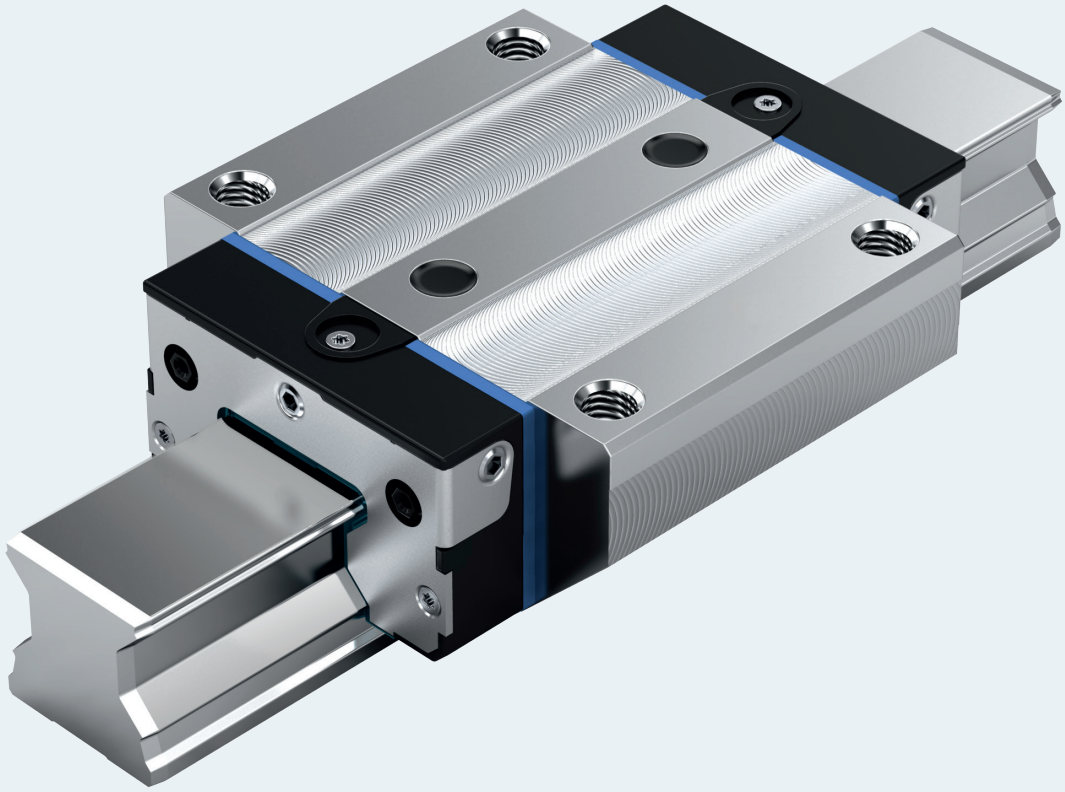
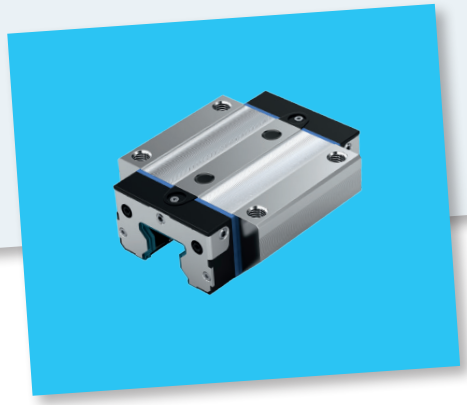
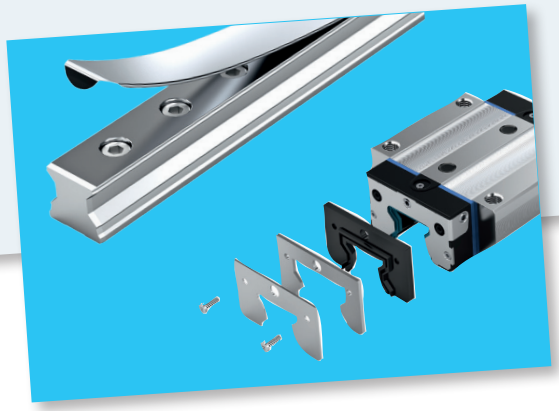
rexroth
A Bosch Company

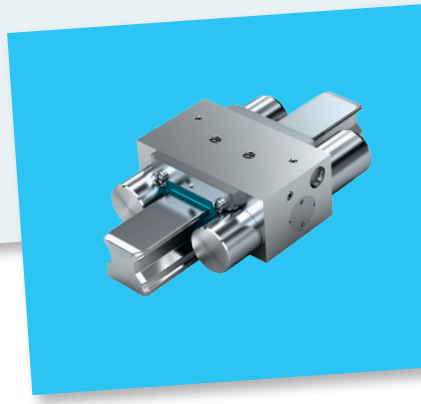
# Roller rail systems

## Roller runner blocks, roller guide rails, accessories









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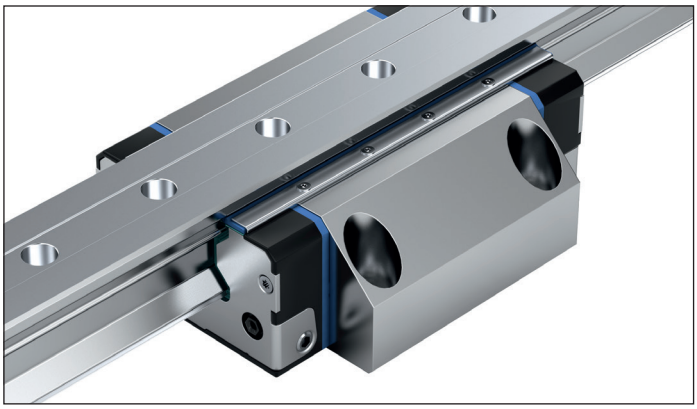
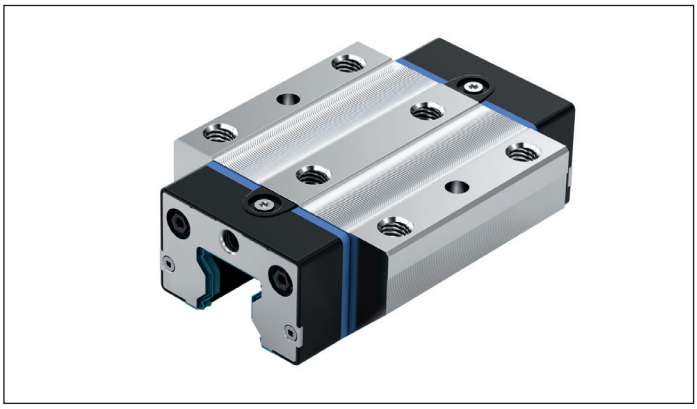
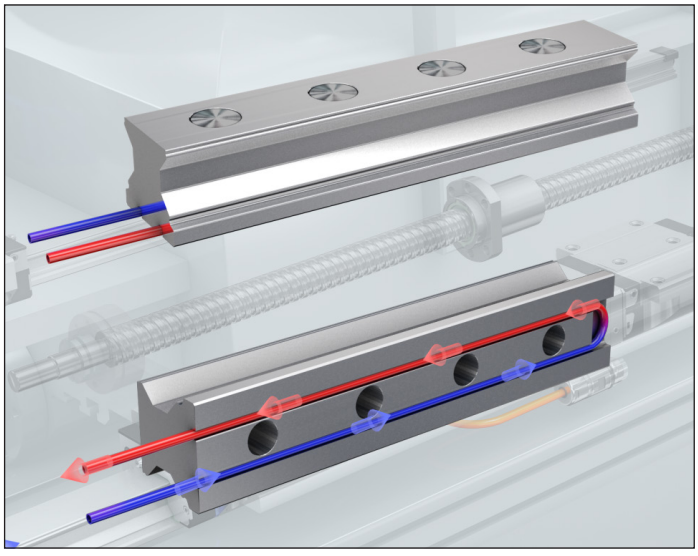
# New features at a glance



**Longitudinal seal AS**



**Size 25 RSHP available**



**Roller guide rail with temperature control**

# Product description

Rexroth roller rail systems have been developed in particular for machine tools, industrial robots, general machine building etc., which require the compact, roller-mounted longitudinal guides in various accuracy classes with a very high load capacity and high rigidity.

## Characteristic features

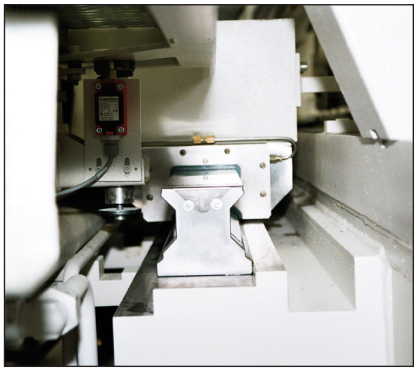
Standard roller rail systems are suitable for all typical applications. The extremely compact assembly units in many common sizes have the same high load capacity in all four main directions of loading.
Standard roller runner blocks are also available for special installation, usage and environmental conditions of use.
Suitable heavy-duty roller rail systems are available for heavy machine construction.

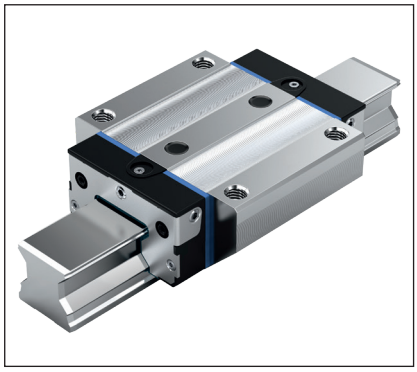
**Complete guide units can also be designed by combining interchangeable elements from stock**
Roller guide rails and roller runner blocks are manufactured by Rexroth with such high precision that each element is fully interchangeable. As a result they can be combined as required.
Each element can be individually planned and separately stocked. Both sides of the roller guide rail can be used as reference edges.
Accessories can be screwed down to the end-face of the roller runner block.

## Further highlights

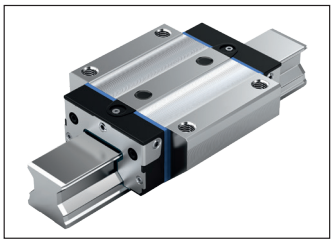
- Uniform roller guide rails with and without cover strips allow limitless interchangeability across all roller runner block variants
- Lube nipples possible on all sides for easy maintenance
- Low lubrication quantities thanks to innovative channel design
- Quiet running thanks to optimally designed roller return and guideway
- Attachments on the roller runner block can be mounted from above and below
- Maximum rigidity in all load directions due to additional screw connections on two bore holes in the center of the roller runner block
- High torque load capacity
- Lowest elastic deflection and greatest precision in the process due to the further optimized entry-zone geometry and high number of rollers (formulated in an enhanced manner)
- The roller runner block is simply slid onto the rail with the transport lock.
- Integrated all-round sealing as standard

**Optional**
- Corrosion-resistant roller runner blocks and roller guide rails in Resist CR, hard chrome plated, available in accuracy class H and in accuracy classes P and SP on request.

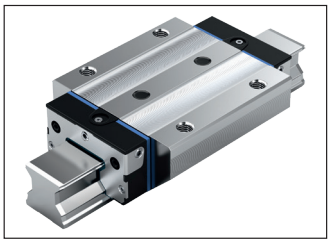




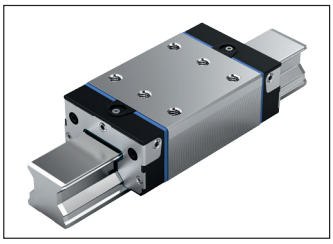
# Formats



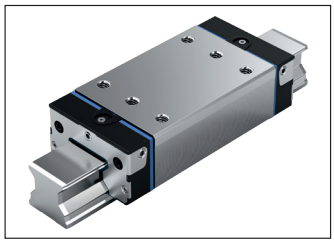
**FNS – Flanged, normal, standard height**



**FLS – Flanged, long, standard height**



**SNS – Slimline, normal, standard height**



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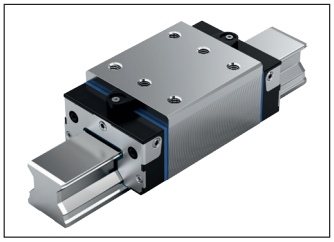
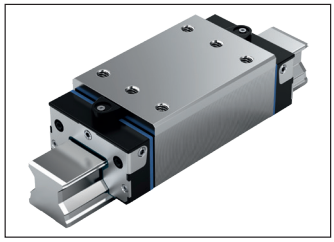
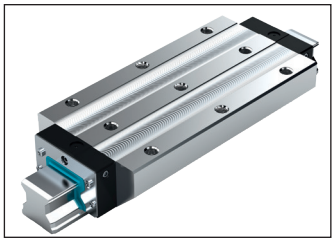


**SNH – Slimline, normal, high**



**SLH – Slimline, long, high**



**FXS – Flanged, extra long, standard height**

**Definition of the format of roller runner blocks**

| Criterion | Designation | Code (example) | | |
|---|---|---|---|---|
| | | **F** | **N** | **S** |
| **Width** | **F**lange | F | | |
| | **S**limline | S | | |
| **Length** | **N**ormal | | N | |
| | **L**ong | | L | |
| | E**x**tra long | | X | |
| **Height** | **S**tandard height | | | S |
| | **H**igh | | | H |

**Format with flange –**
**Design for mounting from above and below**

**Narrow format –**
**Design for mounting from above**

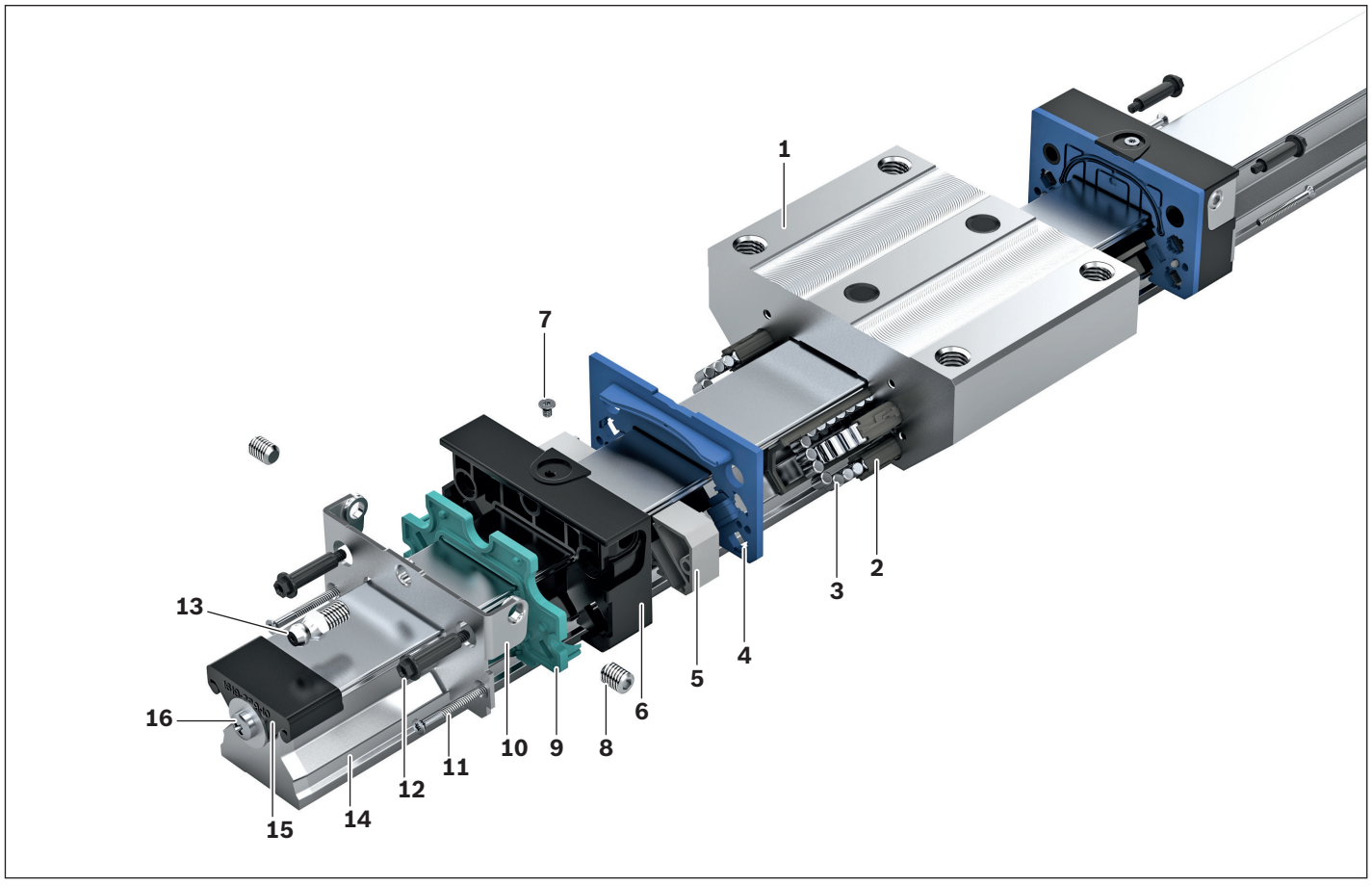
**Definition of the format of roller guide rails**

| Criterion | Designation | Code (example) | | |
|---|---|---|---|---|
| | | **S** | **N** | **S** |
| **Width** | **S**limline | S | | |
| **Length** | **N**ormal | | N | |
| **Height** | **S**tandard height | | | S |
| | **O** Without groove | | | O |

**Roller guide rail with the proven cover strip for covering mounting holes**

- One cover for all bore holes saves time and costs
- Made of stainless spring steel as per DIN EN 10088
- Easy and safe during mounting
- Clip on and secure

# Structure and attachments




**Components and their materials**

| Position | Component | Roller runner block | | Roller guide rails | |
|---|---|---|---|---|---|
| | | Steel | Resist CR | Steel | Resist CR / CR II |
| 1 | Roller runner block | Heat-treated steel | Hard chrome-plated heat-treated steel | | |
| 2 | Return channel | Plastic | Plastic | | |
| 3 | Cylinder rollers | Anti-friction bearing steel | Anti-friction bearing steel | | |
| 4 | Diversion plate | Plastic | Plastic | | |
| 5 | Diversion component | Plastic | Plastic | | |
| 6 | Roller guide | Plastic | Plastic | | |
| 7 | Screw plug | Carbon steel | Carbon steel | | |
| 8 | Set screw | Corrosion resistant steel | Corrosion resistant steel | | |
| 9 | Sealing plate | Plastic | Plastic | | |
| 10 | Threaded plate | Corrosion resistant steel | Corrosion resistant steel | | |
| 11 | Oval-head screws | Corrosion resistant steel | Corrosion resistant steel | | |
| 12 | hexagonal screws | Carbon steel | Carbon steel | | |
| 13 | Lube nipple | Carbon steel | Carbon steel | | |
| 14 | Roller guide rail | | | Heat-treated steel | Hard chrome-plated heat-treated steel |
| 15 | Protective cap | | | Plastic | Plastic |
| 16 | Screw/disc | | | Corrosion resistant steel | Corrosion resistant steel |

# General notes

- Combinations of different accuracy classes

When combining roller guide rails and roller runner blocks of varying accuracy classes, the tolerances for the dimensions H and A3 change. See "Accuracy classes and their tolerances."

# Intended use

- The roller rail systems are linear guideways capable of absorbing forces from all transverse directions and moments about all axes. The roller rail system is intended exclusively for guiding and positioning tasks when installed in a machine.
- The product is intended exclusively for professional use and not for private use.
- Use for the intended purpose also includes the requirement that users must have read and understood the related documentation completely, in particular the "Safety Instructions".

# Misuse

Use of the product in any other way than as described under "Intended use" is considered to be misuse and is therefore not permitted. If unsuitable products are installed or used in safety-critical applications, this may lead to uncontrolled operating statuses in the application which can cause personal injury and/or damage to property.
The product may only be used in safety-critical applications if this use has been expressly specified and permitted in the product documentation.
Bosch Rexroth AG will not accept any liability for injury or damage caused by misuse of the product. The risks associated with any misuse of the product shall be borne by the user alone.
Misuse of the product includes:

- The transport of persons

# General safety instructions

- The safety rules and regulations of the country in which the product is used must be observed.
- All current and applicable accident prevention and environmental regulations must be adhered to.
- The product may only be used when it is in technically perfect condition.
- The technical data and environmental conditions stated in the product documentation must be complied with.
- The product must not be put into service until it has been verified that the final product (for example a machine or system) into which the product has been installed complies with the country-specific requirements, safety regulations and standards for the application.
- Rexroth roller rail systems may not be used in zones with potentially explosive atmospheres as defined in the ATEX directive 94/9/EC.
- Rexroth roller rail systems must never be altered or modified. The user may only perform the work described in the "Quick User Guide" or the "Mounting instructions for roller rail system".
- The product is never allowed to be disassembled.
- At high travel speeds a certain amount of noise is caused by the product. If necessary, appropriate measures should be taken to protect hearing.
- The special safety requirements for specific sectors (e.g. crane construction, theaters, food technology) set forth in laws, directives and standards must be complied with.
- In all cases, the provisions of the following standard should be noted and followed. DIN 637, Safety regulations for dimensioning and operation of profiled rail systems with recirculating rolling elements.

# Directives and standards

Rexroth roller rail systems RSHP guides are designed for reliability and high precision in dynamic, linear applications. The machine tool industry and other sectors must observe a series of standards and directives. These requirements can vary significantly worldwide. It is therefore essential to understand the legislation and standards that apply in each particular region.

**DIN EN ISO 12100**

This standard describes the safety of machinery – general principles for design, risk assessment and risk reduction. It gives a general overview and contains a guide to the major developments governing machines and their intended use.

**Directive 2006/42/EC**

The European Machinery Directive describes the basic safety and health requirements for the design and manufacture of machinery. The manufacturer of a machine or his authorized representative has a duty to ensure that a risk assessment has been performed in order to determine the health and safety requirements which have to be fulfilled for that machine. The machine must be designed and built taking into consideration the results of the risk assessment.

**Directive 2001/95/EC**

This directive covers general safety requirements for any product placed on the market and intended for consumers, or likely to be used by consumers under reasonably foreseeable conditions, including products that are made available to consumers in the context of service provision for use by them

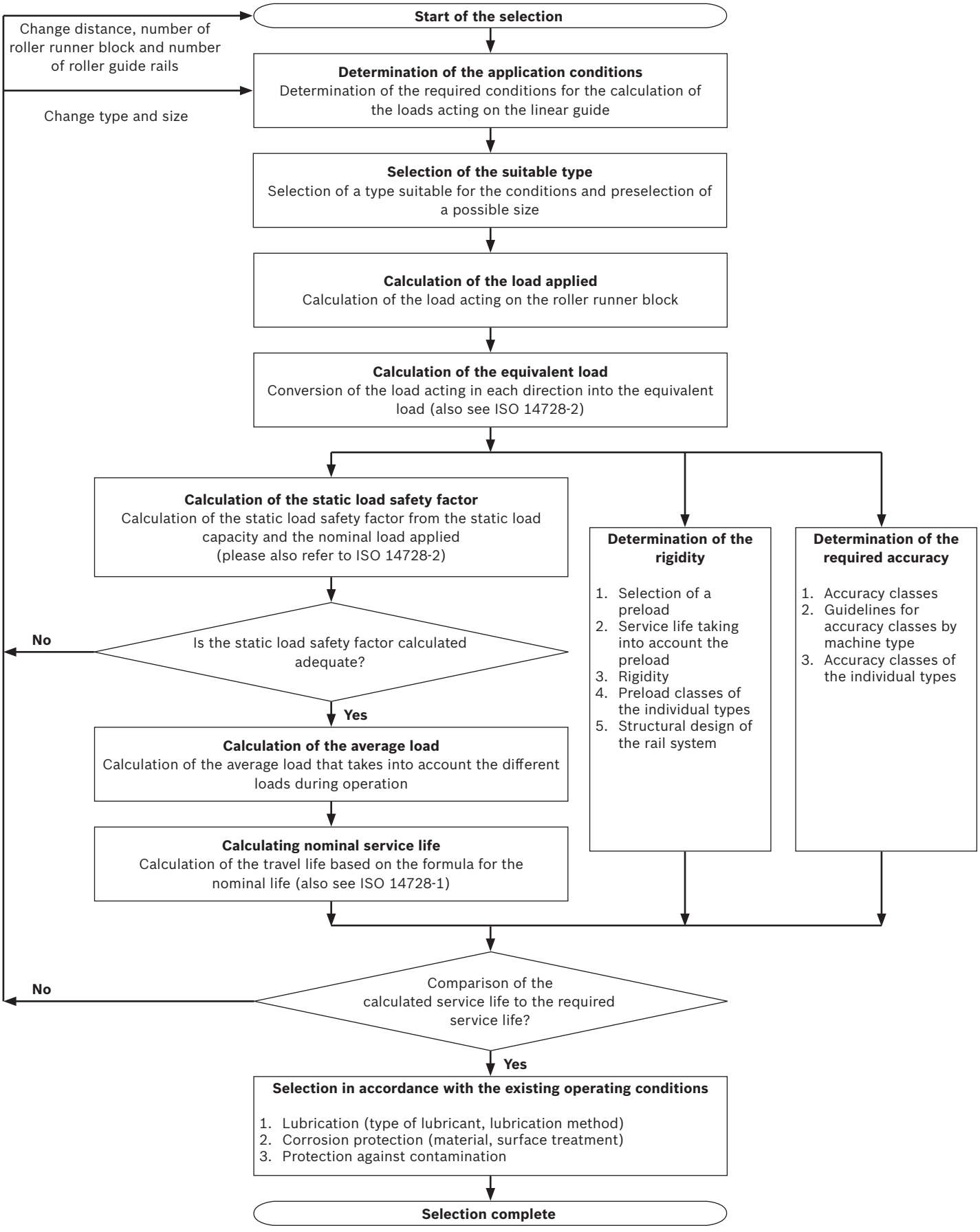
**Directive 1999/34/EC**

This directive concerns the liability for defective products and applies to industrially manufactured movable objects, irrespective of whether or not they have been incorporated into another movable or immovable object.

**REGULATION (EC) No. 1907/2006 (REACH)**

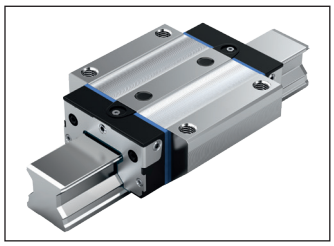
This regulation relates to restrictions on the marketing and use of certain dangerous substances and preparations. "Substances" means chemical elements and their compounds as they occur in the natural state or as produced by industry. "Preparations" means mixtures or solutions composed of two or more substances.

# Selection of a linear guide according to DIN 637



# Product description of high-precision version

## Formats of high-precision roller runner blocks



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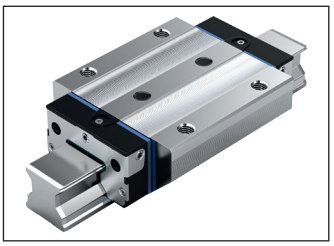

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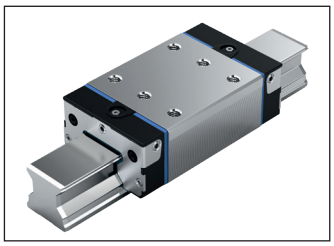

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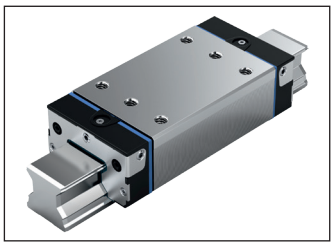

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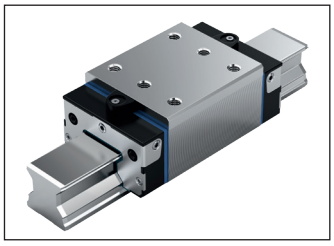

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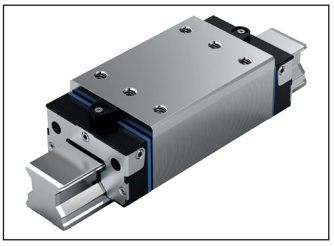
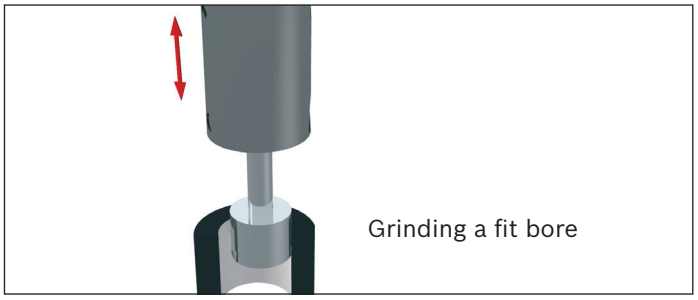


**SLH – Slimline, long, high**

## Application examples

**Rexroth high-precision roller runner blocks are particularly suited for the following applications:**

Grinding

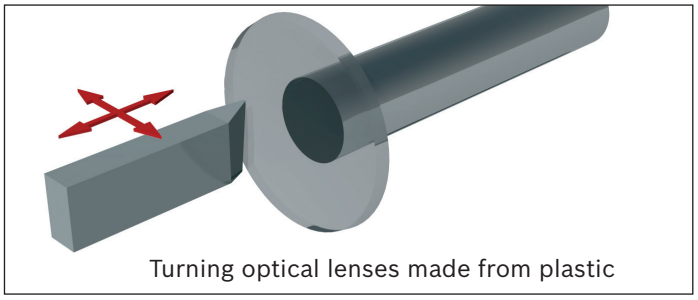



Internal cylindrical grinding

Milling


Hard milling

Turning




High-precision turning

These are only a few examples. Naturally, other applications can be realized. Feel free to ask any questions that you may have.
We have an appropriate solution.

