
$$\begin{aligned} F_{y \max} &= 1400 \text{ N} \\ F_{z \max} &= 850 \text{ N} \\ M_{x \max} &= 0,4 \times B \text{ Nm} \\ v_{\max} &= 5 \text{ m/s} \end{aligned}$$

LF12S

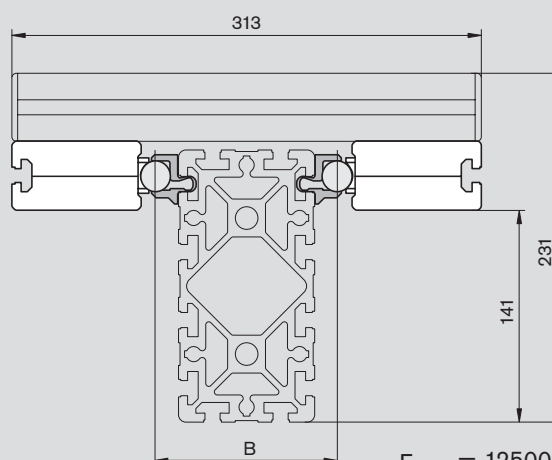
$$\begin{aligned} F_{y \max} &= 3500 \text{ N} \\ F_{z \max} &= 2000 \text{ N} \\ M_{x \max} &= 78 \text{ Nm} \\ v_{\max} &= 5 \text{ m/s} \end{aligned}$$

LF12C

$$\begin{aligned} F_{y \max} &= 3500 \text{ N} \\ F_{z \max} &= 2000 \text{ N} \\ M_{x \max} &= 1,0 \times B \text{ Nm} \\ v_{\max} &= 5 \text{ m/s} \end{aligned}$$

LF20S

$$\begin{aligned} F_{y \max} &= 12500 \text{ N} \\ F_{z \max} &= 6000 \text{ N} \\ M_{x \max} &= 240 \text{ Nm} \\ v_{\max} &= 5 \text{ m/s} \end{aligned}$$

LF20C

$$\begin{aligned} F_{y \max} &= 12500 \text{ N} \\ F_{z \max} &= 6000 \text{ N} \\ M_{x \max} &= 3,0 \times B \text{ Nm} \\ v_{\max} &= 5 \text{ m/s} \end{aligned}$$

MGE cam roller guides with guide bearing runner blocks

Size 6



MGE cam roller guides with guide bearing runner blocks

Complete axis LF6S



Fully assembled cam roller guide
with rail profile mounted on strut profile
45x60.

Driven with toothed belts.

See also the linear guide drives
(☞ 2-29).

Accessories:

MSK motor: (☞ 2-30)

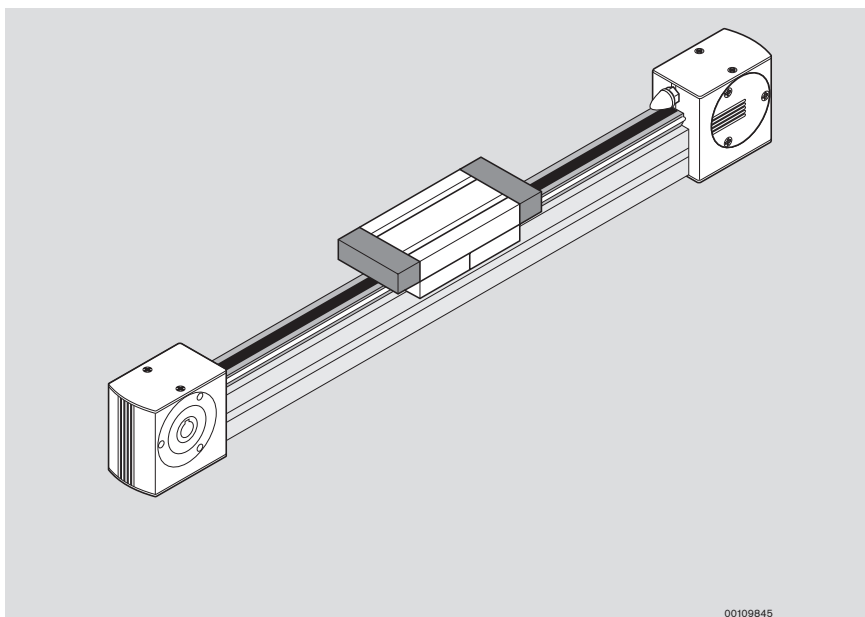
LF6 gear: (☞ 2-32)

LF6 flange: (☞ 2-34, 2-35)

Switch unit: (☞ 2-37)

LF6 operating elements: (☞ 2-37)

For information on controls (☞ 2-33), see
also IndraDrive catalog (R911308428)



00109845

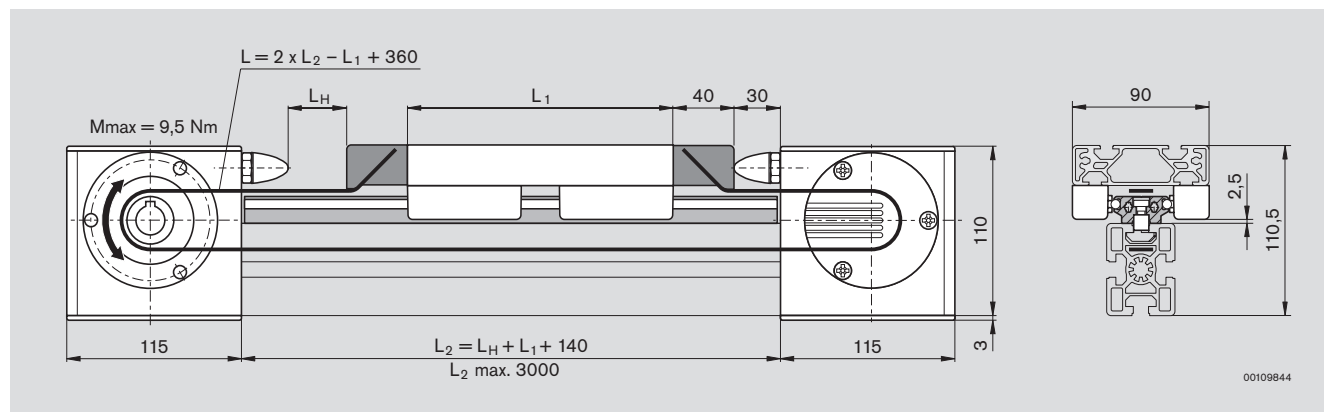
Complete axis LF6S

$LE\ 1 \times L_H = \dots\text{ mm} / L_1 = \dots\text{ mm}$

3 842 998 495 / ... / ...

$L_1 + 80 \leq L_H \leq 2710\text{ mm}$

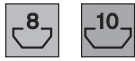
$150\text{ mm} \leq L_1 \leq 1000\text{ mm}$



00109844

MGE cam roller guides with guide bearing runner blocks

Complete axis LF6C



Fully assembled cam roller guide with clamping profile on strut profile 45x90L. Driven with toothed belts. See also the linear guide drives (☞ 2-29).

Accessories:

MSK motor: (☞ 2-30)

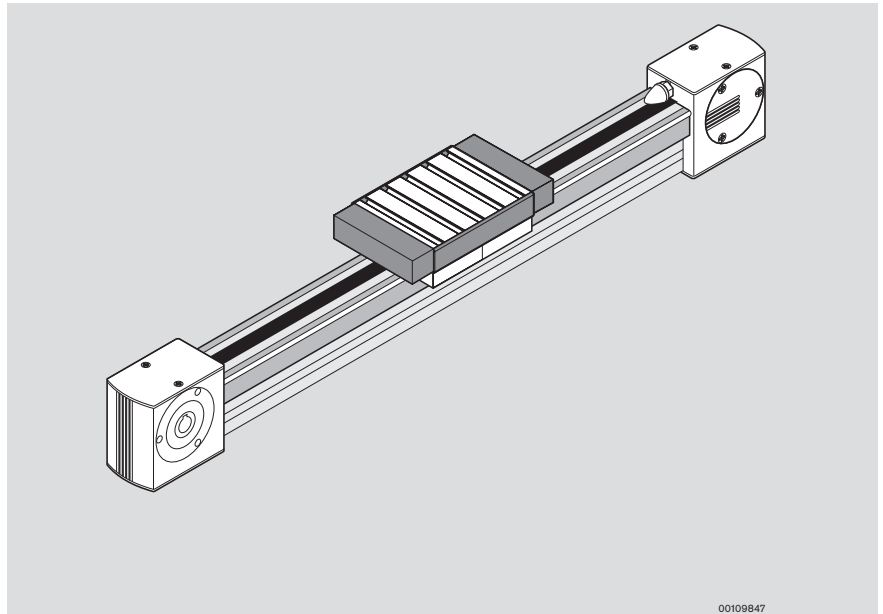
LF6 gear: (☞ 2-32)

LF6 flange: (☞ 2-34, 2-35)

Switch unit: (☞ 2-37)

LF6 operating elements: (☞ 2-37)

For information on controls (☞ 2-33), see also IndraDrive catalog (R911308428)



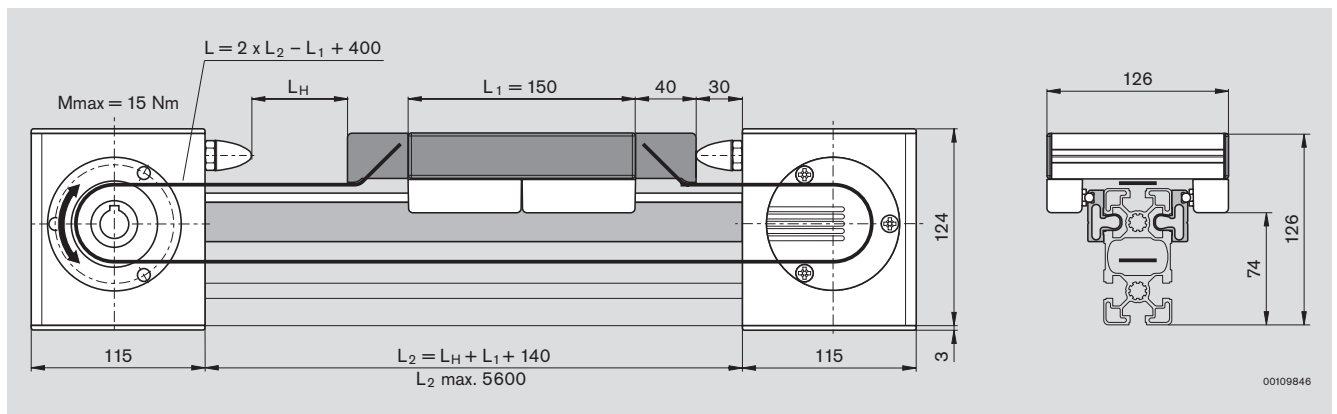
00109847

Complete axis LF6C

LE 1 x $L_H = \dots$ mm

3 842 998 496/...

$50 \text{ mm} \leq L_H \leq 5310 \text{ mm}$



MGE cam roller guides with guide bearing runner blocks

Cam roller guides LF6S, LF6C



LF6S

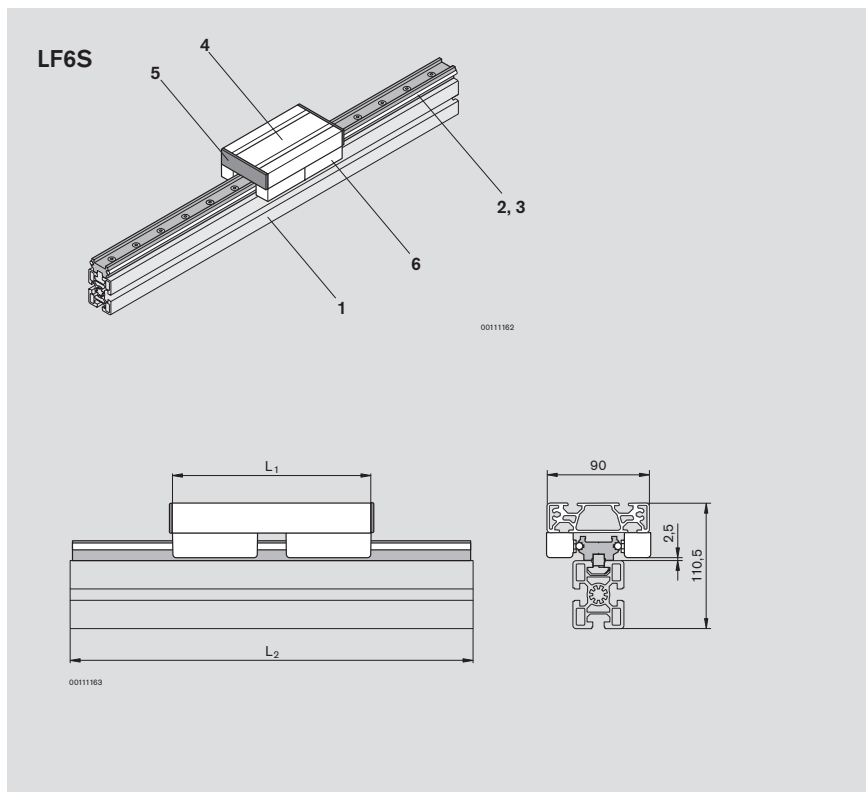
Sample assembly for a compact cam roller guide based on strut profile 45x60. Without drive. All parts can be ordered according to the parts list.

Material:

- guide rail: aluminum, anodized
- guide rods: VA
- support profile: aluminum, anodized
- runner block: aluminum, anodized
- cap: PA, black

Parts list LF6S

No.		
1	3 842 990 570/L ₂	(☞ MGE)
2+3	3 842 993 966/L ₂	(☞ 2-9)
4	3 842 993 061/L ₁	(☞ 2-10)
5	3 842 535 645 (2x)	(☞ 2-10)
6	3 842 535 662 (4x)	(☞ 2-10)
7	3 842 515 122 (2x)	(☞ MGE)



LF6C

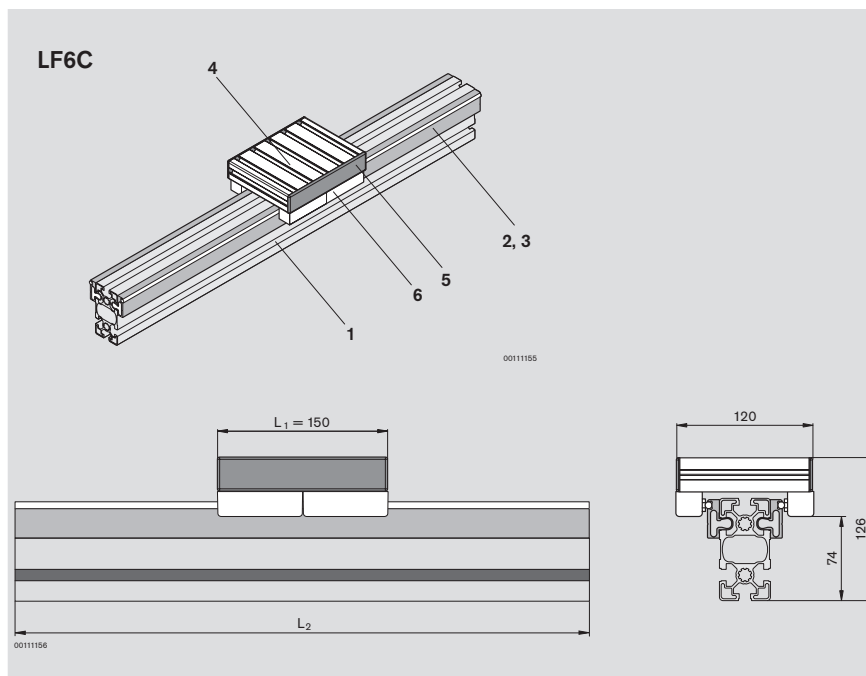
Sample assembly for a compact cam roller guide for clipping into strut profile 45x90L. Without drive. All parts can be ordered according to the parts list.

Material:

- guide rods: VA
- support profile: aluminum, anodized
- clamping profile: aluminum, anodized
- runner block: aluminum, anodized
- cap: PA, black

Parts list LF6C

No.		
1	3 842 992 432/L ₂	(☞ MGE)
2	3 842 992 925/L ₂ (2x)	(☞ 2-9)
3	3 842 993 967/L ₂ (2x)	(☞ 2-9)
4	3 842 993 952/114 mm	(☞ 2-10)
5	3 842 539 120 (2x)	(☞ 2-10)
6	3 842 535 662 (4x)	(☞ 2-10)
7	3 842 511 783 (2x)	(☞ MGE)



MGE cam roller guides with guide bearing runner blocks

Guides LF6S/LF6C



Guide profile LF6S

Guide profile for mounting on MGE strut profiles with 10 mm groove or directly on a flat surface.

The sliding block serves as a centering aid.

The guide rods are integrated in the LF6S guide profile at the factory.

Guide profile LF6S

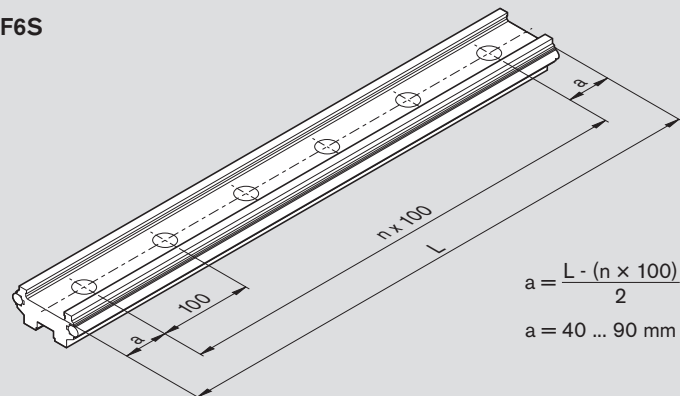
	LE 1 x L = ... mm
LF6S	3 842 993 966/...
	150 mm ≤ L ≤ 3000 mm

	LE 10 x L = 3000 mm
LF6S	3 842 539 412

Sliding block

	No.
50	3 842 146 877

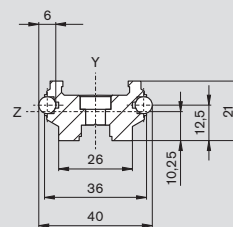
LF6S



$$a = \frac{L - (n \times 100)}{2}$$

$$a = 40 \dots 90 \text{ mm}$$

00109854

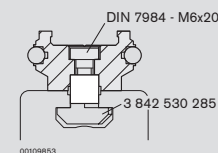


1,60 kg/m

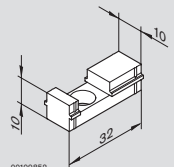
A = 405 mm²

I_z = 1,16 cm⁴

I_y = 5,88 cm⁴



00109853



00109852

Clamping profile LF6C, guide rods LF6

The clamping profile is clipped into the 10 mm groove in any MGE strut profile and holds the guide rods.

Clamping profile LF6C

	LE 1 x L = ... mm
LF6C	3 842 992 925/...
	150 mm ≤ L ≤ 3000 mm

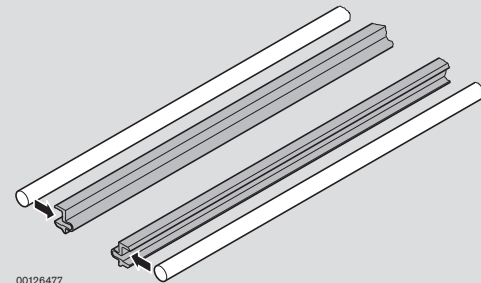
	LE 20 x L = 3000 mm
LF6C	3 842 518 896

Guide rods LF6

	LE 1 x L = ... mm
LF6	3 842 993 967/...
	150 mm ≤ L ≤ 3000 mm

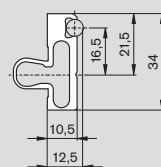
	L = 3000 mm
LF6 20	3 842 539 414

LF6C



00126477

LF6C



0,61 kg/m

00109849

LF6



00109850

0,22 kg/m

Material:

- guide profile: aluminum, anodized
- sliding block: PA, black
- clamping profile: aluminum, anodized
- guide rod: solid shaft VA, induction hardened, polished

MGE cam roller guides with guide bearing runner blocks

Drive head, return head LF6



To move the runner block on the LF6 via toothed belts.

The drive head is used to directly fit a motor or (in connection with a center shaft) a hollow shaft gear or a coupling. The return head is used to change the toothed belt's direction.

The drive head and return head are directly secured on the profile with longitudinal end connectors.

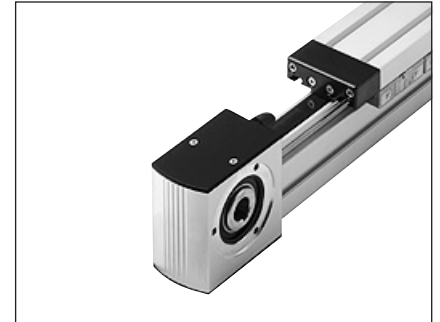
Accessories:

- flanges
- gears
- servomotors

See also the linear guide drives.

Material:

- drive head: aluminum, anodized
- return head: aluminum, anodized
- hollow shaft: steel, galvanized
- cap: PA, black



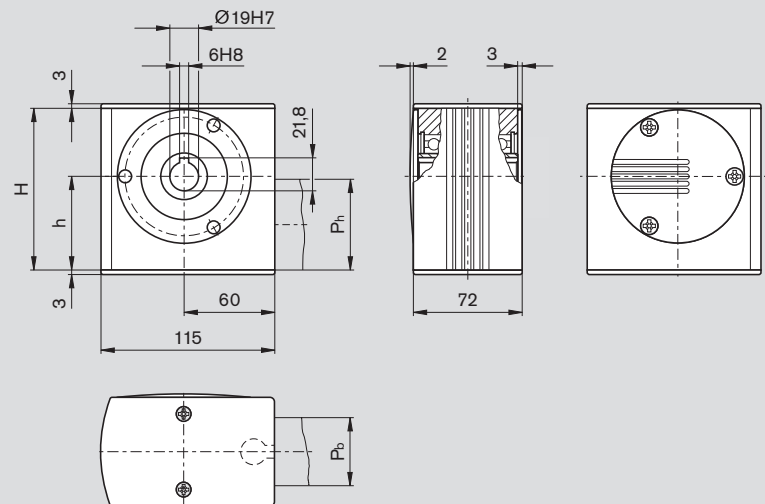
00111418

Drive head

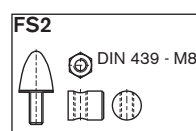
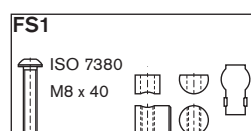
	No.	H (mm)	h (mm)	Pb x Ph (mm)	\bar{m} (kg)	Fastening set
LF6S	3 842 526 410	107.0	62.0	45x60	1.8	2xFS1, 1xFS2
LF6C	3 842 526 416	121.0	68.0	45x90L	2.1	2xFS1, 1xFS2

Return head

	No.	H (mm)	h (mm)	Pb x Ph (mm)	\bar{m} (kg)	Fastening set
LF6S	3 842 526 411	107.0	62.0	45x60	1.6	2xFS1, 1xFS2
LF6C	3 842 526 417	121.0	68.0	45x90L	1.9	2xFS1, 1xFS2



00109857



MGE cam roller guides with guide bearing runner blocks

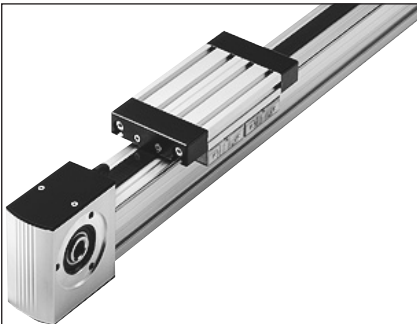
Belt connector, toothed belt LF6



Belt connector (A, B) to fix the toothed belt (C,D) at the end of the runner block.

