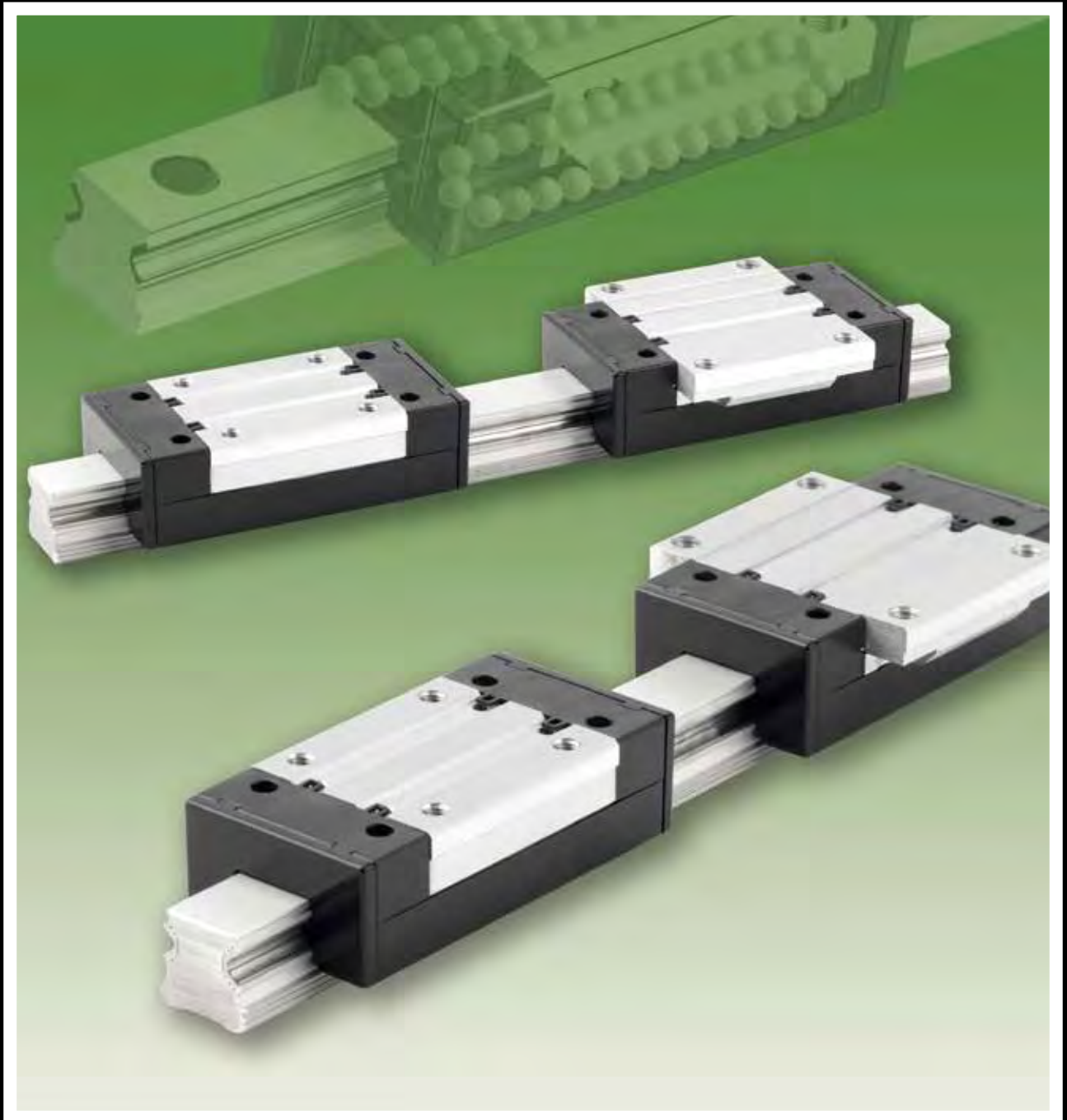


# ALUMINIUM LINEAR RAIL SYSTEM



**ROLLCO**

SPECIALIZED  
ON LINEAR MOTION

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## Introduction

### Product overview

Aluminium linear rail systems are designed especially for all sorts of linear movements and are therefore suitable for use in most type of machinery. The rails consist of extruded aluminium having two pressed-in hardened stainless steel profiles serving as the raceways for the balls of the runner blocks. Advantages are the light weight and corrosive resistant materials. Fixing holes in the attachment surfaces enable machine parts to be directly mounted onto the runner blocks. With this combination it is possible for us to offer a guide system which achieves a good price/performance ratio.

### Product range

- There are two versions of our carriages: Flanged and narrow.
- The blocks are stocked with clearance and standard precision. In case preload and for higher precision "P" is needed, please contact Rollco.
- The load rating is based on a service performance of 100 km.