# Product description of high-precision version

## Highlights

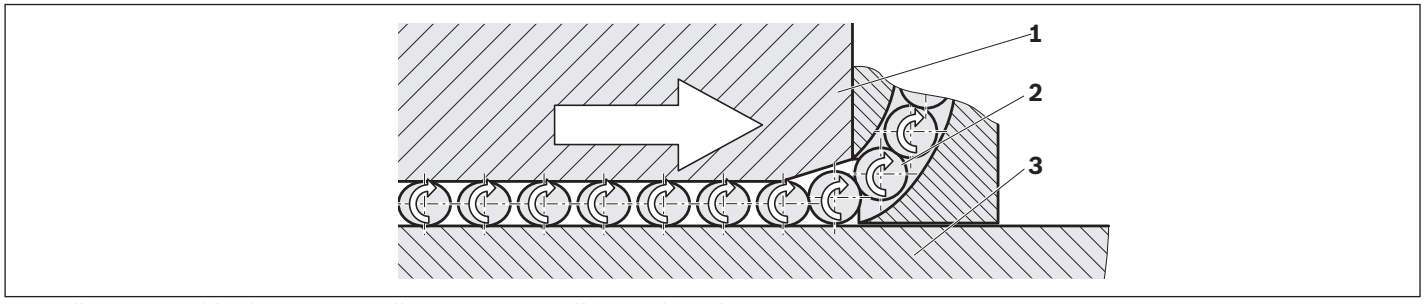
- Improved travel accuracy
- Significantly reduced frictional oscillations and low friction force level, particularly under external load
- Maximum precision
- Selected qualities
- The minimum amount preservation minimizes the impairment of the environment by the preserving agent.
- Optimize entry zones increases the discharge accuracy.

# Compare:

## Conventional roller runner block

If the roller runner block comprises of a conventional entry zone, this may only be designed for a specific load point.

**Entry-zone geometry for conventional roller runner block**




**1** Roller runner block **2** Rollers **3** Roller guide rail

**Roller entry**

- The rollers are guided up to the start of the entry zone via the roller deflection.
- If the distance between the roller runner block (1) and the roller guide rail (3) is smaller than the roller diameter, the roller (2) is put under load (preload) in pulses.
- The preload is increased in the entry zone and reaches its maximum in the load bearing zone. By doing so, the roller transmits its force from the roller runner block to the roller guide rail.
- Due to the kinematic and geometric relations, a distance between the individual rollers is set.

**Entry zone**

The conventional roller runner blocks comprise of a fix entry zone. The depth of the entry zone shall be suitable for a high load, since a fault-free roller entry is to be guaranteed under very high loads, as well.

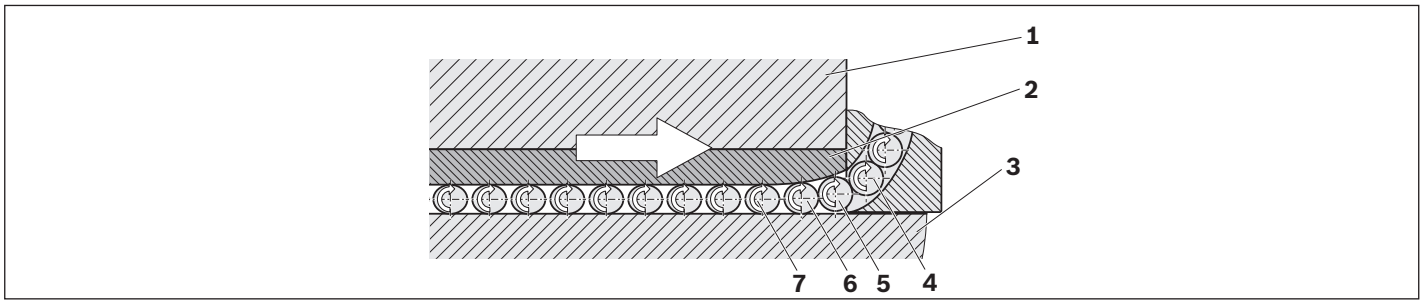
- On the one hand, as many load-bearing rollers as possible should be in the roller runner block in order to reach an ideal load-carrying capacity.
  ⇒ Entry zone as short as possible
- On the other hand, the load during the entry of the rollers should be increased as slowly as possible and thus in a harmonic manner in order to reach the maximum of the geometric travel accuracy.
  ⇒ Entry zone which is as flat (long) as possible

There is a conflict of aims between short and long entry zones.

## High-precision roller runner block

**New entry-zone geometry for roller runner block in high-precision version**

The roller runner block in high-precision version comprise of an innovative entry zone. This allows the rollers to enter the load-bearing zone harmonically, i.e. without any impulse loads.




**1** Roller runner block
**2** Steel bearing plate
**3** Roller guide rail
**4 – 7** Rollers

**Roller entry**

- The rollers (4) are guided up to the start of the entry zone via the roller deflection.
- The roller (5) can be entered.
- If the distance between the steel load-bearing plate and the roller guide rail is smaller than the roller diameter, the roller is put under load again slowly and evenly (preload).
- The preload is increased harmonically until the rollers (7) have reached their maximum preload.

**Innovative solutions by Rexroth:**

**The optimized entry zone**

The functionality of the entry zone is decisive. The steel bearing plates are manufactured with such precision that they can withstand increasing load as curvature becomes more convex. Thus, the rollers can enter particularly smoothly.
The rollers thus no longer crash their way into the load-bearing zone through an oblique entry zone, rather transition smoothly on a tangential, ideally angled elastic line into the load-bearing zone.
The smooth entry of the rollers and the optimized adaptation of the entry zone to the load represent a decisive benefit of the high-precision roller runner blocks.

**Characteristic features**

**1** Maximum travel accuracy
**2** Reduced friction force oscillations
**3** The conflict of aims is resolved

# Product description of high-precision version

## Fluctuation of friction forces

### Definition

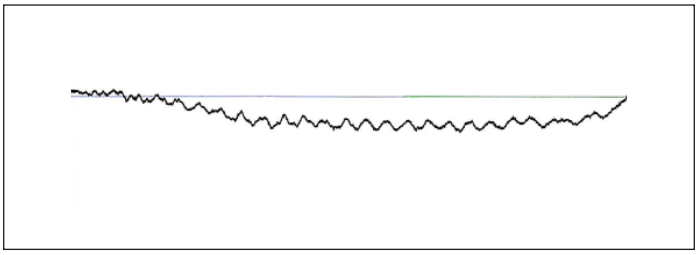
The overall driving force of a roller runner block consist of the following components:

**1** Roller friction
**2** Sealing friction
**3** Friction in the roller deflections and roller returns

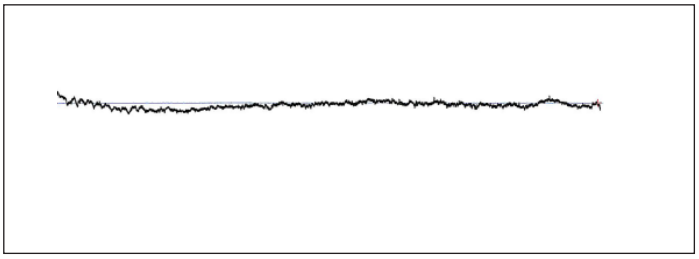
In operation, the fluctuations of the friction force can be particularly disturbing.

**These fluctuations are essentially impacted by the following effect:**
The rollers need to be inserted into the loaded load-bearing zone from the load-free zone. The harmonic entry zone and the optimized roller entry are used to reduce the fluctuations to a minimum, which means that the linear drive will also be easier to control

**Conventional roller runner block**



**High-precision roller runner block**



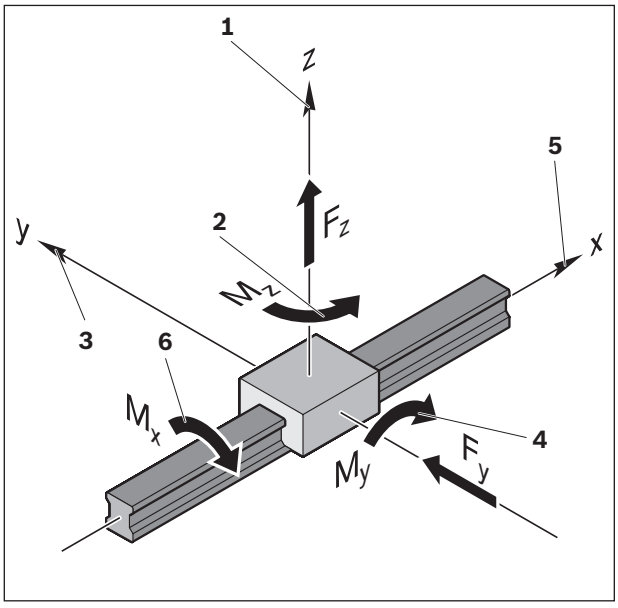
## Travel accuracy

### Definition

In an ideal case, a roller runner block moves transitively in relation to the x-axis over the roller guide rail. In practice, however, deviations occur in all six degrees of freedom. The term travel accuracy describes the deviation from this ideal line.

**Six different degrees of freedom**

**1** Height deviation (linear deviation in Z)
**2** Yaw (rotary motion around Z)
**3** Side deviation (linear deviation in Y)
**4** Pitching (rotary motion around Y)
**5** Translation (linear movement in X)
**6** Rollers (rotary motion around x)




### Causes of travel inaccuracy

The Travel inaccuracy is impacted by the following points.
1. Inaccurate mounting base on which the roller guide rail is mounted.
2. Parallelism between the contact areas of the roller guide rail and the running tracks.
3. Elastic deformations of the roller guide rail by the mounting screws.
4. Accuracy fluctuations caused by the rollers entering and exiting.

### Potential for optimization

With respect to 1: Contact surfaces of the roller guide rails should be produced as precisely as possible (outside of the scope of influence of Rexroth).
With respect to 2: Any deviation should be equalized by the selection of the accuracy class of the roller guide rail.
With respect to 3: Reduce the tightening torque. The tightening torque of the fastening screws has a proportional impact. A reduction of the tightening torque decreases the compressive strain of the rail material.
⇒ Lower geometric process fluctuations

⚠ NOTE: With this measure, the transferable forces and moments can be reduced.

With respect to 4: The optimized entry zone of Rexroth - high-precision roller runner blocks reduces the speed fluctuations to a minimum.

Further potential for improvements:

- Use of long roller runner blocks
- Installation of additional roller runner blocks for each roller guide rail.

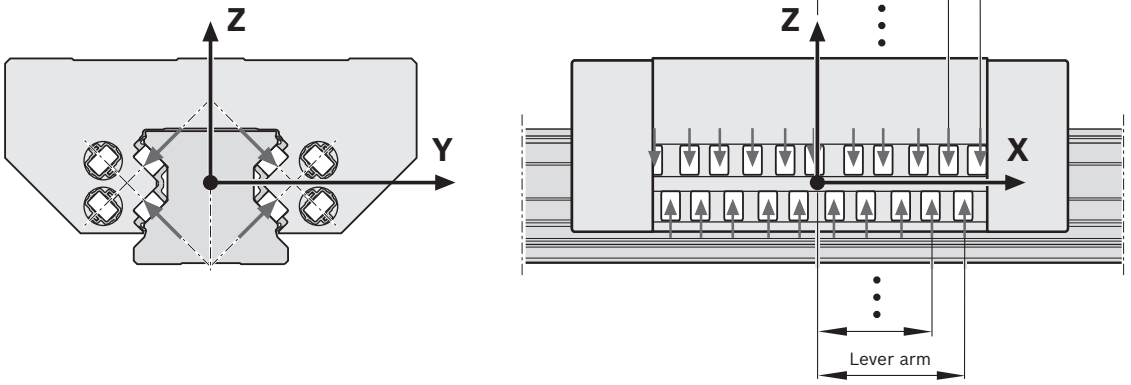
# Product description of high-precision version

**The measured deviations have the following cause**

A roller circulation contains a number n of supporting rollers which are under load. If the roller runner block is moved into the direction of travel, via the entry zone, a new roller enters the load-bearing zone and n + 1 roller are supporting. Thus, the internal balance of the four supporting rollers is disturbed. The roller runner block enters a rotational movement since the rollers can arbitrarily enter the supporting roller lines. In order to restore the balance, the roller runner block is moving into a new balance position. If the roller runner block is moved further, a supporting roller exits the load-bearing zone at the roller exit. Thus, the internal balance of the four supporting roller lines is disturbed again and the roller runner block enters a rotational movement.
The effect can be clearly seen in the right-hand diagram.

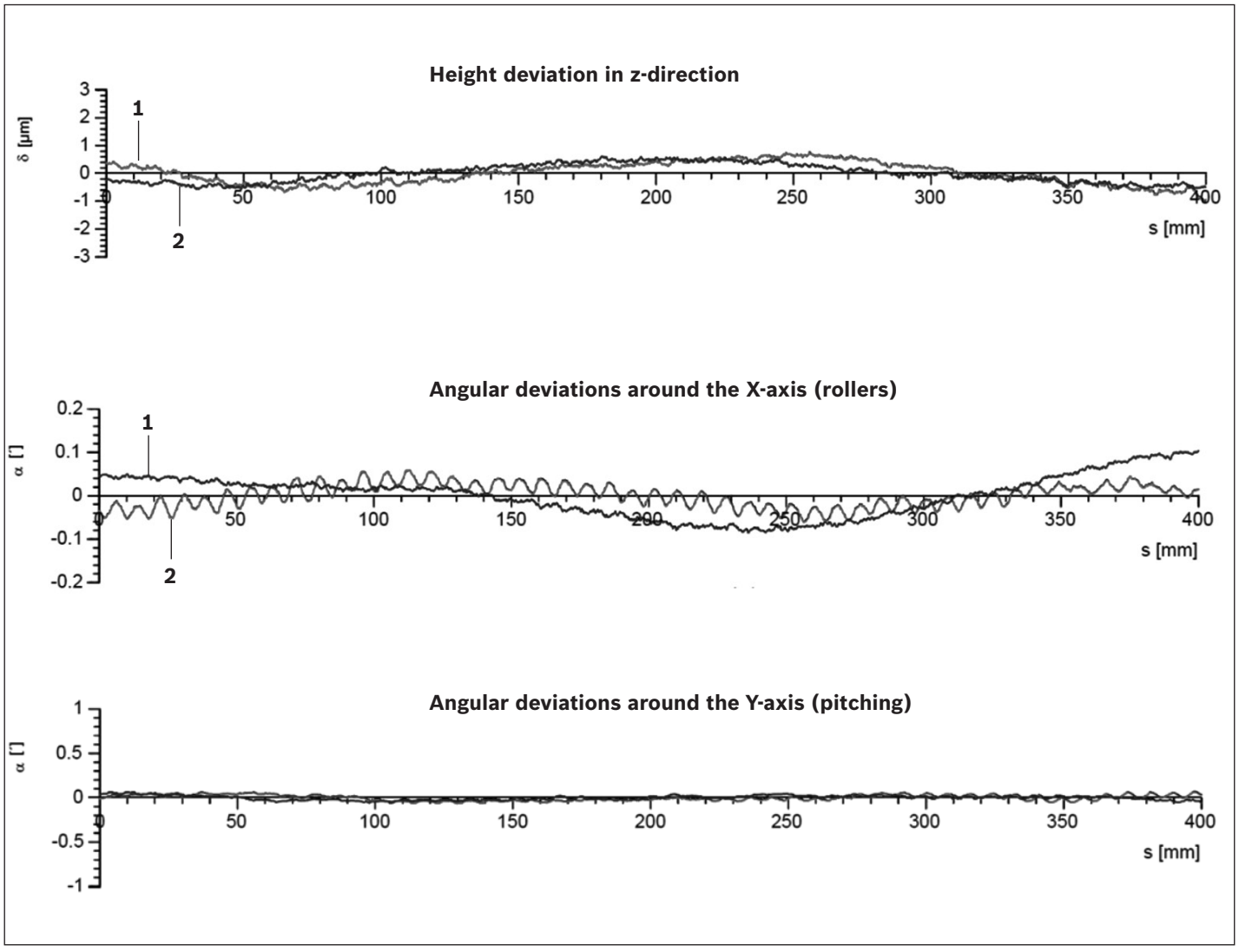
As it has been verified in practical applications, the period of short-wave inaccuracies roughly corresponds to twice the roller diameter.
The remaining long-wave deviation is caused by the described causes 1, 2 and 3 (inaccurate support, parallelism errors and elastic deformation of the roller guide rails due to the fastening screws).

**Force distribution in the roller runner block**



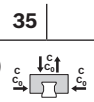
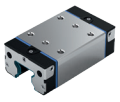
**Direct comparison of the sequence accuracy of two roller runner blocks**

It can be clearly seen that the short-wave inaccuracy can be significantly reduced by the new optimized design of the entry zone.




**1)** High-precision version
**2)** Conventional version

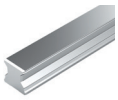
# Product overview of roller runner block with load ratings

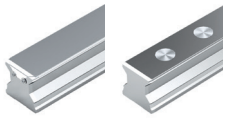
| Roller Runner Block | | | | Page | Size | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 25 | 35 | 45 | 55 | 65 | 100 | 125 |
| | | | | | Load capacities[1] (N)  | | | | | | | |
| **Standard roller runner block made of steel** |  | FNS | R1851 ... 2. | 54 | **C** | 26900 | 61000 | 106600 | 140400 | 237200 | | |
| | | | R1851 ... 7. Resist CR | 66 | **$C_0$** | 59500 | 119400 | 209400 | 284700 | 456300 | | |
| |  | FLS | R1853 ... 2. | 56 | **C** | 33300 | 74900 | 132300 | 174000 | 295900 | | |
| | | | R1853 ... 7. Resist CR | 66 | **$C_0$** | 76400 | 155400 | 276400 | 374900 | 606300 | | |
| |  | SNS | R1822 ... 2. | 58 | **C** | 26900 | 61000 | 106600 | 140400 | 237200 | | |
| | | | R1822 ... 7. Resist CR | 66 | **$C_0$** | 59500 | 119400 | 209400 | 284700 | 456300 | | |
| |  | SLS | R1823 ... 2. | 60 | **C** | 33300 | 74900 | 132300 | 174000 | 295900 | | |
| | | | R1823 ... 7. Resist CR | 66 | **$C_0$** | 76400 | 155400 | 276400 | 374900 | 606300 | | |
| |  | SNH | R1821 ... 2. | 62 | **C** | 26900 | 61000 | 106600 | 140400 | | | |
| | | | R1821 ... 7. Resist CR | 66 | **$C_0$** | 59500 | 119400 | 209400 | 284700 | | | |
| |  | SLH | R1824 ... 2. | 64 | **C** | 33300 | 74900 | 132300 | 174000 | | | |
| | | | R1824 ... 7. Resist CR | 66 | **$C_0$** | 76400 | 155400 | 276400 | 374900 | | | |

| | | | | | Size | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 25 | 35 | 45 | 55 | 65 | 100 | 125 |
| **Heavy-Duty Roller rrunner Block made of steel** |  | FXS | R1854 10 | 96 | **C** | – | | | | 366800 | – | – |
| | | | | | **$C_0$** | – | | | | 792800 | – | – |
| |  | FNS | R1861 10 | 98 | **C** | – | | | | | 461000 | 757200 |
| | | | R1861 60 Resist CR | 98 | **$C_0$** | – | | | | | 811700 | 1324000 |
| |  | FLS | R1863 ... 10 | 100 | **C** | – | | | | | 632000 | 1020000 |
| | | | R1863 ... 60 Resist CR | 100 | **$C_0$** | – | | | | | 1218000 | 1941900 |

**1)** Determination of the dynamic load capacities and load moments is based on a stroke travel of 100,000 m according to DIN ISO 14728-1. However, often only 50,000 m is actually stipulated. For comparison: Multiply values C, $M_t$ and $M_L$ from the table by 1.23.

# Product overview of roller guide rails with lengths

| roller guide rails | | | | Page | Size 25 | 35 | 45 | 55 | 65 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Rail length (mm) | | | | |
| **Standard roller guide rails made of steel[1] and Resist CR/CRII[3], can be screwed from above** |  with cover strip and strip clamp | SNS SNO | R1805 .3. .. | 70 | 3986 | 3996 | 3986 | 3956 | 3971 |
| | | | R1845 ... .. Resist CR | 82/84 | | | | | |
| |  with cover strip and protective caps | SNS SNO | R1805 .6. .. | 72 | | | | | |
| | | | R1845 ... .. Resist CR/CRII | 82/84 | | | | | |
| |  for cover strip | SNS SNO | R1805 .2. .. | 74 | | | | | |
| | | | R1845 ... .. Resist CR/CRII | 82/84 | | | | | |
| |  with plastic mounting hole plugs | SNS SNO | R1805 .5. .. | 76 | | | | | |
| | | | R1845 ... .. Resist CR/CRII | 82/84 | | | | | |
| |  with steel mounting hole plugs | SNS SNO | R1806 .5. .. | 78 | | | | | |
| | | | R1846 ... .. Resist CR | 82/84 | | | | | |
| **Standard roller guide rails made of steel[2] and Resist CR/CRII[3], can be screwed from below** |  | SNS SNO | R1807 .0. .. | 80 | | | | | |
| | | | R1847 ... .. Resist CR/CRII | 82/84 | | | | | |

| | | | | | 100 | 125 |
|---|---|---|---|---|---|---|
| **Heavy-Duty roller guide rails made of steel** | | SNS | R1835 .6. .. | 102 | 3986 | 2760 |
| | | | R1836 .5. .. | 104 | | |
| with cover strip / with steel mounting hole plugs |  | | R1865 .6. .. Resist CR | 102 | 2500 | 2000 |

**1)** Size 35: also deliverable as one piece up to a length of 5996 mm, size 45: also deliverable as one piece up to a length of 5981 mm, Size 55: also deliverable as one piece up to a length of 5936 mm, size 65: also deliverable as one piece up to a length of 5921 mm,
**2)** Size 35: also deliverable as one piece up to a length of 5996 mm
**3)** Resist CR: roller guide rails made of steel with corrosion-resistant coating in matte-silver or black, hard chrome plated

# General technical data and calculations

## General notes

General technical data and calculations apply to all Roller rail systems, i.e. Roller Runner Blocks and roller guide rails. Specific technical data are listed separately for the individual Roller Runner Blocks and roller guide rails.

## Preload classes

To cover the widest possible range of applications, the Rexroth Roller Runner Blocks (FW) are available in different preload classes.

The following preload classes are available:
- FW with preload class C2
- FW with preload class C3

Risk analysis on request:
- FW with preload class C1, C4, C5

To prevent reductions to the service life, the preload should not exceed 1/3 of the load on bearing F.

In general, the rigidity of the Roller Runner Block rises with increasing preload.

### Guide systems with parallel rails

When choosing the preload class, also pay attention to the permissible parallelism offset of the rails (see "Accuracy class selection criterion").

## Travel speed

$v_{max} = 4^{1)}$ m/s

**1)** Sizes:
65 FXS: 3 m/s
100 and 125 2 m/s

## Acceleration

$a_{max} = 150\ m/s^2$

Requirement:
There must be preload, even during operation under load.

## Operating temperature range

–10 °C ... +80 °C

Up to 100°C is permissible for a short time.
For operation at lower minus temperatures, please consult us.

## Friction

The table contains guideline values for the friction forces of the complete, sealed and oiled Roller Runner Block without connection elements.
When starting up the Roller Runner Block, the friction force may have a value of 1.5- to 2-fold normal, depending on downtime, selection, quantity and state of the lubricant as well as contamination of the Roller Guide Rail. This applies for all Roller Runner Blocks in all preload classes.
The friction coefficient μ amounts to 0.0004 to 0.001 (without the friction of the sealings).

| Size | Friction force $F_R$ (N) | |
|---|---|---|
| | with double-lip seal DS | with longitudinal seal AS |
| **25** | 30 | – |
| **35** | 35 | 80 |
| **45** | 40 | 120 |
| **55** | 45 | 140 |
| **65** | 60 | – |
| **100** | 400[1)] | – |
| **125** | 600[1)] | – |

**1)** The friction is approx. 50 % higher immediately after lubrication.

## Seals

Seals are used to prevent dirt, chips etc. from working their way into the inside of the Roller Runner Block, thereby preventing reductions to its service life.
This also prevents the discharge of lubricant.

### Standard

Seals are fitted at the Rexroth Roller Runner Block by default. They have a uniform sealing effect for roller guide rails with and without cover strips.

### FKM seals

FKM seal are available as additional elements and are mounted by the customer.
They are intended for the use in environments with many fine dirt or metal particles.

- Use in environments with dirt or metal particles and, additionally, cooling and cutting liquids.
- Interchangeable during servicing.

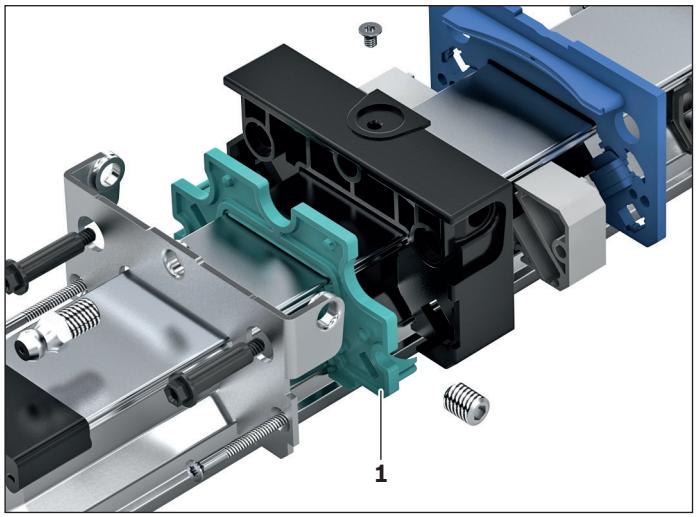
## Cover plate wiper

Cover plate wipers are available as additional elements and are mounted by the customer.

- For the use in environments with hot coarse chips or beads of sweat.

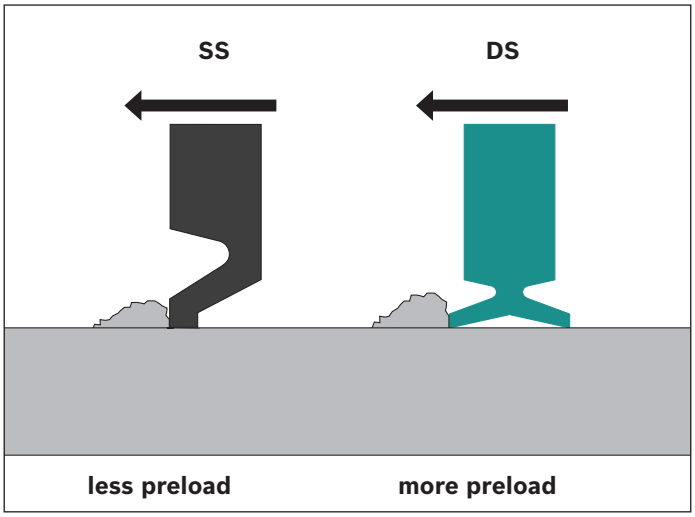
# Seals

The sealing plate on the front side (1) protects the interior of the roller runner block against dirt, chips and fluids. Additionally, it prevents the discharge of lubricant. Due to the optimized form of the sealing lips, the occurring friction is reduced to a minimum. Sealing plates are optionally available with black standard sealings (SS) or green double-lip sealings (DS).