Toothed belt pitch
– AT5

- Material:
- belt connector: aluminum, painted black
 - toothed belt: PU with embedded steel wires



00126478

Belt connector

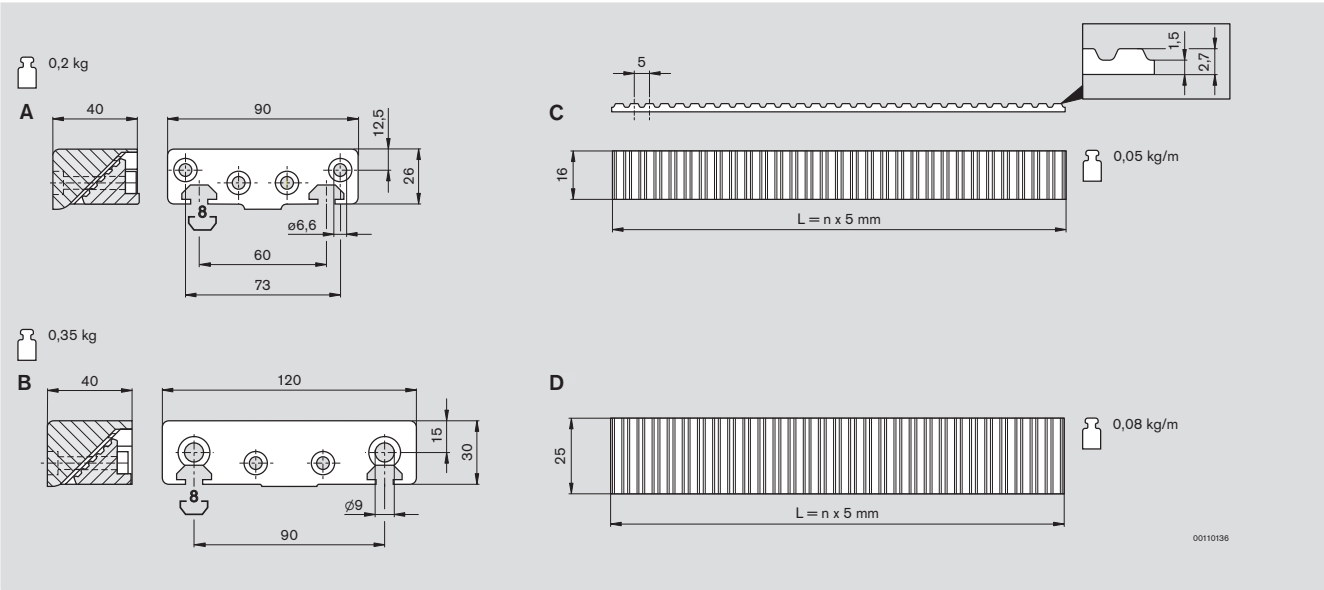
		No.	Fastening set
A	LF6S	2 3 842 535 682	2x (FS1, FS2)
B	LF6C	2 3 842 535 681	2x (FS1, FS3, FS4)

Toothed belt

	LE 1 x L = ... mm
C	LF6S 3 842 994 659 / ...
D	LF6C 3 842 994 711 / ...
300 mm ≤ L ≤ 50000 mm	

Toothed belt

	LE1 x L = 50000 mm
C	LF6S 3 842 513 646
D	LF6C 3 842 518 856

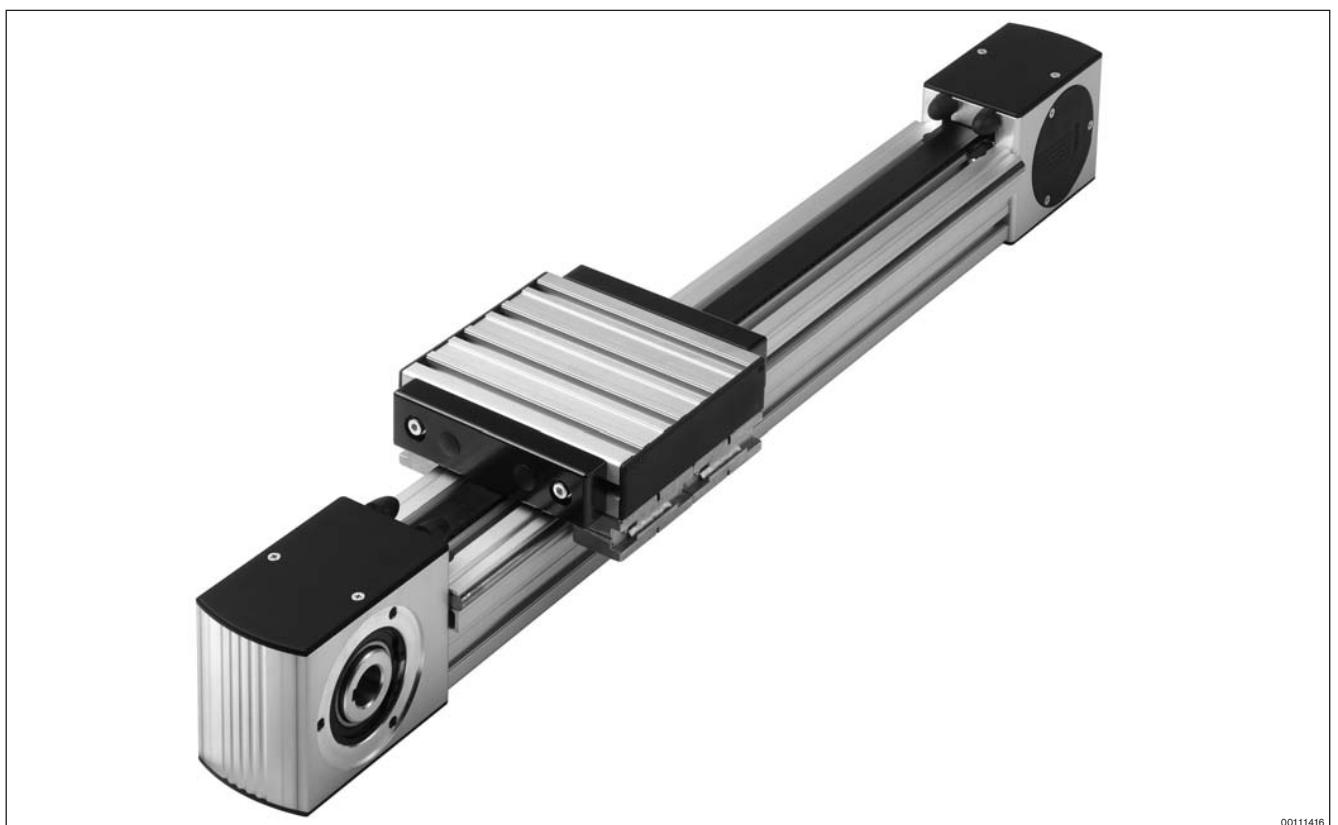


00110136

FS1 DIN 7984 M6x35 6-FSt ISO 4032 M6	FS2 DIN 7500 M6x50 6-FSt	FS3 DIN 7984 M8x50 8-FSt	FS4 DIN 7984 M8x40
--	--	--	---------------------------------

MGE cam roller guides with guide bearing runner blocks

Size 12



MGE cam roller guides with guide bearing runner blocks

Complete axis LF12S



Fully assembled cam roller guide with rail profile mounted on strut profile 90x90L.

Driven with toothed belts.

See also the linear guide drives (👉📄2-29).

Accessories:

MSK motor: (👉📄2-30)

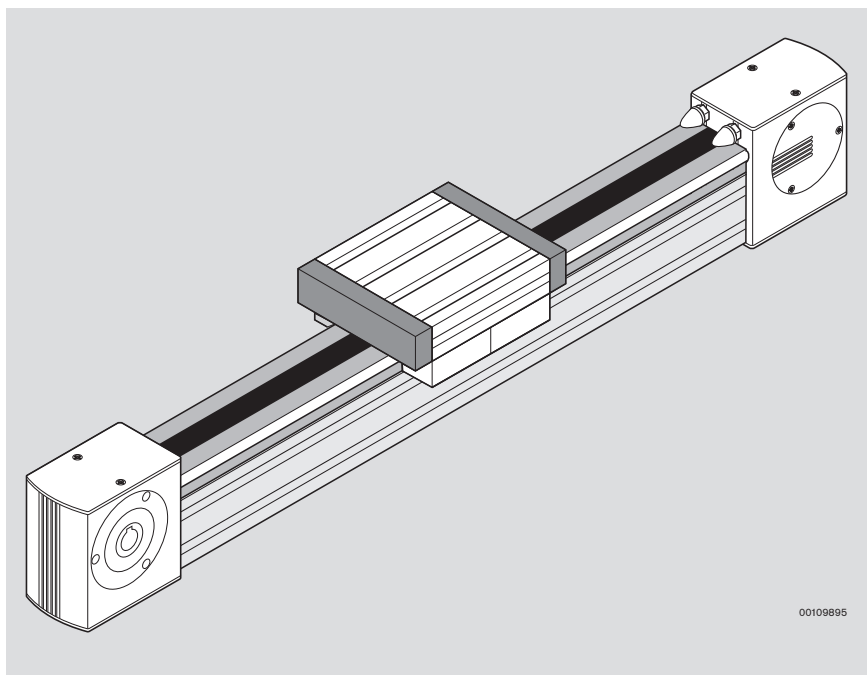
LF12 gear: (👉📄 2-32)

LF12 flange: (👉📄2-34, 2-35)

Switch unit: (👉📄2-37)

LF12 operating elements: (👉📄2-37)

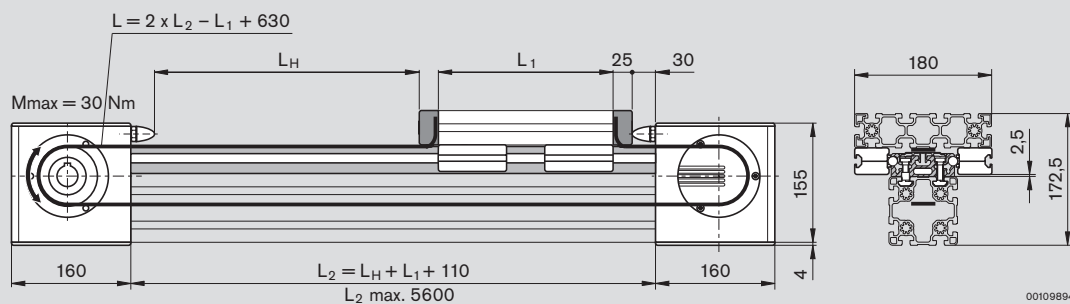
For information on controls (👉 📄2-33), see also IndraDrive catalog (R911308428)



Complete axis LF12S

$$LE\ 1 \times L_H = \dots \text{ mm} / L_1 = \dots \text{ mm}$$

3 842 998 497/.../...

$$L_1 + 50 \leq L_H \leq 5310 \text{ mm}$$
$$180 \text{ mm} \leq L_1 \leq 1000 \text{ mm}$$


$$L = 2 \times L_2 - L_1 + 630$$

$$M_{\max} = 30 \text{ Nm}$$

15

14

25

3

18

1

$$L_2 = L_H + L_1 + 110$$

L₂ max. 5600

1

4

4

MGE cam roller guides with guide bearing runner blocks

Complete axis LF12C



Fully assembled cam roller guide with clamping profile on strut profile 90x90. Driven with toothed belts. See also the linear guide drives (☞ 2-29).

Accessories:

MSK motor: (☞ 2-30)

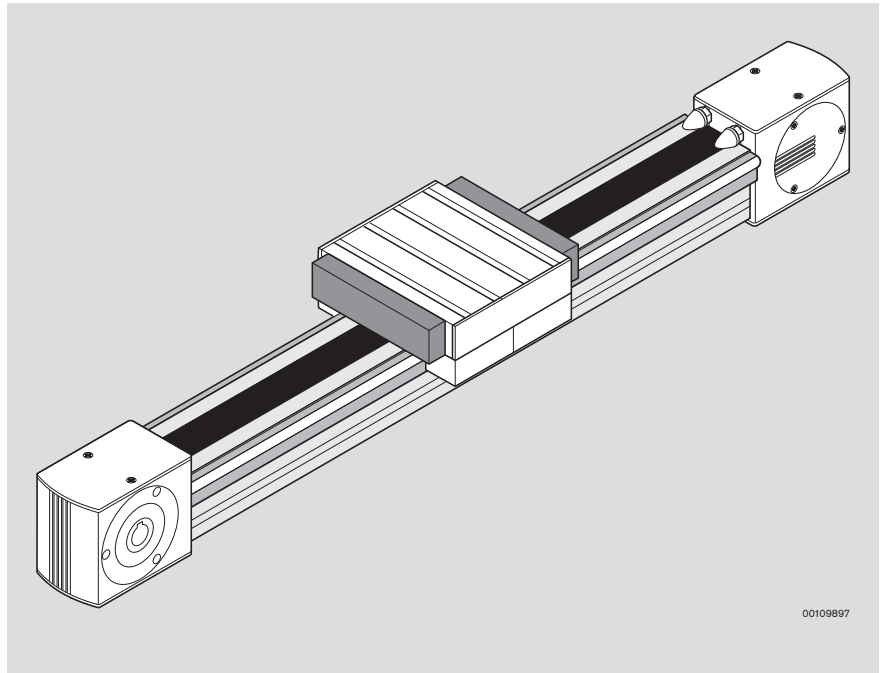
LF12 gear: (☞ 2-32)

LF12 flange: (☞ 2-34, 2-35)

Switch unit: (☞ 2-37)

LF12 operating elements: (☞ 2-37)

For information on controls (☞ 2-33), see also IndraDrive catalog (R911308428)



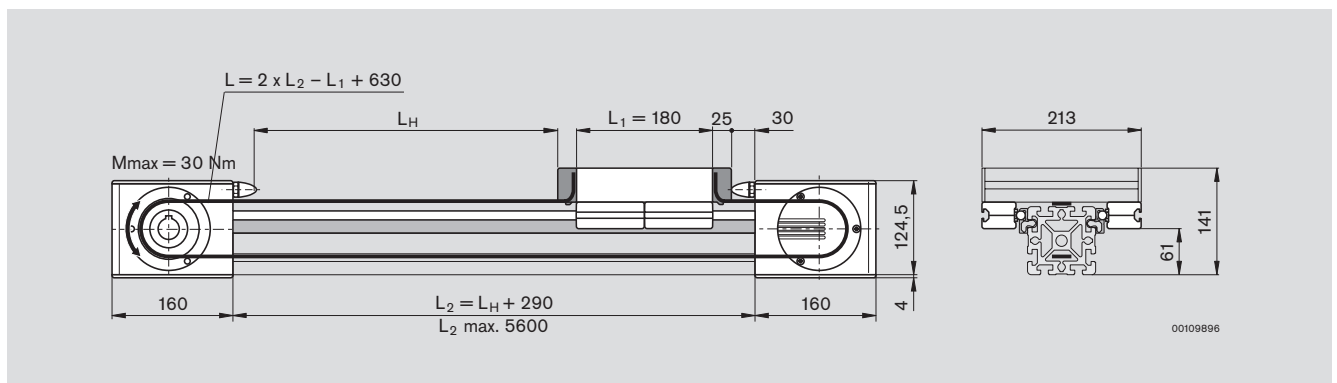
2

Complete axis LF12C

LE 1 x LH = ... mm

3 842 998 498/...

50 mm ≤ LH ≤ 5310 mm



MGE cam roller guides with guide bearing runner blocks

Cam roller guides LF12S/LF12C



LF12S

Sample assembly for a cam roller guide based on strut profile 90x90L.

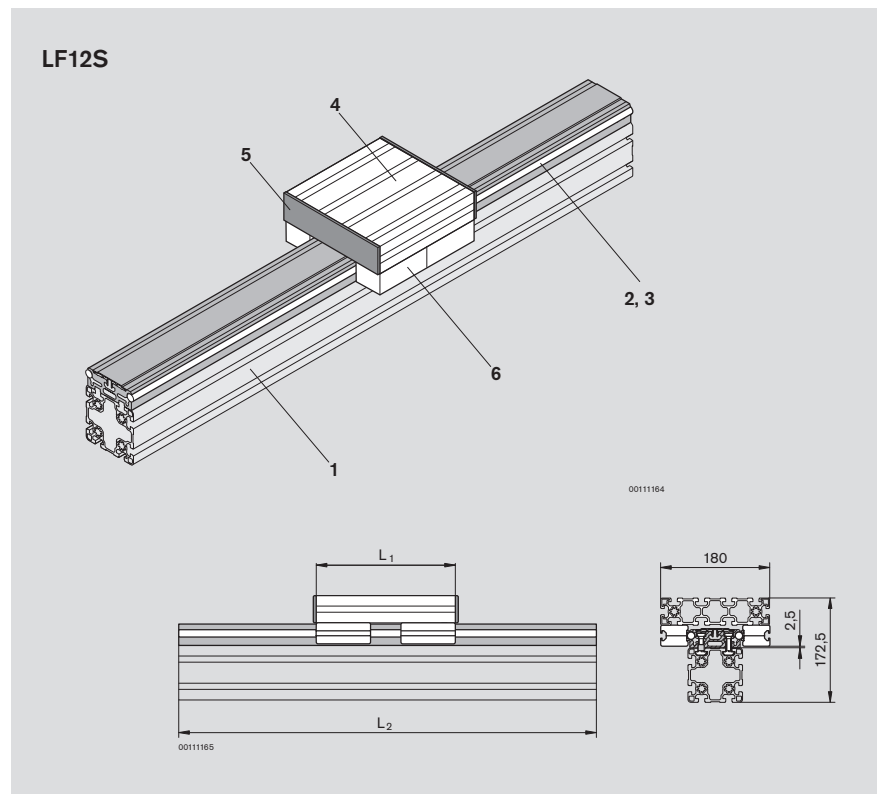
Without drive. All parts can be ordered according to the parts list.

Material:

- guide rail: aluminum, anodized
- guide rods: VA
- support profile: aluminum, anodized
- runner block: aluminum, anodized
- cap: PA, black

Parts list LF12S

No.		
1	3 842 992 415/L ₂	(☞ MGE)
2	3 84 2 9 92 438/L ₂	(☞ 2-17)
2a	3 842 993 062/L ₂	(☞ 2-17)
3	3 842 993 968/L ₂ (2x)	(☞ 2-17)
4	3 842 990 335/L ₁	(☞ MGE)
5	3 842 503 845 (2x)	(☞ MGE)
6	3 842 535 664 (4x)	(☞ 2-18)
7	3 842 516 214 (2x)	(☞ MGE)



LF12C

Sample assembly for a cam roller guide for clipping into strut profile 90x90.

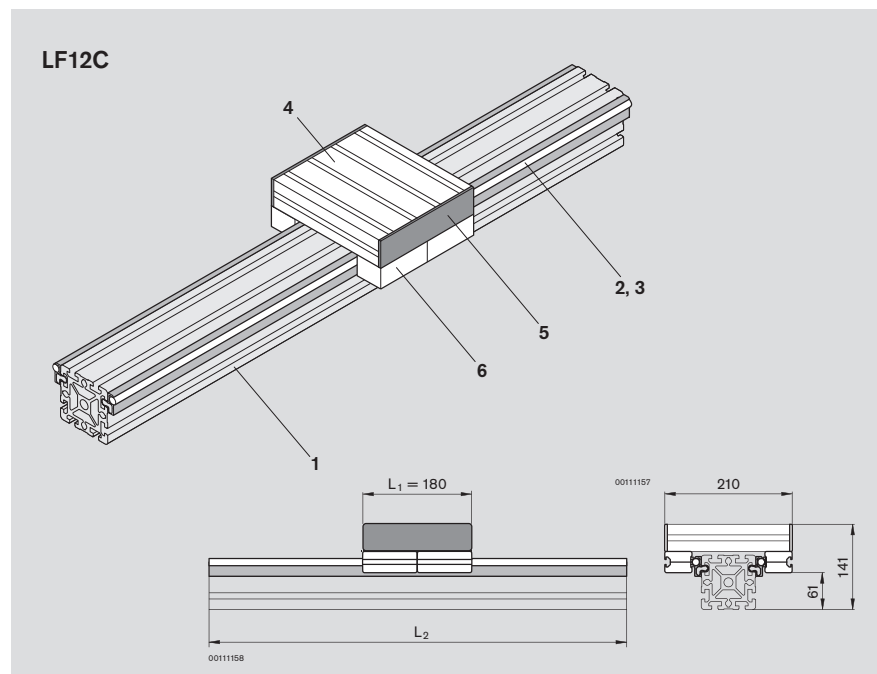
Without drive. All parts can be ordered according to the parts list.

Material:

- guide rods: VA
- clamping profile: aluminum, anodized
- support profile: aluminum, anodized
- runner block: aluminum, anodized
- cap: PA, black

Parts list LF12C

No.		
1	3 842 990 500/L ₂	(☞ MGE)
2	3 842 992 440/L ₂ (2x)	(☞ 2-17)
3	3 842 993 968/L ₂ (2x)	(☞ 2-17)
4	3 842 990 335/205 mm	(☞ MGE)
5	3 842 503 845 (2x)	(☞ MGE)
6	3 842 535 664 (4x)	(☞ 2-18)
7	3 842 242 400 (2x)	(☞ MGE)



MGE cam roller guides with guide bearing runner blocks

Guides LF12S/LF12C



Guide profile LF12S

Guide profile for mounting on MGE strut profiles with 10 mm groove or directly on a flat surface.

The sliding block serves as a centering aid.

The guide rods are simply and securely clipped into the guide profile.

Guide profile LF12S

	LE 1 x L = ... mm
A LF12S	3 842 992 438/...
	150 mm ≤ L ≤ 5600 mm

	LE 5 x L = 5600 mm
A LF12S	3 842 511 841

Cover profile LF12S

	LE 1 x L = ... mm
B	3 842 993 062/...
	150 mm ≤ L ≤ 5600 mm

Sliding block

	No.
C	50
	3 842 146 877

Clamping profile LF12C, guide rods LF12

The clamping profile is clipped into the 10 mm groove in any MGE strut profile and holds the guide rods.

Clamping profile LF12C

	LE 1 x L = ... mm
LF12C	3 842 992 440/...
	150 mm ≤ L ≤ 3000 mm

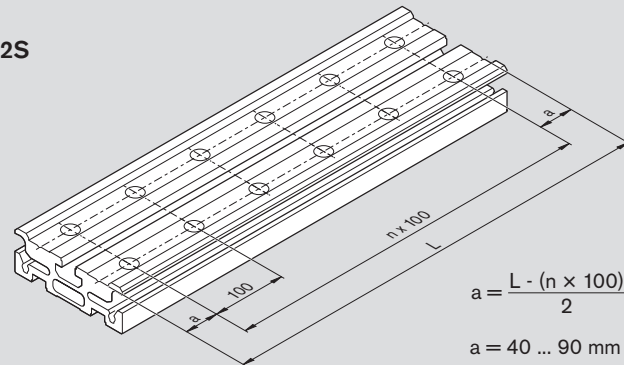
	LE 20 x L = 3000 mm
LF12C	3 842 518 897

Guide rods LF12

	LE 1 x L = ... mm
LF12	3 842 993 968/...
	150 mm ≤ L ≤ 2900 mm

	L = 2900 mm
LF12	20
	3 842 539 415

LF12S



$$a = \frac{L - (n \times 100)}{2}$$

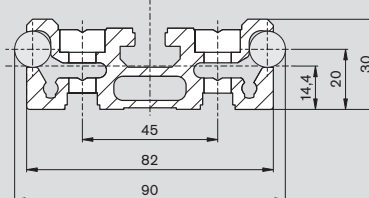
$$a = 40 \dots 90 \text{ mm}$$

00109903

B



A



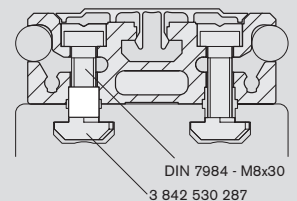
0,37 kg/m

A = 137 mm²I_z = 0,20 cm⁴I_y = 3,70 cm⁴

3,50 kg/m

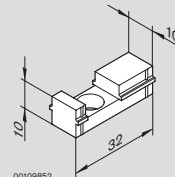
A = 1290 mm²I_z = 9,60 cm⁴I_y = 76,40 cm⁴

00109898

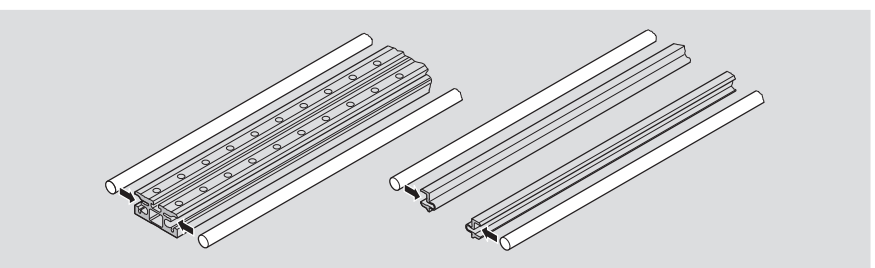


00109902

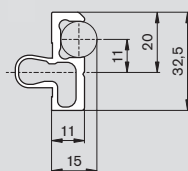
C



00109852



LF12C



0,52 kg/m

00109899

LF12



0,89 kg/m

00109900

Material:

- guide profile: aluminum, anodized
- sliding block: PA, black
- clamping profile: aluminum, anodized
- guide rod: solid shaft VA, induction hardened and polished

MGE cam roller guides with guide bearing runner blocks

Drive head, return head LF12



To move the runner block on the LF12 via toothed belts. The drive head is used to directly fit a motor or (in connection with a center shaft) a hollow shaft gear or a coupling. The return head is used to change the toothed belt's direction.

Drive head and return head are directly secured on the profile with longitudinal end connectors.

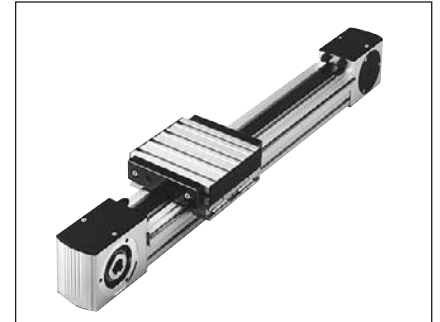
Accessories:

- flanges
- gears
- servomotors

See also the linear guide drives.

Material:

- drive head: aluminum, anodized
- return head: aluminum, anodized
- hollow shaft: steel, galvanized
- caps: PA, black



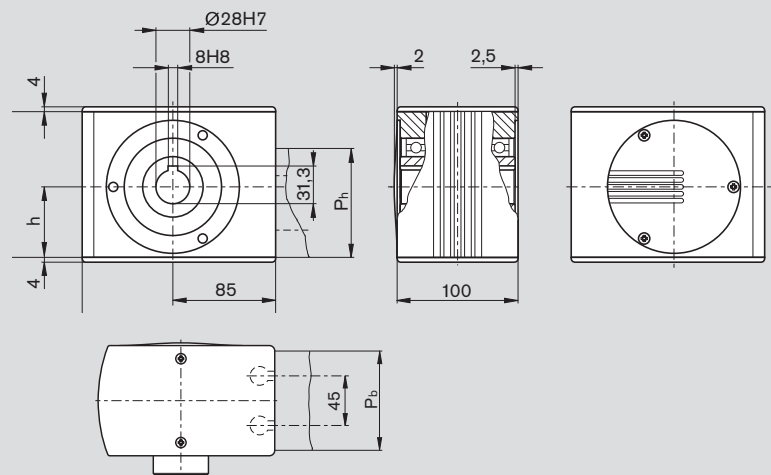
00106073

Drive head

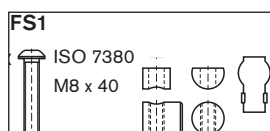
No.	H (mm)	h (mm)	Pb x Ph (mm)	\bar{m} (kg)	Fastening set
LF12S 3 842 526 412	151.0	88.7	90x90L	4.5	4xFS1, 2xFS2
LF12C 3 842 526 863	120.5	58.3	90x90	3.9	4xFS1, 2xFS2

Return head

No.	H (mm)	h (mm)	Pb x Ph (mm)	\bar{m} (kg)	Fastening set
LF12S 3 842 526 413	151.0	88.7	90x90L	3.5	4xFS1, 2xFS2
LF12C 3 842 526 865	120.5	58.3	90x90	2.9	4xFS1, 2xFS2



00109890



MGE cam roller guides with guide bearing runner blocks

Belt connector, toothed belt LF12



Belt connector (A) to fix the toothed belt (B) at the end of the runner block.