### Advantages

- Compact, light-weight design with a weight saving of 60% versus steel versions.
- Same connection dimensions as steel ball rail systems.
- Much greater parallelism and height offsets of mounting bases possible.
- Insensitive to aggressive environment (dust, shavings)
- Significantly better corrosion resistance in comparison with the steel versions.
- Runner blocks initially greased in-factory, therefore provided with long-term lubrication.
- Due to ball retainers in the runner blocks, runner blocks can be removed from the rail without any loss of balls.
- Complete interchangeability between runner blocks and rails.
- Both sides of the rail are reference sides. The runner block has one reference side, which can be verified by turning it on the rail.

### Application range

|              |           |   |                     |
|--------------|-----------|---|---------------------|
| Speed        | $v_{max}$ | = | 2 m/s               |
| Acceleration | $a_{max}$ | = | 30 m/s <sup>2</sup> |
| Temperature  | T         | = | 0°- 60° C           |

### Application

If you look at the above limits, you will see that a broad area of applications is opening. Especially in light machinery, handling technology, jigs and fixtures, assembly technology, manual displacement systems, machine enclosures, door – and window technology, booth- and store construction and much more.

Our rail guides cannot be used in:

- Main axis of a CNC or tooling machine
- Aggressive dusts
- Oscillating conveyor
- Danger of life or physical condition (for example unsecured overhead installation)



# Accuracy

## Accuracy

The carriage and the rails are produced with high precision, so that non preloaded carriages can be replaced by another anytime.

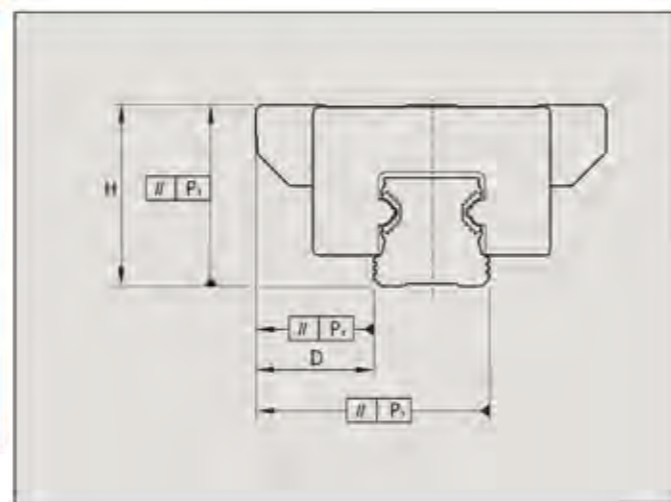
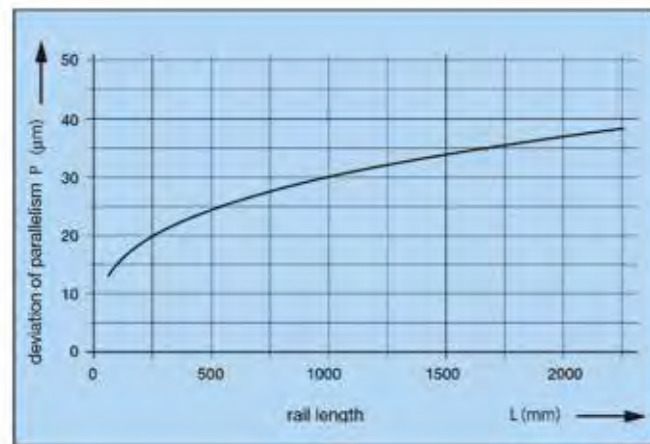
The following values are valid for the stocked types in the dimensions tables on page 6 and 7.

### HEIGHT TOLERANCE "H"

The height tolerance of several carriages on a rail is maximum +/- 30 µm.  
In the case of several carriages and rails the maximum is +/-120 µm.

### SIDE TOLERANCE "D"

The side tolerance of several carriages on a rail is maximum +/- 30 µm.  
In the case of several carriages and rails the maximum is +/-70 µm.



## Deviation of parallelism

Deviation of parallelism can be found in the diagram above on the left.

## Carriages in standard precision (stocked products)

For normal applications we recommend a combination of carriage and rail without preload. With the standard precision it will have a tolerance in the micro range between the rail and carriage. It is possible to order just the rail or carriage separately (interchangeable and in stock).

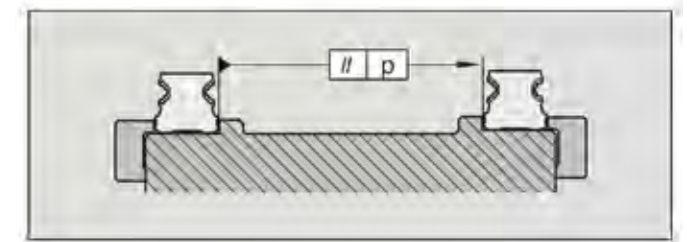
# Mounting Instructions

## Parallelism

Parallelism of the installed rails measured at the guide rails and the runner blocks. The parallelism offset P1 causes a slight increase in preload on one side of the assembly. As long as values specified in the table are met, the effect of parallelism offsets on the service life can generally be neglected. Through the deviation in parallelism (P1) the preload is increased on one side. If table values are adhered to, the influence on the service life is generally negligible. Profiled rail system allow substantially higher installation tolerances compared to steel rail systems.

| Size | Permissible deviation in parallelism P <sub>max</sub> |         |
|------|---|---------|
|      | Standard  | Preload |
| 15   | 0,027   | 0,018   |
| 20   | 0,031   | 0,021   |
| 25   | 0,034   | 0,022   |

Values in mm



## Height deviation

Given adherence to the permissible height deviation "S", the influence on the service life can generally be neglected.