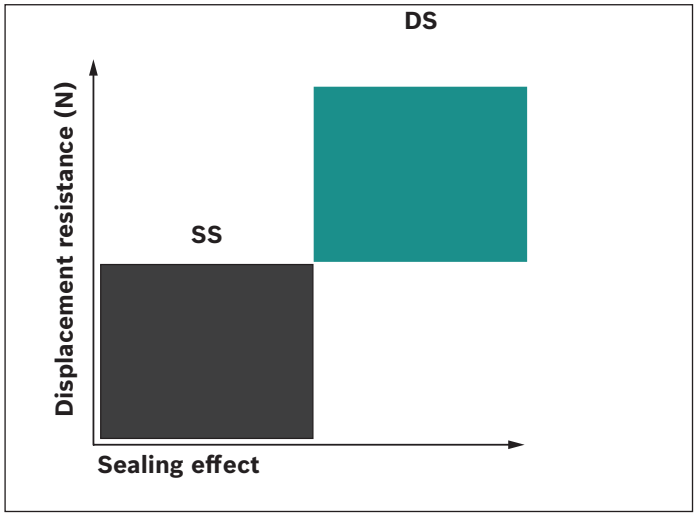



**Double-lip seal DS** (sealing with very good sealing effect)
For applications in which the rail guide is heavily charged with chips, wood dust, cooling lubricants etc., Rexroth recommends the double-lip sealing. It comprises an excellent wiping action but a greater friction force and lower relubrication interval.

**In preparation:**
**Standard seal SS** (universal sealing with good sealing effect)
For most application cases, the standard seal is suitable. It comprises of a good wiping action but also enables long relubrication intervals.

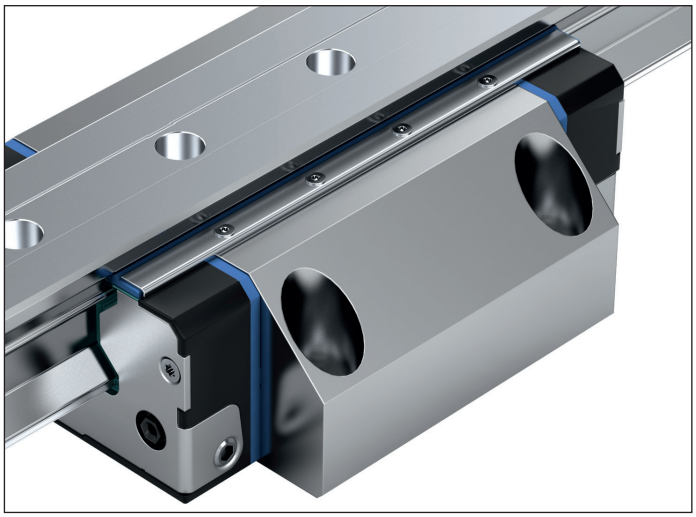



**Sealing effect and displacement resistance**
The displacement resistance can be impacted by the geometry and the material. The diagram shows the effects of different sealing versions on the sealing effect and the displacement resistance.

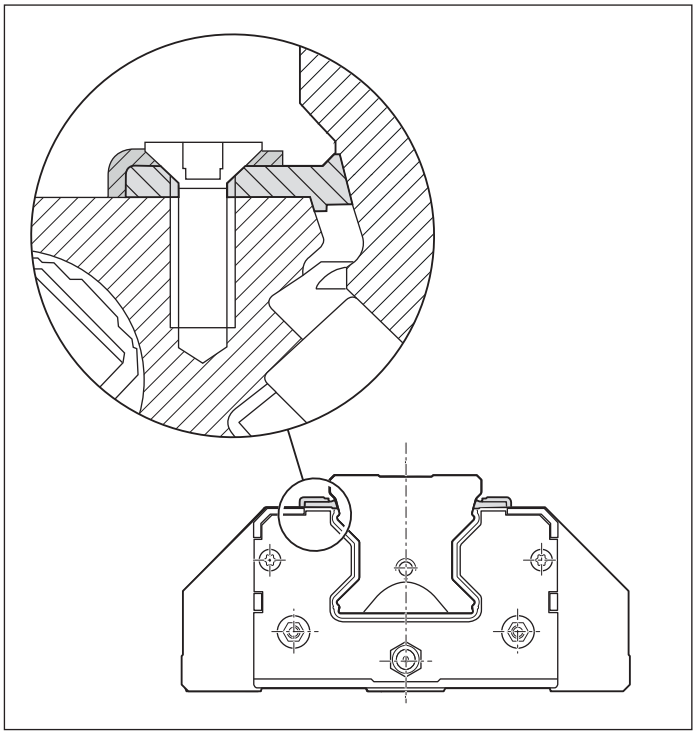


**Longitudinal seal**

- Area of use:
  Installation positions, horizontal over-head and wall installation
- Advantage:
  Early failure of the Runner Block is avoided.
- Sealing lip above the complete Runner Block length (including fins for the front-side sealing)



- Sealing lip with sharp edges for optimizing the friction
- Upright, pre-tensioned sealing lip for a targeted deflection of dirt away from the sealing edge.
- Fixation via retaining plate (screwed)
- Optimum fastener at the Runner Block with 4 screws each
- High level of rigidity and clamping with edged retaining plate



# General technical data and calculations

## Forces and moments

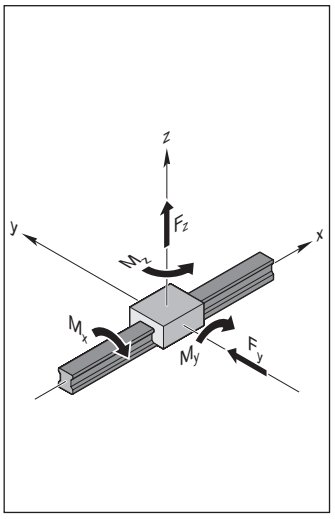
In Rexroth Roller rail systems the tracks are arranged at a pressure angle of 45°. This results in the same high load capacity of the entire system in all four main directions of loading. The Roller Runner Blocks may be subjected to both forces and load moments.

**Forces in the four main directions of loading**

- Tension $F_z$ (positive z-direction)
- Pressure $-F_z$ (negative z-direction)
- Side load $F_y$ (positive y-direction)
- Side load $-F_y$ (negative y-direction)

**Moments**

- Moment $M_x$ (around the y-axis)
- Moment $M_y$ (around the y-axis)
- Moment $M_z$ (around the z-axis)




## Definition of load capacities

**Dynamic load capacity C**

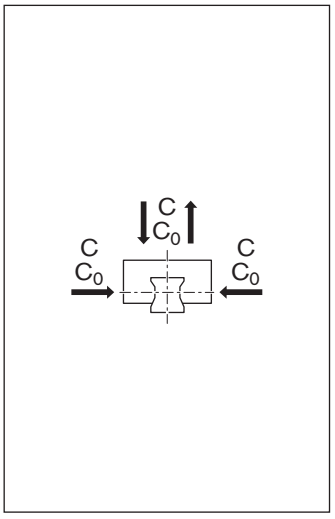
The radial load (whose extent and direction does not change) that a linear anti-friction bearing can theoretically absorb for a nominal life covering $10^5$ m (according to ISO 14728-1).

Note: The dynamic load capacities in the tables are above the ISO values. These values have been confirmed in tests.

**Static load rating $C_0$**

Static load in the load direction that corresponds to a calculated load in the center of the contact point with the greatest load between the rolling element and the track zone (rail) of 4000 MPa.

Note: With this stress at the contact point, permanent overall deformation of the rolling element and the track zone occurs that corresponds to about 0.0001 times the rolling element diameter (according to DIN ISO 14 728-1).




## Definition of load moment capacities

**Dynamic torsional moment load capacity $M_t$**

Comparative dynamic moment around the longitudinal axis x, which causes a load equivalent to the dynamic load capacity C.

**Static torsional moment load capacity $M_{t0}$**

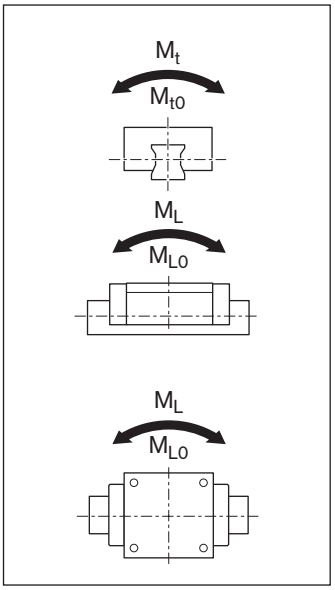
The comparable static moment around the longitudinal axis x, which causes a load corresponding to the static load capacity $C_0$.

**Dynamic longitudinal moment load capacity $M_L$**

The dynamic comparable dynamic moment around the transverse axis y or the vertical axis z that induces a load corresponding to the dynamic load capacity C.

**Static longitudinal moment load capacity $M_{L0}$**

The static comparable dynamic moment around the transverse axis y or the vertical axis z that induces a load corresponding to the static load capacity $C_0$.



## 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 using contemporary, commonly used materials and manufacturer quality under conventional operating conditions (according to DIN ISO 14 728-1).

**Nominal life in meters**

$$(1)\quad L_{10} = \left(\frac{C}{F_m}\right)^{10/3} \cdot 10^5\ m$$

**Service life in operating hours with constant stroke and constant stroke repetition rate**

$$(2)\quad L_{h\,10} = \frac{L_{10}}{2 \cdot s \cdot n \cdot 60}\ h$$

If the stroke length s and the stroke repetition rate n are constant over the total service life, you can use formula (2) to determine the service life in operating hours.

**Nominal service life at variable travel speed**

$$(3)\quad L_{h\,10} = \frac{L_{10}}{60 \cdot v_m}$$

As an alternative, it is possible to use formula (3) to calculate the service life in operating hours using the average travel speed $v_{m.}$.
This average travel speed $v_m$ is calculated with speeds that can be changed on a stepwise basis using discrete time steps $q_{tn}$ of the individual load stages (4).

$$(4)\quad v_m = \frac{|v_1| \cdot q_{t1} + |v_2| \cdot q_{t2} + \ldots + |v_n| \cdot q_{tn}}{100\%}$$

**Modified life expectancy**

$$L_{na} = a_1 \cdot \left(\frac{C}{F_m}\right)^{10/3} \cdot 10^5\ m$$

$$L_{ha} = \frac{L_{na}}{2 \cdot s \cdot n \cdot 60}\ h$$

If a 90 percent requisite reliability is not enough, you must reduce the service life values by a factor of $a_1$ in accordance with the table below.

| Requisite reliability (%) | $L_{na}$ | Factor $a_1$ |
|---|---|---|
| 90 | $L_{10a}$ | 1.00 |
| 95 | $L_{5a}$ | 0.64 |
| 96 | $L_{4a}$ | 0.55 |
| 97 | $L_{3a}$ | 0.47 |
| 98 | $L_{2a}$ | 0.37 |
| 99 | $L_{1a}$ | 0.25 |

**Notes**

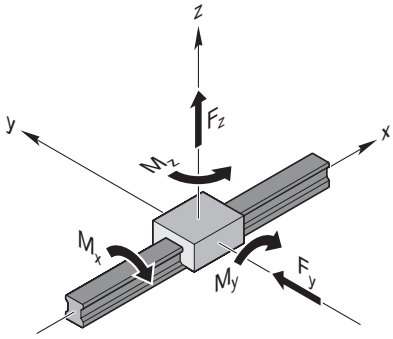
DIN ISO 14728-1 limits the validity of the formula (1) to dynamically equivalent loads $F_m < 0.5$. However, in our tests we verified that under ideal operating conditions this service life formula can be applied up to loads of $F_m = C$. Under some circumstances, with stroke lengths below 2 · Roller Runner Block length $B_1$ (see the dimension tables) a load rating reduction may be required. Please consult us.

# General technical data and calculations

## Load on bearing for calculating the service life

**Combined equivalent bearing load**
Using formula (5), you can combine all the partial loads that occur in a load case into one single comparison load. i.e. the combined equivalent load on bearing.

$$F_{comb} = |F_y| + |F_z| + C \cdot \frac{|M_x|}{M_t} + C \cdot \frac{|M_y|}{M_L} + C \cdot \frac{|M_z|}{M_L} \quad (5)$$



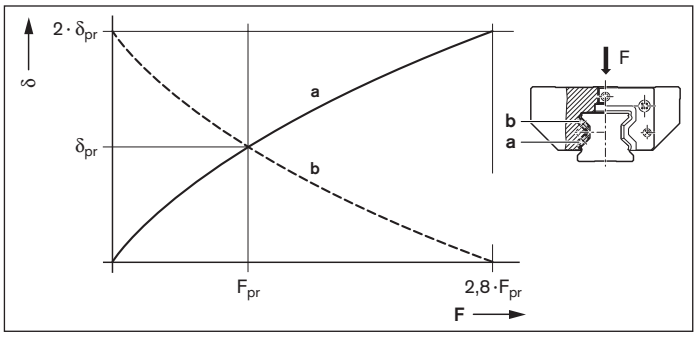

**Notes**
Including moments as stated in formula (5) only applies to an individual roller guide rails with just one Roller Runner Block. The formula is simpler for other combinations.

The forces and moments plotted in the coordinate system can also have an effect in the opposite direction. Reduce an external load that affects the Roller Runner Block at any angle to $F_y$ and $F_z$ and insert the amounts into formula (5). The structure of the Roller Runner Block permits this simplified calculation.

**Considering the internal preload force $F_{pr}$**

To increase the rigidity and precision of the guide system, it is advisable to use pre-tensioned Roller Runner Blocks (cf. "System preload selection criterion").

When using Roller Runner Blocks of preload classes C2 and C3, it may be necessary to consider the internal preload force; this is because both rows of rollers a and b are pre-tensioned against one another by a specific oversize at an internal preload force $F_{pr}$ and deform by the amount $\delta_{pr}$ (see the diagram).




a = Loaded (lower) row of rollers
b = Non-loaded (upper) row of rollers
δ = Deformation of the rollers at F
$\delta_{pr}$ = Deformation of the rollers at $F_{pr}$
F = Load on the Roller Runner Block
$F_{pr}$ = Internal preload force

**Effective equivalent load on bearing**

From an external load amounting to 2.8 times the internal preload force $F_{pr}$ onward, a row of rollers becomes preload-free.

**Note**

Under highly dynamic load conditions, the combined equivalent bearing load should be $F_{comb} < 2.8 \cdot F_{pr}$ to prevent damage to anti-friction bearings due to slippage.

$$(6) \quad F_{eff} = F_{comb}$$

**Case 1**

$F_{comb} > 2.8 \cdot F_{pr}$

In this case, the internal preload force $F_{pr}$ does not affect the service life.

$$(7) \quad F_{eff} = \left(\frac{F_{comb}}{2.8 \cdot F_{pr}} + 1\right)^{3/2} \cdot F_{pr}$$

**Case 2**

$F_{comb} \leq 2.8 \cdot F_{pr}$

The preload force $F_{pr}$ is included in the calculation of the effective equivalent load on bearing.

# General technical data and calculations

**Dynamic equivalent load on bearing**

The determination of the dynamic equivalent load on bearing $F_m$ for the calculation of the service life is implemented according to track ratios $q_{sn}$ according to formula (8).

$$(8)\quad F_m = \sqrt[\frac{10}{3}]{(F_{eff\,1})^{\frac{10}{3}} \cdot \frac{q_{s1}}{100\,\%} + (F_{eff\,2})^{\frac{10}{3}} \cdot \frac{q_{s2}}{100\,\%} + \ldots + (F_{eff\,n})^{\frac{10}{3}} \cdot \frac{q_{sn}}{100\,\%}}$$

**Equivalent static load on bearing**

With a combined vertical and horizontal external static load in conjunction with a static torsional or longitudinal moment, calculate the static equivalent load on bearing $F_{0\,comb}$ according to formula (9).

$$(9)\quad F_{0\,comb} = |F_{0y}| + |F_{0z}| + C_0 \cdot \frac{|M_{0x}|}{M_{t0}} + C_0 \cdot \frac{|M_{0y}|}{M_{L0}} + C_0 \cdot \frac{|M_{0z}|}{M_{L0}}$$

**Notes**

The static equivalent load on bearing $F_{0\,comb}$ must not exceed the static load capacity $C_0$. Formula (9) only applies when using a single Roller Guide Rail.

Reduce an external load that affects the Roller Runner Block at any angle to $F_{0y}$ and $F_{0z}$ and insert the amounts into formula (9).

**Definitions and calculation for dynamic and static load ratios**

Using the ratio of load rating to load of the Roller Runner Block, you can make a preselection of the guideway. The dynamic loading ratio $C/F_{max}$ and the static loading ratio $C_0/F_{0\,max}$ should be selected according to the application. The necessary load ratings are calculated from this. The load rating overview yields the corresponding dimensions and format.

**Recommended values for load ratios**

The table below contains guideline values for the load ratios.

The values are offered merely as a rough guide reflecting typical customer requirements (e.g. service life, accuracy, rigidity) by sector and application.

$$\text{Dynamic ratio} = \frac{C}{F_{max}}$$

**Case 1:** Static load $F_{0\,max} > F_{max}$:

$$\text{Static ratio} = \frac{C_0}{F_{0\,max}}$$

**Case 2:** Static load $F_{0\,max} < F_{max}$:

$$\text{Static ratio} = \frac{C_0}{F_{max}}$$

| Machine type/sector | Application example | $C/F_{max}$ | $C_0/F_{0\,max}$ |
|---|---|---|---|
| Machine tools | General | 6 ... 9 | > 4 |
| | Turning | 6 ... 7 | > 4 |
| | Milling | 6 ... 7 | > 4 |
| | Grinding | 9 ... 10 | > 4 |
| | Engraving | 5 | > 3 |
| Rubber and plastics processing machinery | Injection molding | 8 | > 2 |
| Woodworking and wood processing machines | Sawing, milling | 5 | > 3 |
| Area of mounting/handling technology and industrial robots | Handling | 5 | > 3 |
| Oil hydraulics and pneumatics | Raising/lowering | 6 | > 4 |

**Static load safety factor $S_0$**

You must verify mathematically any structural design involving rolling contact with regard to the static load safety factor. The static load safety factor for a linear guide results from the following equation:

$$(10) \qquad S_0 = \frac{C_0}{F_{0\,max}}$$

In this connection, $F_{0\,max}$ represents the maximum load amplitude that can occur, which can affect the linear guide. It does not matter whether this load is exerted only for a short period. It may represent the peak amplitude of an overall dynamic loading. For dimensioning, the data shown in the table applies.

| Conditions of use | Static load safety factor $S_0$ |
|---|---|
| Overhead arrangements and applications representing a high hazard potential | ≥ 12 |
| High dynamic load when at standstill, contamination. | 8 – 12 |
| Normal dimensioning of machinery and plant without full knowledge of the load parameters or connection details. | 5 – 8 |
| Full knowledge of all the load data. Vibration-free operation is ensured. | 3 – 5 |
| If there are health and safety hazards, paragraph 5.1.3 of DIN 637 is to be observed. | |

**Key to formulas**

| Formula | Unit | Designation |
|---|---|---|
| $a_1$ | – | Likeliness of experience factor |
| C | N | Dynamic load capacity |
| $C_0$ | N | Static load capacity |
| $F_{max}$ | N | Maximum dynamic load |
| $F_{0\,max}$ | N | Maximum static load |
| $F_{comb}$ | N | Combined equivalent bearing load |
| $F_{0comb}$ | N | Equivalent static load on bearing |
| $F_{eff}$ | N | Effective equivalent load on bearing |
| $F_{eff\,1-n}$ | N | Uniform effective individual loads |
| $F_m$ | N | Dynamic equivalent load on bearing |
| $F_{pr}$ | N | Preload force |
| $F_y$ | N | External load due to a resulting force in the y-direction |
| $F_{0y}$ | N | External load due to a static force in the y-direction |
| $F_z$ | N | External load due to a resulting force in the z-direction |
| $F_{0z}$ | N | External load due to a static force in the z-direction |
| $M_t$ | Nm | Dynamic torsional moment load capacity[1)] |
| $M_{t0}$ | Nm | Static torsional moment load capacity[1)] |
| $M_L$ | Nm | Dynamic longitudinal moment load capacity[1)] |
| $M_{L0}$ | Nm | Static longitudinal moment load capacity[1)] |

| Formula | Unit | Designation |
|---|---|---|
| $M_x$ | Nm | Load due to the resultant moment around the x-axis |
| $M_{0x}$ | Nm | Load due to the static moment around the x-axis |
| $M_y$ | Nm | Load due to the resultant moment around the y-axis |
| $M_{0y}$ | Nm | Load due to the static moment around the y-axis |
| $M_z$ | Nm | Load due to the resultant moment around the z-axis |
| $M_{0z}$ | Nm | Load due to the static moment around the z-axis |
| $L_{10}$ | m | Nominal life (travel range) |
| $L_{h\,10}$ | h | Nominal life (time) |
| $L_{na}$ | m | Modified life expectancy (travel range) |
| $L_{ha}$ | h | Modified life expectancy (time) |
| n | $min^{-1}$ | Stroke repetition rate (full cycles) |
| s | m | Stroke length |
| $S_0$ | – | Static load safety factor |
| $v_m$ | m/min | Average linear speed |
| $v_1 \ldots v_n$ | m/min | Travel speeds of phases 1 ... n |
| $q_{t1} \ldots q_{tn}$ | % | Discrete time steps for $v_1 \ldots v_n$ of phases 1 ... n |
| $q_{s1} \ldots q_{sn}$ | % | Travel portions for phases 1 ... n |

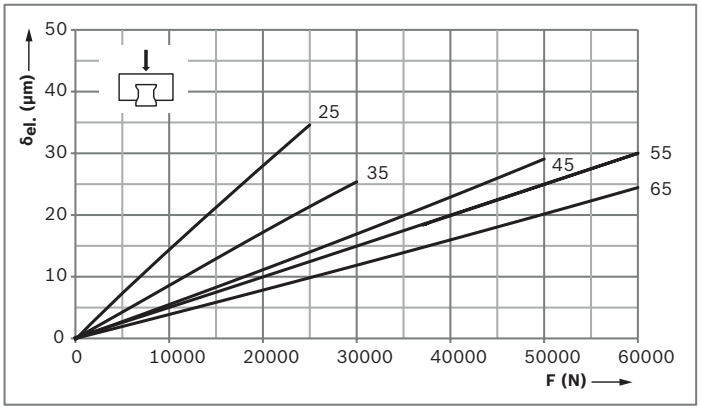
**1)** Refer to the table for the values

# Rigidity of FNS Standard Roller Runner Block

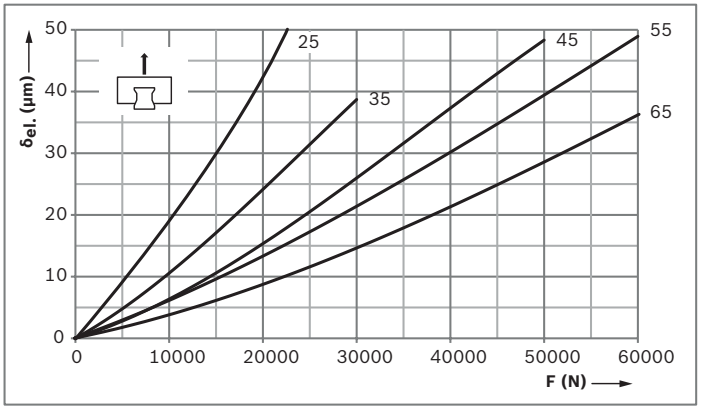
**Rigidity of Roller rail system for preload C2**
**Standard FNS R1851 Roller Runner Block**
Roller Runner Block mounted with 6 screws:

- Externally with 4 screws of strength class 12.9
- In the middle with 2 screws of strength class 8.8

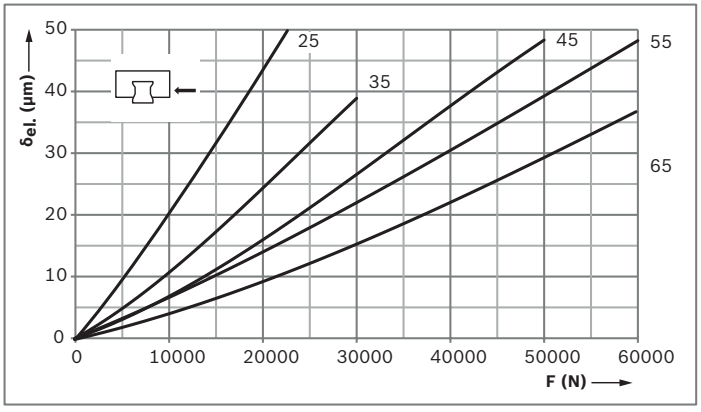
**Down load**




**Lift-off load**




**Side load**



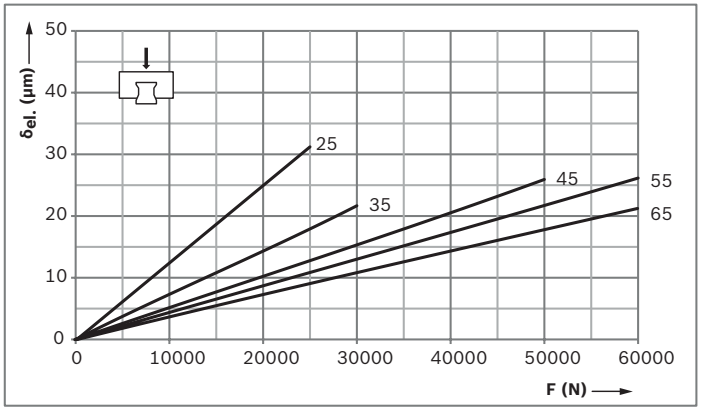

**Preload class**
C2 = Preload (acc. to Preload force $F_{pr}$ table)

**Key to illustration**
$\delta_{el.}$ = Elastic deformation (µm)
F = Load (N)

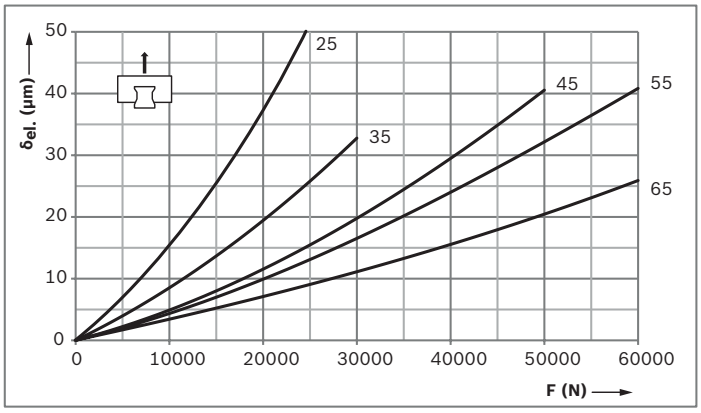
**Rigidity of Roller rail system for preload C3**
**Standard FNS R1851 Roller Runner Block**
Roller Runner Block mounted with 6 screws:

- Externally with 4 screws of strength class 12.9
- In the middle with 2 screws of strength class 8.8

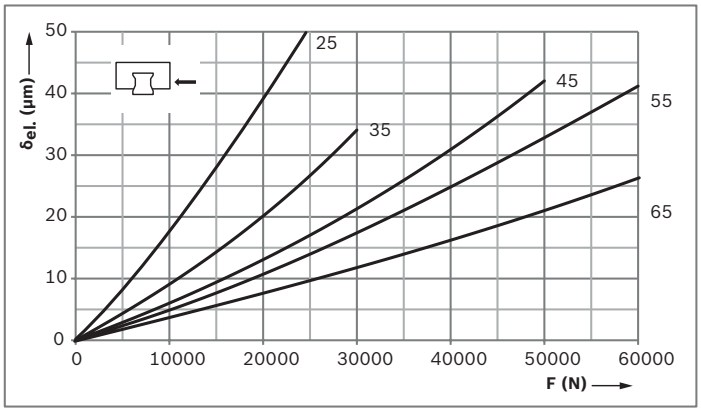
**Down load**




**Lift-off load**




**Side load**




**Preload class**
C3 = Preload (acc. to Preload force $F_{pr}$ table)

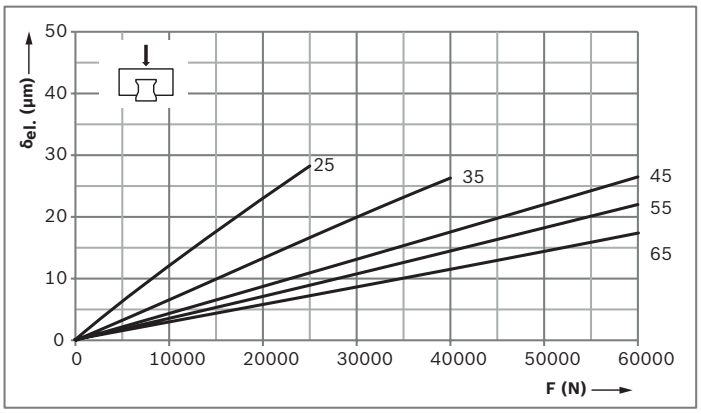
**Key to illustration**
$\delta_{el.}$ = Elastic deformation (µm)
F = Load (N)