Toothed belt pitch
– AT10

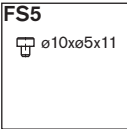
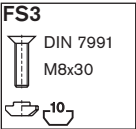
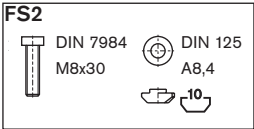
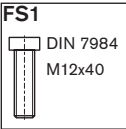
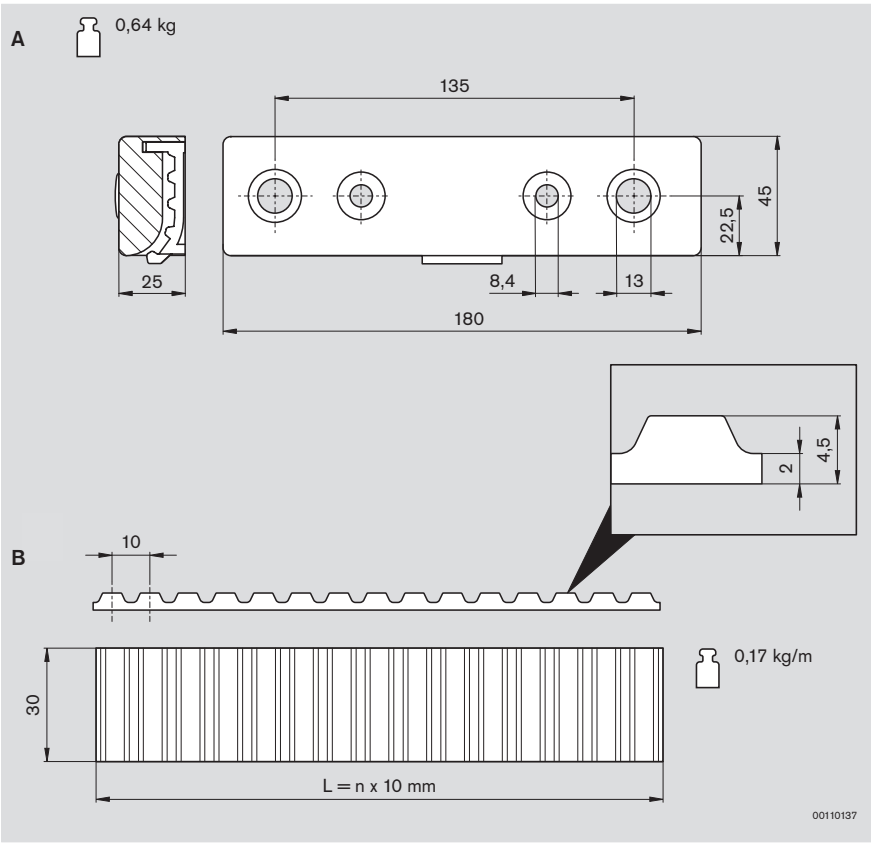
- Material:
- belt connector: aluminum, painted black
 - toothed belt: PU with embedded steel wires



00106058

Belt connector		No.	Fastening set
A	LF12	2 3 842 535 680	2x (FS1, FS2, FS3, FS4), 4xFS5

Toothed belt		LE 1 x L = ... mm	Toothed belt		LE 1 x L = 50000 mm
B	LF12	3 842 994 821/... 300 mm ≤ L ≤ 50000 mm	B	LF12	3 842 526 422



MGE cam roller guides with guide bearing runner blocks

Size 20



MGE cam roller guides with guide bearing runner blocks

Complete axis LF20S



Fully assembled cam roller guide with rail profile mounted on strut profile 90x180.

Driven with toothed belts.

See also the linear guide drives (☞ 2-29).

Accessories:

MSK motor: (☞ 2-30)

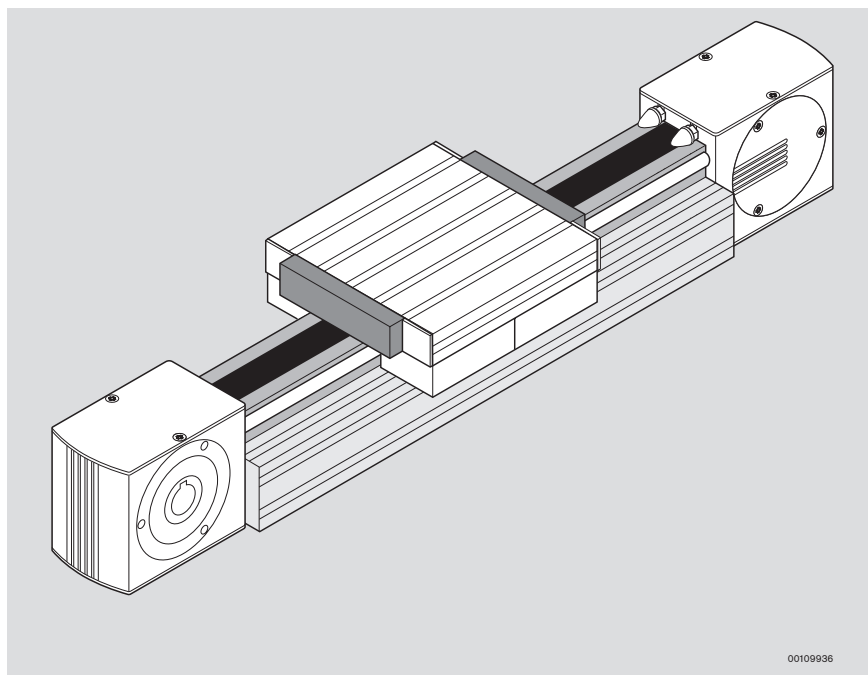
LF20 gear: (☞ 2-32)

LF20 flange: (☞ 2-34, 2-35)

Switch unit: (☞ 2-37)

LF20 operating elements: (☞ 2-37)

For information on controls (☞ 2-33), see also IndraDrive catalog (R911308428)



00109936

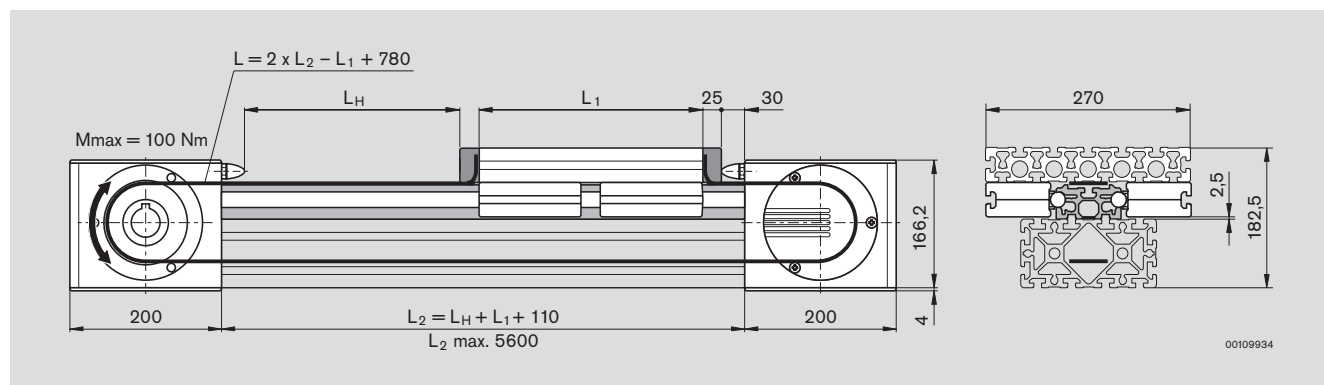
Complete axis LF20S

$LE\ 1 \times L_H = \dots\text{ mm} / L_1 = \dots\text{ mm}$

3 842 998 499/.../...

$L_1 + 50 \leq L_H \leq 5220\text{ mm}$

$270\text{ mm} \leq L_1 \leq 1000\text{ mm}$



00109934

MGE cam roller guides with guide bearing runner blocks

Complete axis LF20C



Fully assembled cam roller guide with clamping profile on strut profile 90x180. Driven with toothed belts. See also the linear guide drives (☞ 2-29).

Accessories:

MSK motor: (☞ 2-30)

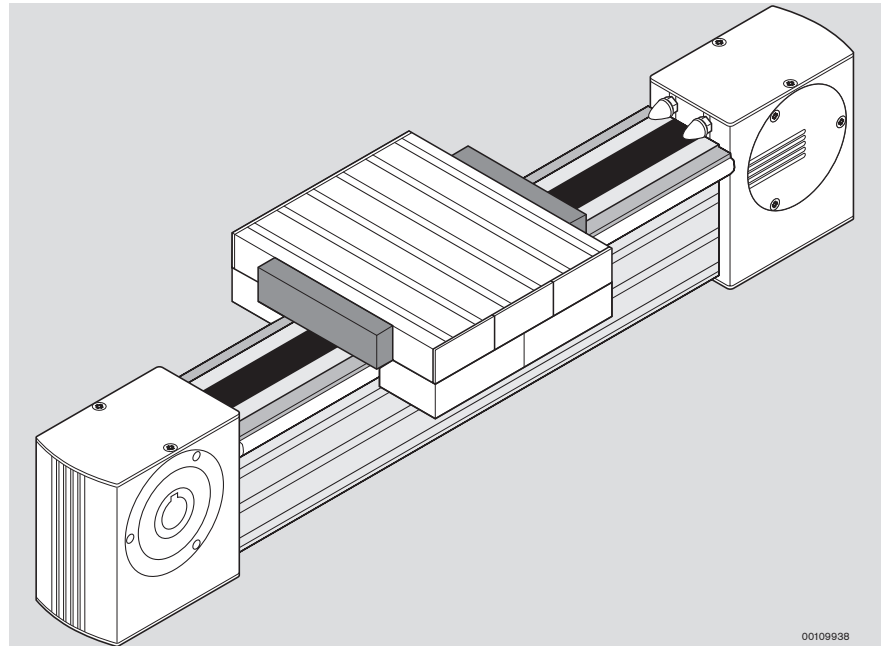
LF20 gear: (☞ 2-32)

LF20 flange: (☞ 2-34, 2-35)

Switch unit: (☞ 2-37)

LF20 operating elements: (☞ 2-37)

For information on controls (☞ 2-33), see also IndraDrive catalog (R911308428)



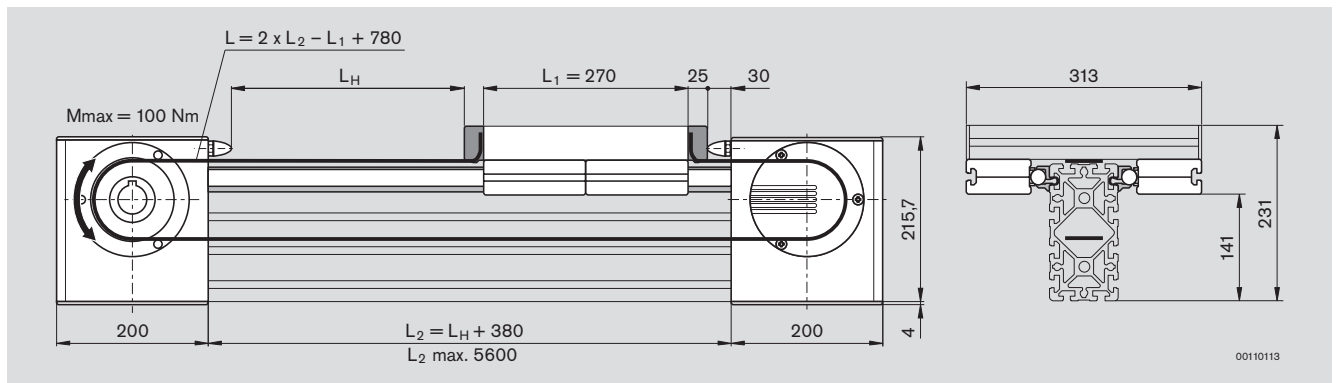
00109938

Complete axis LF20C

LE 1 x LH = ... mm

3 842 998 500/...

50 mm ≤ L_H ≤ 5220 mm



00110113

MGE cam roller guides with guide bearing runner blocks

Cam roller guides LF20S/LF20C

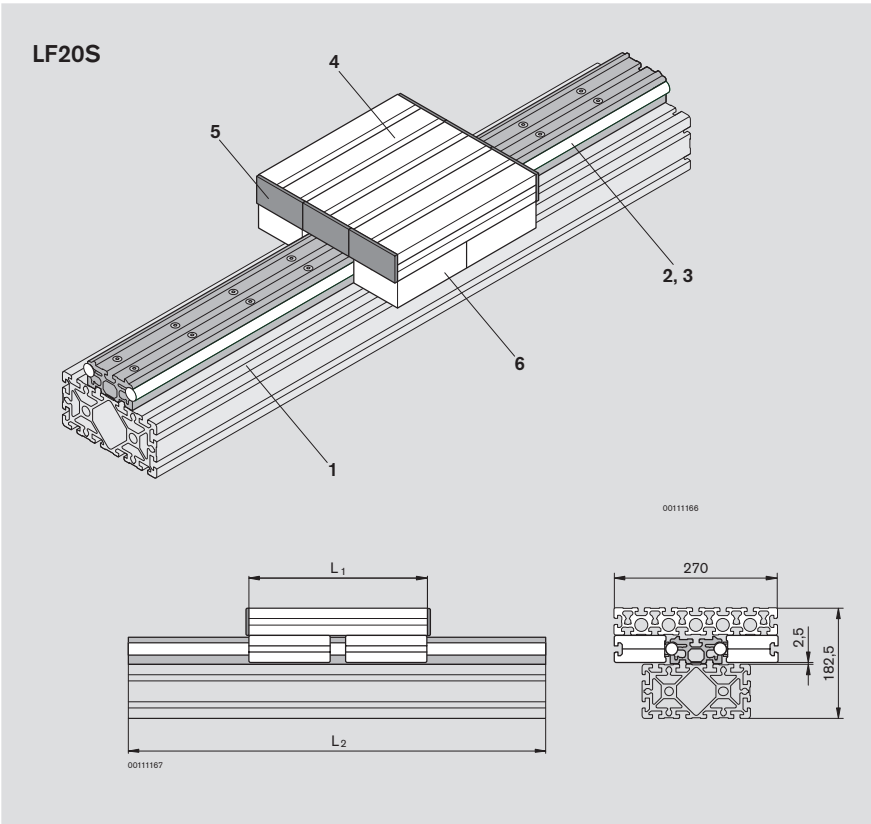


LF20S
Sample assembly for a heavy cam roller guide based on strut profile 90x180.
Without drive. All parts can be ordered according to the parts list.

- Material:
- guide rail: aluminum, anodized
 - guide rods: VA
 - support profile: aluminum, anodized
 - runner block: aluminum, anodized
 - cap: PA, black

Parts list LF20S

No.		
1	3 842 990 416/L ₂	(☞ MGE)
2	3 842 993 080/L ₂	(☞ 2-25)
3	3 842 993 969/L ₂ (2x)	(☞ 2-25)
4	3 842 992 927/L ₁	(☞ MGE)
5	3 842 511 783 (6x)	(☞ MGE)
6	3 842 535 663 (4x)	(☞ 2-26)
7	3 842 242 400 (4x)	(☞ MGE)

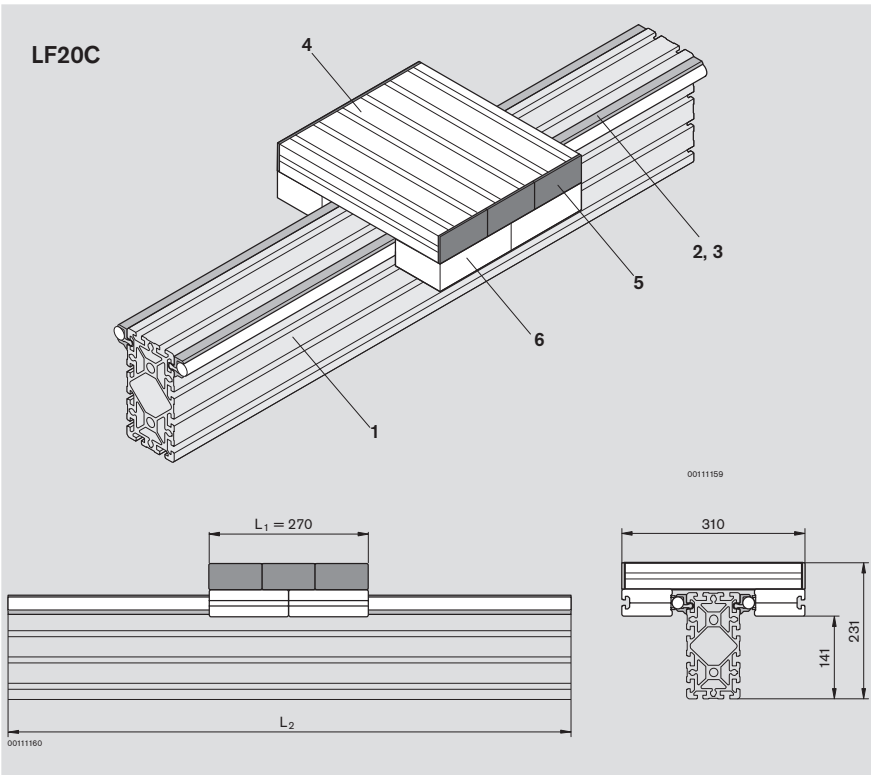


LF20C
Sample assembly for a heavy cam roller guide for clipping into strut profile 90x180.
Without drive. All parts can be ordered according to the parts list.

- Material:
- guide rods: VA
 - clamping profile: aluminum, anodized
 - support profile: aluminum, anodized
 - runner block: aluminum, anodized
 - cap: PA, black

Parts list LF20C

No.		
1	3 842 990 416/L ₂	(☞ MGE)
2	3 842 992 441/L ₂ (2x)	(☞ 2-25)
3	3 842 993 969/L ₂ (2x)	(☞ 2-25)
4	3 842 992 927/305 mm	(☞ MGE)
5	3 842 511 783 (6x)	(☞ MGE)
6	3 842 535 663 (4x)	(☞ 2-26)
7	3 842 242 400 (4x)	(☞ MGE)



MGE cam roller guides with guide bearing runner blocks

Guides LF20S/LF20C



Guide profile LF20S

Guide profile for mounting on MGE strut profiles with 10 mm groove or directly on a flat surface.

The sliding block serves as a centering aid.

The guide rods are simply and securely clipped into the guide profile.

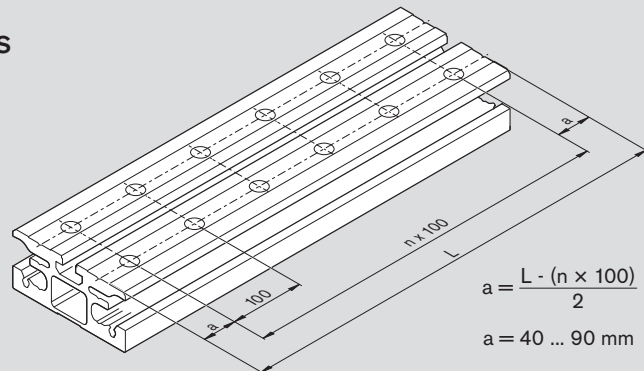
Guide profile LF20S

	LE 1 x L = ... mm
LF20S	3 842 993 080/...
	150 mm ≤ L ≤ 5600 mm
	LE 5 x L = 5600 mm
LF20S	3 842 526 878

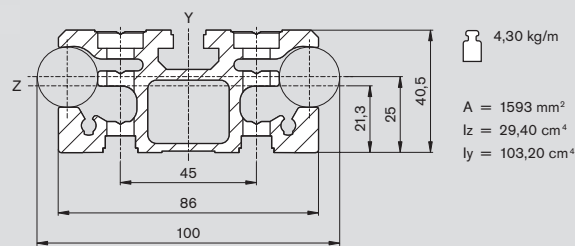
Sliding block

	No.
50	3 842 146 877

LF20S

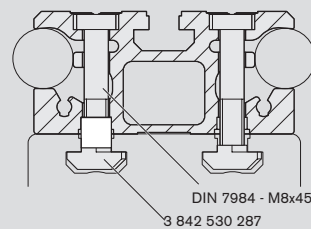


00110190



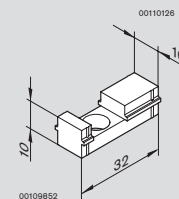
4,30 kg/m

A = 1593 mm²
I_z = 29,40 cm⁴
I_y = 103,20 cm⁴



3 842 530 287

00110129



00109852

Clamping profile LF20C, guide rods LF20

The clamping profile is clipped into the 10 mm groove in any MGE strut profile and holds the guide rods.

Clamping profile LF20C

	LE 1 x L = ... mm
LF20C	3 842 992 441/...
	150 mm ≤ L ≤ 3000 mm

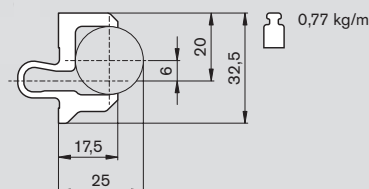
	LE 20 x L = 3000 mm
LF20C	3 842 518 898

Guide rods LF20

	LE 1 x L = ... mm
LF20	3 842 993 969/...
	150 mm ≤ L ≤ 2900 mm

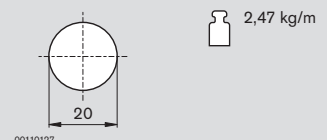
	L = 2900 mm
LF20 20	3 842 539 416

LF20C



00110131

LF20



00110127

Material:

- guide profile: aluminum, anodized
- sliding block: PA, black
- clamping profile LF20C: aluminum, anodized
- guide rod: solid shaft VA, induction hardened, polished

MGE cam roller guides with guide bearing runner blocks

Drive head, return head LF20



To move the runner block on the LF20 via toothed belts. The drive head is used to directly fit a motor or (in connection with a center shaft) a hollow shaft gear or a coupling. The return head is used to change the toothed belt's direction.

Drive head and return head are directly secured on the profile with longitudinal end connectors.

Accessories:

- flanges
- gears
- servomotors

See also the linear guide drives.

Material:

- drive head: aluminum, anodized
- return head: aluminum, anodized
- hollow shaft: steel, galvanized
- caps: PA, black



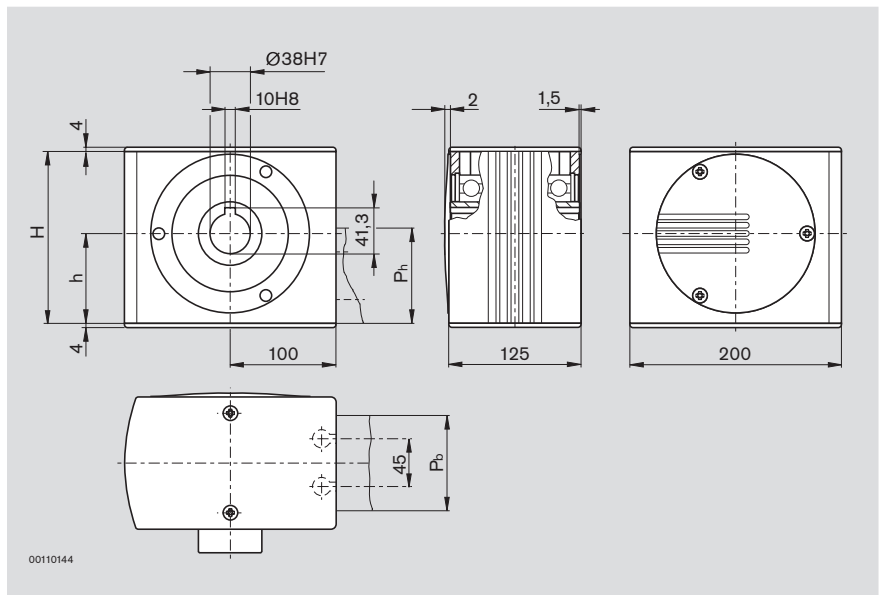
00106073

Drive head

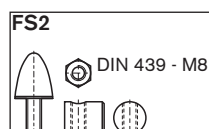
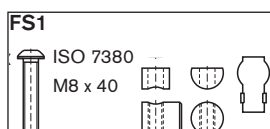
	No.	H (mm)	h (mm)	Pb x Ph (mm)	Ⓜ (kg)	Fastening set
LF20S	3 842 526 414	162.2	84.7	180x90	9.4	4xFS1, 2xFS2
LF20C	3 842 526 867	211.7	134.2	90x180	11.0	4xFS1, 2xFS2

Return head

	No.	H (mm)	h (mm)	Pb x Ph (mm)	Ⓜ (kg)	Fastening set
LF20S	3 842 526 415	162.2	84.7	180x90	9.3	4xFS1, 2xFS2
LF20C	3 842 526 869	211.7	134.2	90x180	10.9	4xFS1, 2xFS2



00110144



MGE cam roller guides with guide bearing runner blocks

Belt connector, toothed belt LF20



Belt connector (A) to fix the toothed belt (B) at the end of the runner block.