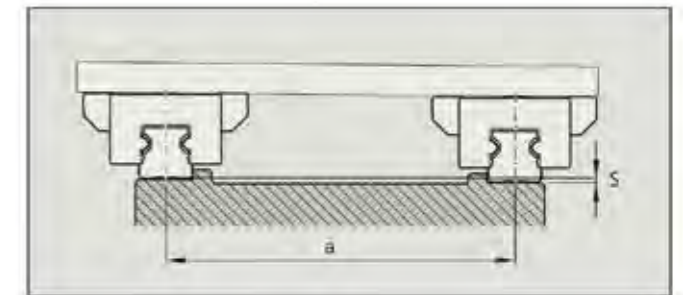
Permissible height deviation in lateral direction "S"

$$S \leq a \cdot f$$

S = Permissible height deviation (mm)

a = Distance between rails (mm)

f = Calculation factor



| Calculation factor | Standard               | Preload                 |
|--------------------|------------------------|-------------------------|
| f                  | 1,2 · 10 <sup>-3</sup> | 0,75 · 10 <sup>-3</sup> |

## Permissible height deviation in longitudinal direction

Given adherence to the permissible height deviation "R", the influence on the service life can generally be neglected.

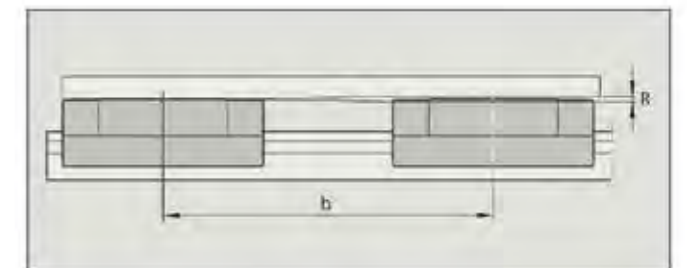
Permissible height deviation in longitudinal direction "R"

$$R \leq b \cdot g$$

R = Permissible height deviation (mm)

b = Distance between runner blocks (mm)

g = Calculation factor

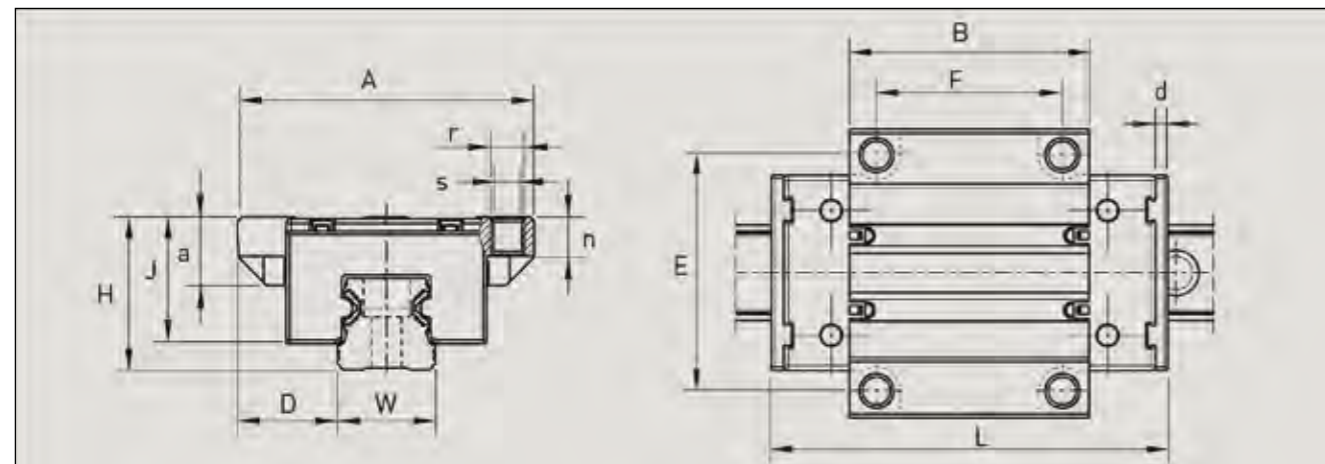
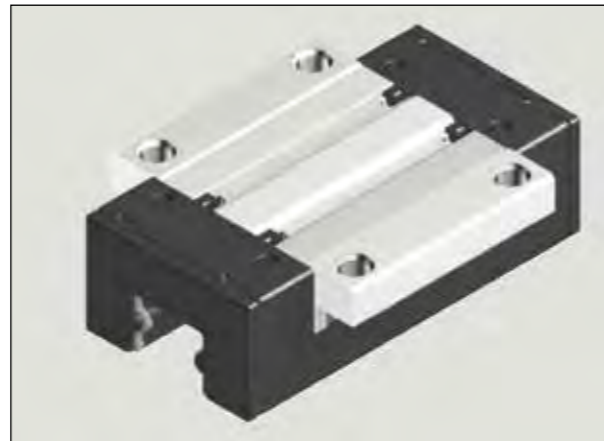


| Calculation factor | Standard             | Preload                |
|--------------------|----------------------|------------------------|
| g                  | 6 · 10 <sup>-4</sup> | 2,1 · 10 <sup>-4</sup> |

## Flanged Block Type FNS

This light-weight flanged runner block is designed for cost-effective applications such as assembly and handling processes. Mounting dimensions are identical to those of the steel guiding rails and in accordance to DIN 645-1, which makes them interchangeable and replaceable.