# Rigidity of FLS Standard Roller Runner Block

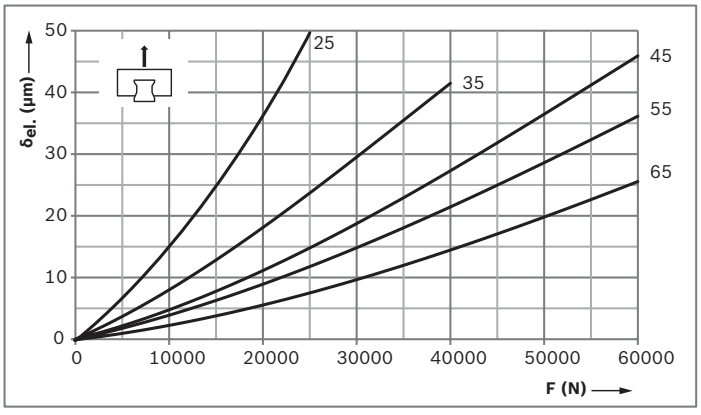
**Rigidity of Roller rail system for preload C2**
**Standard FLS R1853 Roller Runner Block**
Roller Runner Block mounted with 6 screws:

- Externally with 4 screws of strength class 12.9
- In the middle with 2 screws of strength class 8.8

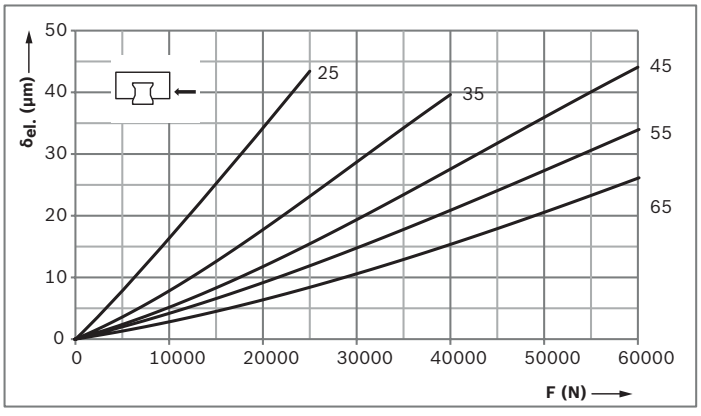
**Down load**




**Lift-off load**




**Side load**



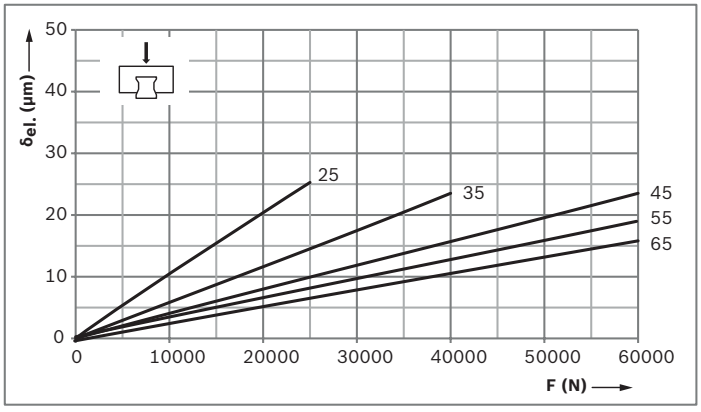

**Preload class**
C2 = Preload (acc. to Preload force $F_{pr}$ table)

**Key to illustration**
$\delta_{el.}$ = Elastic deformation (µm)
F = Load (N)

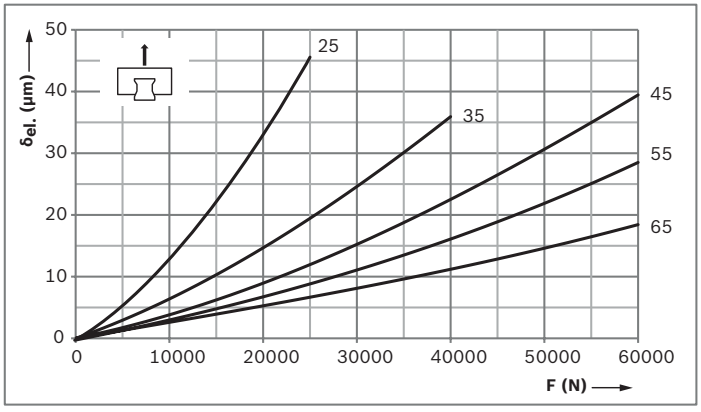
**Rigidity of Roller rail system for preload C3**
**Standard FLS R1853 Roller Runner Block**
Roller Runner Block mounted with 6 screws:

- Externally with 4 screws of strength class 12.9
- In the middle with 2 screws of strength class 8.8

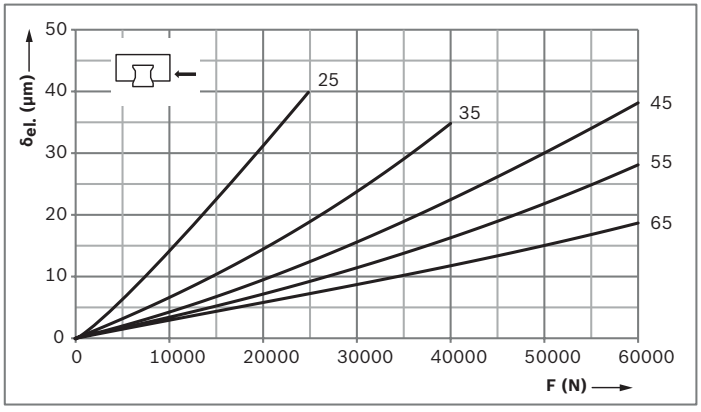
**Down load**




**Lift-off load**




**Side load**



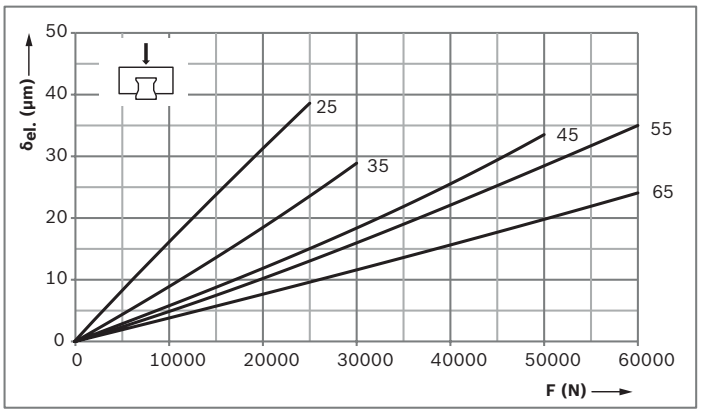

**Preload class**
C3 = Preload (acc. to Preload force $F_{pr}$ table)

**Key to illustration**
$\delta_{el.}$ = Elastic deformation (µm)
F = Load (N)

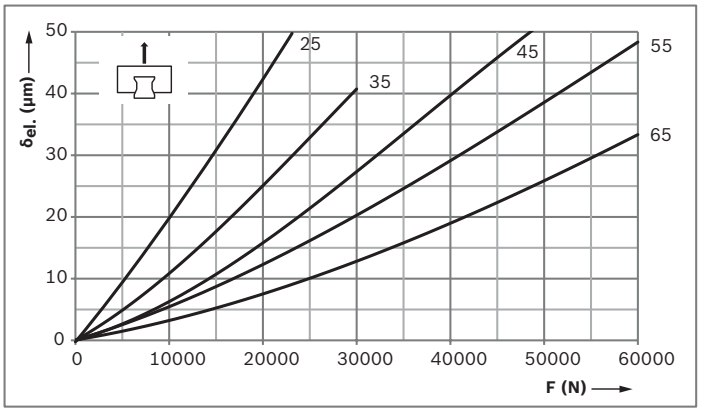
# Rigidity of SNS/SNH Standard Roller Runner Block

**Rigidity of Roller rail system for preload C2**
**SNS R1822 / SNH R1821 Standard Roller Runner Blocks**
Roller Runner Block mounted with 6 screws of strength class 12.9

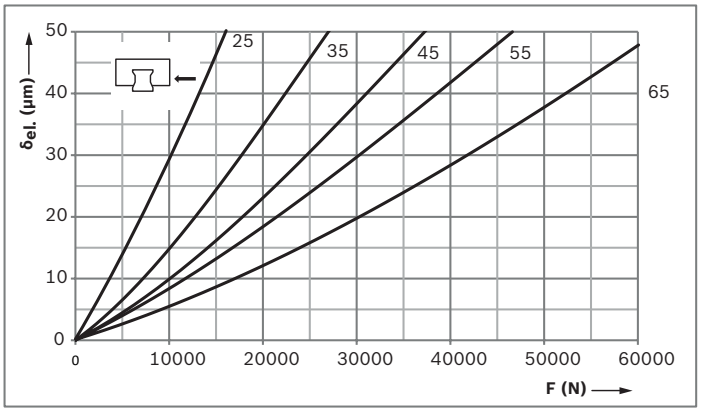
**Down load**




**Lift-off load**




**Side load**

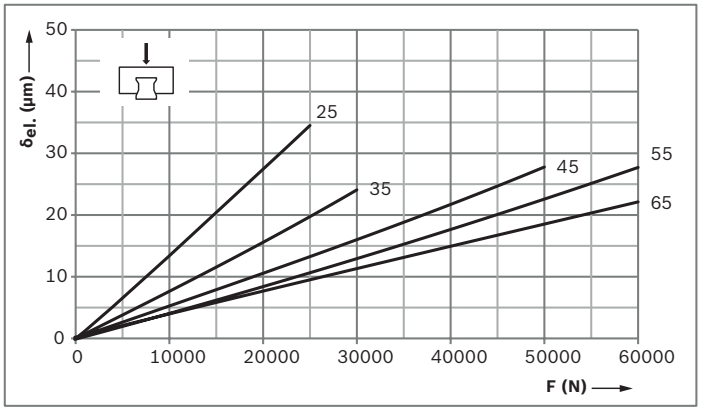



**Preload class**
C2 = Preload (acc. to Preload force $F_{pr}$ table)

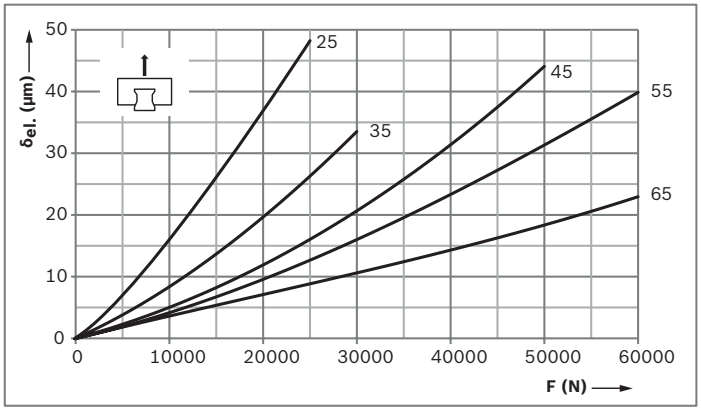
**Key to illustration**
$\delta_{el.}$ = Elastic deformation (µm)
F = Load (N)

**Rigidity of Roller rail system for preload C3**
**SNS R1822 / SNH R1821 Standard Roller Runner Blocks**
Roller Runner Block mounted with 6 screws of strength class 12.9

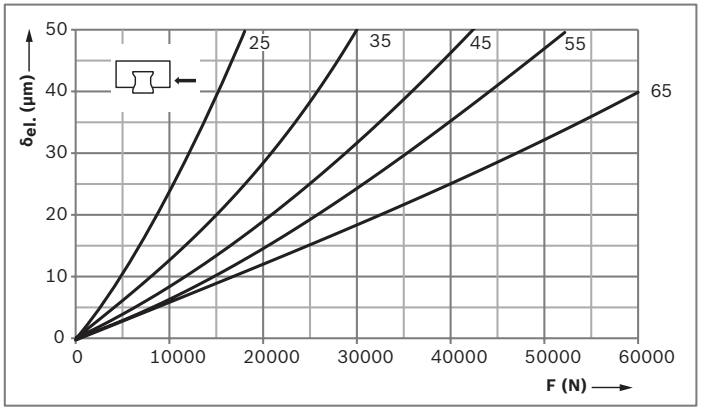
**Down load**




**Lift-off load**




**Side load**



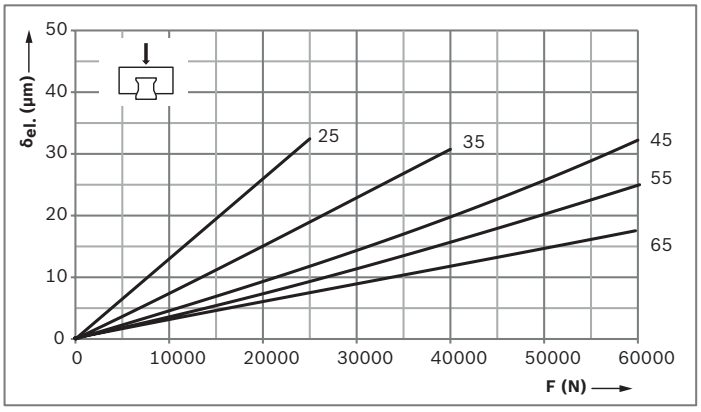

**Preload class**
C3 = Preload (acc. to Preload force $F_{pr}$ table)

**Key to illustration**
$\delta_{el.}$ = Elastic deformation (µm)
F = Load (N)

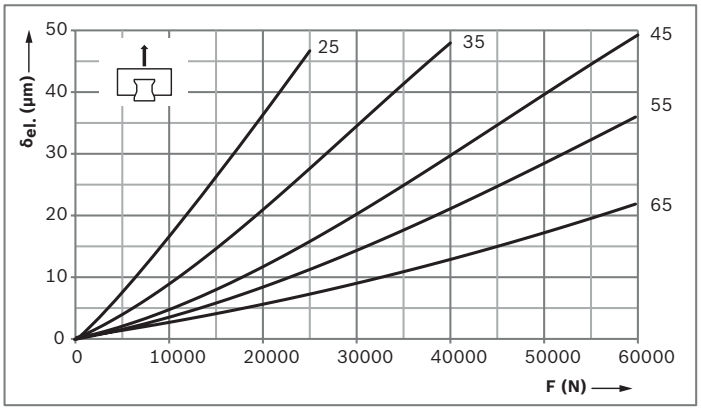
# Rigidity of SLS/SLH Standard Roller Runner Block

**Rigidity of Roller rail system for preload C2**
**SLS R1823/SLH R1824 Standard Roller Runner Blocks**
Roller Runner Block mounted with 6 screws of strength class 12.9

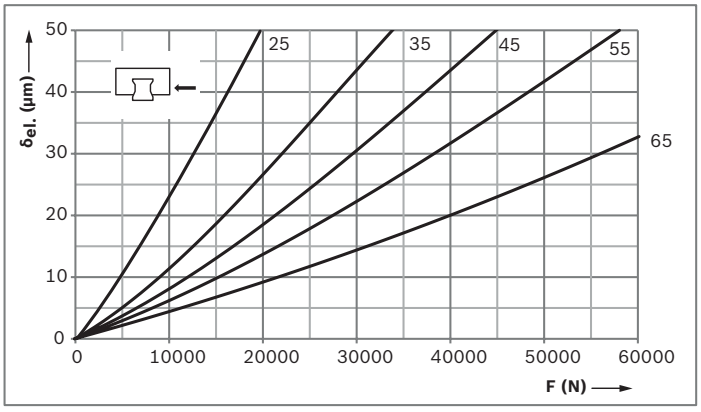
**Down load**




**Lift-off load**




**Side load**

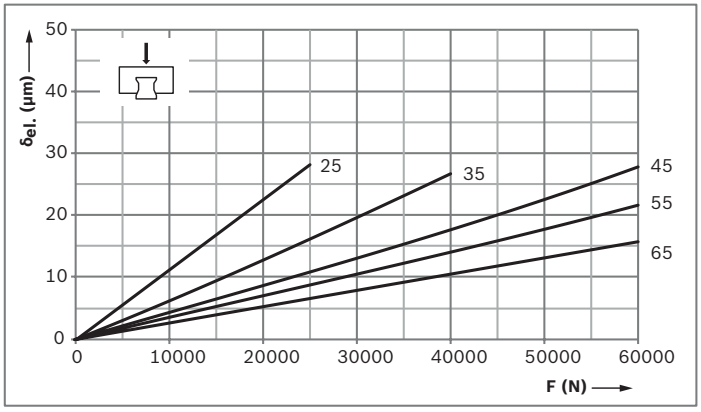



**Preload class**
C2 = Preload (acc. to Preload force $F_{pr}$ table)

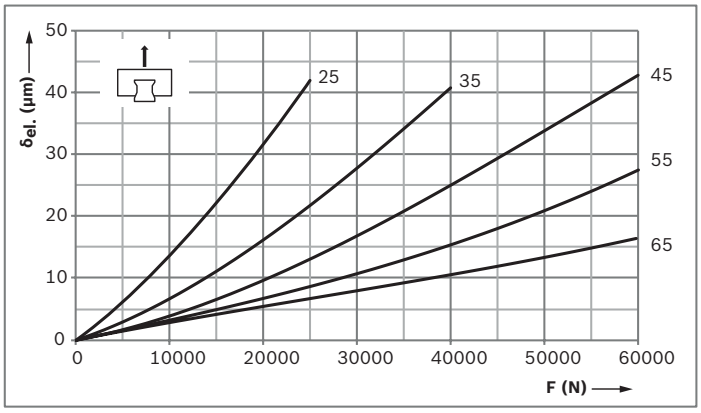
**Key to illustration**
$\delta_{el.}$ = Elastic deformation (µm)
F = Load (N)

**Rigidity of Roller rail system for preload C3**
**SLS R1823/SLH R1824 Standard Roller Runner Blocks**
Roller Runner Block mounted with 6 screws of strength class 12.9

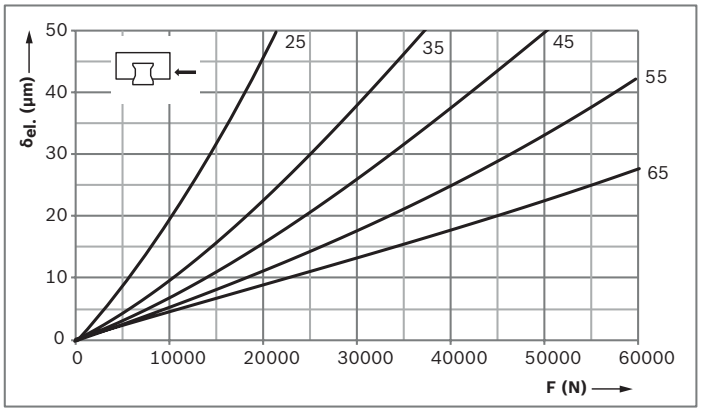
**Down load**




**Lift-off load**




**Side load**




**Preload class**
C3 = Preload (acc. to Preload force $F_{pr}$ table)

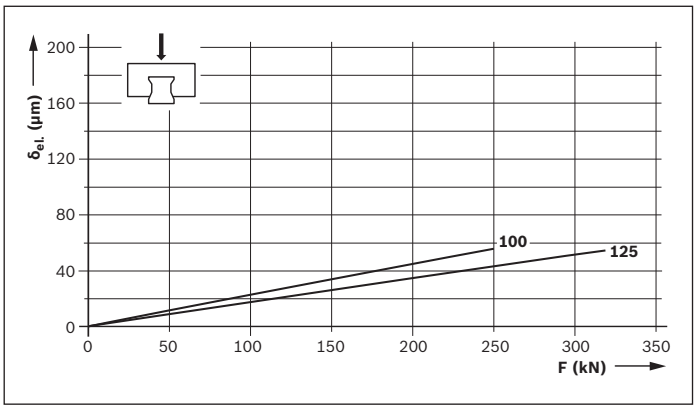
**Key to illustration**
$\delta_{el.}$ = Elastic deformation (µm)
F = Load (N)

# Rigidity of FNS Heavy-Duty Roller Runner Block

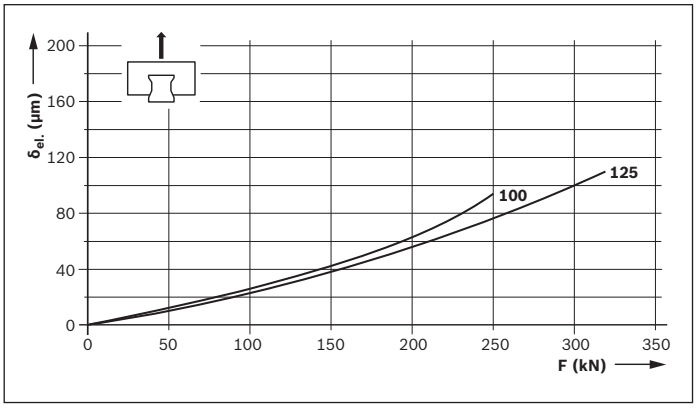
**Rigidity of Roller rail system for preload C3**
**FNS R1861 Heavy-Duty Roller Runner Block**
Roller Runner Block mounted with 9 screws:

- Externally with 6 screws of strength class 12.9
- Centrally with 3 screws of strength class 8.8

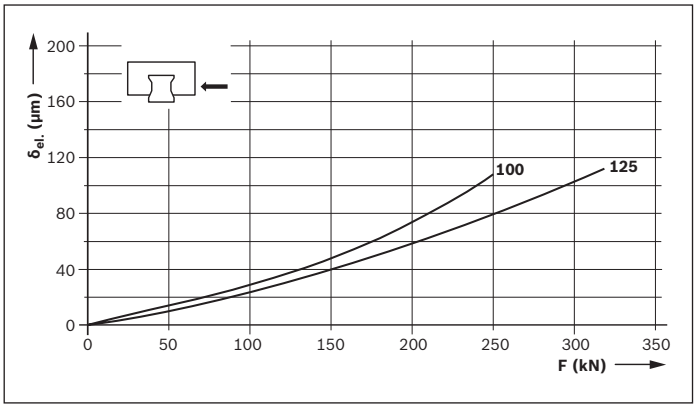
**Down load**




**Lift-off load**




**Side load**




**Preload class**
C3 = Preload (acc. to Preload force $F_{pr}$ table)

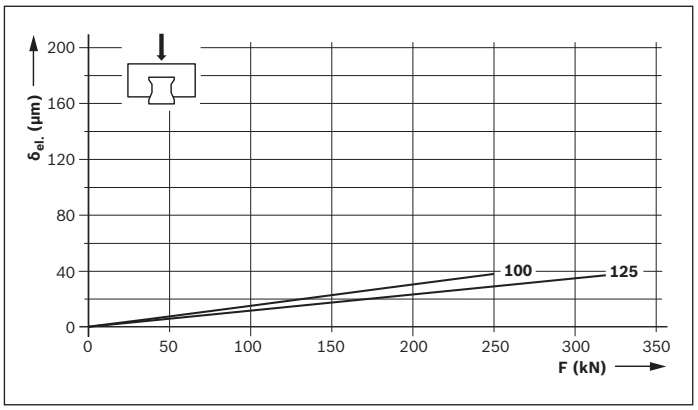
**Key to illustration**
$\delta_{el.}$ = Elastic deformation (µm)
F = Load (N)

# Rigidity of FLS Heavy-Duty Roller Runner Block

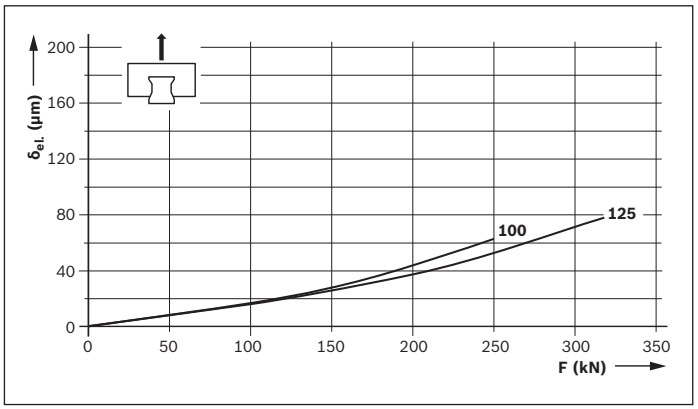
**Rigidity of Roller rail system for preload C3**
**FLS R1863 Heavy-Duty Roller Runner Block**
Roller Runner Block mounted with 9 screws:

- Externally with 6 screws of strength class 12.9
- Centrally with 3 screws of strength class 8.8

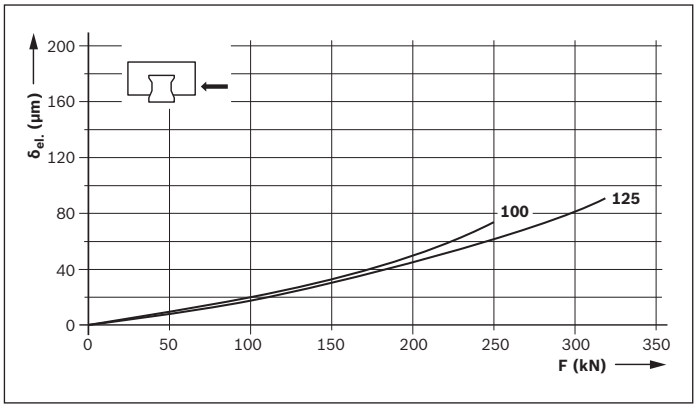
**Down load**




**Lift-off load**




**Side load**




**Preload class**
C3 = Preload (acc. to Preload force $F_{pr}$ table)

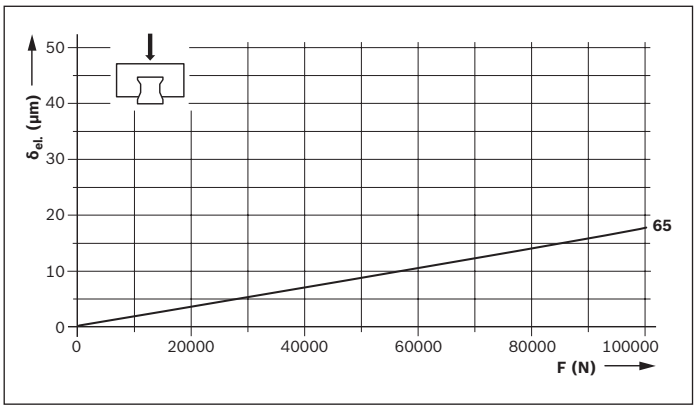
**Key to illustration**
$\delta_{el.}$ = Elastic deformation (µm)
F = Load (N)

# Rigidity of FXS Heavy-Duty Roller Runner Block

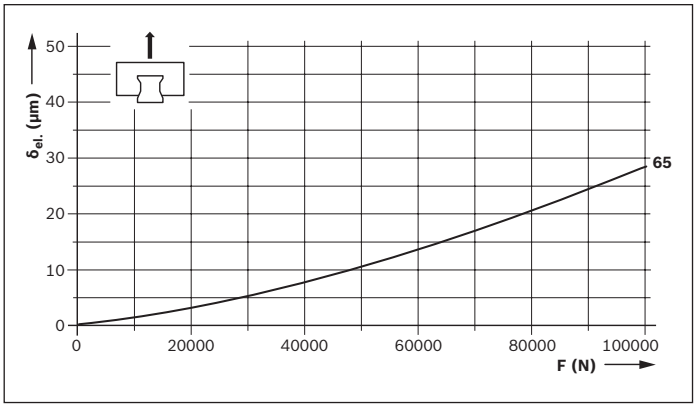
**Rigidity of Roller rail system for preload C2**
**FXS R1854 Heavy-Duty Roller Runner Block**
Roller Runner Block mounted with

