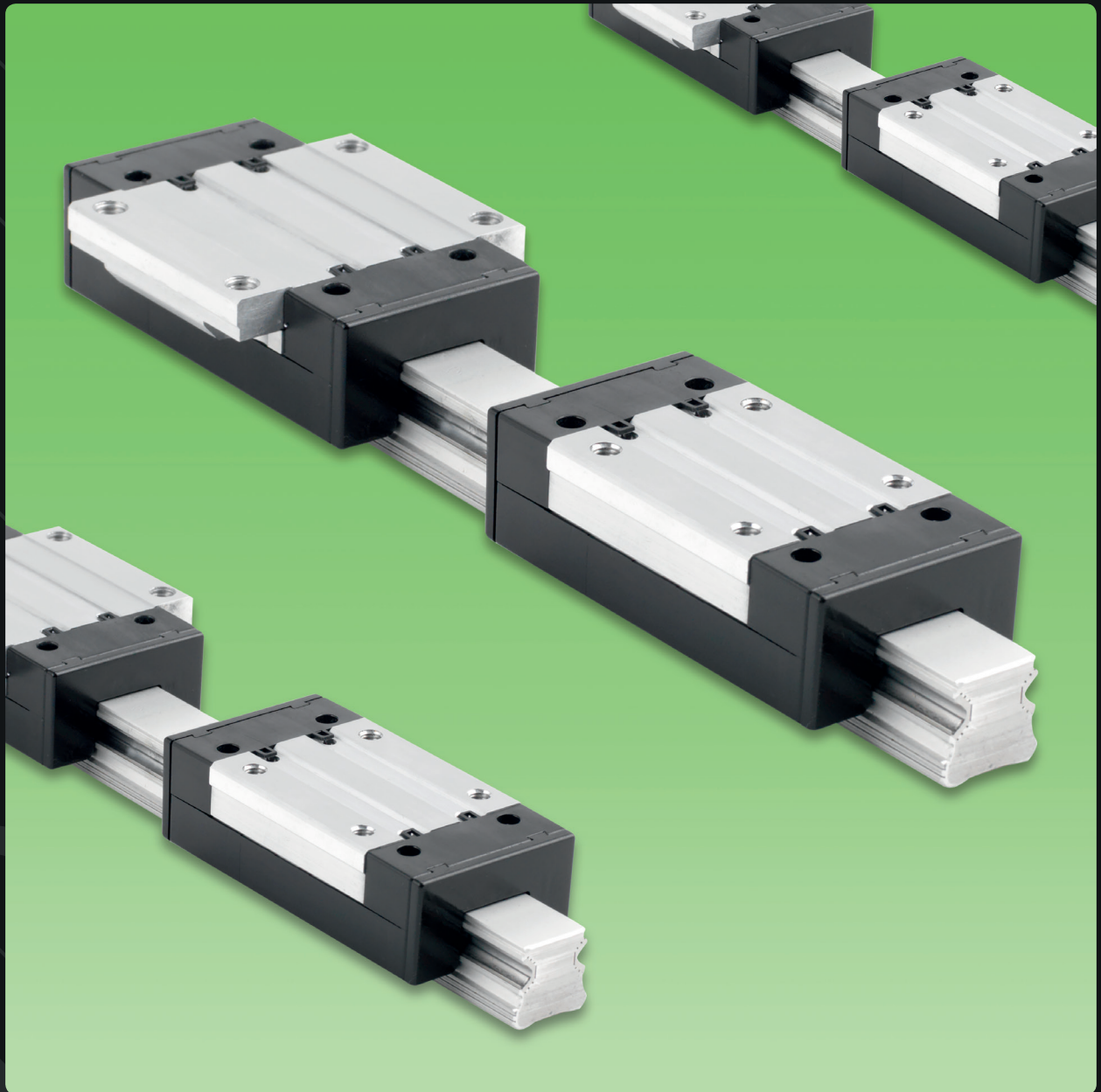


# LINEAR ALUMINIUM RAIL



**ROLLCO**

SPECIALIZED  
ON LINEAR MOTION

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**CLIMATE  
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PAPER**



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## 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.

There are two versions of 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.