The runner block has a lateral abutment edge and can then be screwed from above or below. Runner block consists of an aluminium alloy with a tensile strength of 350N/mm<sup>2</sup>, balls and running tracks of hardened stainless steel, X46Cr13 (1.4034). All others parts are made of POM. The carriage is pre-lubricated and has standard seal units, which can be replaced.



| Order ref. no. | A  | H  | W  | D    | L    | B    | E  | F  | s   | r  | n   | J    | a <sub>max</sub> | d   | Weight |
|----------------|----|----|----|------|------|------|----|----|-----|----|-----|------|------------------|-----|--------|
|                | mm |    |    |      |      |      |    |    |     |    |     |      |                  |     | kg     |
| FNS15          | 47 | 24 | 15 | 16   | 64   | 37,8 | 38 | 30 | 4,3 | M5 | 6   | 19,8 | 11               | 2,5 | 0,08   |
| FNS20          | 63 | 30 | 20 | 21,5 | 85,9 | 51,5 | 53 | 40 | 5,3 | M6 | 8   | 24,7 | 13               | 2,8 | 0,18   |
| FNS25          | 70 | 36 | 23 | 23,5 | 96   | 58   | 57 | 45 | 6,7 | M8 | 9,3 | 29,9 | 17               | 3   | 0,26   |

| Size | Dynamic load capacities (N) <sup>(*)</sup> |                                 | Torque (Nm)          |  |                      |  |
|------|--|---------------------------------|----------------------|--|----------------------|--|
|      | C (dyn)                                    | F <sub>max</sub> <sup>(*)</sup> | M <sub>t</sub> (dyn) | M <sub>t,max</sub> (stat) <sup>(*)</sup> | M <sub>L</sub> (dyn) | M <sub>L,max</sub> (stat) <sup>(*)</sup> |
| 15   | 5000                                       | 2000                            | 36                   | 14                                       | 29                   | 12                                       |
| 20   | 11000                                      | 4400                            | 101                  | 40                                       | 89                   | 35                                       |
| 25   | 16000                                      | 6400                            | 165                  | 66                                       | 147                  | 59                                       |

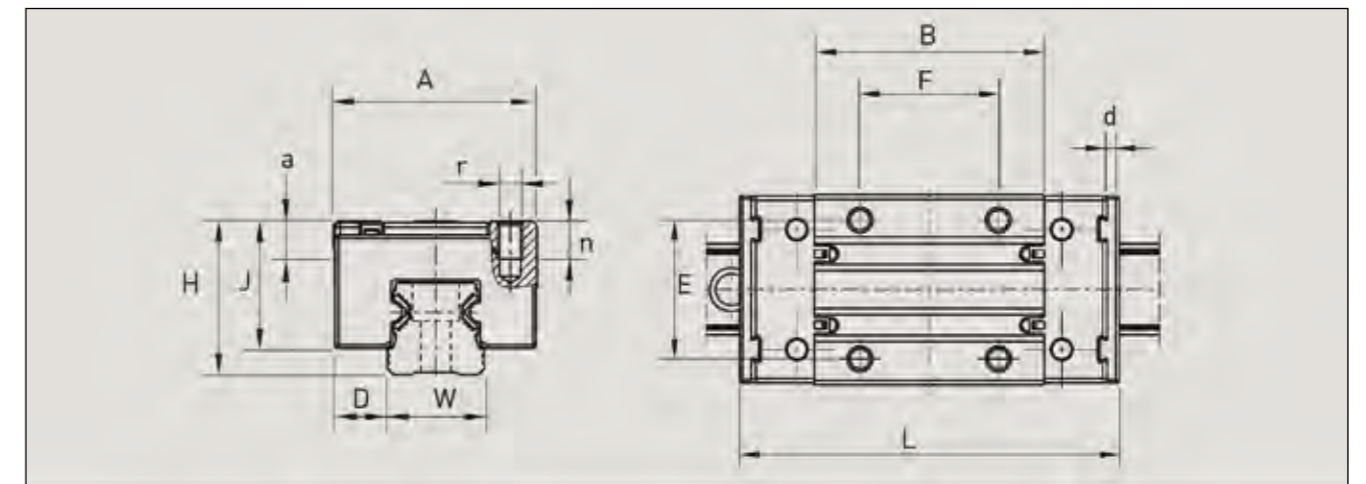
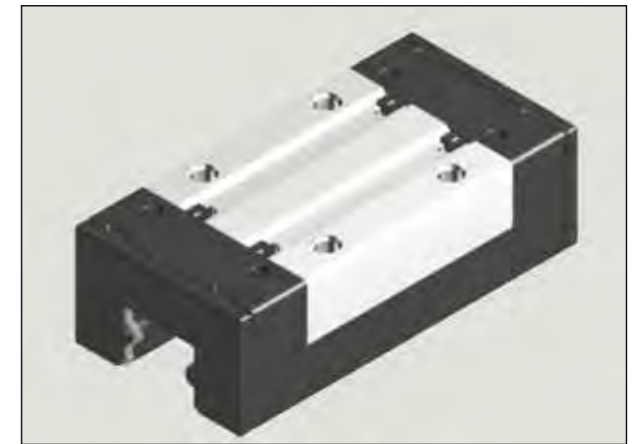
(\*1) Determination of the dynamic load capacities and torques is based on a travel life of 100.000 m.