- 4 screws, strength class 12.9
- 2 screws, strength class 8.8

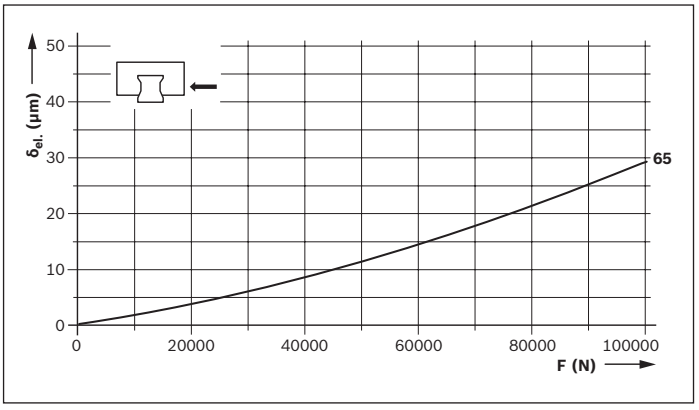
**Down load**




**Lift-off load**




**Side load**



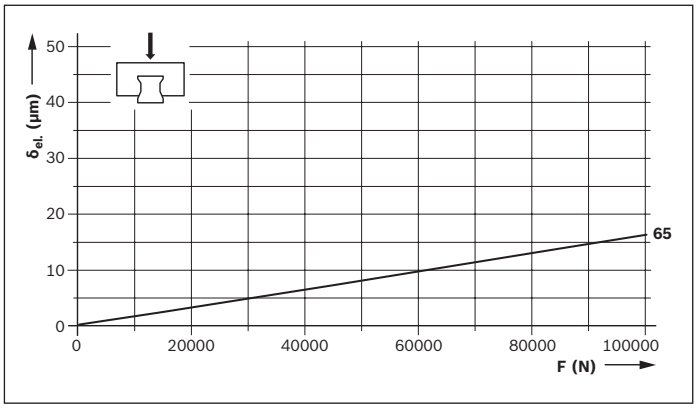

**Preload class**
C2 = Preload (acc. to Preload force $F_{pr}$ table)

**Key to illustration**
$\delta_{el.}$ = Elastic deformation (µm)
F = Load (N)

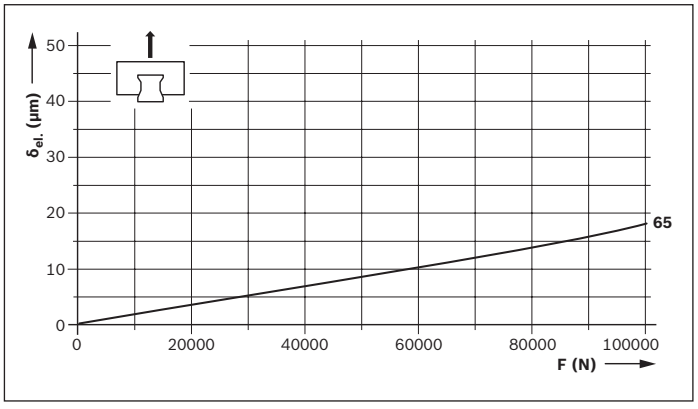
**Rigidity of Roller rail system for preload C3**
**FXS R1854 Heavy-Duty Roller Runner Block**
Roller Runner Block mounted with

- 4 screws, strength class 12.9
- 2 screws, strength class 8.8

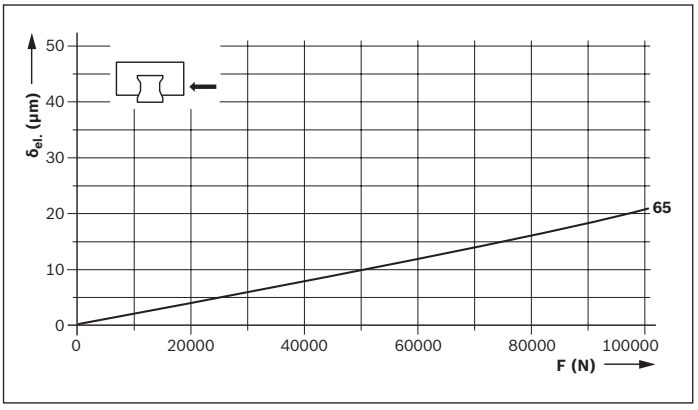
**Down load**




**Lift-off load**




**Side load**




**Preload class**
C3 = Preload (acc. to Preload force $F_{pr}$ table)

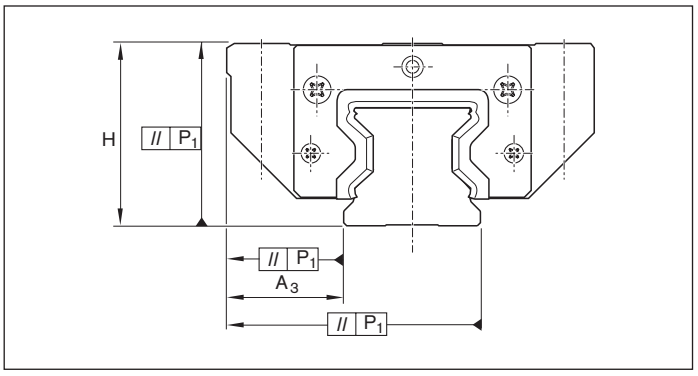
**Key to illustration**
$\delta_{el.}$ = Elastic deformation (µm)
F = Load (N)

# Accuracy classes

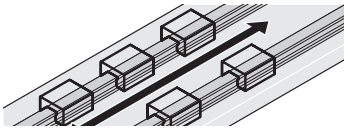
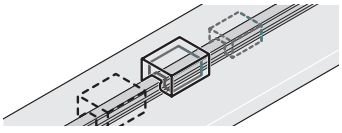
## Accuracy classes and their tolerances for Standard Roller rail systems

Up to five accuracy classes apply to Standard Roller rail systems.
Up to three accuracy classes apply to Heavy-Duty Roller rail systems
For details on the available Roller Runner Block and roller guide rails, please refer to the table with "material numbers".

**Precision manufacturing process makes interchangeability easy**
Rexroth manufactures its roller guide rails and Roller Runner Blocks with such high precision, especially in the roller track zone, that each individual component element is fully interchangeable.




For example, a Roller Runner Block may be used without any problems on various roller guide rails of the same size. Similarly, different Roller Runner Blocks may also be used on one and the same Roller Guide Rail.

| | H, $A_3$ | $\Delta H, \Delta A_3$ |
|---|---|---|
| |  |  |
| **Measured in middle of runner block** | For any Roller Runner Block/Roller Guide Rail combinations over the total rail length | For different Roller Runner Blocks in the same rail position |

### Standard and Heavy-Duty Roller rail systems made of steel

| Accuracy classes | Tolerances of the dimensions (µm) | | Max. differences of dimensions H and $A_3$ on one rail (µm) |
|---|---|---|---|
| | H | $A_3$ | $\Delta H, \Delta A_3$ |
| **H** | ±40 | ±20 | 15 |
| **P** | ±20 | ±10 | 7 |
| **SP** | ±10 | ±7 | 5 |
| **GP**[1)] | (±10) 10 | ±7 | 5 |
| **UP** | ±5 | ±5 | 3 |

**1)** Dimension H: (±10) sorted by height (GP) to 10 µm (see "Combination of accuracy classes")

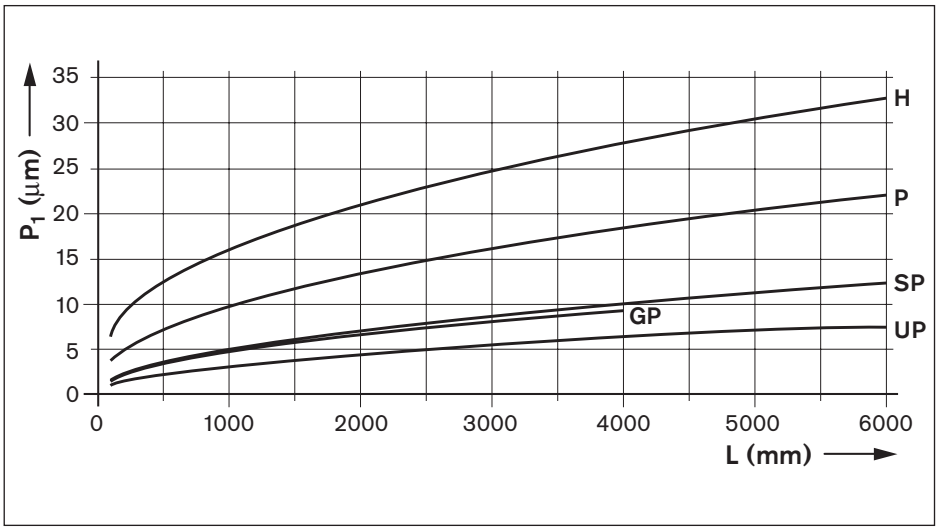
### Standard and Heavy-Duty Resist CR Roller rail systems, hard chrome plated

| Accuracy classes | Tolerances of the dimensions (µm) | | | | Max. differences of dimensions H and $A_3$ on one rail (µm) | |
|---|---|---|---|---|---|---|
| | H | | $A_3$ | | $\Delta H, \Delta A_3$ | |
| | RW/RS | RS | RW/RS | RS | RW/RS | RS |
| **H** | +47<br>−38 | +44<br>−39 | ± 23 | +19<br>−24 | 18 | 15 |
| **P** | +27<br>−18 | +24<br>−19 | ±13 | +9<br>−14 | 10 | 7 |
| **SP** | +17<br>8 | +14<br>9 | ±10 | +6<br>−11 | 8 | 5 |

# Accuracy classes

## Parallelism offset $P_1$ of the Roller rail system in operation

**Values measured in middle of Runner Block with Roller rail systems without surface coating**
For hard chrome plated roller guide rails, the values can increase up to 2 µm.




**Key to illustration**
$P_1$ = Parallelism offset (µm)
L = Rail length (mm)

## Combinations of accuracy classes

**Tolerances for combination of accuracy classes**

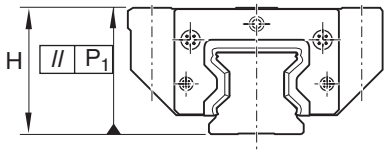
| Accuracy classes Roller Runner Block | Tolerances of the dimensions (µm) | Accuracy classes for roller guide rails | | | | |
|---|---|---|---|---|---|---|
| | | H | P | SP | GP | UP |
| **H** | Tolerance of dimension H | ±40 | ±24 | ±15 | ±10 | ±11 |
| | Tolerance of dimension $A_3$ | ±20 | ±14 | ±12 | ±12 | ±11 |
| | Max. diff. dimensions H and $A_3$ on one rail | 15 | 15 | 15 | 15 | 15 |
| **P** | Tolerance of dimension H | ±36 | ±20 | ±11 | ±6 | ±7 |
| | Tolerance of dimension $A_3$ | ±16 | ±10 | ±8 | ±8 | ±7 |
| | Max. diff. dimensions H and $A_3$ on one rail | 7 | 7 | 7 | 7 | 7 |
| **SP** | Tolerance of dimension H | ±35 | ±19 | ±10 | (±10)[1] ±5 | ±6 |
| | Tolerance of dimension $A_3$ | ±15 | ±9 | ±7 | ±7 | ±6 |
| | Max. diff. dimensions H and $A_3$ on one rail | 5 | 5 | 5 | 5 | 5 |
| **UP** | Tolerance of dimension H | ±34 | ±18 | ±9 | ±4 | ±5 |
| | Tolerance of dimension $A_3$ | ±14 | ±8 | ±6 | ±6 | ±5 |
| | Max. diff. dimensions H and $A_3$ on one rail | 3 | 3 | 3 | 3 | 3 |

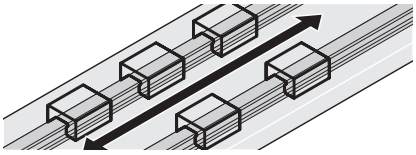
**1)** Dimension H: (±10) sorted by height (GP) to 10 µm (see "Combination: SP Roller Runner Block with GP roller guide rails")

**Combination: SP Roller Runner Block with GP roller guide rails**

Dimension H: (±10) sorted by height (GP) to ±5 ... 10 µm: **Valid** with an arbitrary combination of Roller Runner Blocks of accuracy class SP and roller guide rails R1805 .68 .. with the same sorting, e.g. $-1^{\pm 2,5}$ µm, over the total rail length.
Sorting markings on the Roller Guide Rail and the additional label, e.g. GP-1, GP +3 etc.
Indicate the number of pieces per sorting with your order, e.g. 2 pieces per sorting.

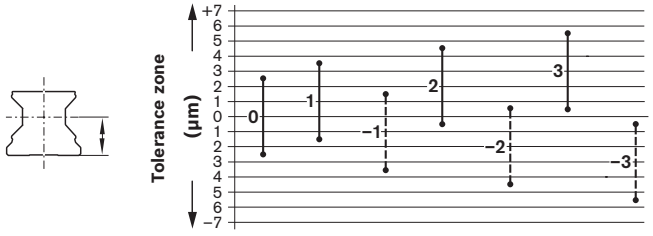
**Tolerances for dimension H**



**Measured in middle of Runner Block over the total rail length**

**Height sorting of roller guide rails**




**Recommendations for combining accuracy classes**

Recommended with **small Roller Runner Block distances** and short strokes:
Roller **Runner Block in higher** accuracy class than Roller Guide Rail.
Recommended with **relatively large Roller Runner Block distances** and long strokes:
Roller **Guide Rail in a higher** accuracy class than Roller Runner Block.

Caution
For Resist CR Roller Runner Blocks and roller guide rails, hard chrome plated, deviating tolerances of the dimensions H and $A_3$ (see "Accuracy classes and their tolerances").

## Travel accuracy

By means of perfectly optimized roller entry and roller exit zones in the Roller Runner Block and the optimized screw-on partition in the roller guide rails, a very high travel accuracy with the lowest pulsation is achieved.

Particularly suitable for highly precise, chipping processing, measuring technique, high-precision scanners, eroding technology etc.

# Preload

## Definition of preload class

Preload force, based on the dynamic load capacity rating C of the particular Roller Runner Block.

## Selection of the preload class

| Code | Application area |
|---|---|
| **C1**<br>**C4**<br>**C5** | Customization upon request |
| **C2** | For guide systems with both high external loading and high demands on overall rigidity;<br>also recommended for single-rail systems.<br>Above average moment loads can be absorbed without significant elastic deflection.<br>Further improved overall rigidity with only medium moment loads. |
| **C3** | For highly rigid guide systems, e.g. precision tooling machines etc.<br>Above-average loads and moments are caught with the lowest possible elastic deformation.<br>Roller Runner Block with preload C3 only available in the accuracy classes P, SP (GP) and UP. |

**Preload force $F_{pr}$**

| Roller Runner Block | | | Size | 25 | 35 | 45 | 55 | 65 | 100 | 125 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Format | Preload class | Preload force $F_{pr}$ (N) | | | | | | |
| **Standard Roller Runner Block made of steel[1] and Resist CR[2]** | R1851<br>R1822<br>R1821<br>R1861 | FNS<br>SNS<br>SNH | C1 | 830 | 1680 | 2930 | 3860 | 6520 | | |
| | | | C2 | 2240 | 4510 | 7890 | 10400 | 17600 | 36900 | 60600 |
| | | | C3 | 3640 | 7320 | 12800 | 16800 | 28500 | 59900 | 98400 |
| | | | C4 | 4770 | 9610 | 16800 | 22100 | 37400 | | |
| | | | C5 | 5610 | 11300 | 19700 | 26000 | 43900 | | |
| | R1853<br>R1823<br>R1824<br>R1863 | FLS<br>SLS<br>SLH | C1 | 1010 | 2060 | 3640 | 4790 | 8140 | | |
| | | | C2 | 2720 | 5540 | 9790 | 12900 | 21900 | 50600 | 81600 |
| | | | C3 | 4420 | 8990 | 15900 | 20900 | 35500 | 82200 | 132600 |
| | | | C4 | 5800 | 11800 | 20800 | 27400 | 46600 | | |
| | | | C5 | 6810 | 13900 | 24500 | 32200 | 54700 | | |
| **Roller Runner Block made of steel[1]** | R1854 | FXS | C2 | | | | | 29300 | | |
| | | | C3 | | | | | 47700 | | |

**1)** All steel parts made of carbon steel
**2)** Steel Roller Runner Block body with corrosion-resistant coating, matte silver finish, hard chrome plated

**Recommended combination based on preload and accuracy class of Roller Runner Block and Roller Guide Rail**

Recommendation for preload C2:
Accuracy classes H and P

Recommendation for preload C3:
Accuracy classes P, SP, GP and UP

**Combination of hard chrome plated Roller Runner Block with hard chrome plated roller guide rails**

When hard chrome-plated Roller Runner Blocks are combined with preload C2 and/or C3 and hard chrome plated roller guide rails, this increases the preload by approx. half a preload class.

# Product description

## Characteristic features

- RSHP roller runner blocks are suitable for all typical applications as well as for special installation and environmental conditions and conditions of use, so that additional special designs are not necessary.
- High torque load capacity
- Same high load capacity in all four directions of loading
- Maximum rigidity in all load directions due to additional screw connections on two bore holes in the center of the roller runner block
- Unrestricted interchangeability
- All roller guide rail versions can be combined arbitrarily with all roller runner block versions
- Accessories can be screwed down to the front of the roller runner block.

## Further highlights

- Lube nipples possible on all sides for easy maintenance
- Low lubrication quantities thanks to innovative channel design
- Quiet running thanks to optimally designed roller return and guideway
- Attachments on the roller runner block can be mounted from above and below
- Maximum rigidity in all load directions due to additional screw connections on two bore holes in the center of the roller runner block
- High torque load capacity
- Lowest elastic deflection and greatest precision in the process due to the further optimized entry-zone geometry and high number of rollers
- The roller runner block is simply slid onto the rail with the transport lock.
- Integrated all-round sealing as standard

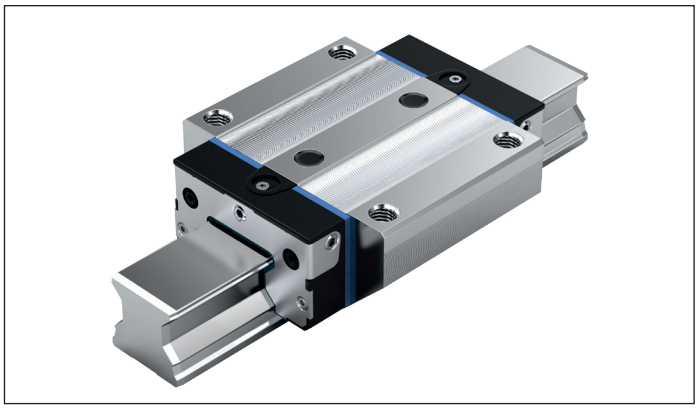
## Optional versions

- Corrosion-resistant roller runner blocks and roller guide rails in resist CR, hard chrome plated, available in accuracy class H. Accuracy classes P and SP available upon request
- Sizes 25 and 65
- Preload classes C1 to C5
- Version with seals DS, SS or AS

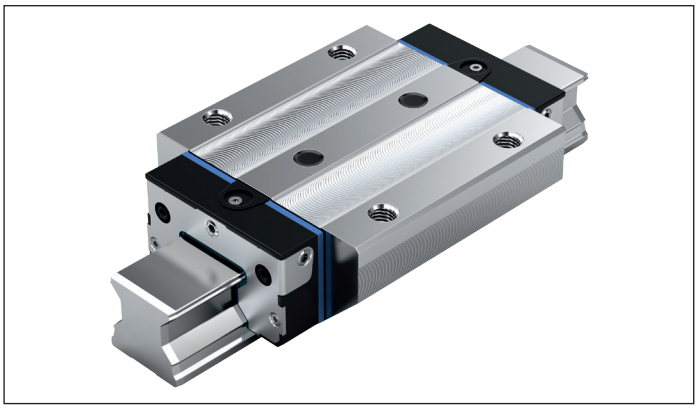
## Identification system of material numbers

| **Material number** | | Example: | **R** | **18** | **51** | **3** | **2** | **1** | **2A** |
|---|---|---|---|---|---|---|---|---|---|
| **Rolling element** | = | Roller = **18** | | | | | | | |
| **Format** | = | FNS = **51** / FLS = 53 / SNS = 22 / SLS = 23 / SNH = 21 / SLH = 24 | | | | | | | |
| **Size** | = | 25 / **3**5 / 45 / 55 / 65 | | | | | | | |
| **Preload** | = | C1 / C**2** / C3 / C4 / C5 | | | | | | | |
| **Accuracy class** | = | H = 3 / P = 2 / SP = **1** / UP = 9 | | | | | | | |
| **Seal** | = | DS = 2X<br>SS = 24<br>AS = **2A** | | | | | | | |

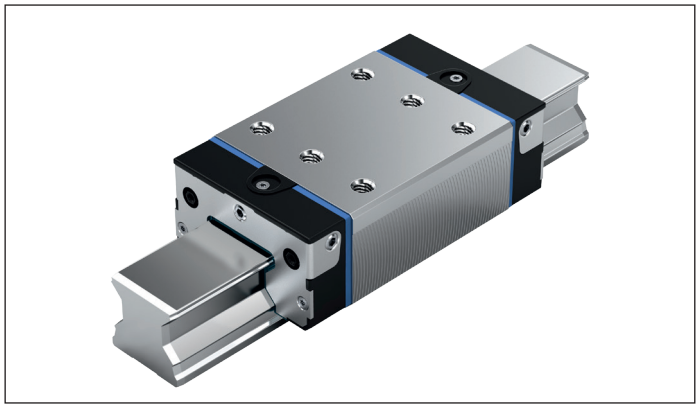
## Formats of high-precision roller runner blocks



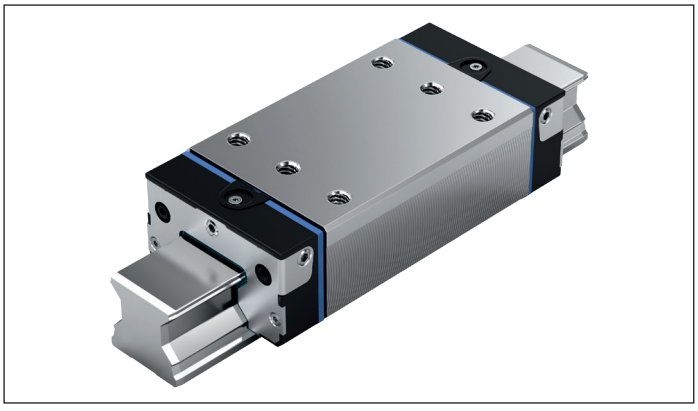
**FNS – Flanged, normal, standard height**



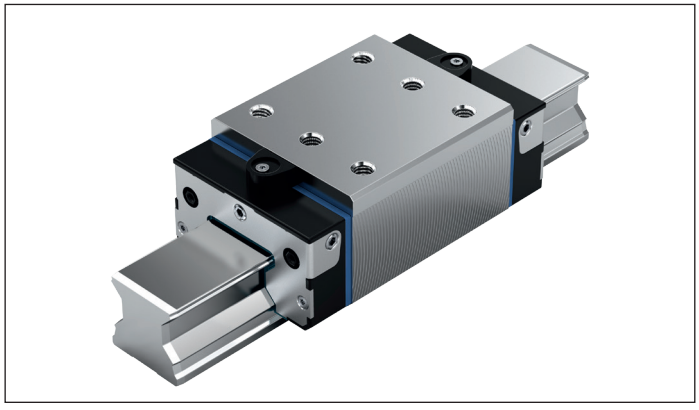
**FLS – Flanged, long, standard height**



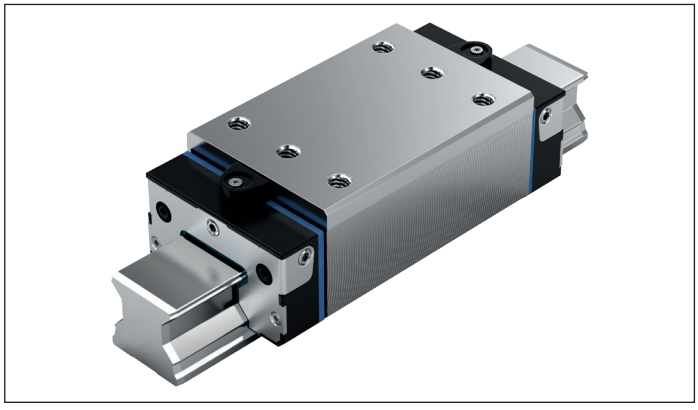
**SNS – Slimline, normal, standard height**



**SLS – Slimline, long, standard height**

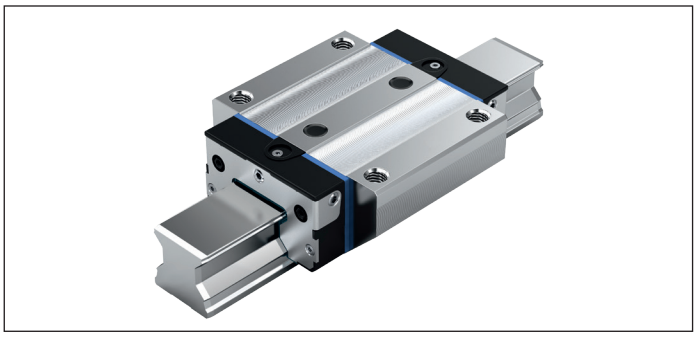


**SNH – Slimline, normal, high**



**SLH – Slimline, long, high**

# FNS – Flanged, normal, standard height
# R1851 ... 2.



**Dynamic characteristics**

Travel speed: $v_{max}$ = 4 m/s

Acceleration: $a_{max}$ = 150 m/s$^2$

**Recommended combination based on preload and accuracy class**

- For preload C2: H and P (preferably)
- For preload C3: P and SP

## Material numbers

| Size | Roller runner block with size | Preload class | | Accuracy class | | | | Seals | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | C2 | C3 | H | P | SP | UP | DS | SS[1] | AS[2] |
| **25** | R1851 2 | 2 | | 3 | 2 | 1 | 9 | 2X | – | – |
| | | | 3 | | 2 | 1 | 9 | 2X | – | – |
| **35** | R1851 3 | 2 | | 3 | 2 | 1 | 9 | 2X | 24 | 2A |
| | | | 3 | | 2 | 1 | 9 | 2X | 24 | 2A |
| **45** | R1851 4 | 2 | | 3 | 2 | 1 | 9 | 2X | 24 | 2A |
| | | | 3 | | 2 | 1 | 9 | 2X | 24 | 2A |
| **55** | R1851 5 | 2 | | 3 | 2 | 1 | 9 | 2X | – | 2A |
| | | | 3 | | 2 | 1 | 9 | 2X | – | 2A |
| **65** | R1851 6 | 2 | | 3 | 2 | 1 | 9 | 2X | – | – |
| | | | 3 | | 2 | 1 | 9 | 2X | – | – |

**1)** In preparation

**2)** With integrated DS seal

## Technical data

| Size | Mass (kg) | Load ratings[2] (N) | | Torsional moment load capacity[2] (Nm) | | Longitudinal moment load capacity[2] (Nm) | |
|---|---|---|---|---|---|---|---|
| | m | C | $C_0$ | $M_t$ | $M_{t0}$ | $M_L$ | $M_{L0}$ |
| **25** | 0.73 | 26900 | 59500 | 348 | 770 | 260 | 580 |
| **35** | 2.15 | 61000 | 119400 | 1210 | 2370 | 760 | 1480 |
| **45** | 4.05 | 106600 | 209400 | 2640 | 5180 | 1650 | 3,240 |
| **55** | 5.44 | 140400 | 284700 | 4120 | 8350 | 2610 | 5290 |
| **65** | 10.72 | 237200 | 456300 | 8430 | 16210 | 5260 | 10120 |

**2)** Determination of the dynamic load capacities and load moments is based on a stroke travel of 100,000 m according to DIN ISO 14728-1. However, often only 50,000 m is actually stipulated. For comparison: Multiply values C, $M_t$ and $M_L$ from the table by 1.23.