Toothed belt pitch
– AT10

- Material:
- belt connector: aluminum, painted black
 - toothed belt: PU with embedded steel wires



00106058

Belt connector LF20

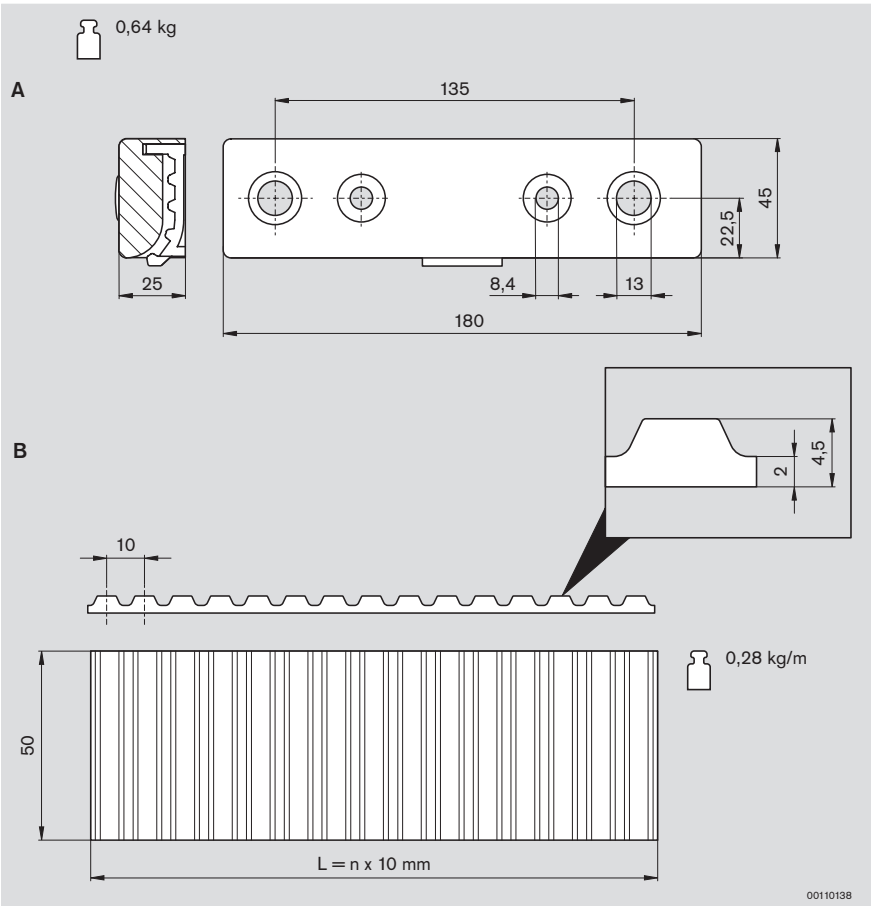
		No.	Fastening set
A	2	3 842 535 680	2x(FS1, FS2, FS3, FS4) 4xFS5

Toothed belt

	LE 1 x L = ... mm
B LF20	3 842 994 662/...
	300 mm ≤ L ≤ 50000 mm

Toothed belt

	LE 1 x L = 50000 mm
B LF20	3 842 513 648



00110138

FS1

DIN 7984
M12x40

FS2

DIN 7984
M8x30

FS3

DIN 7991
M8x30

FS4

FS5

MGE cam roller guides with guide bearing runner blocks

Linear guide drives

Drive concept

Linear guides are driven via the hollow shaft in the drive head. The drive head is used to directly fit a motor or (in connection with a center shaft) a hollow shaft gear or a coupling. According to the desired speeds of movement for the application, it is necessary to use various motor types in conjunction with intermediate gears. Due to the multitude of drive components available on the market, there are a large number of possible combinations.

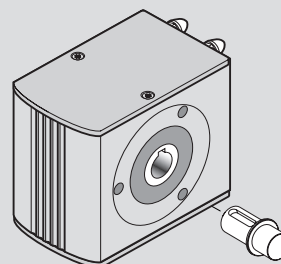
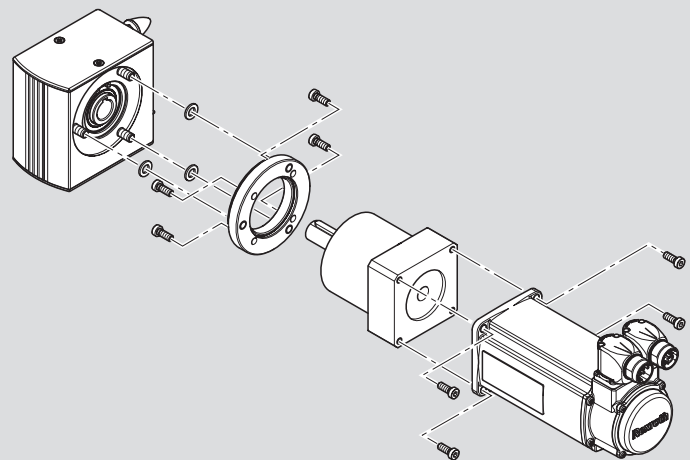
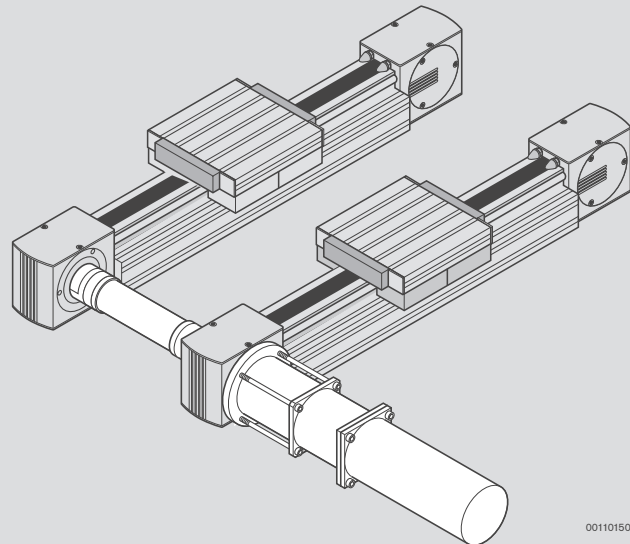
On the following pages we have selected the suitable accessories for each size: motors, gears, flanges, inductive/mechanical switches, brackets and operating elements.

Connection

The drive head is directly secured on the profile with longitudinal end connectors. The motor, or the intermediate gear flange, can be fitted as a complete unit with the drive head from the inside, from left or from right.

Synchronous shafts

By using synchronous shafts (☞ 2-36) several linear axes can be operated with one drive.



MGE cam roller guides with guide bearing runner blocks

MSK servomotors

The MSK motor series stands out with its broad performance range and fine size graduation. The high torque density of these synchronous servomotors allows a particularly compact design with maximum torques of up to 230 Nm. Please see the chapter Technical data for additional technical data on the motors selected here. The servomotors listed here are designed for applications with our cam roller guides.

The MSK servomotors are equipped with an absolute multi-turn encoder (Hiperface, 128 increments with 4096 rotations), smooth motor shafts and no brakes. To achieve the optimal drive configuration for an individual application, as well as for the selection of additional motor parameters, we recommend that you contact the BRC Business Unit. You will find additional information on the motors in the latest IndraDrive catalog (R911308428).



00131871

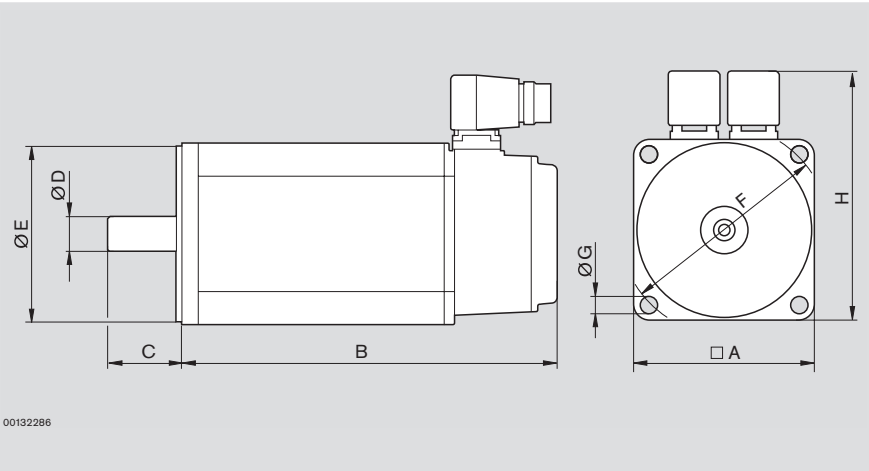
MSK servomotors

	Symbol	Unit	MSK 040C	MSK 050B	MSK 060C	MSK 070C	MSK 070E	MSK 100B
BRC part number			R911 306 060	R911 299 935	R911 307 219	R911 299 754	R911 316 908	R911 315 705
Maximum usable speed ¹⁾	n_{max}	min ⁻¹	7500	6000	4900	6000	5300	4750
Nominal torque	M_N	Nm	2.7	3.0	8.0	13.0	23.0	28.0
Maximum torque	M_{max}	Nm	8.1	9.0	24.0	33.0	60.0	102.0
Continuous current at standstill	I_0	A	3.1	3.7	4.8	12.3	15.4	17.4
Maximum current	I_{Max}	A	12.4	14.8	19.2	36.9	46.3	78.3
Moment of inertia	J_R	10 ⁻⁶ kgm ²	140	280	800	2910	4580	19200
Mass	m	kg	3.6	4.0	8.4	11.7	16.2	34.0

¹⁾ n_{max} = 19200 rpm at 750 V intermediate circuit voltage

Motor data for servomotors

Motor type	Dimensions (mm)							
	A	B	C	ØD	ØE	ØF	ØG	H
MSK 040C	82	185.5	30	14	50	95	6.6	124.5
MSK 050B	98	173.0	40	19	95	115	9.0	134.5
MSK 060C	116	226.0	50	24	95	130	9.0	156.0
MSK 070C	140	238.0	58	32	130	165	11.0	202.0
MSK 070E	140	298.0	58	32	130	165	11.0	202.0
MSK 100B	192	368.0	60	32	130	215	11.0	211.5

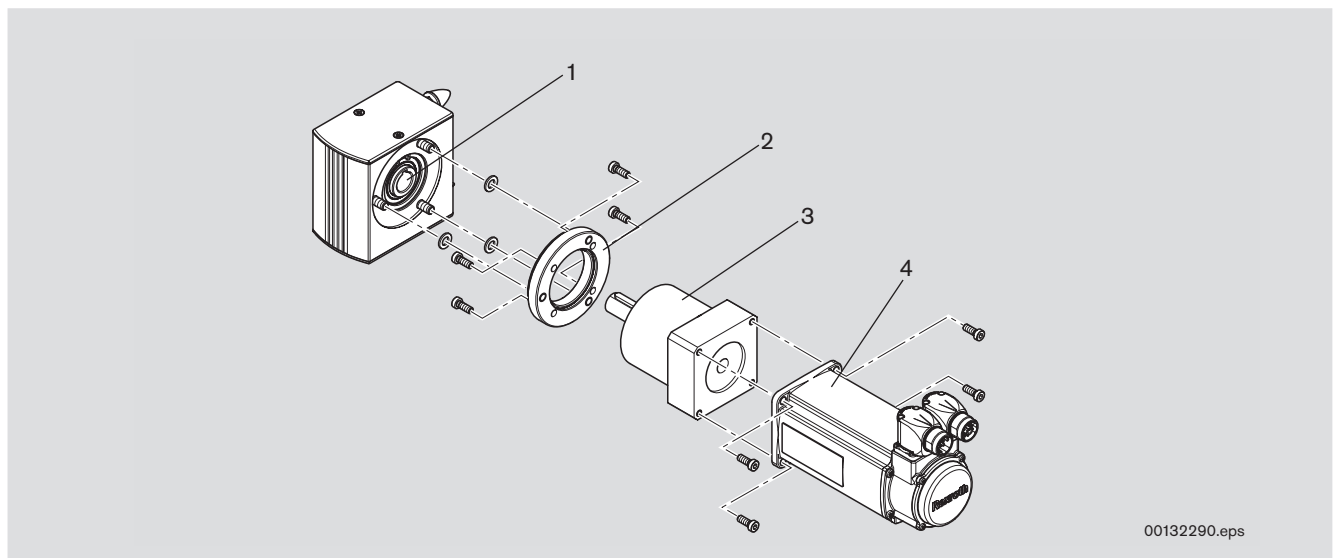
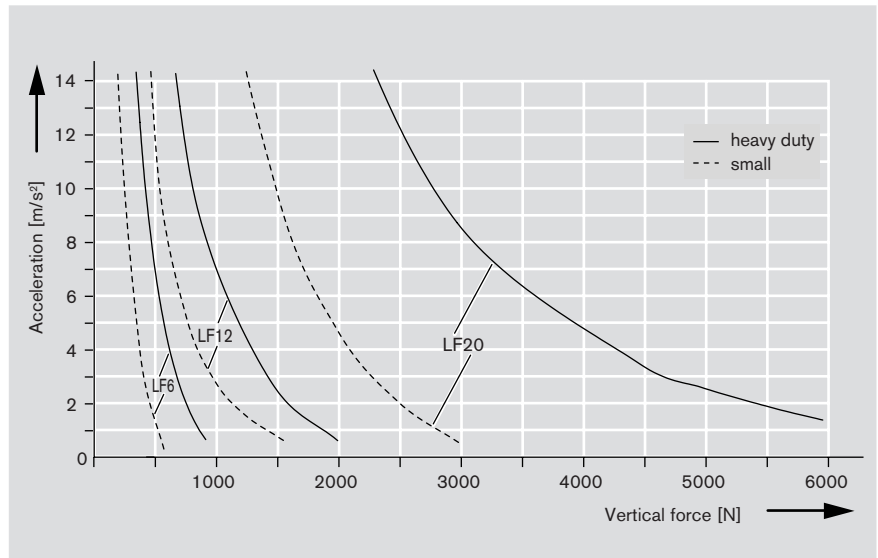


00132286

MGE cam roller guides with guide bearing runner blocks

Selection help – recommended combinations

You can quickly and conveniently find the suitable accessories for the axis you have selected with the table provided here. The diagram shows the load dependent on speed. This allows you to preselect the best axis for your application.



Linear guides

	Model	Version	1 Complete axis	2 Flange	3 Gear	BRC drive	4 Motor designation
LF6	S	small	3842998495	3842539382	3842540018	R911306060	MSK040C-0600
		heavy duty	3842998495	3842539383	3842540019	R911299935	MSK050B-0600
	C	small	3842998496	3842539382	3842540018	R911306060	MSK040C-0600
		heavy duty	3842998496	3842539383	3842540019	R911299935	MSK050B-0600
LF12	S	small	3842998497	3842539384	3842540020	R911307219	MSK060C-0300
		heavy duty	3842998497	3842539385	3842540021	R911299754	MSK070C-0450
	C	small	3842998498	3842539384	3842540020	R911307219	MSK060C-0300
		heavy duty	3842998498	3842539385	3842540021	R911299754	MSK070C-0450
LF20	S	small	3842998499	3842539386	3842540022	R911316908	MSK070E-0300
		heavy duty	3842998499	3842539387	3842540023	R911315705	MSK100B-0300
	C	small	3842998500	3842539386	3842540022	R911316908	MSK070E-0300
		heavy duty	3842998500	3842539387	3842540023	R911315705	MSK100B-0300

MGE cam roller guides with guide bearing runner blocks


Gears

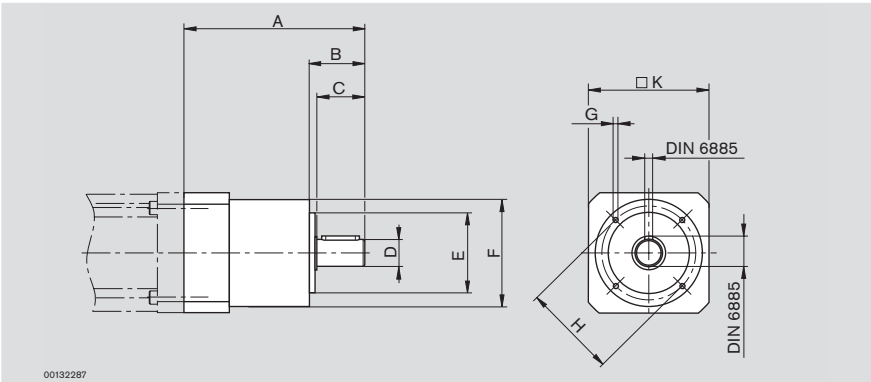
Matching planetary gear for each size.
Simple mounting on the drive head using a flange.
The gear output shaft matches the inner cross-section of the hollow shaft in the drive head, making a coupling unnecessary.
Small design for lightweight applications.
Heavy duty design for tough applications.



00131870

Gear

		No.
LF6/small	1	3 842 540 018
LF6/heavy duty	1	3 842 540 019
LF12/small	1	3 842 540 020
LF12/heavy duty	1	3 842 540 021
LF20/small	1	3 842 540 022
LF20/heavy duty	1	3 842 540 023



00132287

Gear dimensions

Motor designation	Material number	Single-stage								
	No.	A (mm)	B (mm)	K (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)
MSK040C	3 842 540 018	143.5	50	□ 80	46	Ø 19h7	Ø 60h7	Ø 80	M6x15	Ø 95
MSK050B	3 842 540 019	176.5	55	□115	50	Ø 19h7	Ø 80h7	Ø 115	M8x20	Ø 115
MSK060C	3 842 540 020	196.5	65	□115	60	Ø 28h7	Ø 80h7	Ø 115	M8x20	Ø 130
MSK070C	3 842 540 021	263.5	87	□140	80	Ø 28h7	Ø 130h7	Ø 160	M10x25	Ø 165
MSK070E	3 842 540 022	263.5	87	□140	80	Ø 38h7	Ø 130h7	Ø 160	M10x25	Ø 165
MSK100B	3 842 540 023	245.6	85	□190	82	Ø 38h7	Ø 130h6	□ 141	M12x29	Ø 215

Performance data

	Unit	3 842 540 018	3 842 540 019	3 842 540 020	3 842 540 021	3 842 540 022	3 842 540 023
Max. input rpm	rpm	4000	3500	3500	3500	3000	2000
Nominal output torque	Nm	50	100	100	100	300	420
Mass moment of inertia	kg cm ²	0.52	1.79	1.79	7.78	7.78	6.75
Ratio	i	4	4	4	4	4	4
Torsion play	arc min.	<9	<8	<8	<6	<6	<4
Service life	h	30000	30000	30000	30000	30000	20000
Lubrication		Lifetime lubrication, closed system					
Permissible ambient temperature	°C	0...+40	0...+40	0...+40	0...+40	0...+40	0...+40
Noise level	dB (A)	≤60	≤65	≤65	≤70	≤70	≤72
Weight	kg	2.1	6.0	6.0	18	18	11.5

MGE cam roller guides with guide bearing runner blocks

Information on drive control

Complete hardware and software, safe application and intelligent functions. With IndraDrive and IndraDyn you can solve your automation tasks economically, intelligently and future-proof - no matter what industry you call home.

Additional information on control components can be found in the Rexroth IndraDrive catalog (R911308428).



PAN2483_04

			small			heavy duty		
No.			LF6	LF12	LF20	LF6	LF12	LF20
Converter:								
IndraDrive compact converter, single axis	HCS02. 1E-W0012-A-03-NNNN	R 911 298 371	•			•		
	HCS02. 1E-W0028-A-03-NNNN	R 911 298 374		•	•		•	
	HCS02. 1E-W0054-A-03-NNNN	R 911 298 373						•
Cable:								
Power cable, ready-to-use 5 m	RKL4303/005,0	R 911 310 652	•					
	RKL4302/ 005,0	R 911 310 648		•		•		
	RKL4306/005,0	R 911 310 655			•		•	
	L4321/005,0	R 911 310 460						•
Sensor cable, ready-to-use 5 m	RKG4200/005,0	R 911 310 645	•	•	•	•	•	•

Control module for converter

No.		
IndraDrive control module BASIC, single axis	CSB01.1 C-PB-ENS-NNN-NN-S-NN-FW	R 911 305 278
IndraDrive firmware	FWA-INDRV-MPB-04VRS-D5-1-NNN-NN	R 911 312 231
Program module	PFM02.1-016-FW	R 911 296 958

Control

No.		
IndraDrive controller L40	CML40.1-NP-220-NA-NNNN-NW	1 070 170 261
L40 firmware	FWA-CML40*-IL*02VRS-D0-0008-NNN-NN	R 911 309 170
Interface module L40	R-IB IL CML S01-PLSET	R 911 299 856

MGE cam roller guides with guide bearing runner blocks

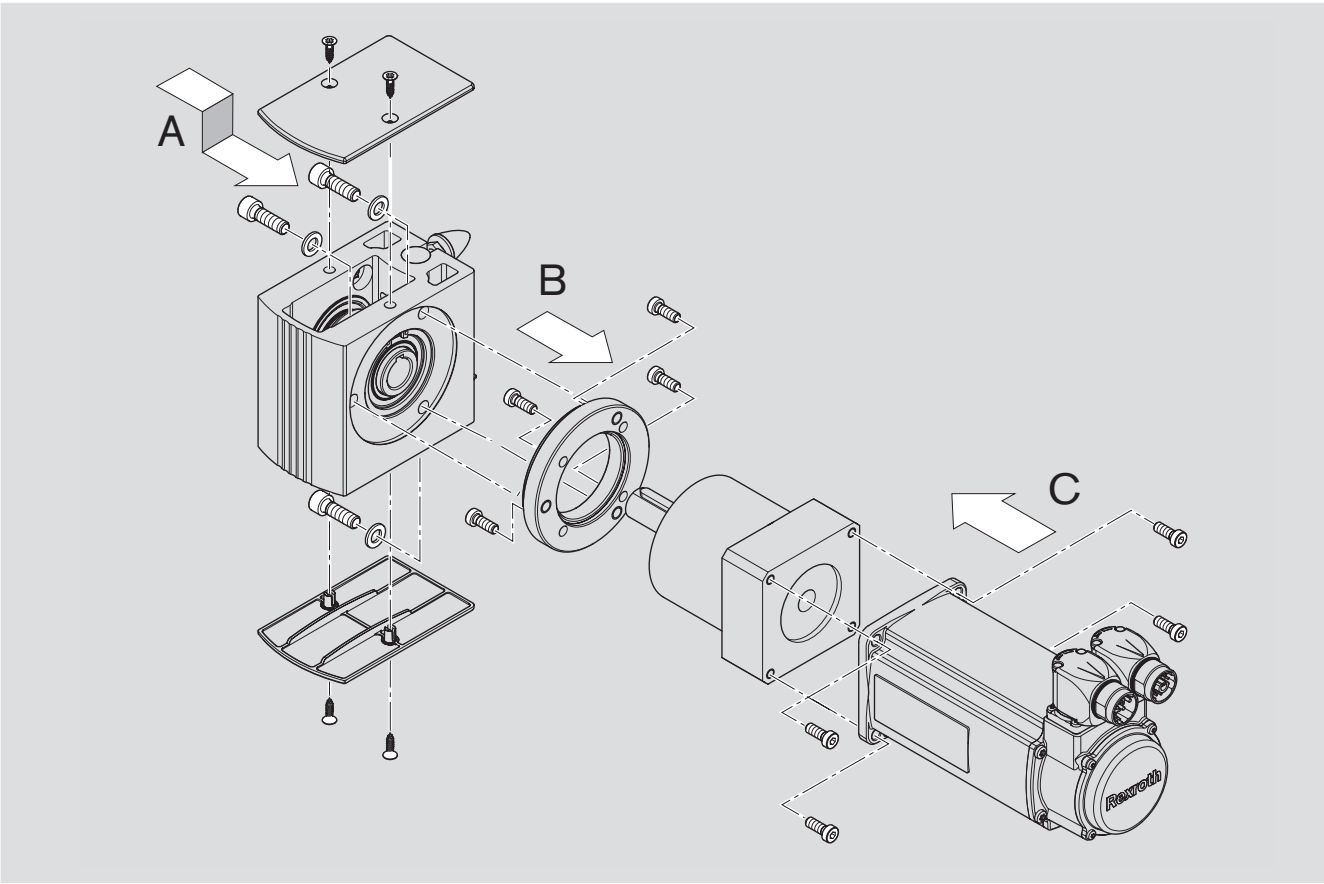
Flange

Every gear is designed so that its output shaft fits directly into the hollow shaft of the drive head. Intermediate couplings are not required - flat adapter flanges can be used.
"Small" design for lightweight applications, "heavy duty" for tough applications.

Material:
- steel, nickel-plated



00131872



Mounting material for drive components


small	LF6	LF12	LF20
A Drive head - flange	ISO 4762 - M8x22 ISO 7092 - 8	ISO 4762 - M8x25 ISO 7092 - 8	ISO 4762 - M10x30 ISO 7092 - 10
B Flange - gear	ISO 4762 - M6x16	ISO 4762 - M10x20	DIN 7984 - M12x25
C Gear - motor	ISO 4762 - M6x20	ISO 4762 - M8x25	ISO 4762 - M10x40

heavy duty	LF6	LF12	LF20
A Drive head - flange	ISO 4762 - M8x22 ISO 7092 - 8	ISO 4762 - M8x25 ISO 7092 - 8	ISO 4762 - M10x30 ISO 7092 - 10
B Flange - gear	ISO 4762 - M10x20	DIN 7984 - M12x25	ISO 4762 - M10x30
C Gear - motor	ISO 4762 - M8x20	ISO 4762 - M10x40	ISO 4762 - M12x35


MGE cam roller guides with guide bearing runner blocks

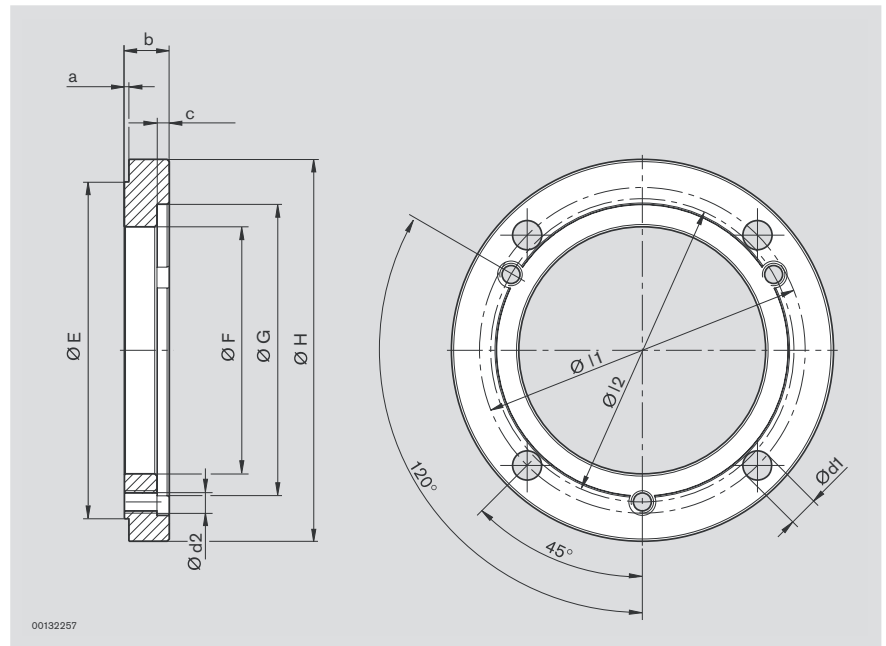
Flange

Small flange

		No.
LF6	1	3 842 539 382
LF12	1	3 842 539 384
LF20	1	3 842 539 386

Heavy duty flange

		No.
LF6	1	3 842 539 383
LF12	1	3 842 539 385
LF20	1	3 842 539 387



Small flange

Dimension parameter	Unit	LF6	LF12	LF20
a	mm	3.5 ± 0.15	3.5 ± 0.15	2 ± 0.15
b	mm	14.5	20	20
c	mm	$3.5 +0.3$	–	$5.5 +0.3$
E	mm	$\varnothing 88 -0.1/-0.3$	$\varnothing 111 -0.1/-0.3$	$\varnothing 150 -0.1/-0.3$
F	mm	$\varnothing 55$	$\varnothing 80$	$\varnothing 110$
G	mm	$\varnothing 60 H7$	$\varnothing 80 H7$	$\varnothing 130 H7$
H	mm	$\varnothing 94$	$\varnothing 120$	$\varnothing 170$
l1	mm	$\varnothing 70$	$\varnothing 100$	$\varnothing 145$
l2	mm	$\varnothing 78$	$\varnothing 100$	$\varnothing 135$
d1	mm	$\varnothing 6.6$	$\varnothing 10.5$	$\varnothing 13$
d2	mm	M8	M8	M10
m	kg	0.441	0.81	1.52

Heavy duty flange

Dimension parameter	Unit	LF6	LF12	LF20
a	mm	3.5 ± 0.15	3.5 ± 0.15	2 ± 0.15
b	mm	20	20	45
c	mm	$5 +0.3$	$5.5 +0.3$	$30.5 +0.3$
E	mm	$\varnothing 88 -0.1/-0.3$	$\varnothing 111 -0.1/-0.3$	$\varnothing 150 -0.1/-0.3$
F	mm	$\varnothing 65$	$\varnothing 80$	$\varnothing 110$
G	mm	$\varnothing 80 H7$	$\varnothing 130 H7$	$\varnothing 130 H7$
H	mm	$\varnothing 119$	$\varnothing 169$	$\varnothing 185$
l1	mm	$\varnothing 100$	$\varnothing 145$	$\varnothing 165$
l2	mm	$\varnothing 78$	$\varnothing 100$	$\varnothing 135$
d1	mm	$\varnothing 10.5$	$\varnothing 13$	M10
d2	mm	M8	M8	M10
m	kg	0.91	1.98	4.94

MGE cam roller guides with guide bearing runner blocks

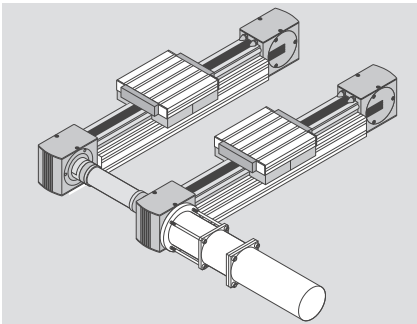
Center shafts, synchronous shafts



Center shafts

The center shaft is used to fit individual drive solutions.