(\*2) Due to the mechanical operations of guide rails and runner block with their different materials, is not possible to, clearly indicate a load rating. In this case never exceed F<sub>max</sub> or M<sub>max</sub>. Otherwise malfunction or damage may occur.

## Narrow Block Type GNS

This light-weight narrow runner block corresponds to the structure of the flanged runner block from the previous page. It's only slimmer and designed for mounting from above.

The mounting dimensions are also identical to the steel guiding rails and in accordance to DIN 645-1. In this way you can easily change the installed constructions.



| Order ref. no. | A  | H  | W  | D    | L    | B    | E  | F  | r  | n   | J    | a <sub>max</sub> | d   | Weight |
|----------------|----|----|----|------|------|------|----|----|----|-----|------|------------------|-----|--------|
|                | mm |    |    |      |      |      |    |    |    |     |      |                  |     | kg     |
| GNS15          | 34 | 24 | 15 | 9,5  | 64   | 37,8 | 26 | 26 | M4 | 6   | 19,8 | 4,1              | 2,5 | 0,07   |
| GNS20          | 44 | 30 | 20 | 12   | 85,9 | 51,5 | 32 | 36 | M5 | 7,5 | 24,7 | 5,5              | 2,8 | 0,15   |
| GNS25          | 48 | 36 | 23 | 12,5 | 96   | 58   | 35 | 35 | M6 | 9   | 29,9 | 6,4              | 3   | 0,22   |

| Size | Dynamic load capacities (N) <sup>(*)</sup> |                                 | Torque (Nm)          |  |                      |  |
|------|--|---------------------------------|----------------------|--|----------------------|--|
|      | C (dyn)                                    | F <sub>max</sub> <sup>(*)</sup> | M <sub>t</sub> (dyn) | M <sub>t,max</sub> (stat) <sup>(*)</sup> | M <sub>L</sub> (dyn) | M <sub>L,max</sub> (stat) <sup>(*)</sup> |
| 15   | 5000                                       | 2000                            | 36                   | 14                                       | 29                   | 12                                       |
| 20   | 11000                                      | 4400                            | 101                  | 40                                       | 89                   | 35                                       |
| 25   | 16000                                      | 6400                            | 165                  | 66                                       | 147                  | 59                                       |

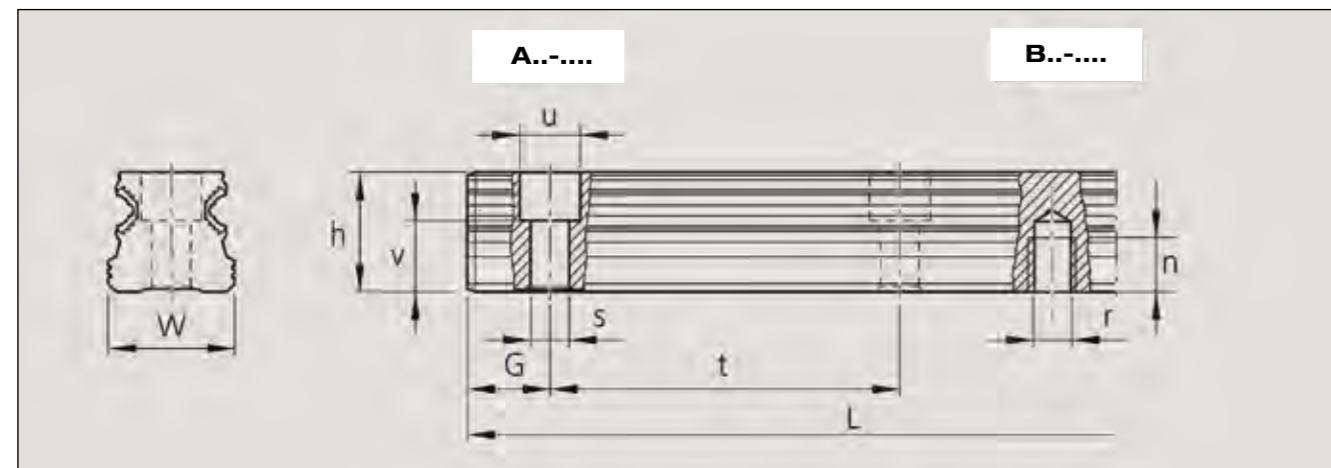
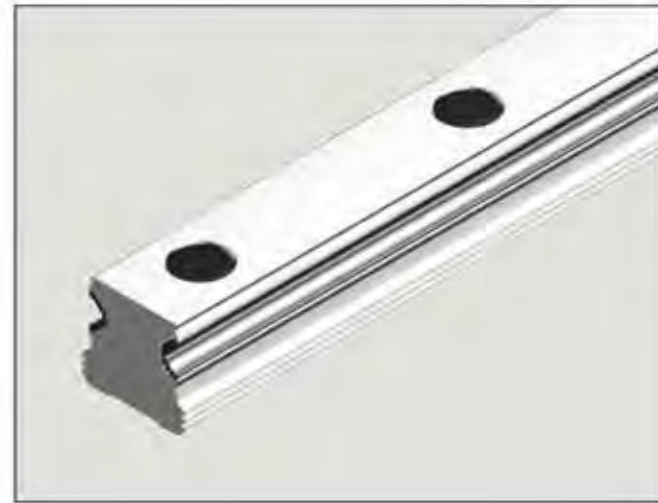
(\*1) Determination of the dynamic load capacities and torques is based on a travel life of 100.000 m.