## Order example

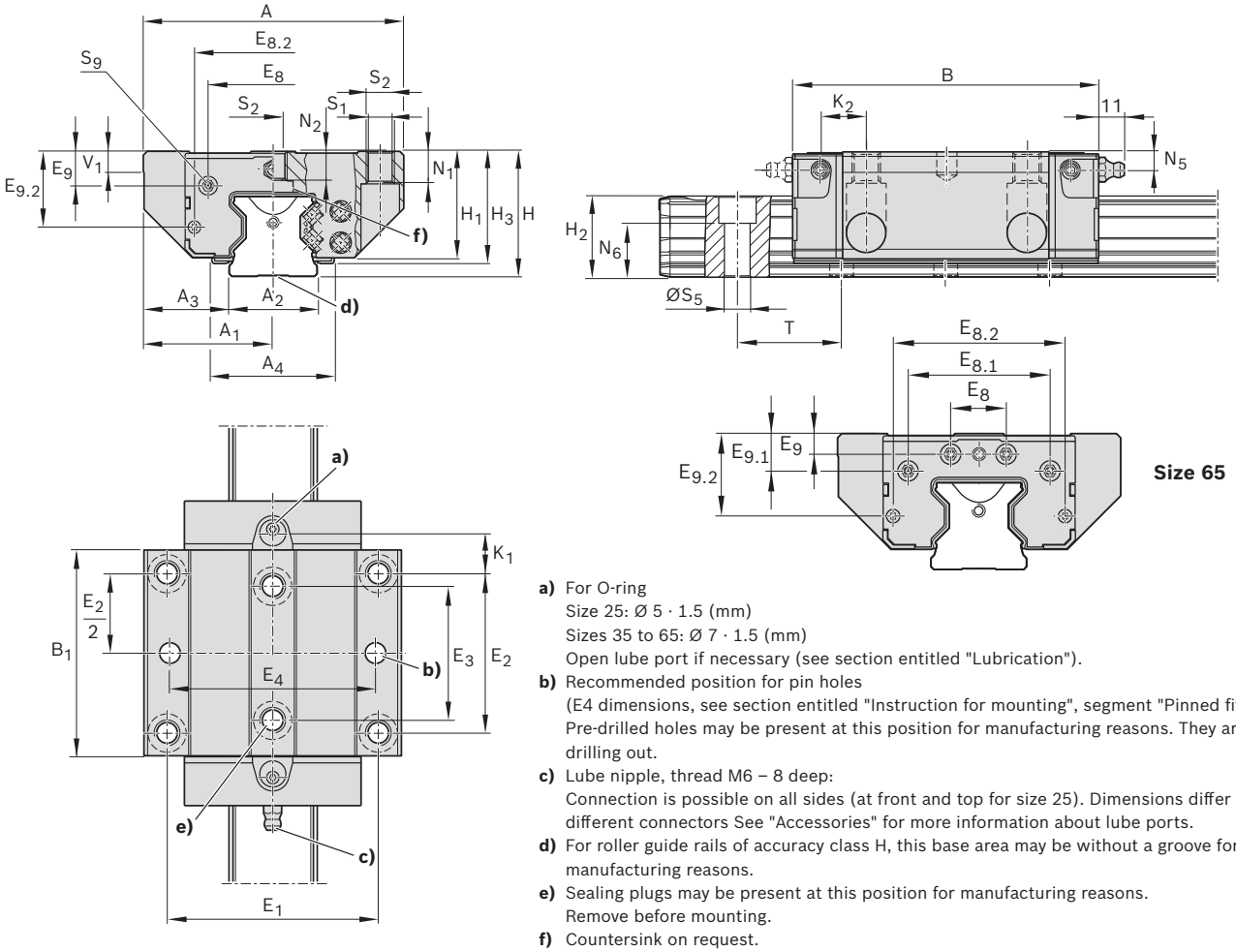
Options:

- Roller runner block FNS
- Size 35
- Preload class C2
- Accuracy class H
- With double-lip seal 2X

Material number: R1851 323 2X

**Preload classes**
C2 = Average preload
C3 = High preload
C1, C4, C5 upon request

**Seals**
DS = Double-lip seal
SS = Standard seal
AS = Longitudinal seal




**a)** For O-ring
Size 25: Ø 5 · 1.5 (mm)
Sizes 35 to 65: Ø 7 · 1.5 (mm)
Open lube port if necessary (see section entitled "Lubrication").

**b)** Recommended position for pin holes
(E4 dimensions, see section entitled "Instruction for mounting", segment "Pinned fitting").
Pre-drilled holes may be present at this position for manufacturing reasons. They are suitable for drilling out.

**c)** Lube nipple, thread M6 – 8 deep:
Connection is possible on all sides (at front and top for size 25). Dimensions differ among different connectors See "Accessories" for more information about lube ports.

**d)** For roller guide rails of accuracy class H, this base area may be without a groove for manufacturing reasons.

**e)** Sealing plugs may be present at this position for manufacturing reasons.
Remove before mounting.

**f)** Countersink on request.

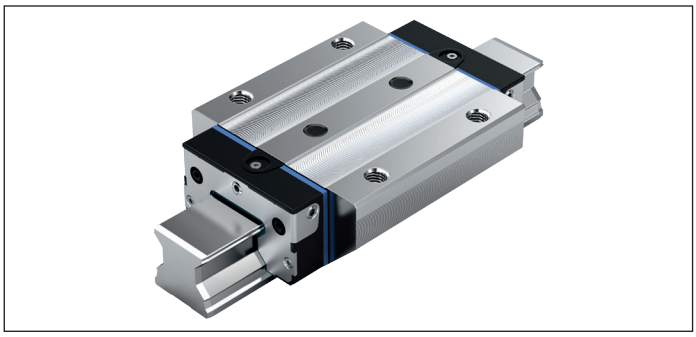
## Dimensions (mm)

| Size | A | $A_1$ | $A_2$ | $A_3$ | $A_4$ [1)] | B | $B_1$ | $E_1$ | $E_2$ | $E_3$ | $E_4$ | $E_8$ | $E_{8.1}$ | $E_{8.2}$ | $E_9$ | $E_{9.1}$ | $E_{9.2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **25** | 70 | 35 | 23 | 23.5 | – | 97.00 | 63.5 | 57 | 45 | 40 | 55 | 33.4 | – | 40.2 | 8.30 | – | 21.40 |
| **35** | 100 | 50 | 34 | 33.0 | 47.0 | 118.00 | 79.6 | 82 | 62 | 52 | 80 | 50.3 | – | 60.5 | 13.10 | – | 29.10 |
| **45** | 120 | 60 | 45 | 37.5 | 55.6 | 147.00 | 101.5 | 100 | 80 | 60 | 98 | 62.9 | – | 72.0 | 16.70 | – | 36.50 |
| **55** | 140 | 70 | 53 | 43.5 | 63.3 | 170.65 | 123.1 | 116 | 95 | 70 | 114 | 74.2 | – | 81.6 | 18.85 | – | 40.75 |
| **65** | 170 | 85 | 63 | 53.5 | – | 207.30 | 146.0 | 142 | 110 | 82 | 140 | 35.0 | 93 | 106.0 | 9.30 | 26 | 55.00 |

| Size | H | $H_1$ | $H_2$ [2)] | $H_2$ [3)] | $H_3$ [4)] | $K_1$ | $K_2$ | $N_1$ | $N_2$ | $N_5$ | $N_6^{\pm 0.5}$ | Ø $S_1$ | $S_2$ | $S_5$ | $S_9$ [5)] | T [6)] | $V_1$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **25** | 36 | 30 | 23.60 | 23.40 | – | 14.05 | – | 9 | 7.3 | 5.5 | 14.3 | 6.7 | M8 | 7 | M3-6,5 deep | 30.0 | 7.5 |
| **35** | 48 | 41 | 31.10 | 30.80 | 43 | 15.55 | 17.40 | 12 | 11.0 | 7.0 | 19.4 | 8.5 | M10 | 9 | M3-6,0 deep | 40.0 | 8.0 |
| **45** | 60 | 51 | 39.10 | 38.80 | 53 | 17.45 | 20.35 | 15 | 13.5 | 8.0 | 22.4 | 10.4 | M12 | 14 | M4-9,0 deep | 52.5 | 10.0 |
| **55** | 70 | 58 | 47.85 | 47.55 | 60 | 21.75 | 24.90 | 18 | 13.7 | 9.0 | 28.7 | 12.4 | M14 | 16 | M5-8.0 deep | 60.0 | 12.0 |
| **65** | 90 | 76 | 58.15 | 57.85 | – | 30.00 | 33.00 | 23 | 21.5 | 9.3 | 36.5 | 14.6 | M16 | 18 | M4-8.0 deep | 75.0 | 15.0 |

**1)** Dimension $A_4$ = Width of the additional longitudinal seal
**2)** Dimension $H_2$ with cover strip
**3)** Dimension $H_2$ without cover strip
**4)** Dimension $H_3$ = Total roller runner block including the additional longitudinal seal
**5)** Thread for connecting parts
**6)** T = Rail separation of the roller guide rail

# FLS – Flanged, long, standard height
# R1853 ... 2.



**Dynamic characteristics**

Travel speed: $v_{max}$ = 4 m/s

Acceleration: $a_{max}$ = 150 m/s$^2$

**Recommended combination based on preload and accuracy class**

- For preload C2: H and P (preferably)
- For preload C3: P and SP

**Material numbers**

| Size | Roller runner block with size | Preload class | | Accuracy class | | | | Seals | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | C2 | C3 | H | P | SP | UP | DS | SS[1] | AS[2] |
| **25** | R1853 2 | 2 | | 3 | 2 | 1 | 9 | 2X | – | – |
| | | | 3 | | 2 | 1 | 9 | 2X | – | – |
| **35** | R1853 3 | 2 | | 3 | 2 | 1 | 9 | 2X | 24 | 2A |
| | | | 3 | | 2 | 1 | 9 | 2X | 24 | 2A |
| **45** | R1853 4 | 2 | | 3 | 2 | 1 | 9 | 2X | 24 | 2A |
| | | | 3 | | 2 | 1 | 9 | 2X | 24 | 2A |
| **55** | R1853 5 | 2 | | 3 | 2 | 1 | 9 | 2X | – | 2A |
| | | | 3 | | 2 | 1 | 9 | 2X | – | 2A |
| **65** | R1853 6 | 2 | | 3 | 2 | 1 | 9 | 2X | – | – |
| | | | 3 | | 2 | 1 | 9 | 2X | – | – |

**1)** In preparation
**2)** With integrated DS seal

**Technical data**

| Size | Mass (kg) | Load ratings[2] (N) | | Torsional moment load capacity[2] (Nm) | | Longitudinal moment load capacity[2] (Nm) | |
|---|---|---|---|---|---|---|---|
| | m | C | $C_0$ | $M_t$ | $M_{t0}$ | $M_L$ | $M_{L0}$ |
| **25** | 0.93 | 33300 | 76400 | 432 | 990 | 420 | 970 |
| **35** | 2.70 | 74900 | 155400 | 1490 | 3080 | 1220 | 2530 |
| **45** | 5.15 | 132300 | 276400 | 3270 | 6830 | 2690 | 5630 |
| **55** | 7.15 | 174000 | 374900 | 5100 | 10990 | 4420 | 9520 |
| **65** | 14.18 | 295900 | 606300 | 10510 | 21540 | 8870 | 18180 |

**2)** Determination of the dynamic load capacities and load moments is based on a stroke travel of 100,000 m according to DIN ISO 14728-1. However, often only 50,000 m is actually stipulated. For comparison: Multiply values C, $M_t$ and $M_L$ from the table by 1.23.

**Order example**

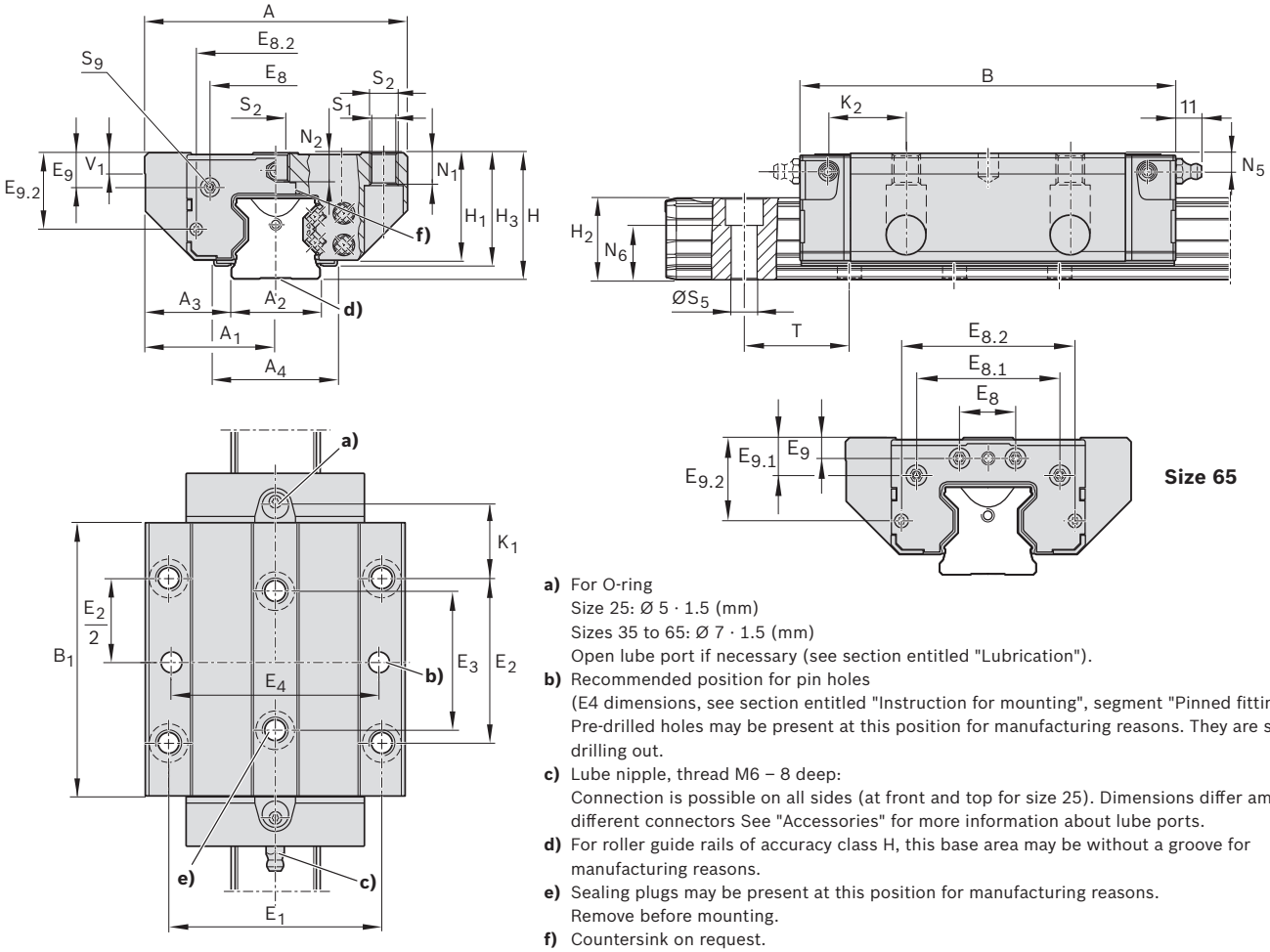
Options:

- Roller runner blocks FLS
- Size 35
- Preload class C2
- Accuracy class H
- With double-lip seal 2X

Material number: R1853 323 2X

**Preload classes**
C2 = Average preload
C3 = High preload
C1, C4, C5 upon request

**Seals**
DS = Double-lip seal
SS = Standard seal
AS = Longitudinal seal




**a)** For O-ring
Size 25: Ø 5 · 1.5 (mm)
Sizes 35 to 65: Ø 7 · 1.5 (mm)
Open lube port if necessary (see section entitled "Lubrication").

**b)** Recommended position for pin holes
(E4 dimensions, see section entitled "Instruction for mounting", segment "Pinned fitting").
Pre-drilled holes may be present at this position for manufacturing reasons. They are suitable for drilling out.

**c)** Lube nipple, thread M6 – 8 deep:
Connection is possible on all sides (at front and top for size 25). Dimensions differ among different connectors See "Accessories" for more information about lube ports.

**d)** For roller guide rails of accuracy class H, this base area may be without a groove for manufacturing reasons.

**e)** Sealing plugs may be present at this position for manufacturing reasons.
Remove before mounting.

**f)** Countersink on request.

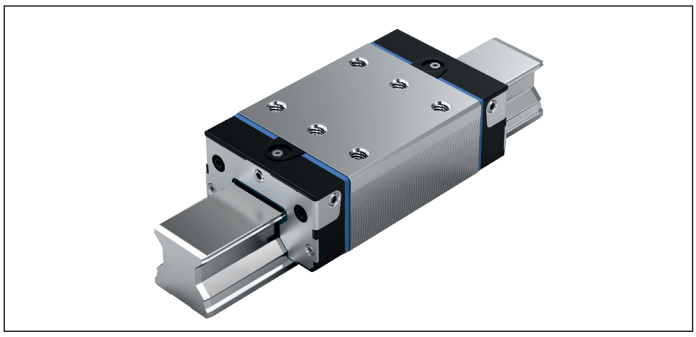
## Dimensions (mm)

| Size | A | $A_1$ | $A_2$ | $A_3$ | $A_4$ [1)] | B | $B_1$ | $E_1$ | $E_2$ | $E_3$ | $E_4$ | $E_8$ | $E_{8.1}$ | $E_{8.2}$ | $E_9$ | $E_{9.1}$ | $E_{9.2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **25** | 70 | 35 | 23 | 23.5 | – | 115.00 | 81.5 | 57 | 45 | 40 | 55 | 33.4 | – | 40.2 | 8.30 | – | 21.40 |
| **35** | 100 | 50 | 34 | 33.0 | 47.0 | 142.00 | 103.6 | 82 | 62 | 52 | 80 | 50.3 | – | 60.5 | 13.10 | – | 29.10 |
| **45** | 120 | 60 | 45 | 37.5 | 55.6 | 179.50 | 134.0 | 100 | 80 | 60 | 98 | 62.9 | – | 72.0 | 16.70 | – | 36.50 |
| **55** | 140 | 70 | 53 | 43.5 | 63.3 | 209.65 | 162.1 | 116 | 95 | 70 | 114 | 74.2 | – | 81.6 | 18.85 | – | 40.75 |
| **65** | 170 | 85 | 63 | 53.5 | – | 255.30 | 194.0 | 142 | 110 | 82 | 140 | 35.0 | 93.00 | 106.0 | 9.30 | 26.00 | 55.00 |

| Size | H | $H_1$ | $H_2$ [2)] | $H_2$ [3)] | $H_3$ [4)] | $K_1$ | $K_2$ | $N_1$ | $N_2$ | $N_5$ | $N_6^{\pm 0.5}$ | Ø $S_1$ | $S_2$ | $S_5$ | $S_9$ [5)] | T [6)] | $V_1$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **25** | 36 | 30 | 23.60 | 23.40 | – | 23.05 | – | 9 | 7.3 | 5.5 | 14.3 | 6.7 | M8 | 7 | M3-6,5 deep | 30.0 | 7.5 |
| **35** | 48 | 41 | 31.10 | 30.80 | 43 | 27.55 | 29.40 | 12 | 11.0 | 7.0 | 19.4 | 8.5 | M10 | 9 | M3-6,0 deep | 40.0 | 8.0 |
| **45** | 60 | 51 | 39.10 | 38.80 | 53 | 33.70 | 36.60 | 15 | 13.5 | 8.0 | 22.4 | 10.4 | M12 | 14 | M4-9,0 deep | 52.5 | 10.0 |
| **55** | 70 | 58 | 47.85 | 47.55 | 60 | 41.25 | 44.40 | 18 | 13.7 | 9.0 | 28.7 | 12.4 | M14 | 16 | M5-8.0 deep | 60.0 | 12.0 |
| **65** | 90 | 76 | 58.15 | 57.85 | – | 54.00 | 57.00 | 23 | 21.5 | 9.3 | 36.5 | 14.6 | M16 | 18 | M4-8.0 deep | 75.0 | 15.0 |

**1)** Dimension $A_4$ = Width of the additional longitudinal seal
**2)** Dimension $H_2$ with cover strip
**3)** Dimension $H_2$ without cover strip
**4)** Dimension $H_3$ = Total roller runner block including the additional longitudinal seal
**5)** Thread for connecting parts
**6)** T = Rail separation of the roller guide rail

# SNS – Slimline, normal, standard height
# R1822 ... 2.



**Dynamic characteristics**

Travel speed: $v_{max}$ = 4 m/s

Acceleration: $a_{max}$ = 150 m/s$^2$

**Recommended combination based on preload and accuracy class**

- For preload C2: H and P (preferably)
- For preload C3: P and SP

**Material numbers**

| Size | Roller runner block with size | Preload class | | Accuracy class | | | | Seals | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | C2 | C3 | H | P | SP | UP | DS | SS[1] | AS[2] |
| **25** | R1822 2 | 2 | | 3 | 2 | 1 | 9 | 2X | – | – |
| | | | 3 | | 2 | 1 | 9 | 2X | – | – |
| **35** | R1822 3 | 2 | | 3 | 2 | 1 | 9 | 2X | 24 | 2A |
| | | | 3 | | 2 | 1 | 9 | 2X | 24 | 2A |
| **45** | R1822 4 | 2 | | 3 | 2 | 1 | 9 | 2X | 24 | 2A |
| | | | 3 | | 2 | 1 | 9 | 2X | 24 | 2A |
| **55** | R1822 5 | 2 | | 3 | 2 | 1 | 9 | 2X | – | 2A |
| | | | 3 | | 2 | 1 | 9 | 2X | – | 2A |
| **65** | R1822 6 | 2 | | 3 | 2 | 1 | 9 | 2X | – | – |
| | | | 3 | | 2 | 1 | 9 | 2X | – | – |

**1)** In preparation
**2)** With integrated DS seal

**Technical data**

| Size | Mass (kg) | Load capacities [1] (N) | | Torsional moment load capacity[1] (Nm) | | Longitudinal moment load capacity[1] (Nm) | |
|---|---|---|---|---|---|---|---|
| | m | C | $C_0$ | $M_t$ | $M_{t0}$ | $M_L$ | $M_{L0}$ |
| **25** | 0.54 | 26900 | 59500 | 348 | 770 | 260 | 580 |
| **35** | 1.55 | 61000 | 119400 | 1210 | 2370 | 760 | 1480 |
| **45** | 2.90 | 106600 | 209400 | 2640 | 5180 | 1650 | 3,240 |
| **55** | 4.14 | 140400 | 284700 | 4120 | 8350 | 2610 | 5290 |
| **65** | 8.12 | 237200 | 456300 | 8430 | 16210 | 5260 | 10120 |

**2)** Determination of the dynamic load capacities and load moments is based on a stroke travel of 100,000 m according to DIN ISO 14728-1. However, often only 50,000 m is actually stipulated. For comparison: Multiply values C, $M_t$ and $M_L$ from the table by 1.23.

**Order example**

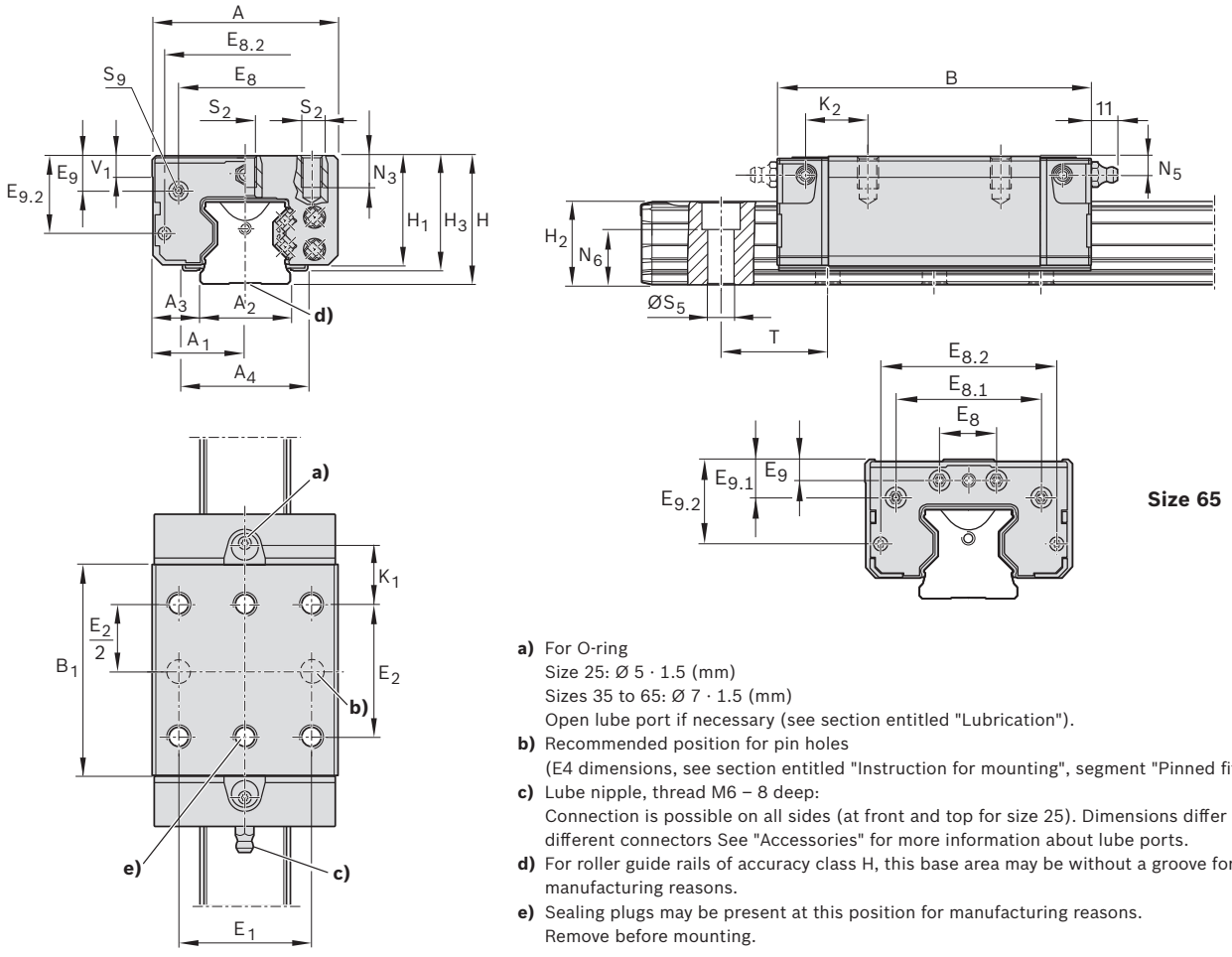
Options:

- Roller runner block SNS
- Size 35
- Preload class C2
- Accuracy class H
- With double-lip seal 2X

Material number: R1822 323 2X

**Preload classes**
C2 = Average preload
C3 = High preload
C1, C4, C5 upon request

**Seals**
DS = Double-lip seal
SS = Standard seal
AS = Longitudinal seal




**a)** For O-ring
Size 25: Ø 5 · 1.5 (mm)
Sizes 35 to 65: Ø 7 · 1.5 (mm)
Open lube port if necessary (see section entitled "Lubrication").

**b)** Recommended position for pin holes
(E4 dimensions, see section entitled "Instruction for mounting", segment "Pinned fitting").

**c)** Lube nipple, thread M6 – 8 deep:
Connection is possible on all sides (at front and top for size 25). Dimensions differ among different connectors See "Accessories" for more information about lube ports.