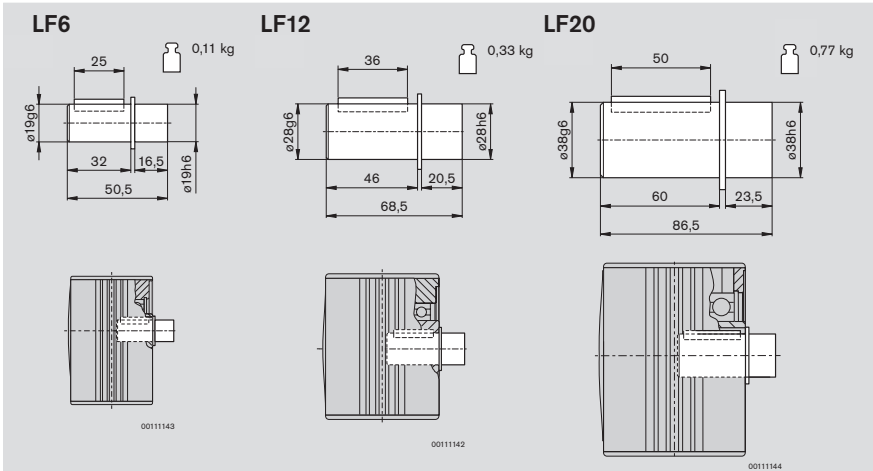
- Material:
- steel, galvanized



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Center shaft

		No.
LF6	1	3 842 526 893
LF12	1	3 842 526 894
LF20	1	3 842 526 895



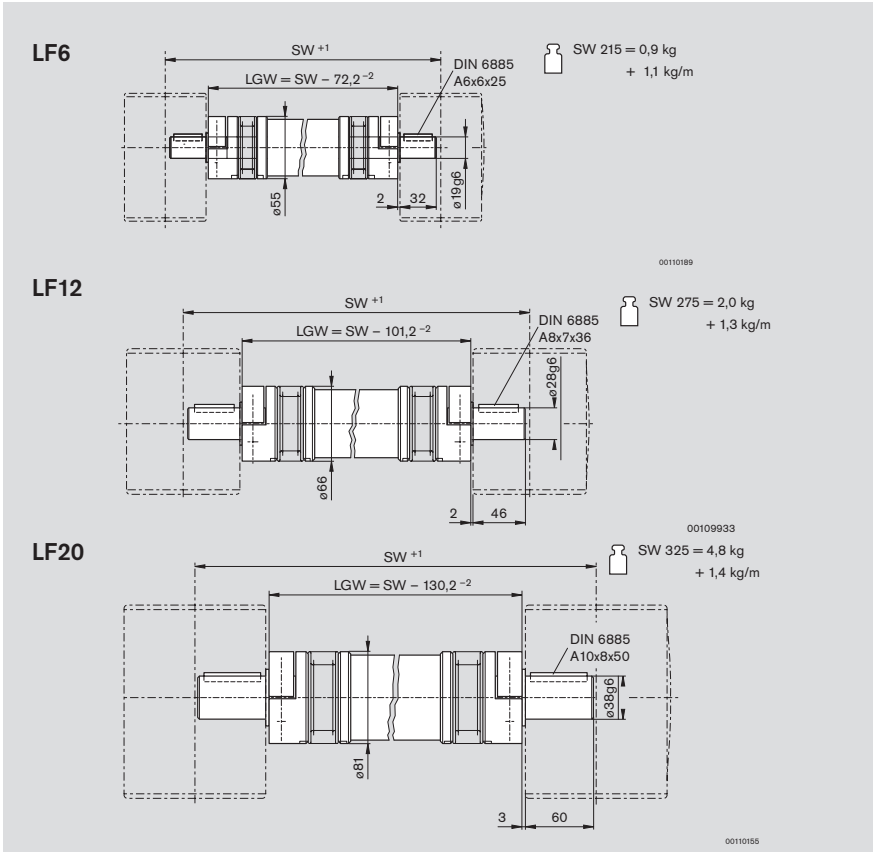
Synchronous shafts

Allows several linear guides to be driven synchronously by a common motor. The synchronous shaft can be exchanged when mounted.

The selection diagrams in the Technical data chapter (4-6 to 4-9) specify maximum values without safety margins.

Synchronous shaft

	LE 1 x SW = ... mm
LF6	3 842 994 811/... 215 mm ≤ L ≤ 3000 mm
LF12	3 842 994 812/... 275 mm ≤ L ≤ 3500 mm
LF20	3 842 994 813/... 325 mm ≤ L ≤ 3500 mm



MGE cam roller guides with guide bearing runner blocks

Switch unit, operating element

To query positions and end positions of inductive and mechanical switches.



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00110150

Switch unit

The brackets for the switches are fitted on the support profile.
The switch unit fits all sizes.

Material:

– brackets: steel, galvanized

Switch unit

			No.	Fastening set
LF...S	Inductive	1	3 842 539 520	2xFS1
	Mechanical	1	3 842 539 522	2x(FS1, FS2)
LF...C	Inductive	1	3 842 539 521	2xFS1
	Mechanical	1	3 842 539 523	2x(FS1, FS2)

Operating element

The operating elements are fixed to the respective belt connector.

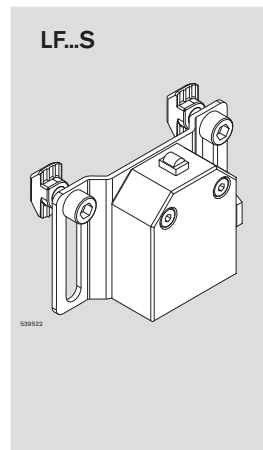
Material:

– operating element: steel, galvanized

Operating element

		No.	Fastening set
LF6S/C	1	3 842 539 367	1xFS3
LF12S/C	1	3 842 539 368	1xFS4
LF20S	1	3 842 539 370	1xFS5
LF20C	1	3 842 539 369	1xFS4

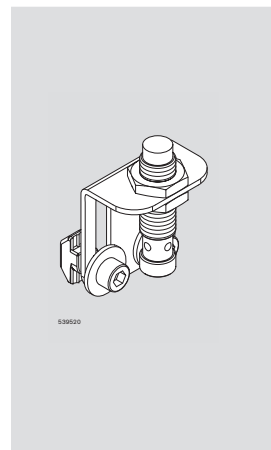
Switch unit, mechanical



LF...S

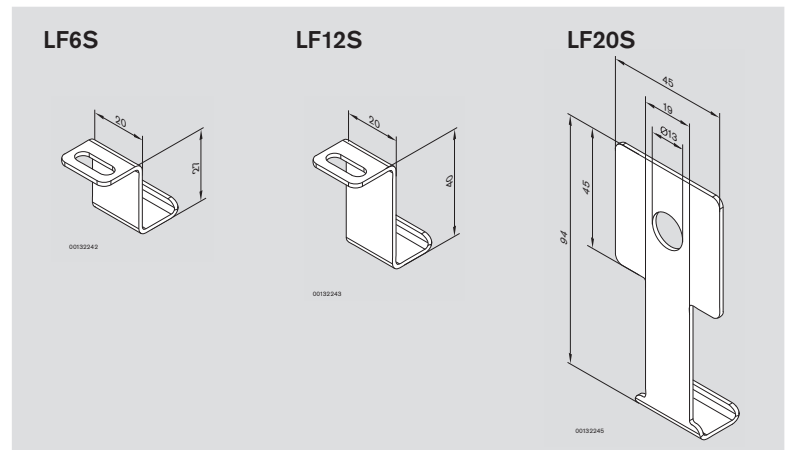
539522

Switch unit, inductive



539520

Operating elements



LF6S

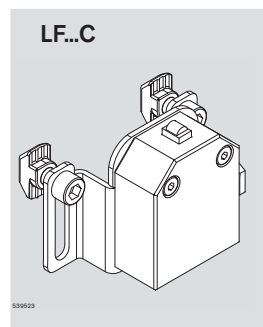
LF12S

LF20S

00132242

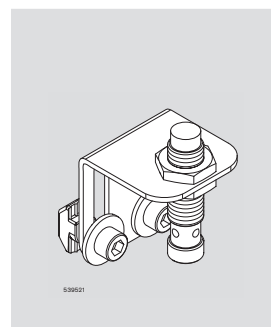
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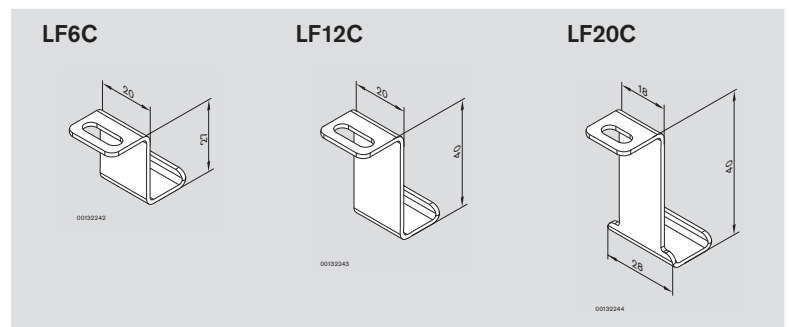


LF...C

539523



539521



LF6C

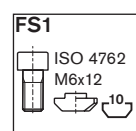
LF12C

LF20C

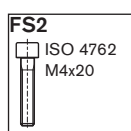
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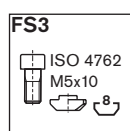
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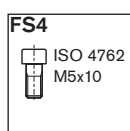
FS1

ISO 4762
M6x12

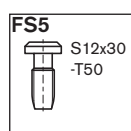
FS2

ISO 4762
M4x20

FS3

ISO 4762
M5x10

FS4

ISO 4762
M5x10

FS5

S12x30
-T50

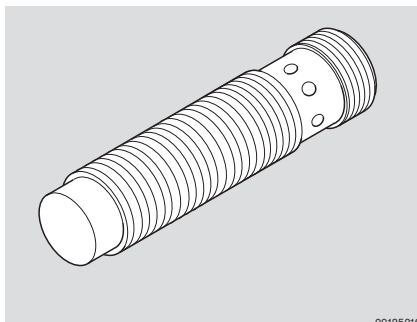
MGE cam roller guides with guide bearing runner blocks

Switch

Proximity switch, inductive

Version:

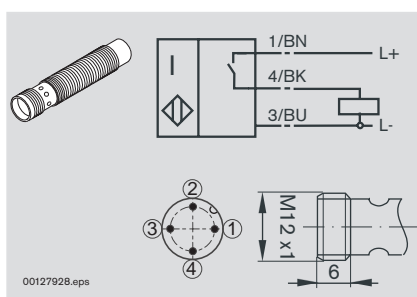
- NO PNP according to IEC/EN 60947-5-2:2004, connection via V1 plug (M12)
- Suitable for installation in switch bracket with integrated stop
- Can be used for all applications in the TS range
- Resistant to media such as test oil and test petrol
- Optical LED function display
- Gold-plated contacts
- Compact length (50 mm)
- Metal thread M12x1
- Switch distance $S_N = 7$ mm
- Operating voltage: 0 to 30 V
- Switching frequency: 300 Hz
- Operating current: 150 mA
- Idle current: max. 15 mA
- Protection class: IP 67
- Ambient temperature: -25 to 70°C



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Proximity switch

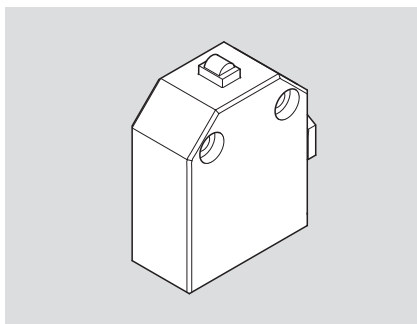
No.

3 842 537 995

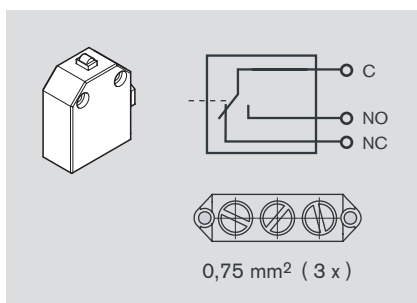
Switch, mechanical

Version:

- Single-pole change-over contact, connection for cable fitting M12x1.5
- Gold-plated contacts, screw-in connection
- Continuous current: 5 A
- Operating voltage: 250 V AC
- Switching frequency: 3 Hz
- Isolation: group C as per VDE0110
- Protection class: IP67
- Ambient temperature: -25 to 70°C
- Starting speed: 0.5 m/s
- Switch distance: 2.5 + 0.2 mm

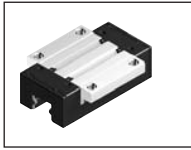
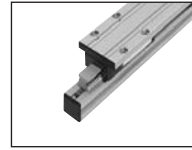
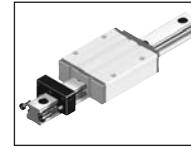


00110150

0,75 mm² (3 x)

eLine profiled rail systems – cam roller and ball runner blocks

eLINE profiled rail systems – cam roller and ball runner block

**3-4****3-6****3-9****3-10****3-11****3-13**

eLine profiled rail systems – cam roller and ball runner blocks

Product overview

Application areas

Light machinery, handling technology, jigs and fixtures, assembly technology, positioning units, manual displacement systems, machine enclosures, door and window construction, building services technology, trade show and shop construction, woodworking machinery, DIY equipment, and many more.

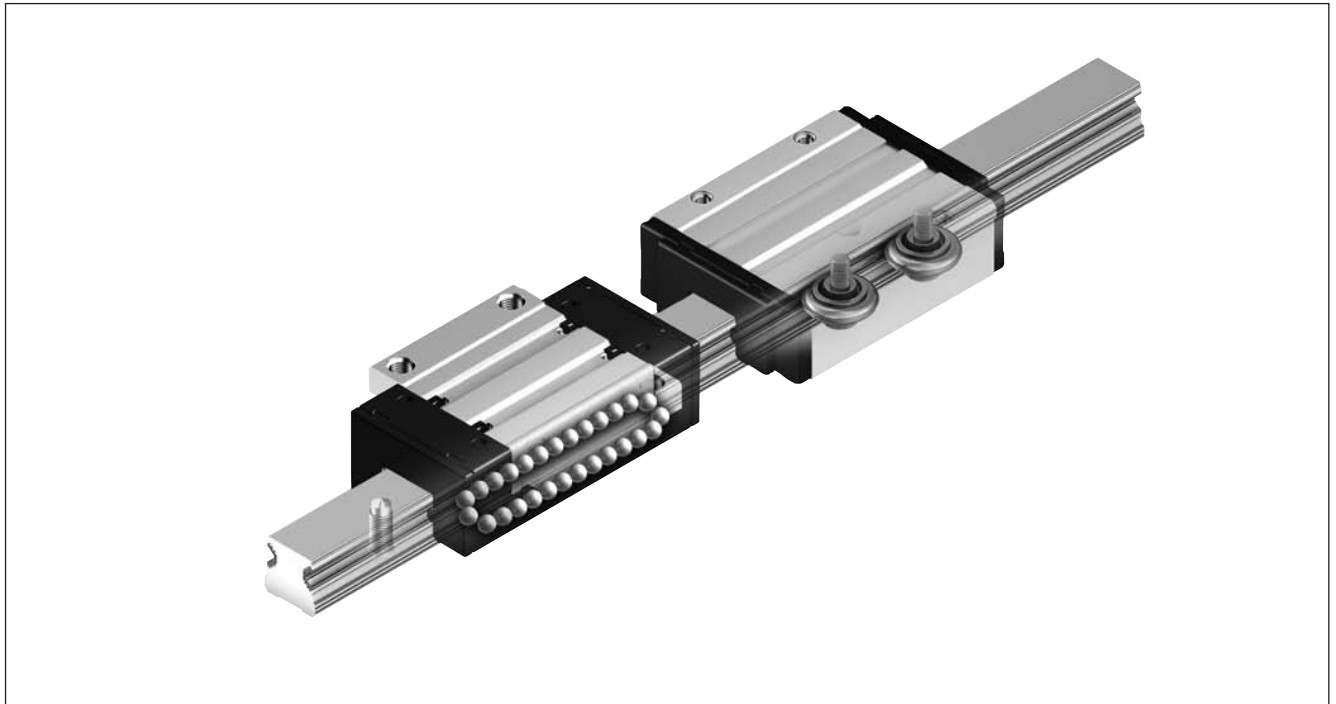
Special features of the new eLINE Profiled Rail Systems



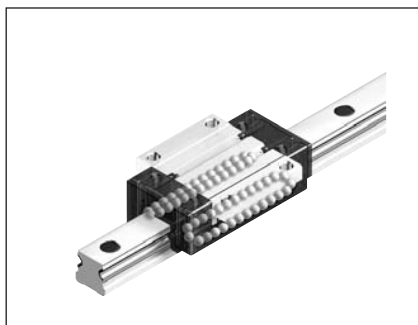
- Available in the three most common sizes per DIN 645-1.
- Structural design allows for much greater parallelism and height offsets of the mounting bases.
- Can be mounted even on unmachined mounting surfaces, depending on the application.
- Especially compact, lightweight design; 60% weight saving versus steel versions.
- Significantly better corrosion resistance compared with the steel versions.
- Lubrication concept
Runner blocks initially greased in-factory, therefore provided with long-term lubrication.
- Ball runner blocks available in two accuracy classes and two preload classes.
- Ball retainers in the runner blocks allow them to be removed from the rail without any loss of balls.
- All eLINE runner blocks are delivered with ready-mounted seal units.
- Optionally mountable lube units at the front for increased lubrication intervals and thus often lifetime lubrication, with a simultaneous front end seal.
- Guide rails with reference edge on both sides.
- All accuracy classes can be combined with one another.
- Interchangeability allows individual stocking of runner blocks and guide rails – top logistics unequalled anywhere in the world.
- Same connection dimensions as steel ball rail systems.
- Same guide rails for both ball and cam roller runner blocks.

For additional information on the ball rail systems and cam roller guides ranges, see the respective main catalogs.

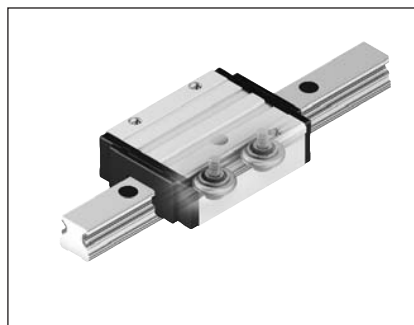
eLine profiled rail systems – cam roller and ball runner blocks



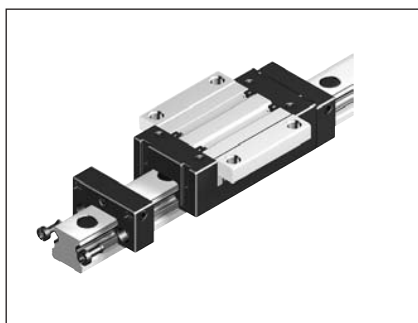
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Ball runner blocks, flanged version
– Standard height



Cam roller runner blocks
– Standard



Lube unit with sealing function for eLINE ball and cam roller guide systems
(accessories)



Manual clamping unit

eLine profiled rail systems – cam roller and ball runner blocks

eLINE ball runner blocks

Ball runner block
FNS R2031
Flanged, normal, standard height

- With seal unit (DE)
- Initial greasing with Dynalub 510
- Lubrication concept



- Material:
- runner block body: aluminum
 - balls: steel as per DIN 5401
 - running tracks: steel, hardened

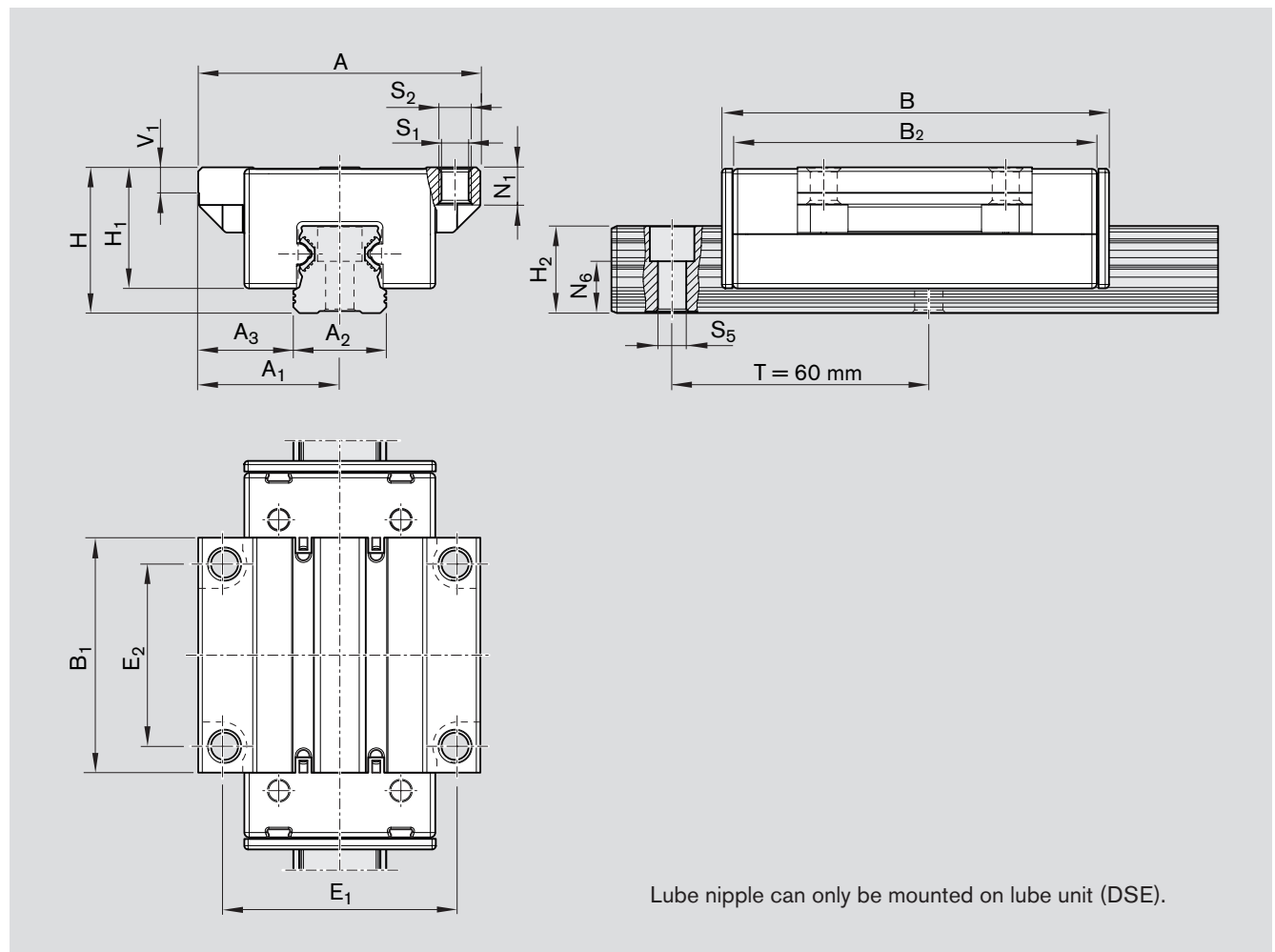


eLINE ball runner blocks

Size	Accuracy class	No. C0 ¹⁾	C1 ¹⁾
15	N	R2031 194 10	R2031 114 10
	E	R2031 195 10	–
20	N	R2031 894 10	R2031 814 10
	E	R2031 895 10	–
25	N	R2031 294 10	R2031 214 10
	E	R2031 295 10	–

¹⁾ See "Design and technical data" chapter (📄 4-12)

eLine profiled rail systems – cam roller and ball runner blocks



Size	Dimensions (mm)																		Weight ¹⁾ (kg)
	A	A ₁	A ₂	A ₃	B	B ₁	B ₂	H	H ₁	H ₂	V ₁	E ₁	E ₂	N ₁	N ₆ ^{±0.5}	S ₁	S ₂	S ₅	
15	47	23.5	15	16.0	64.0	37.8	59.0	24	19.8	14.0	4.1	38	30	6.0	8.1	4.3	M5	4.4	0.08
20	63	31.5	20	21.5	85.9	51.5	80.3	30	24.7	19.0	5.5	53	40	8.0	11.6	5.3	M6	6.0	0.18
25	70	35.0	23	23.5	96.0	58.0	90.0	36	29.9	21.8	6.4	57	45	9.3	12.9	6.7	M8	7.0	0.26

Load capacities ²⁾ (N)			Moments (Nm)			
Size	C	F _{max}	M _t	M _{tmax}	M _L	M _{Lmax}
15	5000	2000	36	14	29	12
20	11000	4400	101	40	89	35
25	16000	6400	165	66	147	59

¹⁾ Please note the low weight of the runner block.