## Performance Characteristics

- Compact, light-weight design with a weight saving of 60% compared to steel versions.
- Same connection dimensions as steel ball rail systems.
- Much greater parallelism and height offsets of mounting bases possible.
- Insensitive to aggressive environment (such as dust, shavings).
- Significantly better corrosion resistance in comparison to the steel versions.
- Runner blocks initially greased in-factory, therefore provided with long-term lubrication.
- Due to ball retainers, 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

## Applications

If you look at the above limits, you will see that a broad area of applications are possible. 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.

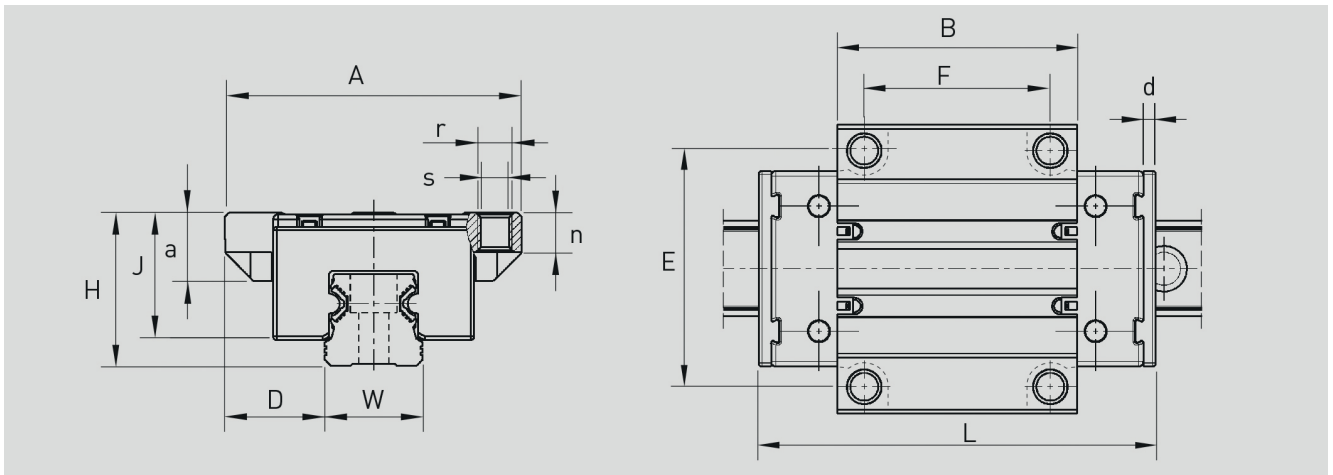
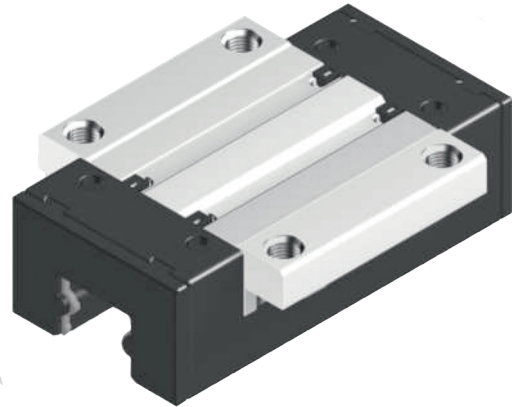
### Our rail guides can not be used in:

- Main axis of a CNC or tooling machine
- Enviroments with aggressive dusts
- Oscillating conveyor
- Unsecured overhead installations etc. (due to danger of life or physical injuries)

# 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.



Article no.	A	H	W	D	L	B	E	F	s	r	n	J	a <sub>max</sub>	d	Weight kg
	mm														
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>	Mt (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