**d)** For roller guide rails of accuracy class H, this base area may be without a groove for manufacturing reasons.

**e)** Sealing plugs may be present at this position for manufacturing reasons.
Remove before mounting.

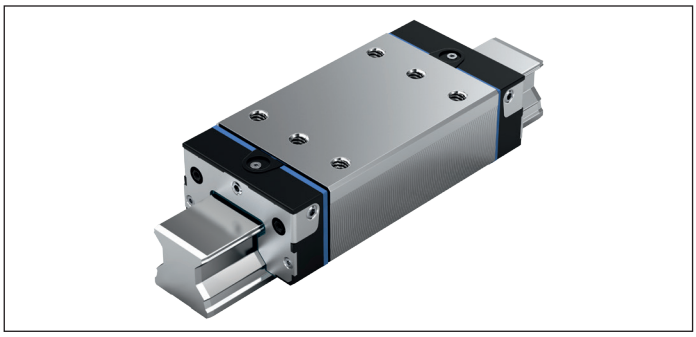
## Dimensions (mm)

| Size | A | $A_1$ | $A_2$ | $A_3$ | $A_4$ [2)] | B | $B_1$ | $E_1$ | $E_2$ | $E_8$ | $E_{8.1}$ | $E_{8.2}$ | $E_9$ | $E_{9.1}$ | $E_{9.2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **25** | 48 | 24 | 23 | 12.5 | – | 97.00 | 63.5 | 35 | 35 | 33.4 | – | 40.2 | 8.30 | – | 21.40 |
| **35** | 70 | 35 | 34 | 18.0 | 47.0 | 118.00 | 79.6 | 50 | 50 | 50.3 | – | 60.5 | 13.10 | – | 29.10 |
| **45** | 86 | 43 | 45 | 20.5 | 55.6 | 147.00 | 101.5 | 60 | 60 | 62.9 | – | 72.0 | 16.70 | – | 36.50 |
| **55** | 100 | 50 | 53 | 23.5 | 63.3 | 170.65 | 123.1 | 75 | 75 | 74.2 | – | 81.6 | 18.85 | – | 40.75 |
| **65** | 126 | 63 | 63 | 31.5 | – | 207.30 | 146.0 | 76 | 70 | 35.0 | 93.00 | 106.0 | 9.30 | 26.00 | 55.00 |

| Size | H | $H_1$ | $H_2$ [3)] | $H_2$ [4)] | $H_3$ [5)] | $K_1$ | $K_2$ | $N_3$ | $N_5$ | $N_6^{\pm 0.5}$ | $S_2$ | $S_5$ | $S_9$ [6)] | T [7)] | $V_1$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **25** | 36 | 30 | 23.60 | 23.40 | – | 19.05 | – | 8 | 5.5 | 14.3 | M6 | 7 | M3-6,5 deep | 30.0 | 7.5 |
| **35** | 48 | 41 | 31.10 | 30.80 | 43 | 21.55 | 23.40 | 12 | 7.0 | 19.4 | M8 | 9 | M3-6,0 deep | 40.0 | 8.0 |
| **45** | 60 | 51 | 39.10 | 38.80 | 53 | 27.45 | 30.35 | 18 | 8.0 | 22.4 | M10 | 14 | M4-9,0 deep | 52.5 | 10.0 |
| **55** | 70 | 58 | 47.85 | 47.55 | 60 | 31.75 | 34.90 | 17 | 9.0 | 28.7 | M12 | 16 | M5-8.0 deep | 60.0 | 12.0 |
| **65** | 90 | 76 | 58.15 | 57.85 | – | 50.00 | 53.00 | 21 | 9.3 | 36.5 | M16 | 18 | M4-8.0 deep | 75.0 | 15.0 |

**1)** Dimension $A_4$ = Width of the additional longitudinal seal
**2)** Dimension $H_2$ with cover strip
**3)** Dimension $H_2$ without cover strip
**4)** Dimension $H_3$ = Total roller runner block including the additional longitudinal seal
**5)** Thread for connecting parts
**6)** T = Rail separation of the roller guide rail

# SLS – Slimline, long, standard height
# R1823 ... 2.



**Dynamic characteristics**

Travel speed: $v_{max}$ = 4 m/s

Acceleration: $a_{max}$ = 150 m/s$^2$

**Recommended combination based on preload and accuracy class**

- For preload C2: H and P (preferably)
- For preload C3: P and SP

**Material numbers**

| Size | Roller runner block with size | Preload class | | Accuracy class | | | | Seals | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | C2 | C3 | H | P | SP | UP | DS | SS[1] | AS[2] |
| **25** | R1823 2 | 2 | | 3 | 2 | 1 | 9 | 2X | – | – |
| | | | 3 | | 2 | 1 | 9 | 2X | – | – |
| **35** | R1823 3 | 2 | | 3 | 2 | 1 | 9 | 2X | 24 | 2A |
| | | | 3 | | 2 | 1 | 9 | 2X | 24 | 2A |
| **45** | R1823 4 | 2 | | 3 | 2 | 1 | 9 | 2X | 24 | 2A |
| | | | 3 | | 2 | 1 | 9 | 2X | 24 | 2A |
| **55** | R1823 5 | 2 | | 3 | 2 | 1 | 9 | 2X | – | 2A |
| | | | 3 | | 2 | 1 | 9 | 2X | – | 2A |
| **65** | R1823 6 | 2 | | 3 | 2 | 1 | 9 | 2X | – | – |
| | | | 3 | | 2 | 1 | 9 | 2X | – | – |

**1)** In preparation

**2)** With integrated DS seal

**Technical data**

| Size | Mass (kg) | Load ratings[2] (N) | | Torsional moment load capacity[2] (Nm) | | Longitudinal moment load capacity[2] (Nm) | |
|---|---|---|---|---|---|---|---|
| | m | C | $C_0$ | $M_t$ | $M_{t0}$ | $M_L$ | $M_{L0}$ |
| **25** | 0.68 | 33300 | 76400 | 432 | 990 | 420 | 970 |
| **35** | 1.95 | 74900 | 155400 | 1490 | 3080 | 1220 | 2530 |
| **45** | 3.65 | 132300 | 276400 | 3270 | 6830 | 2690 | 5630 |
| **55** | 5.30 | 174000 | 374900 | 5100 | 10990 | 4420 | 9520 |
| **65** | 10.68 | 295900 | 606300 | 10510 | 21540 | 8870 | 18180 |

**2)** Determination of the dynamic load capacities and load moments is based on a stroke travel of 100,000 m according to DIN ISO 14728-1. However, often only 50,000 m is actually stipulated. For comparison: Multiply values C, $M_t$ and $M_L$ from the table by 1.23.

**Order example**

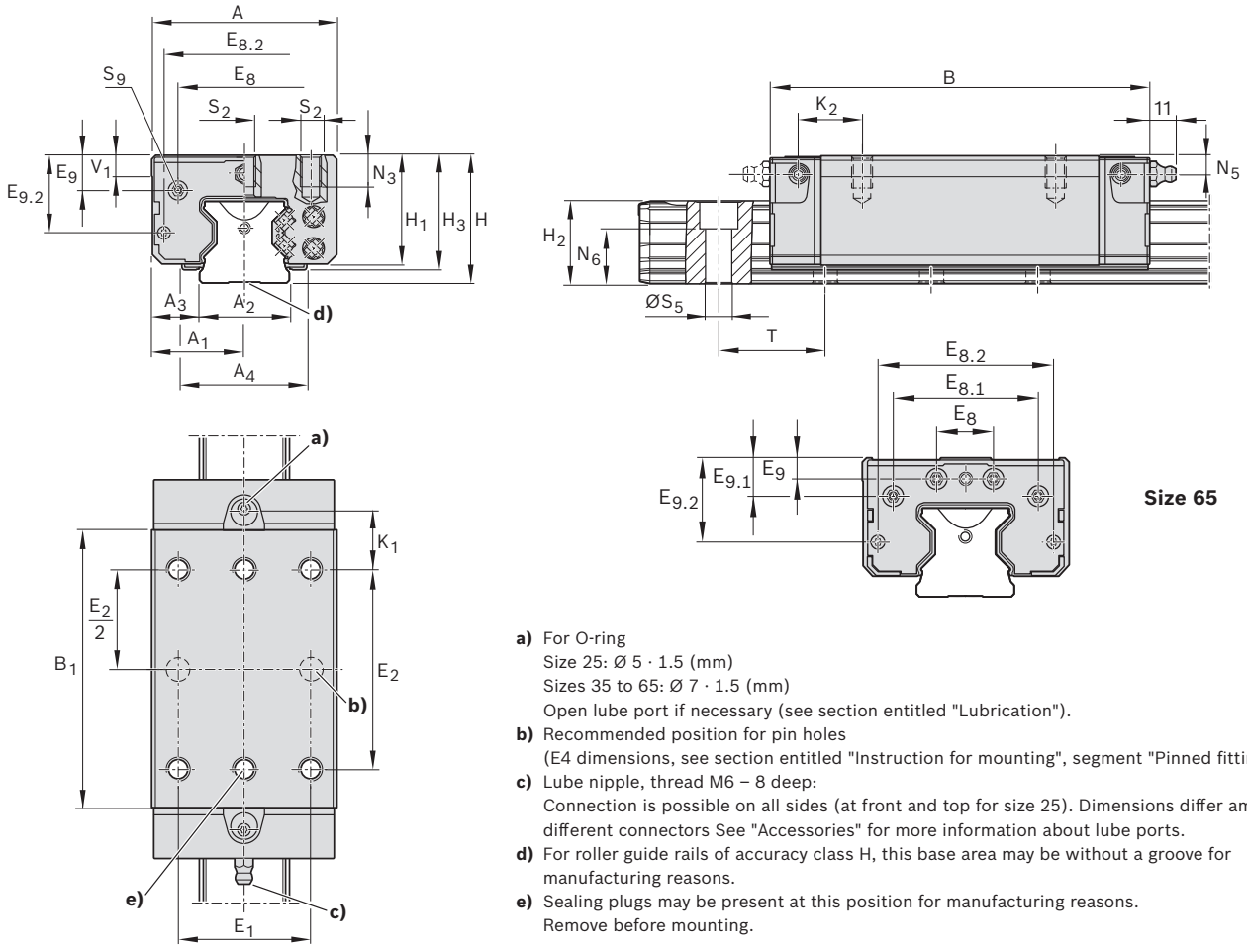
Options:

- Roller runner block SLS
- Size 35
- Preload class C2
- Accuracy class H
- With double-lip seal 2X

Material number: R1823 323 2X

**Preload classes**
C2 = Average preload
C3 = High preload
C1, C4, C5 upon request

**Seals**
DS = Double-lip seal
SS = Standard seal
AS = Longitudinal seal




**a)** For O-ring
Size 25: Ø 5 · 1.5 (mm)
Sizes 35 to 65: Ø 7 · 1.5 (mm)
Open lube port if necessary (see section entitled "Lubrication").

**b)** Recommended position for pin holes
(E4 dimensions, see section entitled "Instruction for mounting", segment "Pinned fitting").

**c)** Lube nipple, thread M6 – 8 deep:
Connection is possible on all sides (at front and top for size 25). Dimensions differ among different connectors See "Accessories" for more information about lube ports.

**d)** For roller guide rails of accuracy class H, this base area may be without a groove for manufacturing reasons.

**e)** Sealing plugs may be present at this position for manufacturing reasons.
Remove before mounting.

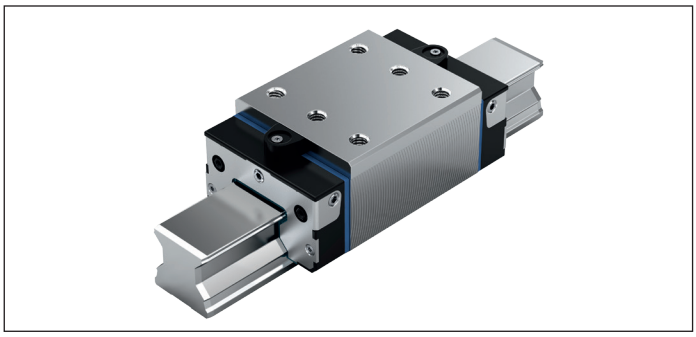
## Dimensions (mm)

| Size | A | $A_1$ | $A_2$ | $A_3$ | $A_4$ [1)] | B | $B_1$ | $E_1$ | $E_2$ | $E_8$ | $E_{8.1}$ | $E_{8.2}$ | $E_9$ | $E_{9.1}$ | $E_{9.2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **25** | 48 | 24 | 23 | 12.5 | – | 115.00 | 81.5 | 35 | 50 | 33.4 | – | 40.2 | 8.30 | – | 21.40 |
| **35** | 70 | 35 | 34 | 18.0 | 47.0 | 142.00 | 103.6 | 50 | 72 | 50.3 | – | 60.5 | 13.10 | – | 29.10 |
| **45** | 86 | 43 | 45 | 20.5 | 55.6 | 179.50 | 134.0 | 60 | 80 | 62.9 | – | 72.0 | 16.70 | – | 36.50 |
| **55** | 100 | 50 | 53 | 23.5 | 63.3 | 209.65 | 162.1 | 75 | 95 | 74.2 | – | 81.6 | 18.85 | – | 40.75 |
| **65** | 126 | 63 | 63 | 31.5 | – | 255.30 | 194.0 | 76 | 120 | 35.0 | 93.00 | 106.0 | 9.30 | 26.00 | 55.00 |

| Size | H | $H_1$ | $H_2$ [2)] | $H_2$ [3)] | $H_3$ [4)] | $K_1$ | $K_2$ | $N_3$ | $N_5$ | $N_6^{\pm 0.5}$ | $S_2$ | $S_5$ | $S_9$ [5)] | T [6)] | $V_1$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **25** | 36 | 30 | 23.60 | 23.40 | – | 20.55 | – | 8 | 5.5 | 14.3 | M6 | 7 | M3-6,5 deep | 30.0 | 7.5 |
| **35** | 48 | 41 | 31.10 | 30.80 | 43 | 22.55 | 24.40 | 12 | 7.0 | 19.4 | M8 | 9 | M3-6,0 deep | 40.0 | 8.0 |
| **45** | 60 | 51 | 39.10 | 38.80 | 53 | 33.70 | 36.60 | 18 | 8.0 | 22.4 | M10 | 14 | M4-9,0 deep | 52.5 | 10.0 |
| **55** | 70 | 58 | 47.85 | 47.55 | 60 | 41.25 | 44.40 | 17 | 9.0 | 28.7 | M12 | 16 | M5-8.0 deep | 60.0 | 12.0 |
| **65** | 90 | 76 | 58.15 | 57.85 | – | 49.00 | 52.00 | 21 | 9.3 | 36.5 | M16 | 18 | M4-8.0 deep | 75.0 | 15.0 |

**1)** Dimension $A_4$ = Width of the additional longitudinal seal
**2)** Dimension $H_2$ with cover strip
**3)** Dimension $H_2$ without cover strip
**4)** Dimension $H_3$ = Total roller runner block including the additional longitudinal seal
**5)** Thread for connecting parts
**6)** T = Rail separation of the roller guide rail

# SNH – Slimline, normal, high
# R1821 ... 2.



**Dynamic characteristics**

Travel speed: $v_{max}$ = 4 m/s

Acceleration: $a_{max}$ = 150 m/s$^2$

**Recommended combination based on preload and accuracy class**

- For preload C2: H and P (preferably)
- For preload C3: P and SP

**Material numbers**

| Size | Roller runner block with size | Preload class | | Accuracy class | | | | Seals | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | C2 | C3 | H | P | SP | UP | DS | SS[1)] | AS[2)] |
| **25** | R1821 2 | 2 | | 3 | 2 | 1 | 9 | 2X | – | – |
| | | | 3 | | 2 | 1 | 9 | 2X | – | – |
| **35** | R1821 3 | 2 | | 3 | 2 | 1 | 9 | 2X | 24 | 2A |
| | | | 3 | | 2 | 1 | 9 | 2X | 24 | 2A |
| **45** | R1821 4 | 2 | | 3 | 2 | 1 | 9 | 2X | 24 | 2A |
| | | | 3 | | 2 | 1 | 9 | 2X | 24 | 2A |
| **55** | R1821 5 | 2 | | 3 | 2 | 1 | 9 | 2X | – | 2A |
| | | | 3 | | 2 | 1 | 9 | 2X | – | 2A |

**1)** In preparation
**2)** With integrated DS seal

**Technical data**

| Size | Mass (kg) | Load ratings[2] (N) | | Torsional moment load capacity[2)] (Nm) | | Longitudinal moment load capacity[2)] (Nm) | |
|---|---|---|---|---|---|---|---|
| | m | C | $C_0$ | $M_t$ | $M_{t0}$ | $M_L$ | $M_{L0}$ |
| **25** | 0.63 | 26900 | 59500 | 348 | 770 | 260 | 580 |
| **35** | 1.85 | 61000 | 119400 | 1210 | 2370 | 760 | 1480 |
| **45** | 3.35 | 106600 | 209400 | 2640 | 5180 | 1650 | 3,240 |
| **55** | 5.04 | 140400 | 284700 | 4120 | 8350 | 2610 | 5290 |

**2)** Determination of the dynamic load capacities and load moments is based on a stroke travel of 100,000 m according to DIN ISO 14728-1. However, often only 50,000 m is actually stipulated. For comparison: Multiply values C, $M_t$ and $M_L$ from the table by 1.23.

**Order example**

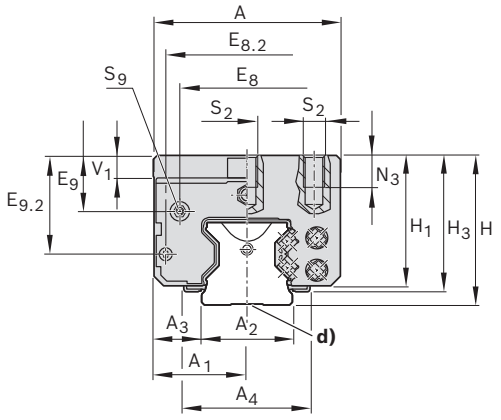
Options:

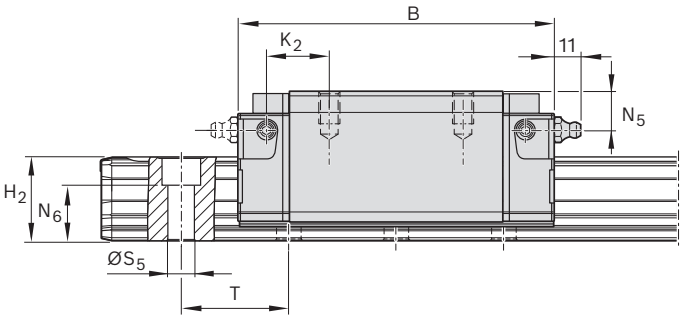
- Roller runner block SNH
- Size 35
- Preload class C2
- Accuracy class H
- With double-lip seal 2X

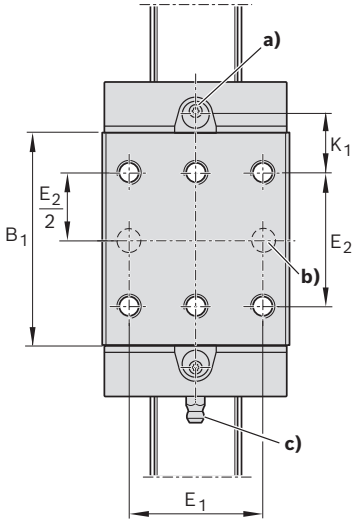
Material number: R1821 323 2X

**Preload classes**
C2 = Average preload
C3 = High preload
C1, C4, C5 upon request

**Seals**
DS = Double-lip seal
SS = Standard seal
AS = Longitudinal seal




**a)** For O-ring
Size 25: Ø 5 · 1.5 (mm)
Sizes 35 to 55: Ø 7 · 1.5 (mm)
Open lube port if necessary (see section entitled "Lubrication").

**b)** Recommended position for pin holes
(E4 dimensions, see section entitled "Instruction for mounting", segment "Pinned fitting").

**c)** Lube nipple, thread M6 – 8 deep:
Connection is possible on all sides (at front and top for size 25).
Dimensions differ among different connectors
See "Accessories" for more information about lube ports.

**d)** For roller guide rails of accuracy class H, this base area may be without a groove for manufacturing reasons.

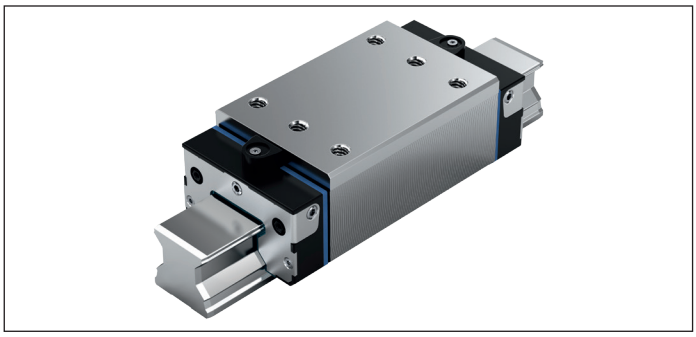
## Dimensions (mm)

| Size | A | $A_1$ | $A_2$ | $A_3$ | $A_4$ [1)] | B | $B_1$ | $E_1$ | $E_2$ | $E_8$ | $E_{8.2}$ | $E_9$ | $E_{9.2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **25** | 48 | 24 | 23 | 12.5 | – | 97.00 | 63.5 | 35 | 35 | 33.4 | 40.2 | 12.30 | 25.40 |
| **35** | 70 | 35 | 34 | 18.0 | 47.0 | 118.00 | 79.6 | 50 | 50 | 50.3 | 60.5 | 20.10 | 36.10 |
| **45** | 86 | 43 | 45 | 20.5 | 55.6 | 147.00 | 101.5 | 60 | 60 | 62.9 | 72.0 | 26.70 | 46.50 |
| **55** | 100 | 50 | 53 | 23.5 | 63.3 | 170.65 | 123.1 | 75 | 75 | 74.2 | 81.6 | 28.85 | 50.75 |

| Size | H | $H_1$ | $H_2$ [2)] | $H_2$ [3)] | $H_3$ [4)] | $K_1$ | $K_2$ | $N_3$ | $N_5$ | $N_6$ [±0.5] | $S_2$ | $S_5$ | $S_9$ [5)] | T [6)] | $V_1$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **25** | 40 | 34 | 23.60 | 23.40 | – | 19.05 | – | 8 | – | 14.3 | M6 | 7 | M3-6,5 deep | 30.0 | 7.5 |
| **35** | 55 | 48 | 31.10 | 30.80 | 50 | 21.55 | 23.40 | 13 | 14.0 | 19.4 | M8 | 9 | M3-6,0 deep | 40.0 | 8.0 |
| **45** | 70 | 61 | 39.10 | 38.80 | 63 | 27.45 | 30.35 | 18 | 18.0 | 22.4 | M10 | 14 | M4-9,0 deep | 52.5 | 10.0 |
| **55** | 80 | 68 | 47.85 | 47.55 | 70 | 31.75 | 34.90 | 19 | 19.0 | 28.7 | M12 | 16 | M5-8.0 deep | 60.0 | 12.0 |

**1)** Dimension $A_4$ = Width of the additional longitudinal seal
**2)** Dimension $H_2$ with cover strip
**3)** Dimension $H_2$ without cover strip
**4)** Dimension $H_3$ = Total roller runner block including the additional longitudinal seal
**5)** Thread for connecting parts
**6)** T = Rail separation of the roller guide rail

# SLH – Slimline, long, high
# R1824 ... 2.



**Dynamic characteristics**

Travel speed: $v_{max}$ = 4 m/s

Acceleration: $a_{max}$ = 150 m/s$^2$

**Recommended combination based on preload and accuracy class**

- For preload C2: H and P (preferably)
- For preload C3: P and SP

**Material numbers**

| Size | Roller runner block with size | Preload class | | Accuracy class | | | | Seals | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | C2 | C3 | H | P | SP | UP | DS | SS[1] | AS[2] |
| **25** | R1824 2 | 2 | | 3 | 2 | 1 | 9 | 2X | – | – |
| | | | 3 | | 2 | 1 | 9 | 2X | – | – |
| **35** | R1824 3 | 2 | | 3 | 2 | 1 | 9 | 2X | 24 | 2A |
| | | | 3 | | 2 | 1 | 9 | 2X | 24 | 2A |
| **45** | R1824 4 | 2 | | 3 | 2 | 1 | 9 | 2X | 24 | 2A |
| | | | 3 | | 2 | 1 | 9 | 2X | 24 | 2A |
| **55** | R1824 5 | 2 | | 3 | 2 | 1 | 9 | 2X | – | 2A |
| | | | 3 | | 2 | 1 | 9 | 2X | – | 2A |

**1)** In preparation
**2)** With integrated DS seal

**Technical data**

| Size | Mass (kg) | Load ratings[2] (N) | | Torsional moment load capacity[2] (Nm) | | Longitudinal moment load capacity[2] (Nm) | |
|---|---|---|---|---|---|---|---|
| | m | C | $C_0$ | $M_t$ | $M_{t0}$ | $M_L$ | $M_{L0}$ |
| **25** | 0.80 | 33300 | 76400 | 432 | 990 | 420 | 970 |
| **35** | 2.35 | 74900 | 155400 | 1490 | 3080 | 1220 | 2530 |
| **45** | 4.45 | 132300 | 276400 | 3270 | 6830 | 2690 | 5630 |
| **55** | 6.55 | 174000 | 374900 | 5100 | 10990 | 4420 | 9520 |

**2)** Determination of the dynamic load capacities and load moments is based on a stroke travel of 100,000 m according to DIN ISO 14728-1. However, often only 50,000 m is actually stipulated. For comparison: Multiply values C, $M_t$ and $M_L$ from the table by 1.23.

**Order example**

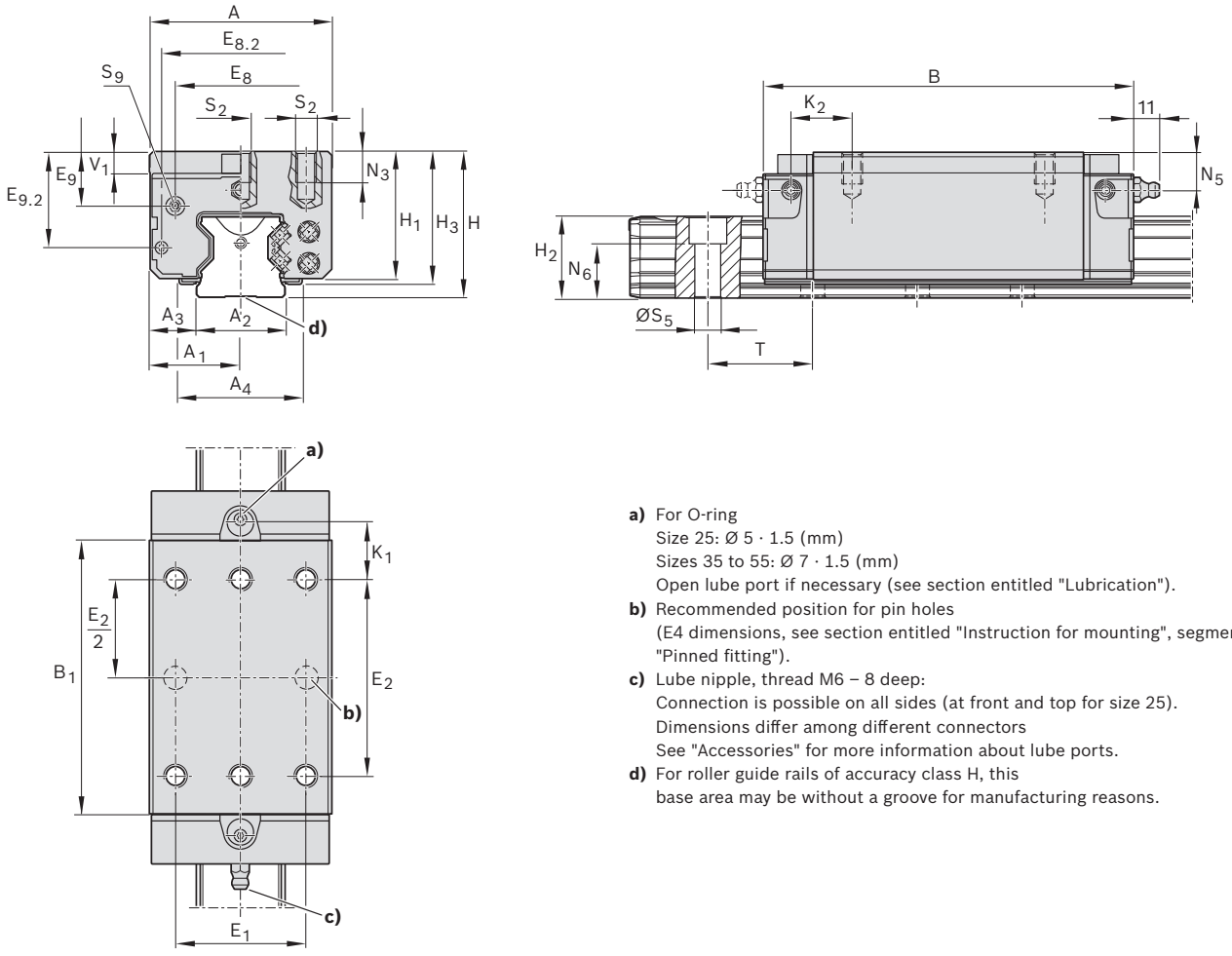
Options:

- Roller runner block SLH
- Size 35
- Preload class C2
- Accuracy class H
- With double-lip seal 2X

Material number: R1824 323 2X

**Preload classes**
C2 = Average preload
C3 = High preload
C1, C4, C5 upon request

**Seals**
DS = Double-lip seal
SS = Standard seal
AS = Longitudinal seal




**a)** For O-ring
Size 25: Ø 5 · 1.5 (mm)
Sizes 35 to 55: Ø 7 · 1.5 (mm)
Open lube port if necessary (see section entitled "Lubrication").

**b)** Recommended position for pin holes
(E4 dimensions, see section entitled "Instruction for mounting", segment "Pinned fitting").

**c)** Lube nipple, thread M6 – 8 deep:
Connection is possible on all sides (at front and top for size 25).
Dimensions differ among different connectors
See "Accessories" for more information about lube ports.