(\*2) Due to the mechanical operations of guide rails and runner block with their different materials, is not possible to, clearly indicate a load rating. In this case never exceed F<sub>max</sub> or M<sub>max</sub>. Otherwise malfunction or damage may occur.

## Corrosion Resistant Profiled Rail

The aluminium profile rails are made of high quality aluminium alloy with rolled and precisely calibrated raceways made of stainless steel, X46Cr13 (1.4034) and are produced only in the accuracy class P.

The use of aluminium achieves a weight saving compared to the steel types. It better compensates any unevenness in the mounting surface. The use of stainless steel for the track material, makes the rail corrosion resistant. The rail with the order number A..-.... is for mounting from above and B..-.... for mounting from below. Because of the aluminium / steel composite construction, the rails should get ordered in the right length. Only in exceptional cases it is allowed to cut it by yourself.



| Order ref. no. | W  | h    | u   | v    | s   | r  | n  | t  | L <sub>max</sub> | Weight |
|----------------|----|------|-----|------|-----|----|----|----|------------------|--------|
|                |    |      |     |      |     |    |    |    |                  | kg/m   |
|                |    |      |     |      |     |    |    |    |                  | mm     |
| A15-...        | 15 | 14   | 7,5 | 8,1  | 4,4 |    |    | 60 | 4000             | 0,57   |
| B15-...        | 15 | 14   |     |      |     | M5 | 7  | 60 | 4000             | 0,57   |
| A20-...        | 20 | 19   | 9,5 | 11,6 | 6,0 |    |    | 60 | 4000             | 0,98   |
| B20-...        | 20 | 19   |     |      |     | M6 | 9  | 60 | 4000             | 0,98   |
| A25-...        | 23 | 21,8 | 11  | 12,9 | 7,0 |    |    | 60 | 4000             | 1,25   |
| B25-...        | 23 | 21,8 |     |      |     | M6 | 12 | 60 | 4000             | 1,25   |

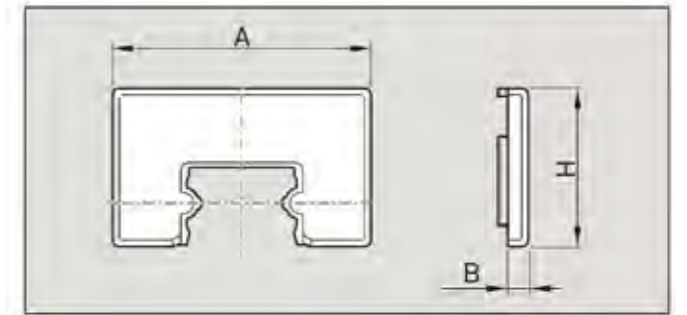
Please insert rail lengths in mm

## Seal Unit

- All runner blocks are delivered with greased seal units
- The basic material is POM