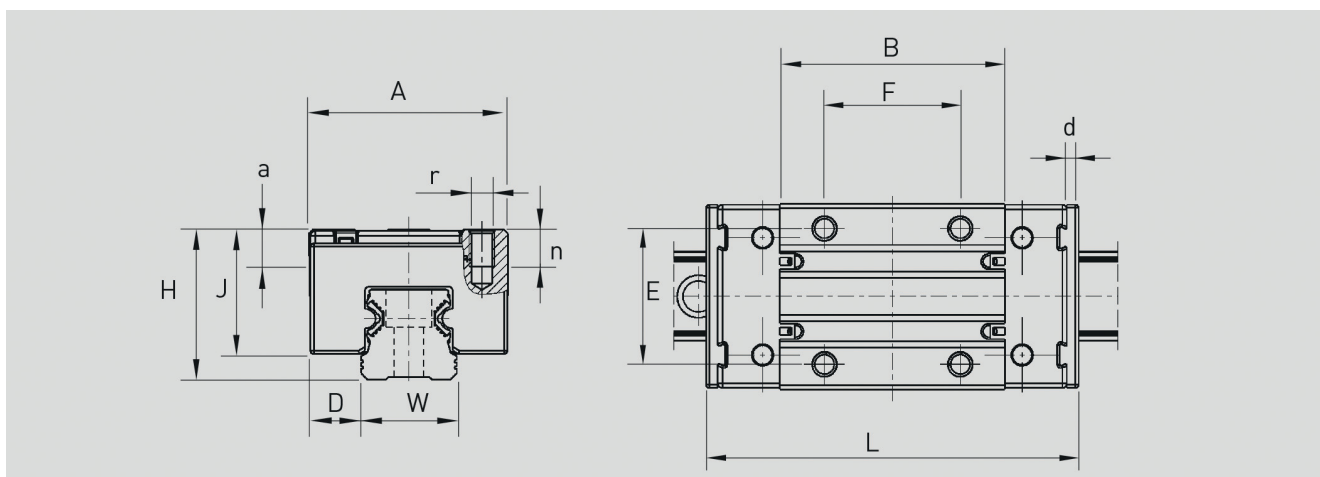
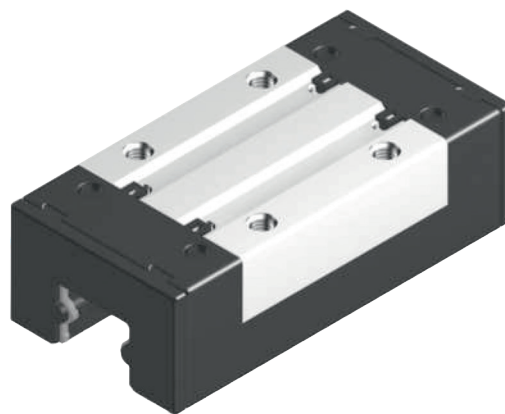
(\*) Determination of the dynamic load capacities and torques is based on a travel life of 100.000 m.

(\*\*) 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.



Article no.	A	H	W	D	L	B	E	F	r	n	J	a <sub>max</sub>	d	Weight kg
	mm													
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>	Mt (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

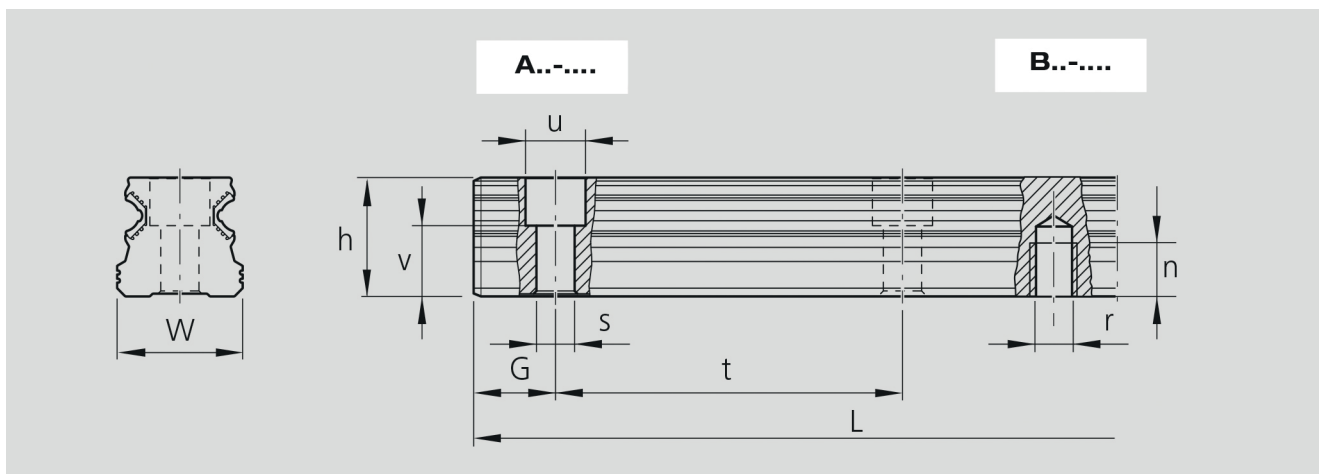
(\*) Determination of the dynamic load capacities and torques is based on a travel life of 100.000 m.