²⁾ Determination of the dynamic load capacities and moments is based on a travel life of 100,000 m. Often only 50,000 m are actually stipulated. For comparison: Multiply values C, M_t and M_L from the table by 1.26.

eLine profiled rail systems – cam roller and ball runner blocks

eLINE cam roller runner blocks

Cam roller runner blocks, standard R2041

- Travel speed up to 12 m/s
- With seal unit (DE)
- Same dimensions and mounting hole pattern as ball runner block R 2031
- Lube unit with sealing function DSE as an option
- Can be used on all eLINE guide rails of corresponding size
- Reference edge for precise alignment
- Lubrication concept



Material:

- runner block body: aluminum
- support rollers: steel, corrosion-resistant

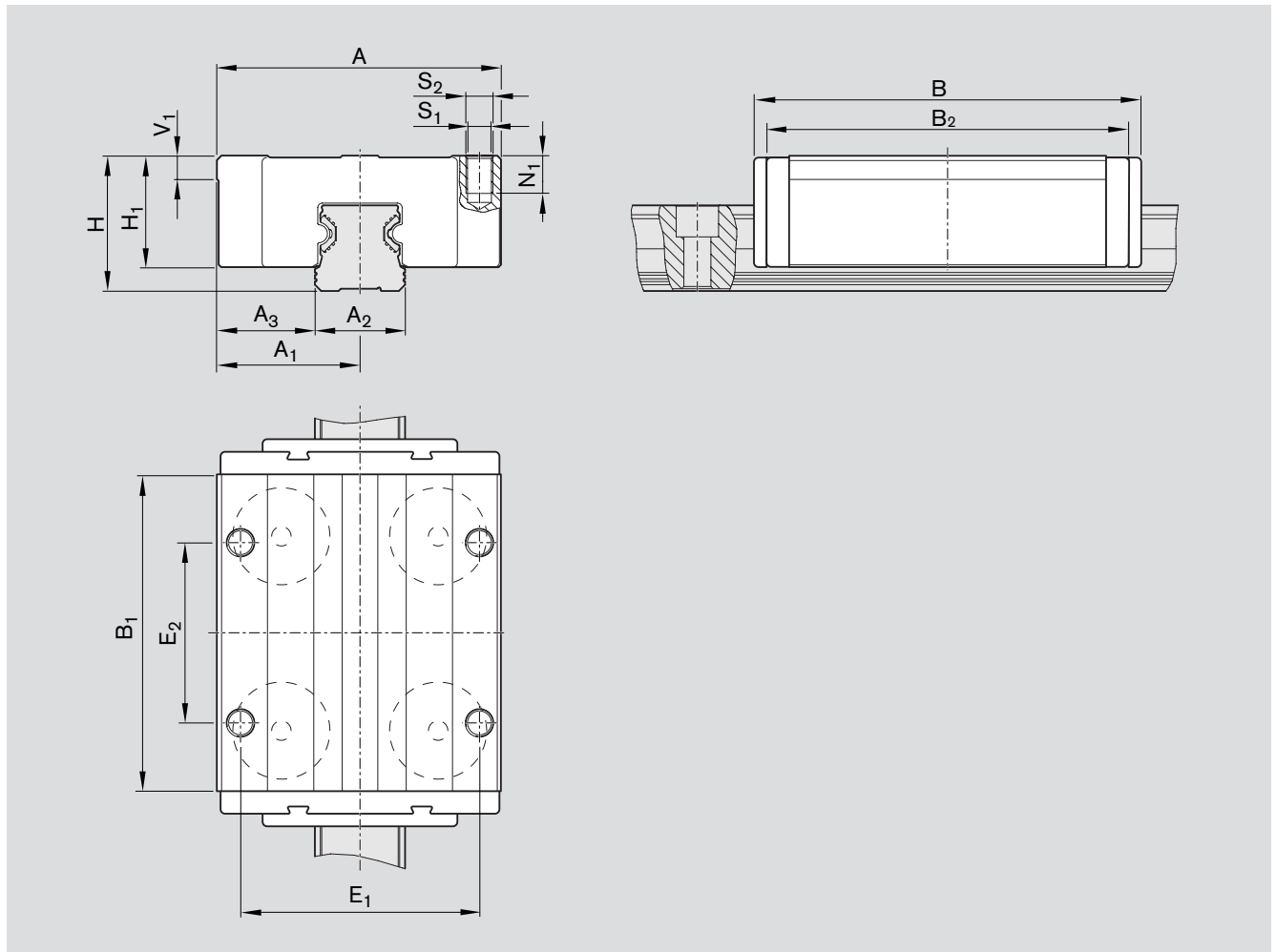


eLINE cam roller runner blocks

Size	Accuracy class	No. C1 ¹⁾
15	E	R2041 115 10
20	E	R2041 815 10
25	E	R2041 215 10

¹⁾ See "Design and technical data" chapter (📄 4-12)

eLine profiled rail systems – cam roller and ball runner blocks



Size	Dimensions (mm)															Weight ¹⁾ (kg)
	A	A ₁	A ₂	A ₃	B	B ₁	B ₂	H	H ₁	V ₁	E ₁	E ₂	N ₁	S ₁	S ₂	
15	47	23.5	15	16.0	64.0	51.0	59.0	24	19.8	3.3	38	30	8.0	4.3	M5	0.11
20	63	31.5	20	21.5	85.9	70.3	80.3	30	24.7	4.7	53	40	8.0	5.3	M6	0.24
25	70	35.0	23	23.5	96.0	78.0	90.0	36	29.9	5.6	57	45	12.0	6.7	M8	0.33

Load capacities ²⁾ (N)					Moments (Nm)			
Size	C	$F_{y\max} / F_{y0\max}$	$F_{z\max}$	$F_{z0\max}$	M_t	$M_{t\max}$	M_L	$M_{L\max}$
15	940	320	120	200	7	1.1	11.5	1.8
20	2620	800	440	735	24	3.6	42	6.2
25	2700	800	440	735	28	3.9	50	7.2

¹⁾ Please note the low weight of the runner block.

²⁾ Determination of the dynamic load capacities and moments is based on a travel life of 100,000 m. Often only 50,000 m are actually stipulated. For comparison: Multiply values C, M_t and M_L from the table by 1.26.

eLine profiled rail systems – cam roller and ball runner blocks

eLINE slide profiles



eLINE slide profiles for mounting on eLINE ball and cam roller runner blocks. Version with 8 mm groove and 30 mm groove distance. The slide profiles have staged mounting holes and are fitted on the eLINE runner blocks with cylinder head screws.

- Material:
- slide profile: aluminum, anodized
 - cap: PA6, conductive, black

eLINE slide profile 15/20 N8 0FW

	LE 1 x L = ... mm
A	3 842 993 972/...
	60 mm ≤ L ≤ 1000 mm

eLINE slide profile 15 N8 1FW

	LE 1 x L = 60 mm
B	3 842 539 570

eLINE slide profile 15 N8 2FW

	LE 1 x L = ... mm
C	3 842 993 973/...
	124 mm ≤ L ≤ 1000 mm

eLINE slide profile 20 N8 1FW

	LE 1 x L = 82 mm
B	3 842 539 571

eLINE slide profile 20 N8 2FW

	LE 1 x L = ... mm
C	3 842 993 975/...
	168 mm ≤ L ≤ 1000 mm

eLINE slide profile 25 N8 0FW

	LE 1 x L = ... mm
A	3 842 993 976/...
	90 mm ≤ L ≤ 1000 mm

eLINE slide profile 25 N8 1FW

	LE 1 x L = 90 mm
B	3 842 539 572

eLINE slide profile 25 N8 2FW

	LE 1 x L = ... mm
C	3 842 993 977/...
	186 mm ≤ L ≤ 1000 mm

Cap

		No.
15/20	2	3 842 539 116
25	2	3 842 539 117

eLINE 15/20

00132250

1,05 kg/m

A = 390mm²
I_z = 0,69 cm⁴
I_y = 17,06 cm⁴

eLINE 25

00132252

1,64 kg/m

A = 606mm²
I_z = 3,07 cm⁴
I_y = 34,72 cm⁴

A

00132248

B

00132246

C

00132247

	No.	Type	L1	L2	L3	D1	D2
A	3 842 993 972	eLINE 15/20	–	–	–	–	–
B	3 842 539 570	eLINE 15	15	30	38	D5.5	D10
C	3 842 993 973	eLINE 15	15	30	38	D5.5	D10
B	3 842 539 571	eLINE 20	21	40	53	D6.6	D11
C	3 842 993 975	eLINE 20	21	40	53	D6.6	D11
A	3 842 933 976	eLINE 25	–	–	–	–	–
B	3 842 539 572	eLINE 25	22.5	45	57	D8.4	D14.5
C	3 842 993 977	eLINE 25	22.5	45	57	D8.4	D14.5

eLINE 15/20

00132249

eLINE 25

00132260

eLine profiled rail systems – cam roller and ball runner blocks

eLINE guide rails

Guide rails for mounting from above R2035

With plastic mounting hole plugs
(provided)

– For ball and cam roller runner blocks

Material:

- rails: aluminum
- running tracks: steel, hardened



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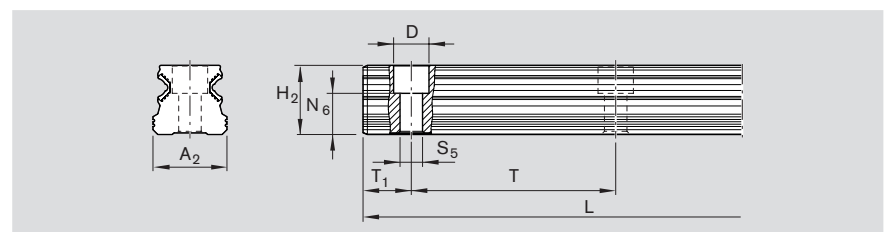
eLINE guide rails

Size	Accuracy class	No. One-piece Rail length L (mm)	Composite Number of sections Rail length L (mm)
15	N	R2035 104 31, ...	R2035 104 3, ...
	E	R2035 105 31, ...	
20	N	R2035 804 31, ...	R2035 804 3, ...
	E	R2035 805 31, ...	
25	N	R2035 204 31, ...	R2035 204 3, ...
	E	R2035 205 31, ...	

Recommended rail length, one-piece

Spacing T (mm)	Number of holes n _B /rail length L (mm)					
60	2/80	2/90	2/100	2/116	3/176	4/236
	5/296	6/356	7/416	8/476	9/536	10/596
	11/656	12/716	13/776	14/836	15/896	16/956
	17/1016	18/1076	19/1136	20/1196	21/1256	22/1316
	23/1376	24/1436	25/1496	26/1556	27/1616	28/1676
	29/1736	30/1796	31/1856	32/1916	33/1976	34/2036
	35/2096	36/2156	37/2216	38/2276	39/2336	40/2396
	41/2456	42/2516	43/2576	44/2636	45/2696	46/2756
	47/2816	48/2876	49/2936	50/2996	51/3056	52/3116
	53/3176	54/3236	55/3296	56/3356	57/3416	58/3476
	59/3536	60/3596	61/3656	62/3716	63/3776	64/3836
	65/3896	66/3956	67/4016			

Dimensions and weights



Size	Dimensions (mm)									Weight ²⁾ (kg/m)
	A ₂	H ₂	N ₆ ^{±0.5}	D	S ₅	T _{IS} ^{±0.5}	T _{1min}	T	L _{max} ¹⁾	
15	15	14.0	8.1	7.4	4.4	28.0	10	60	4016	0.57
20	20	19.0	11.6	9.4	6.0	28.0	10	60	4016	0.98
25	23	21.8	12.9	11.0	7.0	28.0	10	60	4016	1.25

¹⁾ One-piece guide rails

²⁾ Please note the low weight per meter of the guide rail.

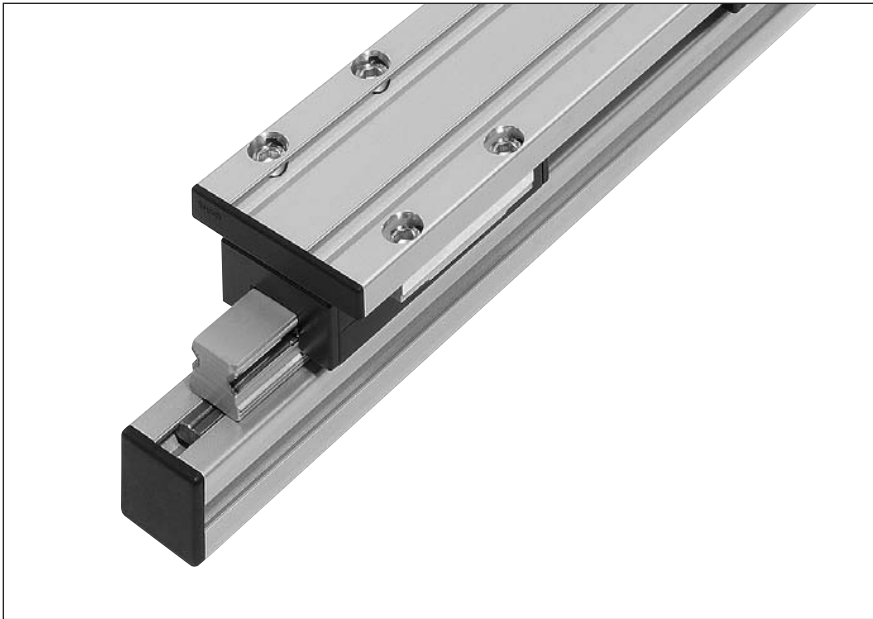
eLine profiled rail systems – cam roller and ball runner blocks

eLINE threaded rails



eLINE threaded rails with fitting threaded mounting holes to attach eLINE guide rails 15, 20 and 25 to the MGE strut profiles with 8 mm groove.

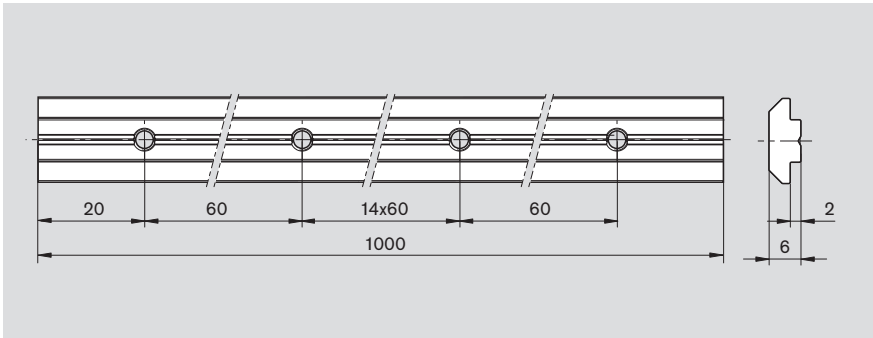
Material:
– steel, galvanized



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eLINE threaded rails

Size		M	No.
15	1	M4	3 842 539 440
20	1	M5	3 842 539 441
25	1	M6	3 842 539 442



eLine profiled rail systems – cam roller and ball runner blocks

Lube unit with sealing function DSE, lube nipple

- For ball and cam roller runner blocks
- Acts as an end seal
- Relubricatable

The required fastening elements are supplied along with the unit.
Please order the lube nipple separately.
The lube units are prefilled with ISO VG 1000 oil and therefore ready for mounting.

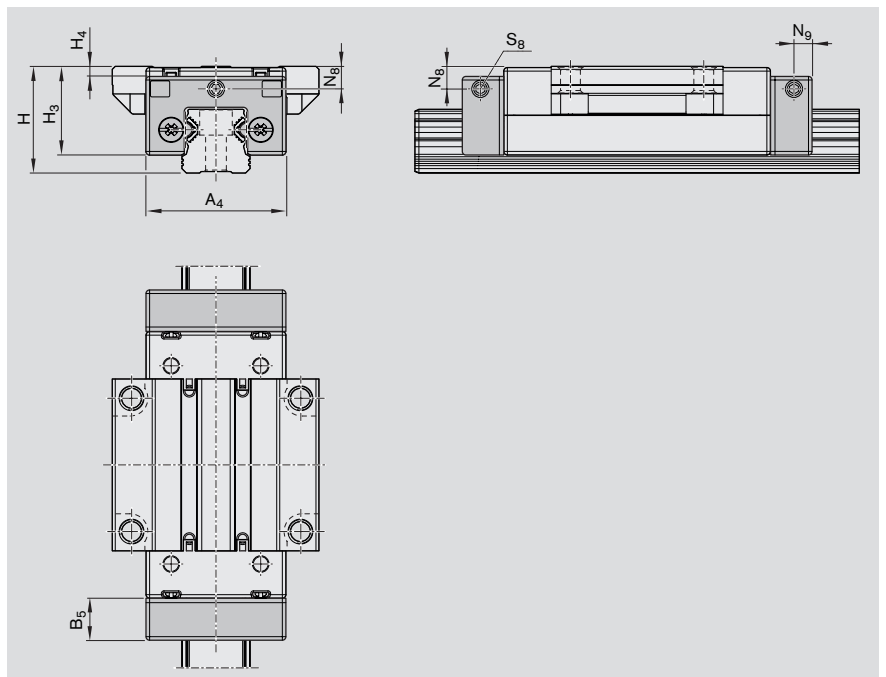
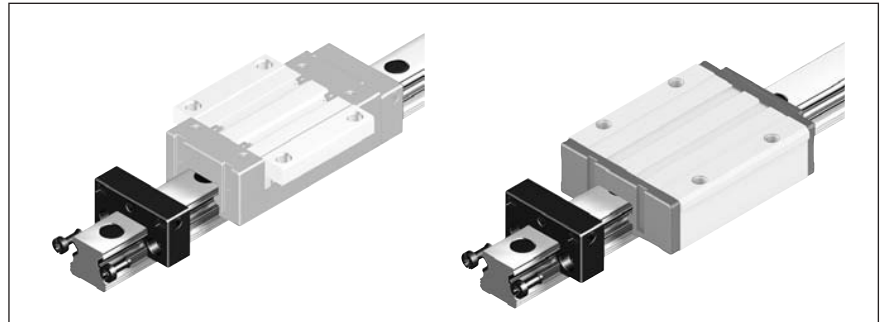
Material:

- special polymer

Notes for mounting:

Before mounting the DSE, remove the seal unit by pulling it upward.

Push the lube unit onto the guide rail and fasten it to the runner block.



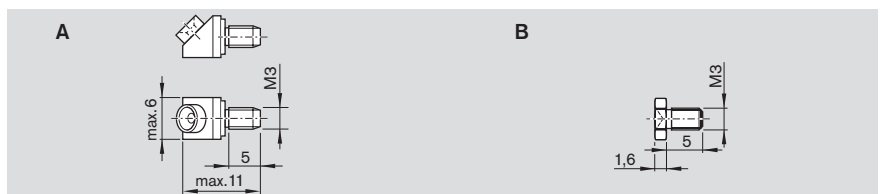
Lube units DSE

Size	No.	Dimensions (mm)								Oil (cm ³)
		A ₄	B ₅	H	H ₃	H ₄	N ₈	N ₉	S ₈	
15	R2030 125 00	31.7	11.5	24	19.4	0.4	4.5	5.0	M3	0.65
20	R2030 825 00	43.2	13.0	30	24.3	0.4	5.0	5.0	M6	1.35
25	R2030 226 00	47.2	14.0	36	30.0	3.4	7.6	6.1	M6	1.7

Funnel-type lube nipple for size 15

Funnel-type lube nipple

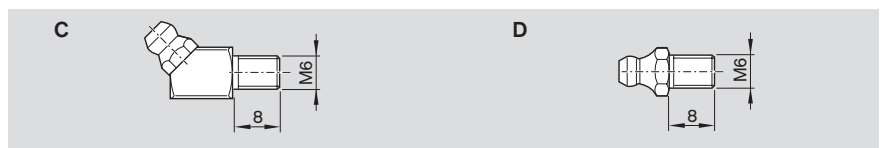
	No.
A	R3417 029 09
B	R3417 029 09



Hydraulic-type lube nipple for sizes 20 and 25

Hydraulic-type lube nipple

	No.
C	R3417 007 02
D	R3417 008 02



Notes for mounting:

The lube nipples can only be mounted on the lube unit DSE.

eLine profiled rail systems – cam roller and ball runner blocks

Seal unit DE

Seal unit DE

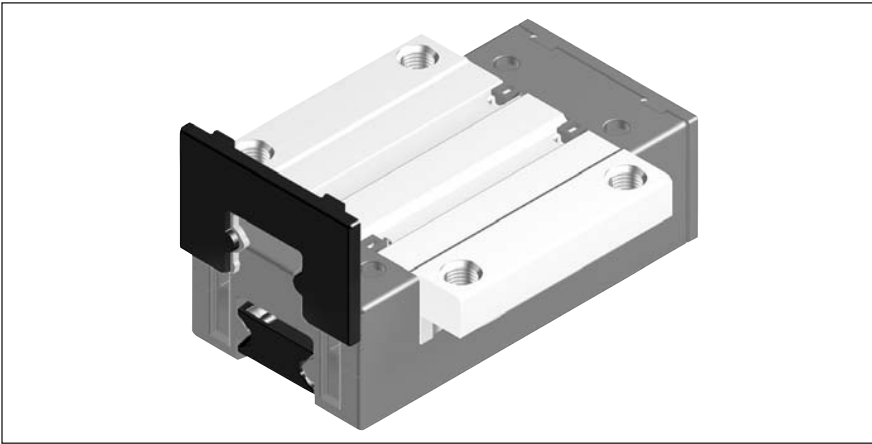
- For ball and cam roller runner blocks
- All eLINE runner blocks are delivered with ready-mounted seal units
- Pre-oiled before shipment

Material:


- POM

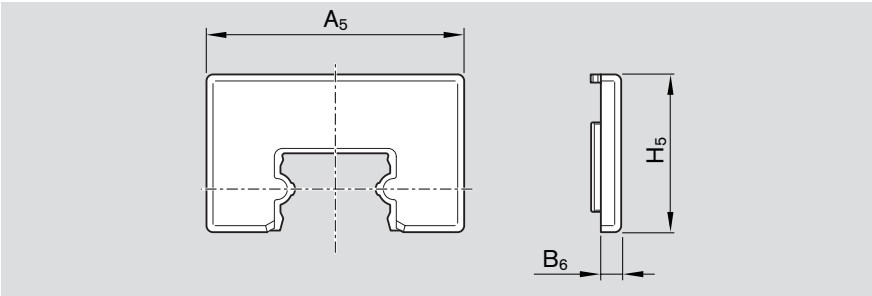
Notes for mounting:

The seal unit cannot be mounted when the runner block is on the guide rail.