### Instructions for the replacement:

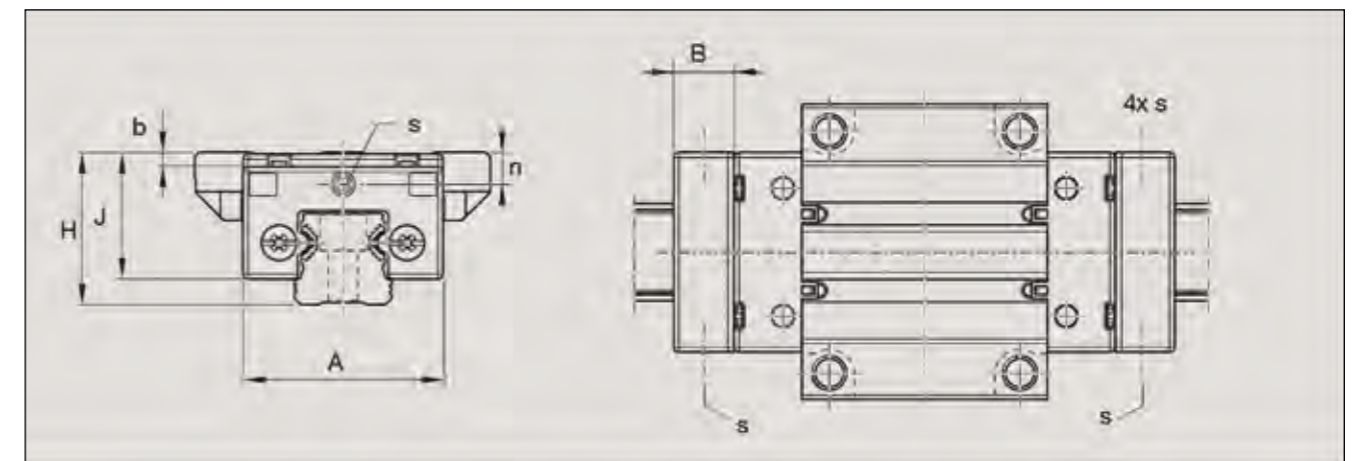
- Assembly with mounted carriage is not possible
- Pull exchanged seal unit up
- Insert the new seal unit
- Push the runner block back on the guide rail
- Align the seal unit vertically to the guide rail



| Order ref. no. | Measurements (mm) |     |      |
|----------------|-------------------|-----|------|
|                | A                 | B   | H    |
| nVA15          | 31,7              | 2,5 | 19,4 |
| nVA20          | 43,2              | 2,8 | 24,3 |
| nVA25          | 47,2              | 3   | 26,5 |

## Lube Unit with Sealing Function

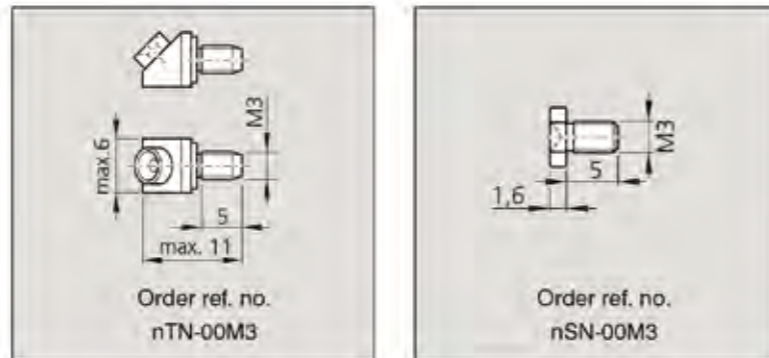
Lube units with sealing function are used for applications with higher mileage or dirty environment. Located inside the blocks and being impregnated with oil ISO VG100, they ensure a continuous lubrication and simultaneously act as front seals. Because of this a service life of 12500 km is possible, without further lubrication. After that you can lubricate via the lubrication oil connections or the enclosed grease nipple. Optimally is when you replace the whole unit. The lube units are simply pushed over the rail and mounted by the attached bayonet fittings at the front side of the runner block, when the existing seal unit is removed.



| Order ref. no. | Size | A    | B    | H  | J    | b   | n   | s  | Oil                | Supplied grease nipple |
|----------------|------|------|------|----|------|-----|-----|----|--------------------|------------------------|
|                |      |      |      |    |      |     |     |    | (cm <sup>3</sup> ) |                        |
|                |      |      |      |    |      |     |     |    | mm                 |                        |
| dsF15          | 15   | 31,7 | 11,5 | 24 | 19,4 | 0,4 | 4,5 | M3 | 0,65               | nSN-00M3               |
| dsF20          | 20   | 43,2 | 13   | 30 | 24,3 | 0,4 | 5   | M6 | 1,35               | nGN-00M6               |
| dsF25          | 23   | 47,2 | 14   | 36 | 30   | 3,4 | 7,6 | M6 | 1,70               | nGN-00M6               |