(\*\*) 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.



Article no.	W	h	u	v	s	r	n	t	Lmax	Weight kg
					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

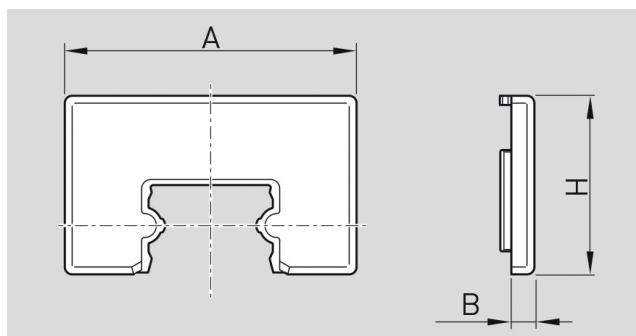
\* Please insert rail lengths in mm. For example: A20-820

## Seal Unit

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

### Instructions for the replacement:

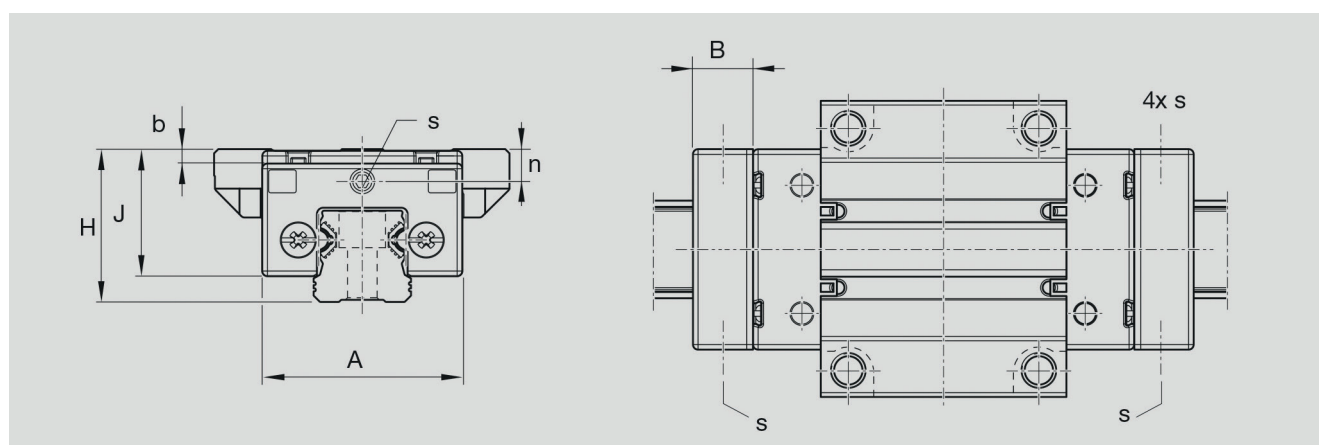
- Assembly with mounted carriage is not possible.
- Pull exchanged seal unit up.
- Insert the new seal unit.
- Push the runner block back on the guide rail.
- Align the seal unit vertically to the guide rail.



Article no.	A	B mm	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.