Seal unit

Size	No.	Dimensions (mm)				
		A ₅	B ₆	H ₅		
15	R2030 110 00	31.7	2.5	19.4		20
20	R2030 810 00	43.2	2.8	24.3		20
25	R2030 211 00	47.2	3.0	26.5		20



eLINE profiled rail systems – cam roller and ball runner blocks

Manual clamping unit

Manual clamping unit HK R2030 for eLINE profiled rail systems

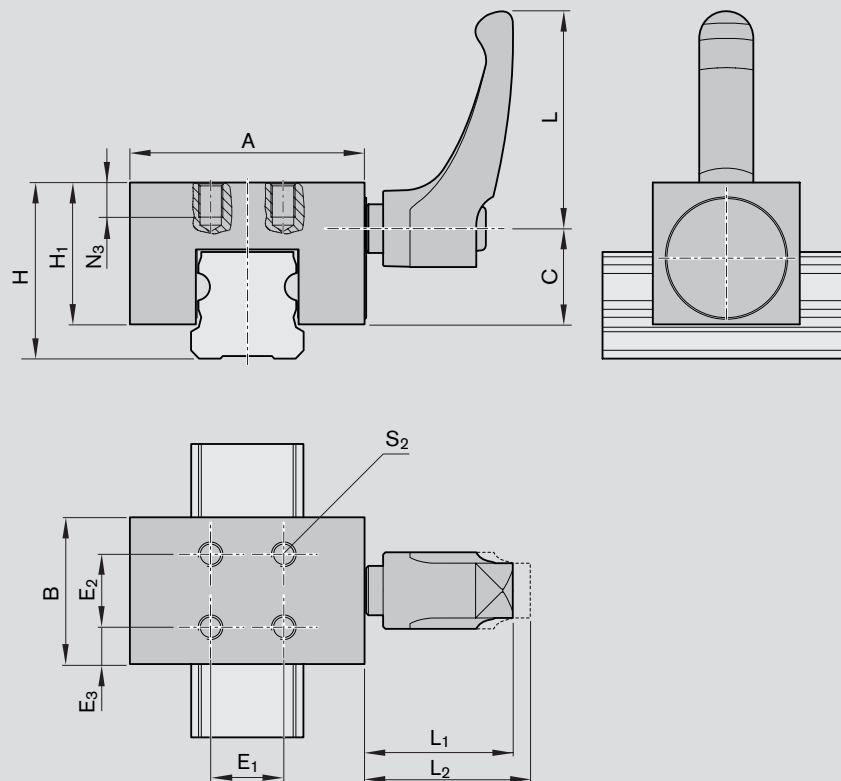
Matching guide rail
– R2035



Manual clamping unit

Size	No.	Holding force	Dimensions (mm)												
			A	B	C	H	H ₁	E ₁	E ₂	E ₃	L	L ₁	L ₂	N ₃ ¹⁾	S ₂
15	R2030 142 82	130N / 3 Nm	34	20	12.9	24	18.8	10	10	5.0	40	29.9	33.3	6	M3
20	R2030 842 82	250N / 3 Nm	44	24	16.0	30	24.0	12	12	6.0	40	29.9	33.4	6	M4
25	R2030 242 82	330N / 3 Nm	48	30	19.6	36	29.0	15	15	7.5	44	29.8	33.3	7	M5

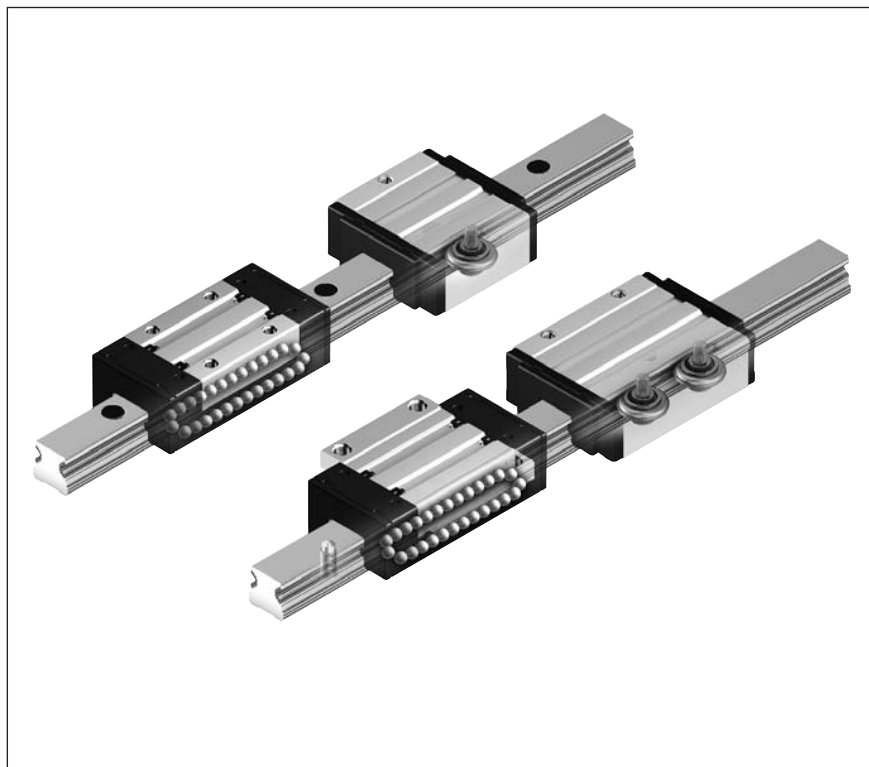
¹⁾ Thread depth checked with screw



eLine profiled rail systems – cam roller and ball runner blocks

eLINE profiled rail systems

All available eLINE products can be found in the complete eLINE Profiled Rail Systems catalog R310EN 2211.



Design and technical data

Design and technical data

Design and technical data for MGE cam roller guides

Technical data for cam roller guides, design notes, mounting instructions

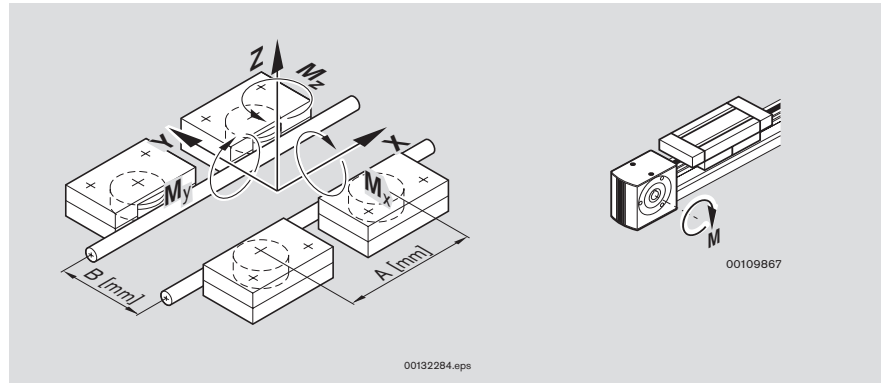
General technical data and calculations

Travel speed	$v_{\max} = 5 \text{ m/s}$
Acceleration	$a_{\max} = 15 \text{ m/s}^2$
Temperature resistance	$-10^{\circ}\text{C} < \vartheta < 40^{\circ}\text{C}$
Lubrication	All cam roller guide ball bearings are delivered with ready-mounted lubrication felts.
Definition of dynamic load capacity C	The radial loading of constant magnitude and direction which a linear rolling bearing can theoretically endure for a nominal life of 100 km distance traveled (per ISO 14728 Part 1).
Note on maximum load F_{\max}	The maximum loads apply for individual loads. Combining loads decreases the expected service life.
Definition and calculation of the nominal life	The calculated service life which an individual linear rolling bearing, or a group of apparently identical rolling element bearings operating under the same conditions, can attain with a 90% probability, with contemporary, commonly used materials and manufacturing quality under conventional operating conditions (per ISO 14728 Part 1) and optimal installation conditions.
Nominal life at constant speed	$L = \left(\frac{C}{F}\right)^3 \cdot 10^5$ $L_h = \left(\frac{L}{2 \cdot s \cdot n_s \cdot 60}\right)$ <p> L = nominal life (m) L_h = nominal life (h) C = dynamic load capacity (N) F = equivalent load (N) s = length of stroke* (m) n_s = stroke repetition rate (full cycles) (rpm) </p> <p>For a stroke length $< 2 \times$ runner block length, the load capacities will be reduced. Please consult us.</p>

Design and technical data for MGE cam roller guides

Load-dependent size selection

The specified values are maximum single loads, which are reduced when loads are combined.



Load-dependent size selection

	Fz(N)	Fy(N)	Mx (Nm)	Mz (Nm)	My (Nm)	vmax (m/s)	Mmax (Nm)
LF6S	850	1400	13.6	$0.7 \times A$	$0.4 \times A$	5	9.5 / 7.6
LF6C	850	1400	$0.4 \times B$	$0.7 \times A$	$0.4 \times A$	5	15
LF12S	2000	3500	78.0	$1.7 \times A$	$1.0 \times A$	5	30
LF12C	2000	3500	$1.0 \times B$	$1.7 \times A$	$1.0 \times A$	5	30
LF20S	6000	12500	240.0	$6.2 \times A$	$3.0 \times A$	5	100
LF20C	6000	12500	$3.0 \times B$	$6.2 \times A$	$3.0 \times A$	5	100

Do not exceed the maximum loading of the screw connections for rails, slides and mounting.

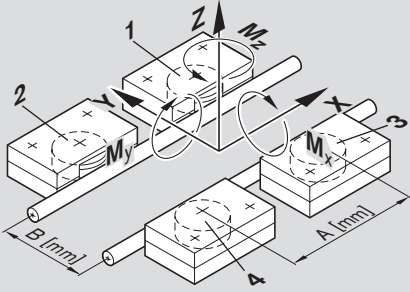
Take account of the general service life of lubricants!

Design and technical data for MGE cam roller guides

Calculation of load on bearing for a runner block

Load of the individual cam rollers

- A mm: distance of the cam roller rotational axis
- B mm: center to center distance of the driven shafts
- Only pressure forces can be transferred between cam rollers and rails in the radial direction. This is why the following applies for radial forces:
 $F_r \leq 0; F_r = 0$.
- Cam rollers can be loaded equally in both directions. For this reason only the level of force F_a is required to calculate P and P_0 .



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Cam roller 1:

$$F_r = -\left(\frac{F_y}{2}\right) - \left(\frac{M_z}{A}\right)$$

$$F_a = \left(\frac{F_z}{4}\right) + \left(\frac{M_x}{2 \cdot B}\right) - \left(\frac{M_y}{2 \cdot A}\right)$$

Cam roller 3:

$$F_r = +\left(\frac{F_y}{2}\right) + \left(\frac{M_z}{A}\right)$$

$$F_a = \left(\frac{F_z}{4}\right) - \left(\frac{M_x}{2 \cdot B}\right) - \left(\frac{M_y}{2 \cdot A}\right)$$

Cam roller 2:

$$F_r = -\left(\frac{F_y}{2}\right) + \left(\frac{M_z}{A}\right)$$

$$F_a = \left(\frac{F_z}{4}\right) + \left(\frac{M_x}{2 \cdot B}\right) + \left(\frac{M_y}{2 \cdot A}\right)$$

Cam roller 4:

$$F_r = +\left(\frac{F_y}{2}\right) - \left(\frac{M_z}{A}\right)$$

$$F_a = \left(\frac{F_z}{4}\right) - \left(\frac{M_x}{2 \cdot B}\right) + \left(\frac{M_y}{2 \cdot A}\right)$$

Equivalent dynamic and static loads

To calculate the service life of a cam roller guide, the cam roller with the greatest load has to be examined. The following must be determined:

$$P = \max(P_1, \dots, P_4)$$

$$P_0 = \max(P_{01}, \dots, P_{04})$$

Equivalent dynamic load P

$$P = x \cdot |F_r| + y \cdot |F_a|$$

Equivalent static load P_0

$$P_0 = x_0 \cdot |F_r| + y_0 \cdot |F_a|$$

F_r (N): radial load of the cam roller
 The following applies: $F_r \leq 0; F_r = 0$

F_a (N): axial load of the cam roller

x, x_0 : radial factor (table 1)
 y, y_0 : axial factor (table 1)

C: dynamic load capacity (table 2)
 C_0 : static load capacity (table 2)

Static safety values: $S_0 = \left(\frac{C_0}{P_0}\right)$

$S_0 \geq 4$ recommended!

Table 1: Load factors for cam rollers

	Load case $F_r \geq$				$F_r <$			
	x	$ F_a $ y	x_0	y_0	x	$ F_a $ y	x_0	y_0
LF6	1	3.1	1.2	3.5	0.5	3.6	1	3.7
LF12	1	4.2	1.2	5.2	0.5	4.7	1	5.4
LF20	1	4	1.2	4.9	0.5	4.5	1.1	5

Table 2: cam rollers - load capacities

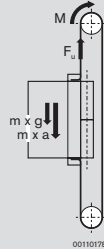
	C related to 10^6 m N	C_0 N
LF6	3670	2280
LF12	8300	5000
LF20	23400	16600

Design and technical data for MGE cam roller guides

Linear guide, drive dimensioning

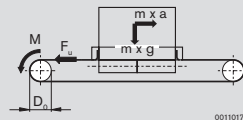
Linear guide

1. Peripheral force F_u



$$F_u = m \cdot a + m \cdot g + F_0 + \mu \cdot m \cdot g$$

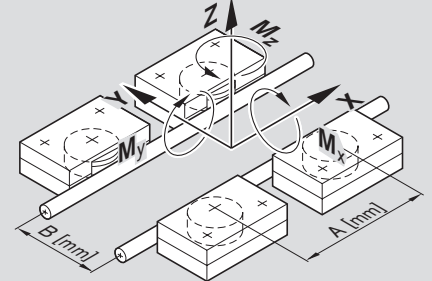
$$F_u \leq F_{u \text{ perm}} !$$



$$F_u = m \cdot a + F_0 + \mu \cdot m \cdot g \leq F_{u \text{ perm}} !$$

2. Required drive moment M

$$M = \frac{1}{2} \cdot D_0 \cdot F_u \leq M_{\text{perm}} !$$



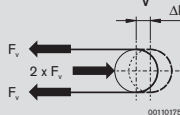
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	v (m/s)	$F_{u \text{ perm}}$ (N)	M_{perm} (Nm)	F_0 (N)	μ	D0 (mm)	$D0 \cdot \pi$ (mm)
LF6S	≤ 2.0	500	9.5	10	0.025	38.21	120
LF6S	2.01...5.0	400	7.6	10	0.025	38.21	120
LF6C	≤ 5.0	600	15.0	10	0.025	50.94	160
LF12S	≤ 5.0	820	30.0	30	0.020	73.20	230
LF12C	≤ 5.0	820	30.0	30	0.020	73.20	230
LF20S	≤ 5.0	2000	100.0	35	0.015	101.86	320
LF20C	≤ 5.0	2000	100.0	35	0.015	101.86	320

F_0 : frictional force on return units
 μ : coefficient of friction

Calculating the drive

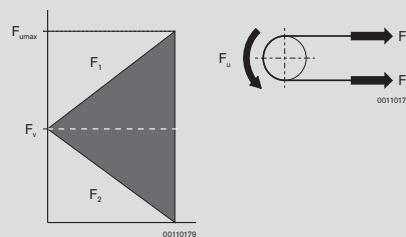
1. Preload force F_v of toothed belt



$$0.5 \cdot F_u \leq F_v \leq F_u$$

Recommended: $F_v = 0.5 \cdot F_u$

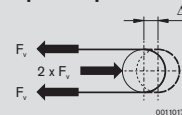
2. Maximum toothed belt force $F_{1 \text{ max}}$



$$F_{1 \text{ max}} = F_v + 0.5 \cdot F_u \leq F_{1 \text{ perm}} !$$

$$F_{2 \text{ min}} = F_v - 0.5 \cdot F_u > 0 !$$

3. Required preload length Δl








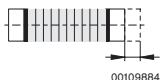








$$\Delta l = 0.5 \cdot F_v \cdot L / C_{\text{spec}} \leq \Delta l_{\text{max}} !$$

	$F_{1 \text{ perm}}$ (N)	C_{spec} (N)	Δl_{max} (N)	L (mm)
LF6S	750	315000	11	$2 \cdot L_2 - L_1 + 360$
LF6C	900	420000	13	$2 \cdot L_2 - L_1 + 400$
LF12S	1230	1250000	16	$2 \cdot L_2 - L_1 + 630$
LF12C	1230	1250000	16	$2 \cdot L_2 - L_1 + 630$
LF20S	3000	1870000	23	$2 \cdot L_2 - L_1 + 780$
LF20C	3000	1870000	23	$2 \cdot L_2 - L_1 + 780$

C_{spec} : belt rigidity
 L: toothed belt length

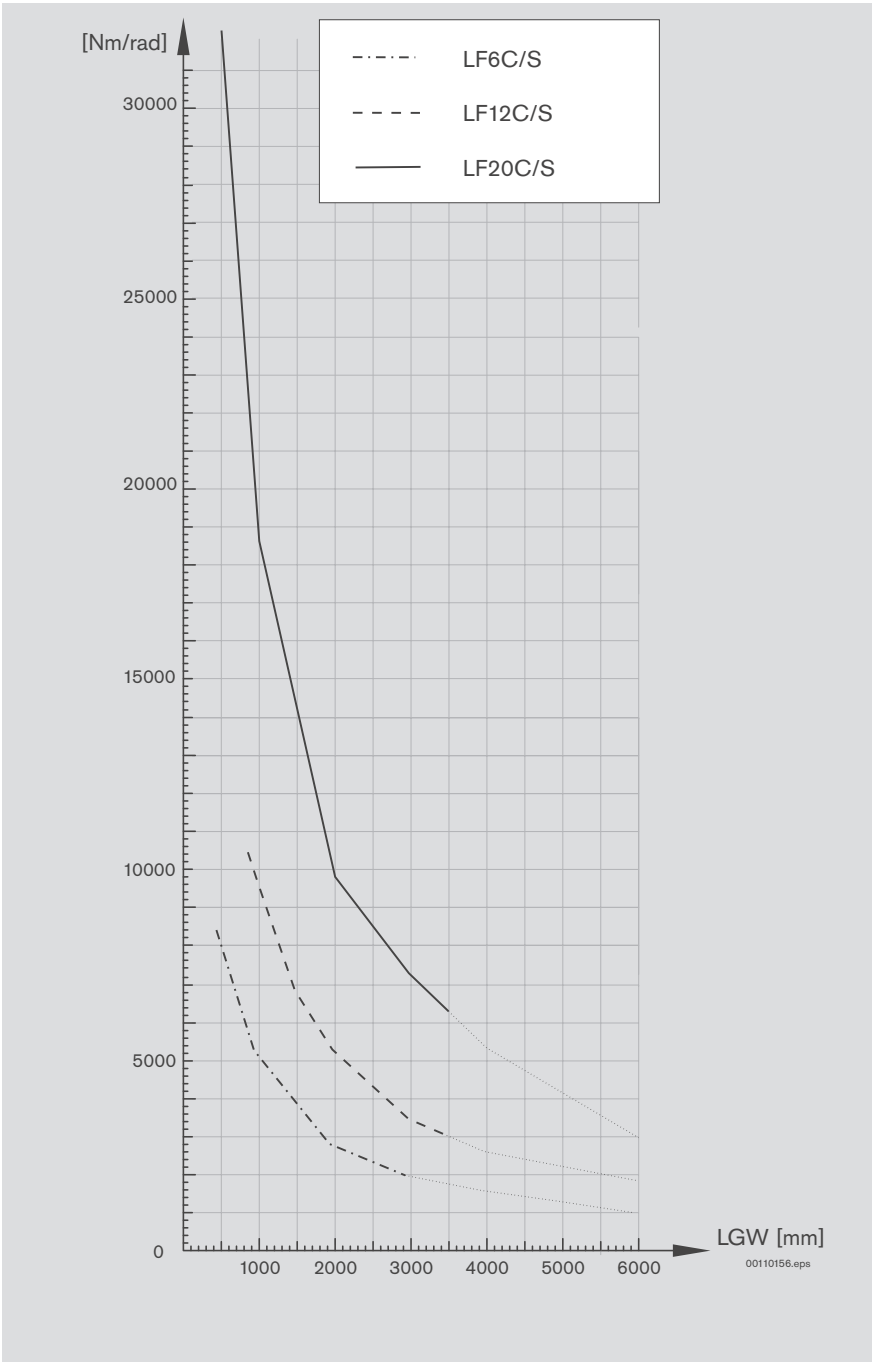
Design and technical data for MGE cam roller guides

Dimensioning of synchronous shafts

			LF6	LF12	LF20
Support separation	Horizontal	 00109873	215 ... 3000 mm	275 ... 3500 mm	325 ... 3500 mm
	Vertical	 00109873	215 ... 2000 mm	275 ... 2000 mm	325 ... 1100 mm
Nominal torque			max. 30 Nm	max. 60 Nm	max. 150 Nm
Permitted rpm			 4-9, diagram 3 max. $0.7 \cdot nk$	 4-9, diagram 3 max. $0.7 \cdot nk$	 4-9, diagram 3 max. $0.7 \cdot nk$
Elasticity	Axial	 00109884	max. 2 mm	max. 3 mm	max. 4 mm
	Lateral	 00109886	 4-9, diagram 4	 4-9, diagram 4	 4-9, diagram 4
	Torsion angle	 00109888	 4-9, diagram 5	 4-9, diagram 5	 4-9, diagram 5

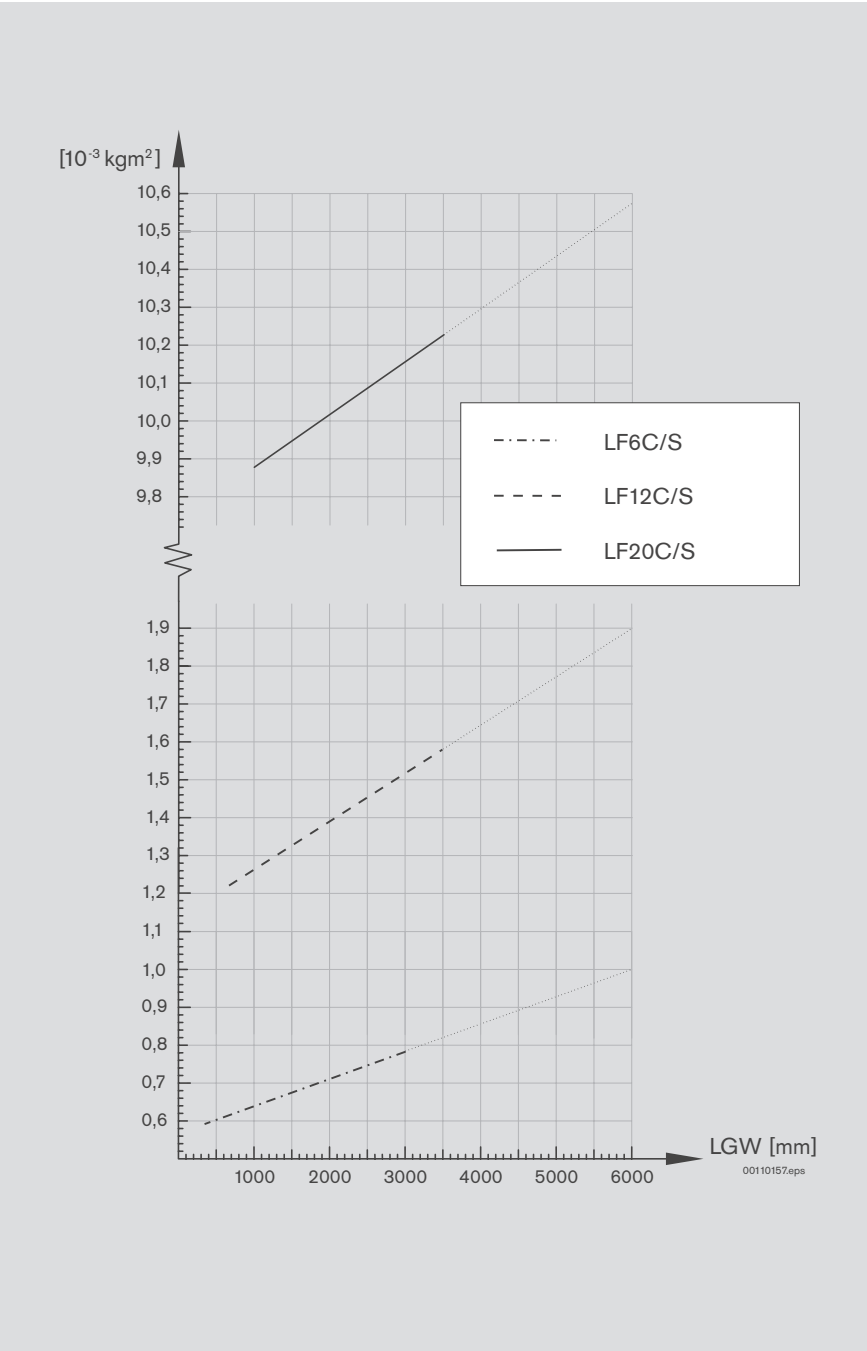
Design and technical data for MGE cam roller guides

Tab. 1: Torsion resistance



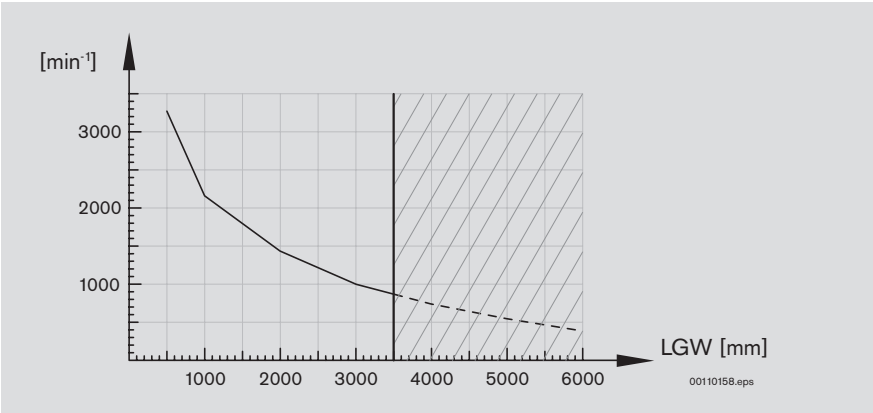
Design and technical data for MGE cam roller guides

Tab. 2: Mass inertia

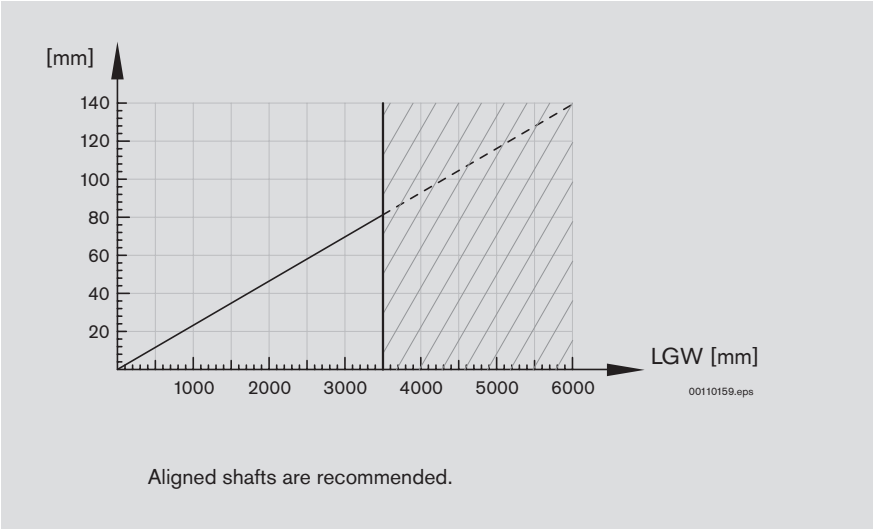


Design and technical data for MGE cam roller guides

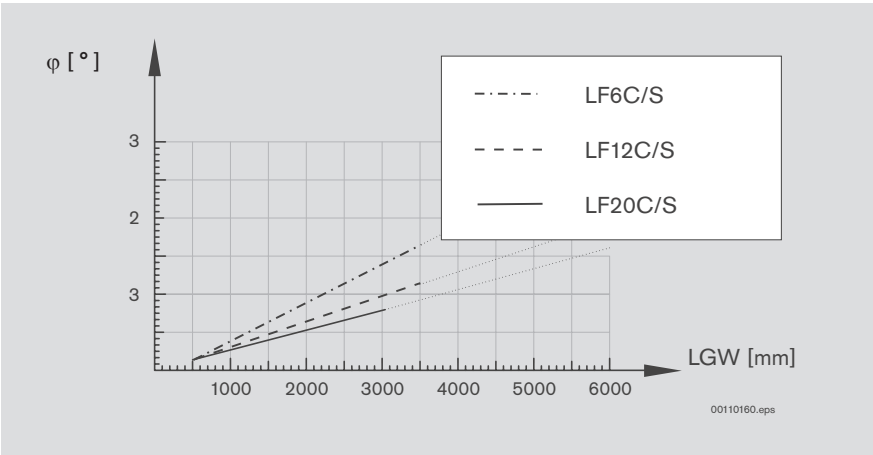
Tab. 3: Bending rpm nk



Tab. 4: Lateral offset



Tab. 5: Torsion angle



Design and technical data for eLINE linear guides

Technical data for eLINE, design notes, mounting instructions, lubrication

General technical data and calculations

Travel speed

$$v_{\max} = 2 \text{ m/s (with eLINE ball runner blocks)}$$

$$v_{\max} = 12 \text{ m/s (with eLINE cam roller runner blocks)}$$

Acceleration

$$a_{\max} = 30 \text{ m/s}^2 \text{ (with eLINE ball runner blocks)}$$

$$a_{\max} = 50 \text{ m/s}^2 \text{ (with eLINE cam roller runner blocks)}$$

Temperature resistance

$$\vartheta = 0 - 60^\circ\text{C}$$

Lubrication

All eLINE runner blocks are delivered with ready-mounted seal units.