## Lubrication Nipple for Lube Units

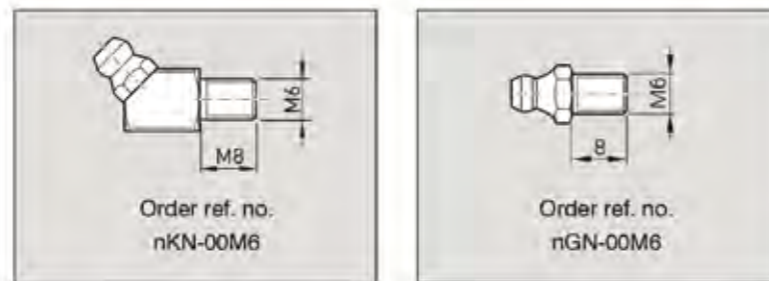
Funnel-type lube nipple for size 15



Order ref. no.  
nTN-00M3

Order ref. no.  
nSN-00M3

Hydraulic-type lube nipple for sizes 20 and 25

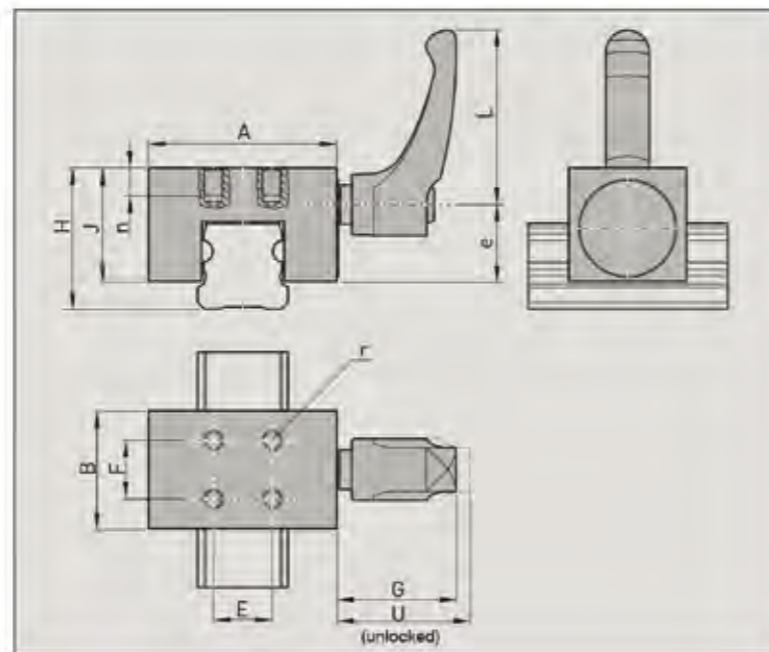


Order ref. no.  
nKN-00M6

Order ref. no.  
nGN-00M6

## Manual Clamping Unit

The manual clamping unit dHK is made of aluminium and plastic. It fits on both type of rails (A and B).



| Order ref. no. | Torsional    | A  | B  | e    | H  | J    | E  | F  | L  | G    | U    | n | r  |
|----------------|--------------|----|----|------|----|------|----|----|----|------|------|---|----|
|                |              | mm |    |      |    |      |    |    |    |      |      |   |    |
| dHK15          | 130 N / 3 Nm | 34 | 20 | 12,9 | 24 | 19,8 | 10 | 10 | 40 | 29,9 | 33,3 | 6 | M3 |
| dHK20          | 250 N / 3 Nm | 44 | 24 | 16   | 30 | 24   | 12 | 12 | 40 | 29,9 | 33,4 | 6 | M4 |
| dHK25          | 330 N / 3 Nm | 48 | 30 | 19,6 | 36 | 29   | 15 | 15 | 44 | 29,8 | 33,3 | 7 | M5 |

## Product Overview



**BALL SCREWS**  
High efficiency ball screws and nuts.



**LINEAR UNIT QME**  
Complete linear drive unit with ball bushings and ball screws.



**LINEAR UNIT RHL**  
Complete unit with tooth belt.



**LINEAR UNITS**  
Complete unit with ball screw or tooth belt.



**ALUMINIUM PROFILES**  
A full program of aluminium profiles and accessories.



**BELT CONVEYOR**  
Transportation system with different drive options



**U-RAIL**  
Rollers in steel or polyamide. For light, standard or heavy load. Mounted in U-rails.



**COMPACT RAIL**  
No more problems with parallelism. Low noise. Lifetime lubricated bearings.



**C-RAIL**  
A simple and cost effective linear bearing system



**LINEAR RAIL SYSTEM**  
The most standardized linear rail system.



**MINIATURE**  
Range from 3 mm up to 15 mm.



**EASYSLIDE**  
A strong solution for short strokes.



**ROLLER GUIDES**  
Four raceways with rollers. High load capacity.



**HEAVY TELESCOPIC**  
The strongest solution for extraction.



**LIGHT TELESCOPIC**  
Telescopic systems for smooth movement. Steel and aluminium.



**BALL BEARINGS**  
Linear ball bearings and hardened steel shafts.

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**Rollco AB**  
Box 22234  
Ekvändan 3  
250 24 Helsingborg  
Sweden  
Tel. +46 42 150040  
Fax +46 42 150045  
[www.rollco.se](http://www.rollco.se)

**Rollco A/S**  
Ladegårdsvej 2  
7100 Vejle  
Denmark  
Tel. +45 7552 2666  
Fax +45 7552 0708  
[www.rollco.dk](http://www.rollco.dk)

**Rollco Oy**  
Sarankulmankatu 12  
33900 Tampere  
Finland  
Tel. +358 207 57 97 90  
Fax +358 207 57 97 99  
[www.rollco.fi](http://www.rollco.fi)

**Rollco Norge AS**  
Bergliveien 2  
3427 Gullaug  
Norway  
Tel. +47 32 84 00 34  
Fax +47 32 84 00 91  
[www.rollco.no](http://www.rollco.no)

**Rollco Taiwan**  
No. 28, Lane 125, Da-an Road  
Shulin District 238  
New Taipei City, Taiwan  
Tel. +886-2-8687-2726  
Fax +886-2-8687-2720  
[www.rollco-tw.com](http://www.rollco-tw.com)



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