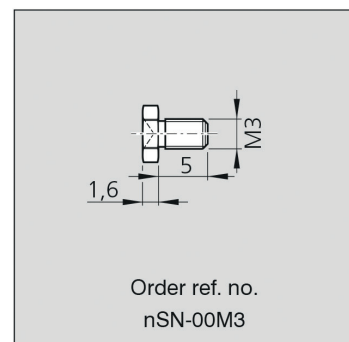
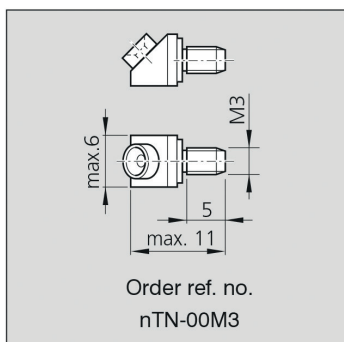


Article no.	Size	A	B	H	J	b	n	s	Oil (cm <sup>3</sup> )	Supplied grease nipple
dsF15	15	31,7	11,5	24	19,4	0,4	4,5	M3	0,65	nSN-00M3
dsF20	20	43,2	15,5	30	24,3	0,4	5	M6	1,35	nGN-00M6
dsF25	23	47,2	17,2	36	30	3,4	7,6	M6	1,70	nGN-00M6

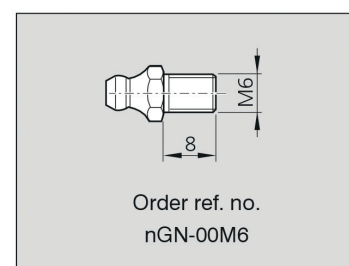
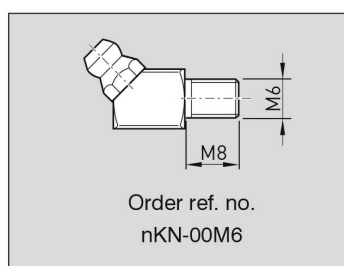


# Lubrication Nipple for Lube Units

## Funnel-type lube nipple for size 15



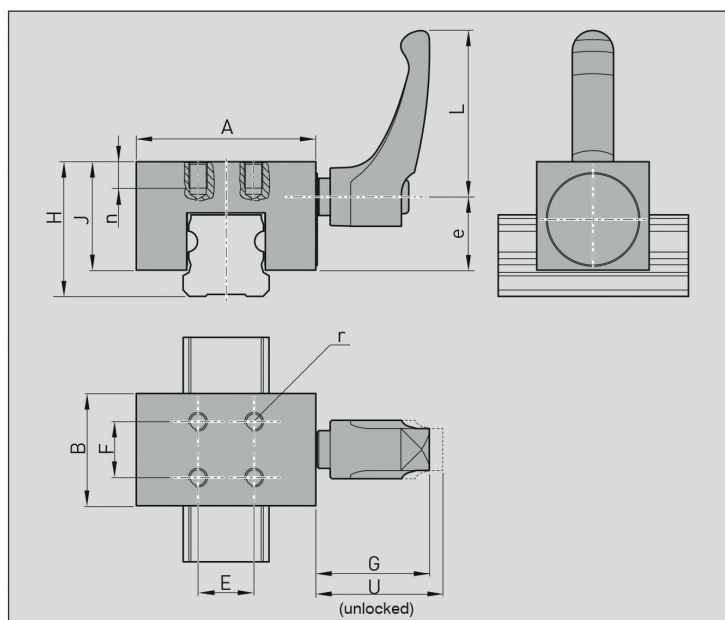
## Hydraulic-type lube nipple for sizes 20 and 25



# Manual Clamping Unit

The manual clamping unit dHK is made of aluminium and plastic.

It fits on both type of rails (A and B).