Definition of dynamic load capacity C

The radial loading of constant magnitude and direction which a linear rolling bearing can theoretically endure for a nominal life of 100 km distance traveled (per ISO 14728 Part 1).

Note on maximum load F_{\max}

Because of the weight-optimized design of eLINE profiled rail systems, the maximum permissible forces for static and dynamic loads must not be exceeded.

Definition and calculation of the nominal life

The calculated service life which an individual linear rolling bearing, or a group of apparently identical rolling element bearings operating under the same conditions, can attain with a 90% probability, with contemporary, commonly used materials and manufacturing quality under conventional operating conditions (per ISO 14728 Part 1) and optimal installation conditions.

Nominal life at constant speed

Calculate the nominal life L or L_h according to formula (1) or (2):

$$(1) \quad L = \left(\frac{C}{F}\right)^3 \cdot 10^5$$

$$(2) \quad L_h = \frac{L}{2 \cdot s \cdot n_s \cdot 60}$$

L = nominal life (m)
 L_h = nominal life (h)
 C = dynamic load capacity (N)
 F = equivalent load (N)
 s = length of stroke* (m)
 n_s = stroke repetition rate (full cycles) (rpm)

* For a stroke length < 2x runner block length, the load capacities will be reduced. Please consult us.

Design and technical data for eLINE linear guides

General mounting instructions

Parallelism of the installed rails measured at the guide rails and at the runner blocks

The parallelism offset P_1 causes a slight increase in preload on one side of the assembly.

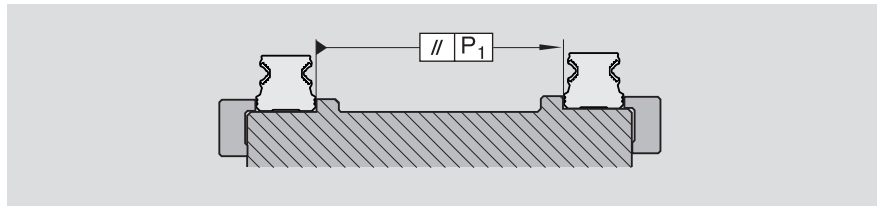
As long as the values specified in the table are met, the effect of parallelism offsets on the service life can generally be neglected.

eLINE profiled rail systems allow substantially higher installation tolerances compared to steel rail systems.

Vertical offset

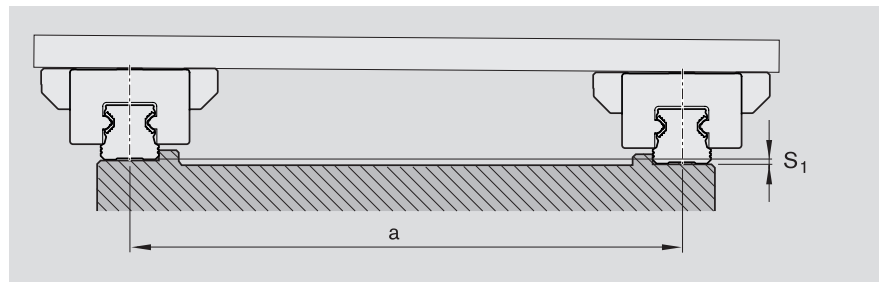
Provided the vertical offset is kept within the stated tolerances for S_1 and S_2 , its influence on the service life can generally be neglected.

The tolerance for dimension H, as given in the table with accuracy classes in the "Technical data" section, must be deducted from the permissible vertical offset S_1 of the guide rails.

Permissible vertical offset in the transverse direction S_1 

Size	Parallelism offset P_1 (mm) for preload class			
	Ball runner blocks		Cam roller runner blocks	
	C0	C1	C0	C1
15	(0.015) 0.027	(0.009) 0.018		0.034
20	(0.018) 0.031	(0.011) 0.021		0.040
25	(0.019) 0.034	(0.012) 0.022		0.042

(Values in parentheses are those for standard ball rail systems)



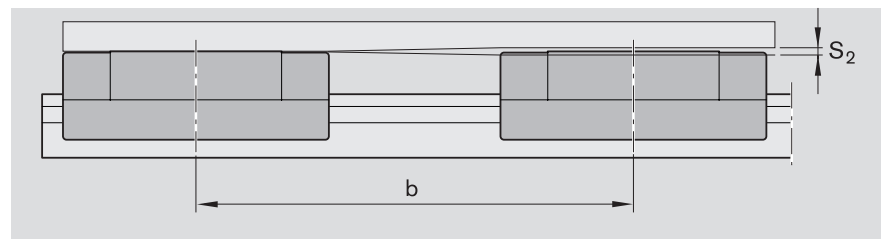
$$S_1 = a \cdot Y$$

S_1 = permissible vertical offset (mm)
 a = distance between guide rails (mm)
 Y = calculation factor

Calculation factor	For preload class			
	Ball runner blocks		Cam roller runner blocks	
	C0	C1	C0	C1
Y	$1.2 \cdot 10^{-3}$	$7.5 \cdot 10^{-4}$		$1.5 \cdot 10^{-3}$

Permissible vertical offset in the longitudinal direction S_2

The tolerance "max. difference in dimension H on the same rail", as given in the table with accuracy classes in the "Technical data" section, must be deducted from the permissible vertical offset S_2 of the runner blocks.



$$S_2 = b \cdot X$$

S_1 = permissible vertical offset (mm)
 b = distance between runner blocks (mm)
 X = calculation factor

Calculation factor	For preload class			
	Ball runner blocks		Cam roller runner blocks	
	C0	C1	C0	C1
X	$6 \cdot 10^{-4}$	$2.1 \cdot 10^{-4}$		$6.5 \cdot 10^{-4}$

Preload classes
 C0 = without preload
 C1 = with preload

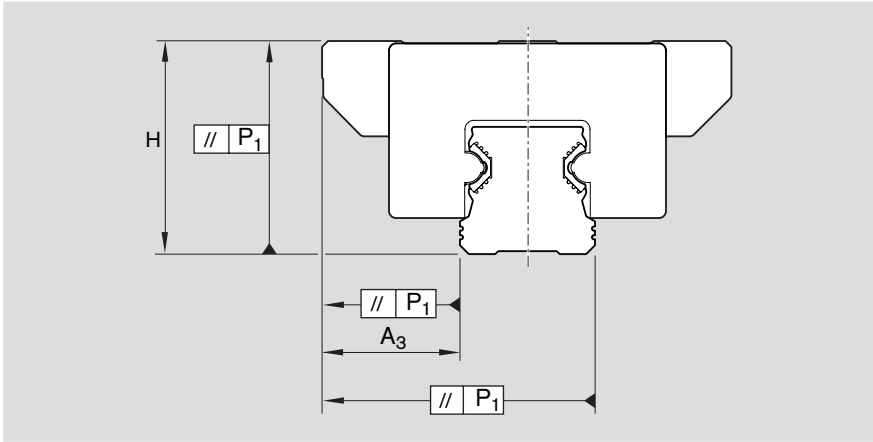
Design and technical data for eLINE linear guides

Technical data for eLINE, design notes, mounting instructions, lubrication

General technical data and calculations

Selection of accuracy classes

Accuracy classes and their tolerances
 eLINE ball rail systems are available in two different accuracy classes, eLINE cam roller guide systems in accuracy class E only.



Built-in interchangeability through precision machining

Rexroth manufactures its guide rails and runner blocks with such high precision, especially in the running track zone, that each individual component element can be replaced by another at any time. For example, different runner blocks can be used without problems on one and the same guide rail of the same size.

Parallelism offset P₁ of the rail system in service

Measured at middle of runner block

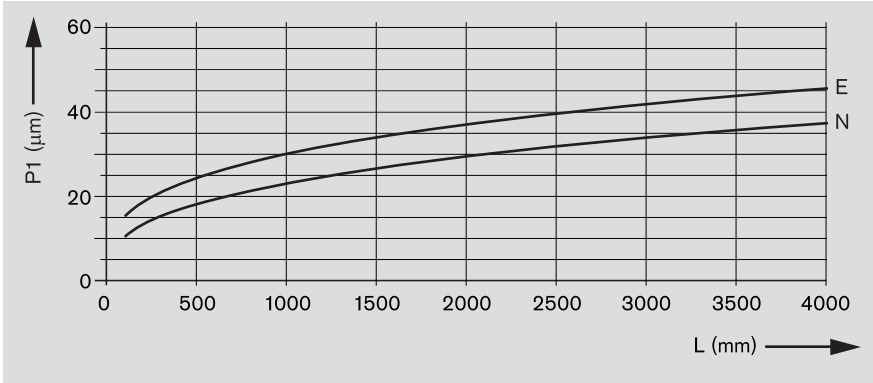
Precision classes	Tolerances dimension H and A ₃ (μm)		Max. difference in dimension H and A ₃ on one guide rail ΔH, ΔA ₃ (μm)
	H	A ₃	
N	±100	±40	30
E	±120	±70	60

Measured at middle of runner block:

For any runner block/rail combination at any position on rail

For different runner blocks at same position on rail

P₁ = parallelism offset
 L = rail length



Design and technical data for linear guides eLINE

Combination of accuracy classes

Runner block		Rails	
		N (μm)	E (μm)
N	Tolerance dimension H	+/- 100	+/- 110
	Tolerance dimension A3	+/- 40	+/- 60
	Max. diff. in dims. H and A3 on one rail	30	30
E	Tolerance dimension H	+/- 115	+/- 120
	Tolerance dimension A3	+/- 50	+/- 70
	Max. diff. in dims. H and A3 on one rail	60	60

Recommendations for combining accuracy classes

Recommended for short strokes and close spacing of runner blocks:
Runner blocks in higher accuracy class than guide rail.

Recommended for long strokes and larger runner block spacing
Guide rail in higher accuracy class than runner blocks

Selection of system preload

Selection of the preload class
In versions without preload there will be a slight clearance between the runner block and the rail. With two rails and use of more than one runner block per rail, this clearance is usually equalized by parallelism tolerances.

Code	Version	Application area
C0	without preload	For particularly smooth running guide systems with the lowest possible friction and a minimum of external influences, and for mounting bases with low accuracy.
C1	with preload	For more accurate guide systems with low external loads.

Design and technical data for eLINE linear guides

Technical data for eLINE, design notes, mounting instructions, lubrication

Load-dependent size selection

Determination of the runner block size

Note

The load ratio F_{comb}/C is the quotient of the equivalent dynamic load on the bearing divided by the dynamic load capacity C (see 4-4).

Calculation of load on bearing for a runner block

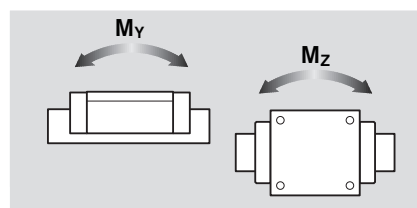
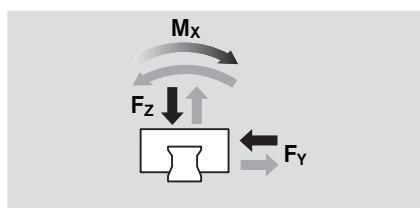
Do not exceed the maximum loading of the screw connections!

- 1 Determine F_{comb} .
- 2 Pre-select the runner block.
- 3 Calculate the ratio of the dynamic load capacity C of the selected runner block relative to F_{comb} (F_{comb} divided by C).

If $F_{\text{comb}}/C > 0.4$: runner block is sized too small.

Select the next largest size of runner block and repeat the calculation (step 3).

The ratio must always be $F_{\text{comb}}/C \leq 0.4$, otherwise F_{max} of the selected runner block will be exceeded.



$$F_{\text{comb}} = k_f \cdot (|F_z| + |F_y| + C \cdot \frac{|M_x|}{M_t} + C \cdot \frac{|M_y|}{M_L} + C \cdot \frac{|M_z|}{M_L})$$

F_{comb} = combined equivalent load (N)

F_y, F_z = dynamic loads (N)

M_x = moment about the X-axis¹⁾ (Nm)

M_y = moment about the Y-axis²⁾ (Nm)

M_z = moment about the Z-axis²⁾ (Nm)

M_t = dyn. torsional moment load cap. (Nm)

M_L = dyn. longitudinal moment load cap. (Nm)

k_f = operating factor

For values, see runner blocks

For values, see runner blocks

For values, see table

1) Moment M_x will be fully effective in an application with only one guide rail.

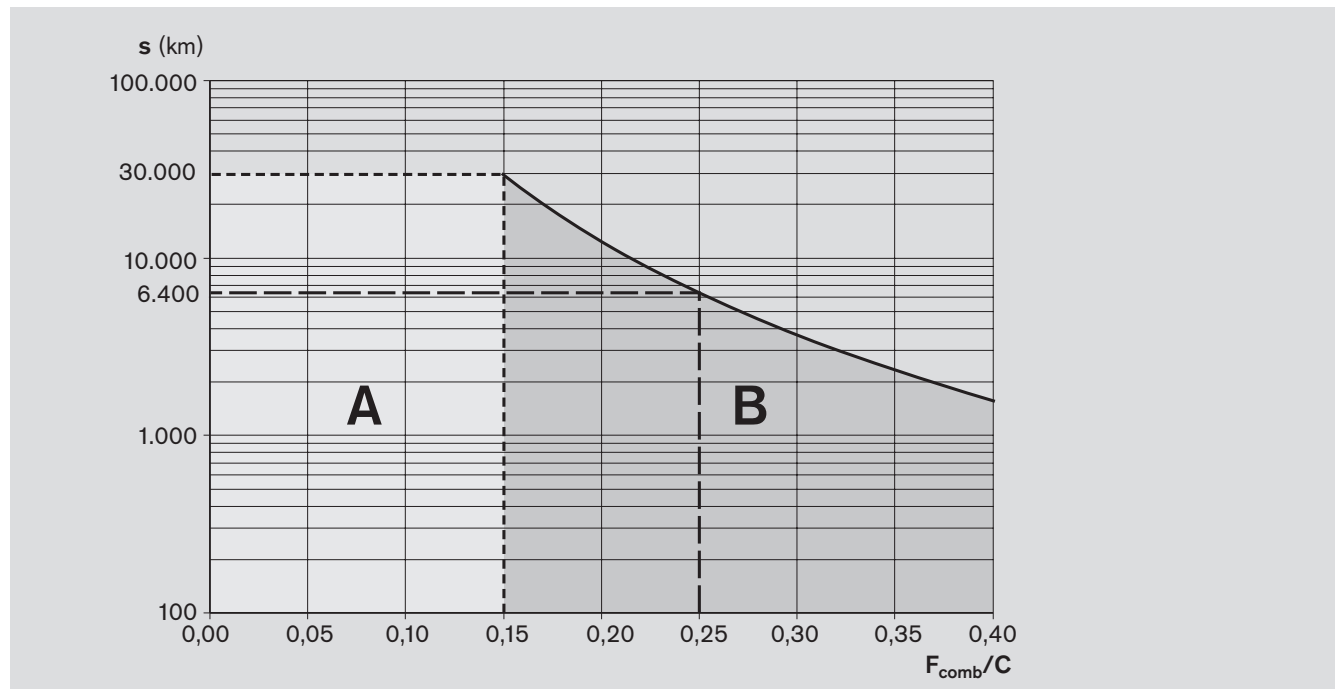
2) Moment M_y or M_z will only be effective when only one runner block is mounted on a guide rail.

Recommended operating factors k_f

Operating factors		Application
Ball runner blocks	Cam roller runner blocks	
0.8	0.8	Linear motion guide with manual drive
1.0	1.0	Door guides, seat adjustment, slide units for lamps, guidance of protective wire meshes, general laboratory applications, slide units for measuring devices
1.2	1.1	Application in a linear motion axis with ball screw drive
1.3	1.2	Application in a linear motion axis with rack and pinion drive
1.5	1.2	Application in a linear motion axis with toothed belt drive
2.0	1.5	Auxiliary axis of machine tool not subject to dirt
4.0	4.0	Application in a linear motion axis with pneumatic drive
7.0	5.0	Application in a linear motion axis with linear motor drive
9.0	9.0	Application in very dirty environments
Not for use in applications like		Main axis of a machine tool; aggressive wood dust environment; oscillating conveyors. Ball runner blocks: $q > 60^\circ\text{C}$, $a > 30 \text{ m/s}^2$, $v > 2 \text{ m/s}$ Cam roller runner blocks: $q > 60^\circ\text{C}$, $a > 50 \text{ m/s}^2$, $v > 12 \text{ m/s}$ Danger to life and limb (e.g. unsecured overhead installation)

Design and technical data for eLINE linear guides

Lubrication



Lubrication concept



from Rexroth means that the eLINE profiled rail systems (eLINE ball and cam roller runner blocks) are lubed for life. Applies only to a ratio $F_{\text{comb}}/C \leq 0.15$ (values from table 8) (Zone A in the graph)

For $F_{\text{comb}} > 0.15C$ and $\leq 0.4C$ (values from table 8), zone B in the graph applies; relubrication is necessary.

Example:

For $F_{\text{comb}} = 0.25$, zone B in the graph applies. Relubrication required after a distance traveled $s = 6400$ km. (To calculate F_{comb} , see "Calculation of load on bearing for a runner block")

Table 3

Size	Ball runner blocks $F_{0.15C}$ (N)	Cam roller runner blocks R2041 $F_{0.15C}$ (N)
15	750	140
20	1700	390
25	2500	400

s = distance traveled (km)
 C = dynamic load capacity (N)
 F = equivalent dynamic load (N)

The following conditions apply

- Initial greasing with Dynalub 510
- With seal unit (DE)
- Maximum speed
 $v_{\text{max}} = 2$ m/s
- No exposure to metalworking fluids
- Ambient temperature:
 $T = 20 - 30^\circ\text{C}$

Take account of the general service life of lubricants!

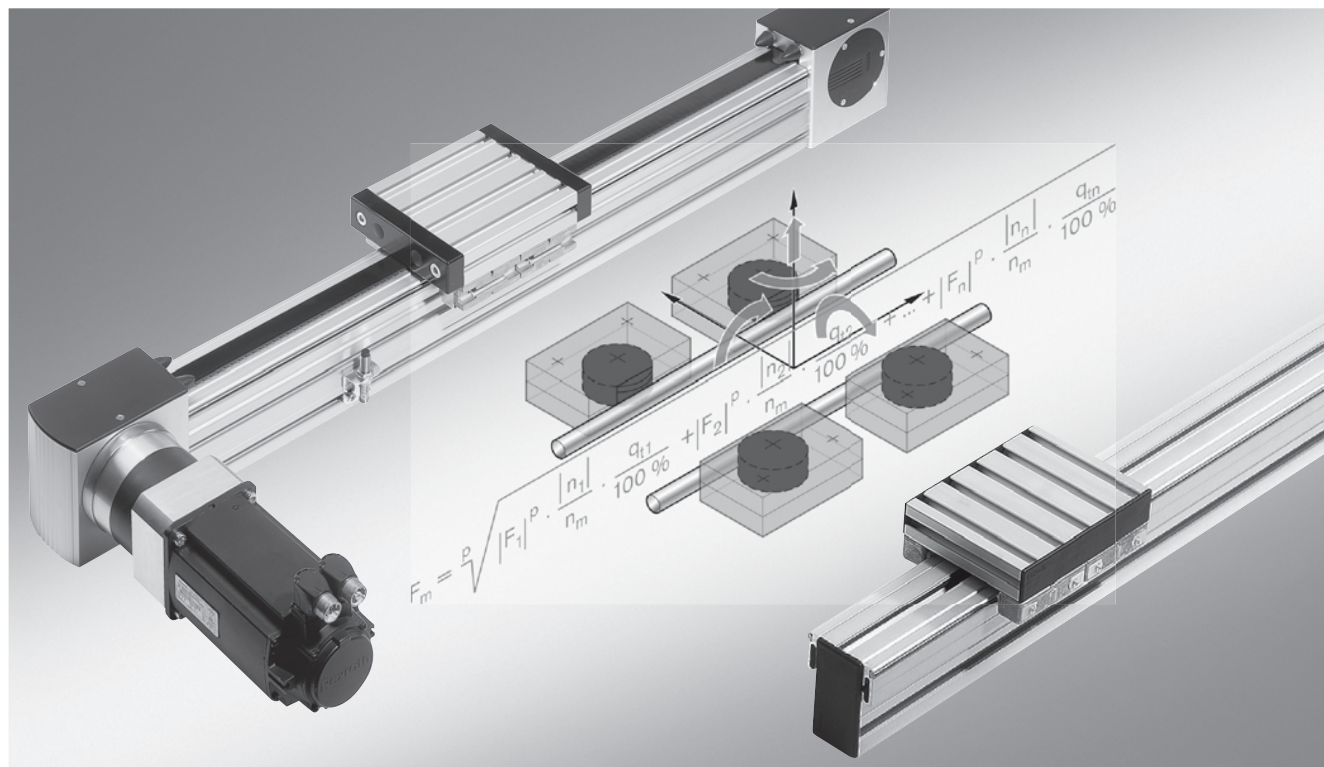
If other lubricants are used, this may lead to a reduction in the relubrication intervals, the achievable travel in short-stroke applications, and the load capacities. Possible chemical interactions between the plastic materials, lubricants and preservative oils must also be taken into account.

Do not use greases containing solid particles (e.g. graphite or MoS_2)!

If your application involves more demanding environmental requirements (such as cleanroom, vacuum, food industry environment, increased exposure to fluids or aggressive media, extreme temperatures), please consult us. These situations must be investigated on a case by case basis and may require the use of a special lubricant. Be sure to have all the information concerning your application at hand when contacting us.

Design and technical data for eLINE linear guides

Planning tool for linear guides



Automation from a single source:

Planning, implementation, commissioning and training – Rexroth offers you support in every project phase.

Besides the catalogs and brochures, we provide you with powerful planning tools. On our website you will find information on new products and up-to-date information on our existing products. In addition, our sales and service teams are on hand to answer specific questions. When implementing our systems, we also support you with our broad range of training measures.

Design program

We are currently developing a professional planning tool for the quick and easy design of linear guides.

The software package simplifies the planning, design and construction of linear guide applications.

You can switch the whole content and user interface between 5 languages (de/en/fr/it/es). The program can be run directly from the CD without separate installation.

Automatic updates via the Internet make sure you are always up to date.

Internet: www.boschrexroth.com/brl

Performance characteristics:

- Calculating the lifetime of individual guide bearings
- Combination of up to 16 guide bearings
- Entry of the dynamic movement
- Check of the selected size
- Suggested motor/gear combination
- Quick and easy design
- Clear result display and documentation

Overview of part numbers

Overview of part numbers

3 842...

Overview of part numbers

Overview of part numbers

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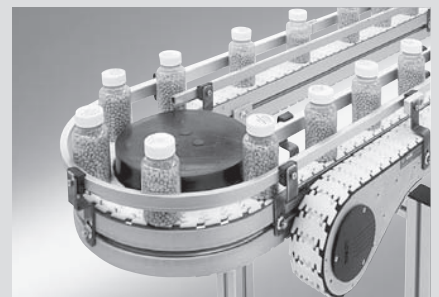
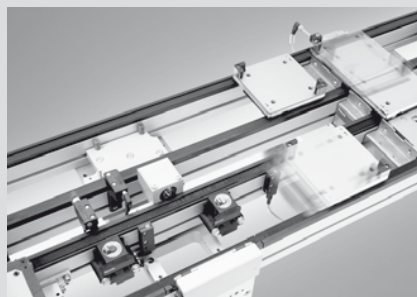
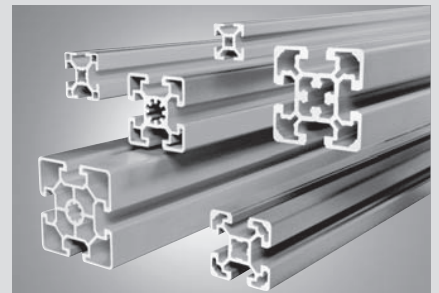
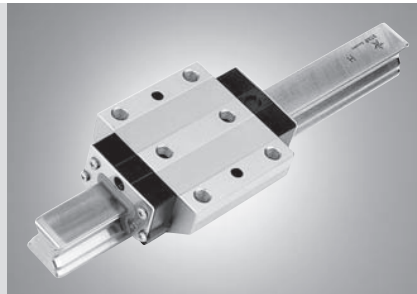
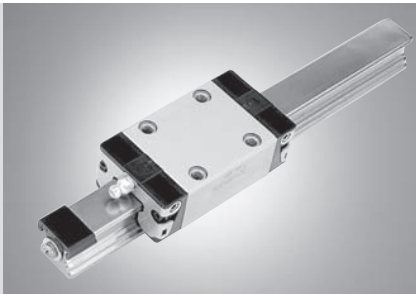
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