Article 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

# Technical Information

## Accuracy

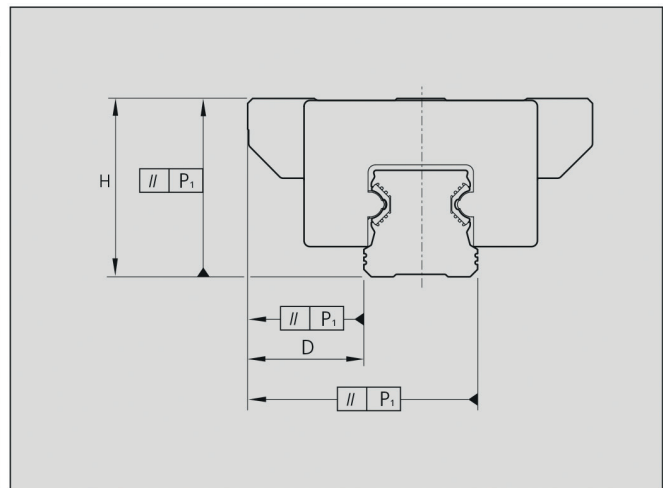
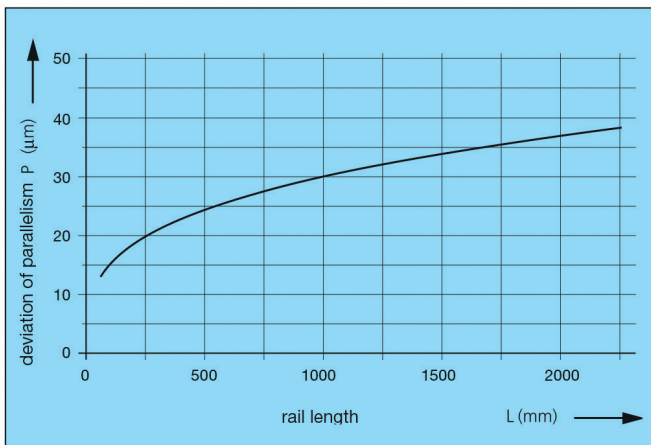
The carriage and the rails are produced with high precision, so that non preloaded carriages can be replaced by another anytime. The following values are valid for the stocked types in the dimensions tables in the product range section of this catalogue.

### 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).

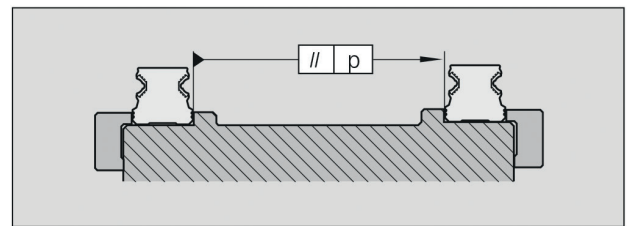
# Mounting Instructions

## 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 $P_{max}$	
	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.

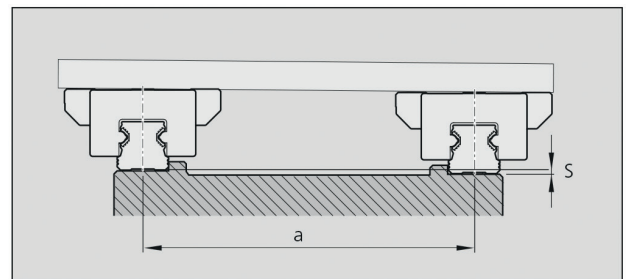
Permissible height deviation in lateral direction "S"

$$S \leq a \cdot f$$

S = Permissible height deviation (mm)

a = Distance between rails (mm)

f = Calculation factor



Calculation factor

f

Standard

$1,2 \cdot 10^{-3}$

Preload

$0,75 \cdot 10^{-3}$

## Permissible Height Deviation in Longitudinal Direction

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

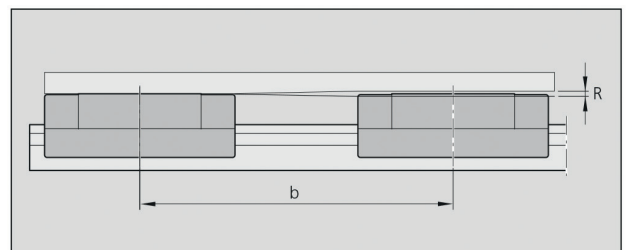
Permissible height deviation in longitudinal direction "R"

$$R \leq b \cdot g$$

R = Permissible height deviation (mm)

b = Distance between runner blocks (mm)

g = Calculation factor



Calculation factor

g

Standard

$6 \cdot 10^{-4}$

Preload

$2,1 \cdot 10^{-4}$

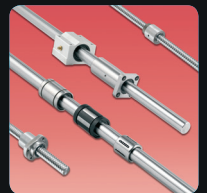
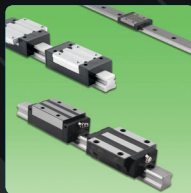
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