**d)** For roller guide rails of accuracy class H, this base area may be without a groove for manufacturing reasons.

## Dimensions (mm)

| Size | A | $A_1$ | $A_2$ | $A_3$ | $A_4$ [1)] | B | $B_1$ | $E_1$ | $E_2$ | $E_8$ | $E_{8.2}$ | $E_9$ | $E_{9.2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **25** | 48 | 24 | 23 | 12.5 | – | 115.00 | 81.5 | 35 | 50 | 33.4 | 40.2 | 12.30 | 25.40 |
| **35** | 70 | 35 | 34 | 18.0 | 47.0 | 142.00 | 103.6 | 50 | 72 | 50.3 | 60.5 | 20.10 | 36.10 |
| **45** | 86 | 43 | 45 | 20.5 | 55.6 | 179.50 | 134.0 | 60 | 80 | 62.9 | 72.0 | 26.70 | 46.50 |
| **55** | 100 | 50 | 53 | 23.5 | 63.3 | 209.65 | 162.1 | 75 | 95 | 74.2 | 81.6 | 28.85 | 50.75 |

| Size | H | $H_1$ | $H_2$ [2)] | $H_2$ [3)] | $H_3$ [4)] | $K_1$ | $K_2$ | $N_3$ | $N_5$ | $N_6^{\pm 0.5}$ | $S_2$ | $S_5$ | $S_9$ [5)] | T [6)] | $V_1$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **25** | 40 | 34 | 23.60 | 23.40 | – | 20.55 | – | 8 | 9.5 | 14.3 | M6 | 7 | M3-6,5 deep | 30.0 | 7.5 |
| **35** | 55 | 48 | 31.10 | 30.80 | 50 | 22.55 | 24.40 | 13 | 14.0 | 19.4 | M8 | 9 | M3-6,0 deep | 40.0 | 8.0 |
| **45** | 70 | 61 | 39.10 | 38.80 | 63 | 33.70 | 36.60 | 18 | 18.0 | 22.4 | M10 | 14 | M4-9,0 deep | 52.5 | 10.0 |
| **55** | 80 | 68 | 47.85 | 47.55 | 70 | 41.25 | 44.40 | 19 | 19.0 | 28.7 | M12 | 16 | M5-8.0 deep | 60.0 | 12.0 |

**1)** Dimension $A_4$ = Width of the additional longitudinal seal
**2)** Dimension $H_2$ with cover strip
**3)** Dimension $H_2$ without cover strip
**4)** Dimension $H_3$ = Total roller runner block including the additional longitudinal seal
**5)** Thread for connecting parts
**6)** T = Rail separation of the roller guide rail

# Product description resist CR roller runner block

## General notes on the resist CR roller runner block

**Corrosion-resistant resist CR coating: matte-silver, hard chrome plated**
Roller runner block made of steel with corrosion resistant coating "resist CR", matte silver finish, hard chrome plated

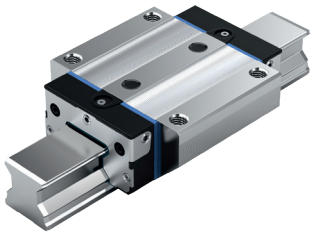
For material numbers, please refer to the following pages. For dimensions, load capacities, rigidity and torques, please refer to the corresponding R18 roller runner block.. ... 2X.

## Impact on tolerances and preload

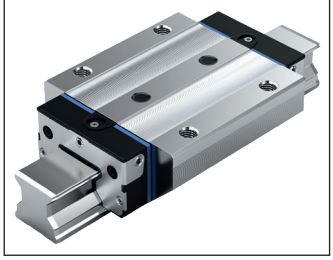
**Differing tolerances for "resist CR" coating**
⚠ For resist CR roller runner blocks and roller guide rails, matte-silver, hard chrome plated, deviating tolerances of the dimensions H and $A_3$ are to be observed (see "Accuracy classes and their tolerances").

**Higher preload upon combination of hard chrome-plated roller runner blocks and hard chrome plated roller guide rails**
When hard chrome-plated roller runner blocks are combined with preload C2 hard chrome plated roller guide rails, this increases the preload by approx. half a preload class.

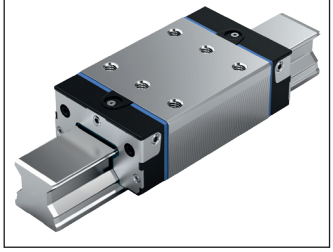
**FNS R1851 ... 7X**



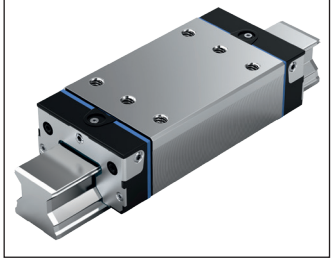
**FLS R1853 ... 7X**



**SNS R1822 ... 7X**

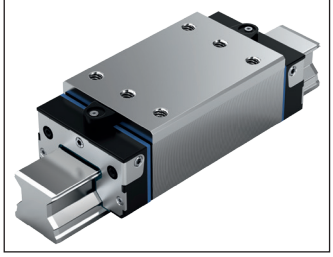


**SLS R1823 ... 7X**



**SNH R1821 ... 7X**

**SLH R1824 ... 7X**



## Identification system of material numbers

| **Material number** | | Example: **R 18 51 3 2 3 7X** |
|---|---|---|
| **Rolling element** | = | Roller = **18** |
| **Format** | = | FNS = **51** / FLS = 53 / SNS = 22 / SLS = 23 / SNH = 21 / SLH = 24 |
| **Size** | = | 25 / **3**5 / 45 / 55 / 65 |
| **Preload** | = | C**2** |
| **Accuracy class** | = | H = **3** / P = 2 / SP = 1 |
| **Seal** | = | DS = **7X** |

**Material numbers, resist CR, matte-silver, hard chrome plated**

| Size | Roller runner block with size | Preload class<br>C2 | Accuracy class[1)]<br>H | Seal<br>DS |
|---|---|---|---|---|
| **R1851 ... 7. FNS – Flanged, normal, standard height** | | | | |
| **25** | R1851 2 | 2 | 3 | 7X |
| **35** | R1851 3 | 2 | 3 | 7X |
| **45** | R1851 4 | 2 | 3 | 7X |
| **55** | R1851 5 | 2 | 3 | 7X |
| **65** | R1851 6 | 2 | 3 | 7X |
| **R1853 ... 7. FLS – Flanged, long, standard height** | | | | |
| **25** | R1853 2 | 2 | 3 | 7X |
| **35** | R1853 3 | 2 | 3 | 7X |
| **45** | R1853 4 | 2 | 3 | 7X |
| **55** | R1853 5 | 2 | 3 | 7X |
| **65** | R1853 6 | 2 | 3 | 7X |
| **R1822 ... 7. SNS – Slimline, normal, standard height** | | | | |
| **25** | R1822 2 | 2 | 3 | 7X |
| **35** | R1822 3 | 2 | 3 | 7X |
| **45** | R1822 4 | 2 | 3 | 7X |
| **55** | R1822 5 | 2 | 3 | 7X |
| **65** | R1822 6 | 2 | 3 | 7X |
| **R1823 ... 7. SLS – Slimline, long, standard height** | | | | |
| **25** | R1823 2 | 2 | 3 | 7X |
| **35** | R1823 3 | 2 | 3 | 7X |
| **45** | R1823 4 | 2 | 3 | 7X |
| **55** | R1823 5 | 2 | 3 | 7X |
| **65** | R1823 6 | 2 | 3 | 7X |
| **R1821 ... 7. SNH – Slimline, normal, high** | | | | |
| **25** | R1821 2 | 2 | 3 | 7X |
| **35** | R1821 3 | 2 | 3 | 7X |
| **45** | R1821 4 | 2 | 3 | 7X |
| **55** | R1821 5 | 2 | 3 | 7X |
| **R1824 ... 7. SLH – Slimline, long, high** | | | | |
| **25** | R1824 2 | 2 | 3 | 7X |
| **35** | R1824 3 | 2 | 3 | 7X |
| **45** | R1824 4 | 2 | 3 | 7X |
| **55** | R1824 5 | 2 | 3 | 7X |

**1)** Accuracy classes P and SP on request

**Order example**

Options:

- Roller runner blocks FLS
- Size 25
- Preload class C2
- Accuracy class H
- Double-lip seal (DS)

Material number:

R1853 223 7X

**Preload classes**
C2 = Average preload

**Seals**
DS = Double-lip seal

# Product description

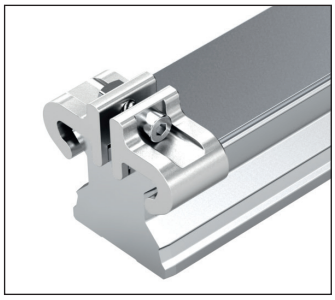
## Characteristic features

- Roller guide rails hardened and smoothened in the running track zone
- Maximum rigidity in all load directions
- Very high torque load capacity

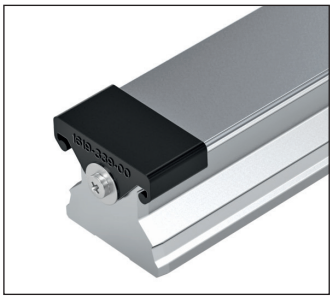
**Roller guide rail with the proven cover strip for covering mounting holes**

- One cover for all bore holes saves time and costs
- Made of stainless spring steel as per DIN EN 10088
- Easy and safe during mounting
- Clip on and secure

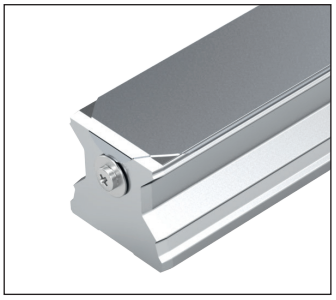
# Overview of formats and models



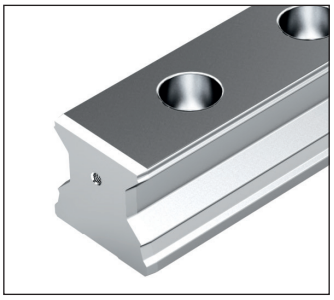
**SNS with cover strip and strip clamps**



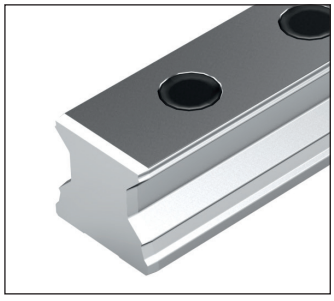
**SNS with cover strip and protective caps**



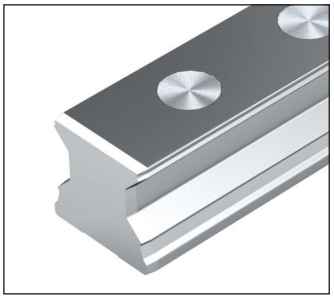
**SNS with cover strip and screw/washer**



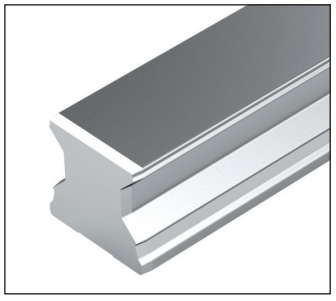
**SNS for cover strip**



**SNS with plastic mounting hole plugs**



**SNS with steel mounting hole plugs**



**SNS for mounting from below**

**Definition of the format of roller guide rails**

| Criterion | Designation | Code (example) | | |
|---|---|---|---|---|
| | | **S** | **N** | **S** |
| **Width** | **S**limline | S | | |
| **Length** | **N**ormal | | N | |
| **Height** | **S**tandard height | | | S |
| | Without groove | | | O |

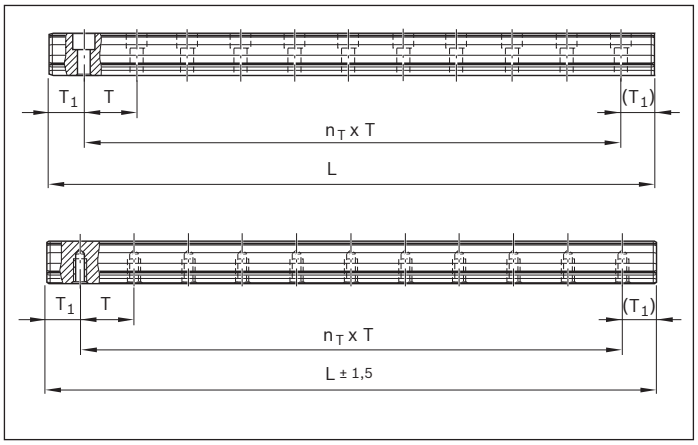
# Ordering roller guide rails in the recommended rail lengths

The recommended rail length prescribes the length grid for the price design of the profile rail. This length grid also applies to the customer-specific length.
Recommended rail lengths have preferred delivery times.

**From the desired rail length to the recommended length**

$$L = \left(\frac{L_W}{T}\right) \cdot T - 4$$

Round up quotient $L_W/T$ to the nearest whole number!




**Calculation example**

$$L = \frac{1660\ mm}{40\ mm} \cdot 40\ mm - 4\ mm$$

$L = 42 \cdot 40\ mm - 4\ mm$
$L = 1676\ mm$

Basis: Number of holes

$$L = n_B \cdot T - 4$$

Basis: Number of spaces

$$L = n_T \cdot T + 2 \cdot T_{1S}$$

| | | |
|---|---|---|
| L | = Recommended rail length | (mm) |
| $L_W$ | = Desired rail length | (mm) |
| T | = Pitch | (mm) |
| $T_{1S}$ | = Preferred dimension | (mm) |
| $n_B$ | = Number of holes | |
| $n_T$ | = Number of spaces | |

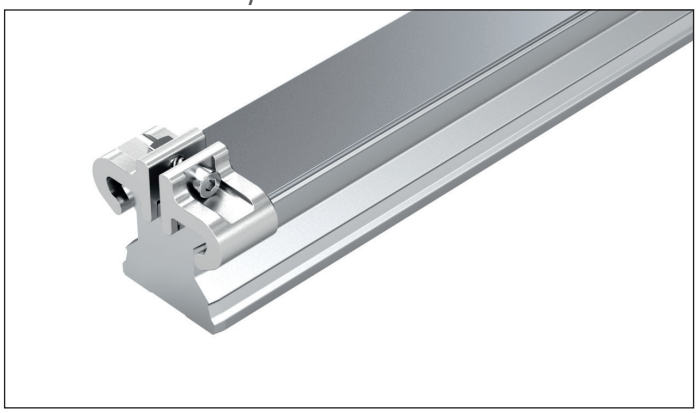
If preferred dimension $T_{1S}$ is not used, it is possible to choose between:

- Select end spacing $T_1$ between $T_{1S}$ and $T_{1\ min.}$
- As an alternative, it is possible to choose end spacings $T_1$ to $T_{1\ max.}$
- Observe minimum distances $T_{1\ min}$ and $T_{1\ max}$!

## Identification system of material numbers

| **Material number** | | Example: **R 18 05 3 3 1 62, 5036** |
|---|---|---|
| **Rolling element** | = | Roller = **18** |
| **Version** | = | Standard rail for mounting from above = **05** /<br>Rail with steel mounting hole plugs = 06 /<br>Rail for mounting from below = 07 |
| **Size** | = | 25 / **3**5 / 45 / 55 / 65 |
| **Model** | = | with cover strip and strip clamps = **3** (smooth surface = B) /<br>with cover strip and protective caps = 6 (smooth surface = D) /<br>for cover strip = 2 (smooth surface = A) /<br>for mounting hole plugs made of plastic/steel = 5 (smooth surfaces = C) /<br>without cover (rail for mounting from below) = 0 |
| **Accuracy class** | = | H = 3 / P = 2 / SP = **1** / GP=8 / UP = 9 |
| **Number of sections** | = | One-piece = 31, or 61, / multiple parts = 32, or **62,** (number of components = 2), ... |
| **Rail length (mm)** | = | **5036** mm |

# SNS/SNO with cover strip and strip clamps R1805 .3. ../R1805 .B. ..



**For mounting from above, with cover strip made of corrosion-resistant spring steel per EN 10088 and strip clamps made of aluminum (without front-side thread bore hole)**

**Notes**

- Secure the cover strip!
- Strip clamps included in scope of delivery.
- Observe the instruction for mounting!
- Please request the "Mounting instructions for roller rail systems" and "Mounting instructions for cover strip".
- Composite roller guide rail also available.

**Roller guide rails R1805 .B. .. with smooth mounting surfaces from cast mineral parts**
**In size 35–65 and available in accuracy class H, P, SP, GP, UP upon request.**

**Material numbers**

| Size | Roller guide rail with size | Accuracy class | | | | | Number of sections | | Hole spacing T | Recommended rail lengths $L = n_B \cdot T - 4$ mm |
|---|---|---|---|---|---|---|---|---|---|---|
| | | H | P | SP | GP | UP | One-piece | Composite | (mm) | Maximum number of bore holes $n_B$ |
| **25** | R1805 23 | 3 | 2 | 1 | 8 | 9 | 31, .... | 3., ... | 30.0 | 133 |
| **35** | R1805 33 | 3 | 2 | 1 | 8 | 9 | 61, .... | 6., ... | 40.0 | 100 |
| **45** | R1805 43 | 3 | 2 | 1 | 8 | 9 | 61, .... | 6., ... | 52.5 | 76 |
| **55** | R1805 53 | 3 | 2 | 1 | 8 | 9 | 61, .... | 6., ... | 60.0 | 66 |
| **65** | R1805 63 | 3 | 2 | 1 | 8 | 9 | 61, .... | 6., ... | 75.0 | 53 |

**Ordering example 1**
**(up to $L_{max}$)**
Options:

- Roller guide rail SNS
- Size 35
- Accuracy class P
- One-piece
- Rail length
  L = 1676 mm

Material number:
R1805 332 61, 1676 mm

**Ordering example 2**
**(beyond $L_{max}$)**
Options:

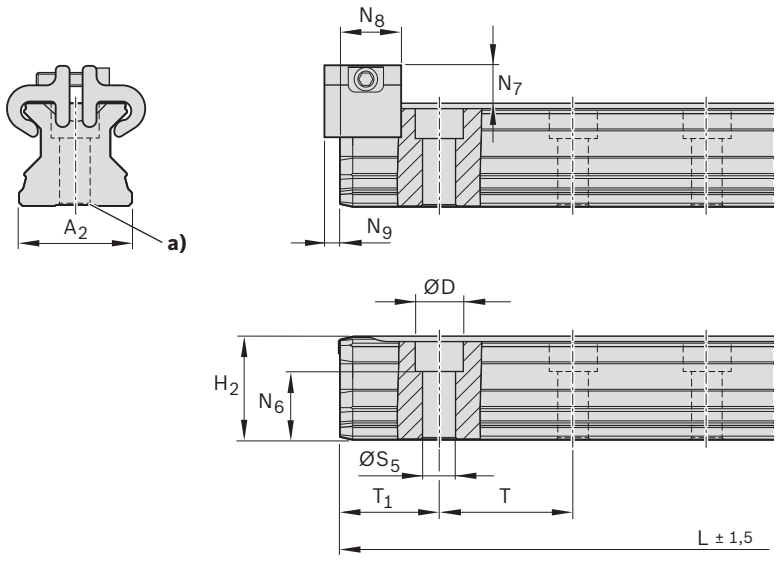
- Roller guide rail SNS
- Size 35
- Accuracy class P
- **Multi-part (2 parts)**
- Rail length
  L = 5036 mm

Material number:
R1805 332 6**2**, 5036 mm

**Ordering example 3**
**(up to $L_{max}$ with smooth surface)**
Options:

- Roller guide rail SNO
- Size 35
- Accuracy class P
- One-piece
- Rail length
  L = 1676 mm

Material number:
R1805 3**B**2 61, 1676 mm




Roller guide rail with cover strip without threaded holes on end faces (not required for strip clamps). Retaining the cover strip with strip clamps (included in the scope of delivery).

**a)** For roller guide rails of accuracy class H, this base area may be without a groove for manufacturing reasons.

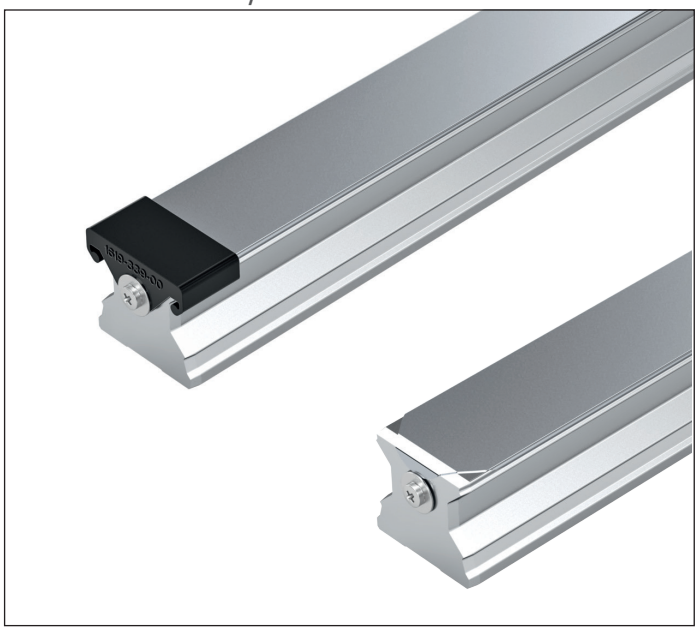


## Dimensions (mm)

| Size | $A_2$ | D | $H_2$ 1) | $L_{max}$ 2) | $N_6^{\pm 0.5}$ | $N_7$ 3) | $N_8$ | $N_9$ | $S_5$ | $T_{1\,min}$ | $T_{1\,max}$ | $T_{1S}$ 4) | T | Mass (kg/m) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **25** | 23 | 11 | 23.60 | 3986 | 14.3 | 8.2 | 13 | 2.0 | 7 | 13 | 20.0 | 13.00 | 30.0 | 3.1 |
| **35** | 34 | 15 | 31.10 | 3996 | 19.4 | 11.7 | 16 | 2.2 | 9 | 16 | 28.0 | 18.00 | 40.0 | 6.3 |
| **45** | 45 | 20 | 39.10 | 3986 | 22.4 | 12.5 | 18 | 2.2 | 14 | 18 | 36.5 | 24.25 | 52.5 | 10.3 |
| **55** | 53 | 24 | 47.85 | 3956 | 28.7 | 14.0 | 17 | 3.2 | 16 | 20 | 42.0 | 28.00 | 60.0 | 13.1 |
| **65** | 63 | 26 | 58.15 | 3971 | 36.5 | 15.0 | 17 | 3.2 | 18 | 21 | 55.0 | 35.50 | 75.0 | 17.4 |

**1)** Dimension $H_2$ with cover strip
Size 25 with cover strip 0.2 mm
Size 35 with cover strip 0.3 mm
**2)** Size 35: also deliverable as one piece up to a length of 5996 mm
Size 45: also deliverable as one piece up to a length of 5981 mm
Size 55: also deliverable as one piece up to a length of 5936 mm
Size 65: also deliverable as one piece up to a length of 5921 mm
**3)** Dimension $N_7$ with cover strip
**4)** Preferred dimension $T_{1S}$ with tolerances ± 0.75

# SNS/SNO with cover strip and protective caps R1805 .6. ../R1805 .D. ..



**For mounting from above, with cover strip made of corrosion-resistant spring steel per EN 10088 and screw-down plastic protective caps (with threaded mounting holes on end faces)**

**Notes**

- As an alternative, the cover strip can be secured with screws and washers.
- Protective caps with screws and washers are included in the scope of delivery.
- Observe the instruction for mounting!
- Please request the "Mounting instructions for roller rail systems" and "Mounting instructions for cover strip".
- Composite roller guide rail also available.

**Roller guide rails R1805 .D. .. with smooth base area for mounting surfaces from cast mineral parts**
**In size 35–65 and available in accuracy class H, P, SP, GP, UP upon request.**

**Material numbers**

| Size | Roller guide rail with size | Accuracy class | | | | | Number of sections | | Hole spacing T | Recommended rail lengths $L = n_B \cdot T - 4$ mm |
|---|---|---|---|---|---|---|---|---|---|---|
| | | H | P | SP | GP | UP | One-piece | Composite | (mm) | Maximum number of bore holes $n_B$ |
| **25** | R1805 26 | 3 | 2 | 1 | 8 | 9 | 31, .... | 3., ... | 30.0 | 133 |
| **35** | R1805 36 | 3 | 2 | 1 | 8 | 9 | 61, .... | 6., ... | 40.0 | 100 |
| **45** | R1805 46 | 3 | 2 | 1 | 8 | 9 | 61, .... | 6., ... | 52.5 | 76 |
| **55** | R1805 56 | 3 | 2 | 1 | 8 | 9 | 61, .... | 6., ... | 60.0 | 66 |
| **65** | R1805 66 | 3 | 2 | 1 | 8 | 9 | 61, .... | 6., ... | 75.0 | 53 |

**Ordering example 1**
**(up to $L_{max}$)**
Options:
- Roller guide rail SNS
- Size 35
- Accuracy class P
- One-piece
- Rail length
  L = 1676 mm

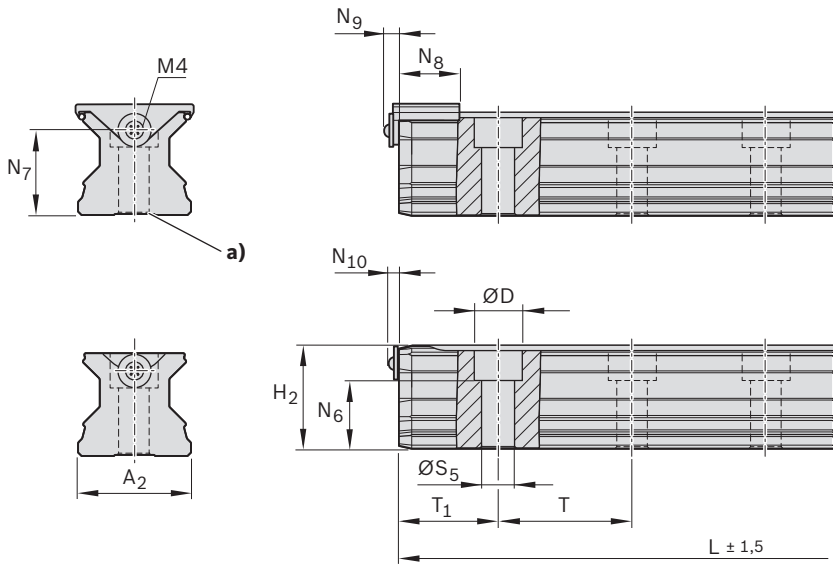
Material number:
R1805 362 61, 1676 mm

**Ordering example 2**
**(beyond $L_{max}$)**
Options:
- Roller guide rail SNS
- Size 35
- Accuracy class P
- **Multi-part (2 parts)**
- Rail length
  L = 5036 mm

Material number:
R1805 362 6**2**, 5036 mm

**Ordering example 3**
**(up to $L_{max}$ with smooth surface)**
Options:
- Roller guide rail SNO
- Size 35
- Accuracy class P
- One-piece
- Rail length
  L = 1676 mm

Material number:
R1805 3**D**2 61, 1676 mm




Roller guide rail with cover strip and threaded holes on end faces.
Fuse with protective cap made of plastic or alternatively with screws and disks (included in the scope of delivery).

**a)** For roller guide rails of accuracy class H, this base area may be without a groove for manufacturing reasons.

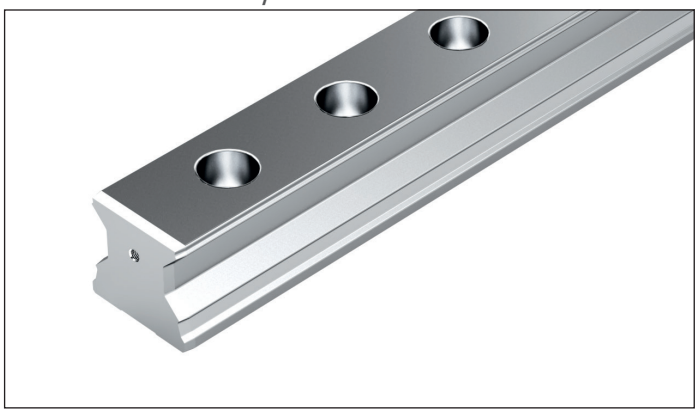


## Dimensions (mm)

| Size | $A_2$ | D | $H_2$ 1) | $L_{max}$ 2) | $N_6^{\pm 0.5}$ | $N_7$ | $N_8$ | $N_9$ | $N_{10}$ | $S_5$ | $T_{1\,min}$ | $T_{1\,max}$ | $T_{1S}$ 3) 4) | T | Mass (kg/m) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **25** | 23 | 11 | 23.60 | 3986 | 14.3 | 15 | 15.2 | 6.5 | 4.10 | 7 | 13 | 20.0 | 13.00 | 30.0 | 3.1 |
| **35** | 34 | 15 | 31.10 | 3996 | 19.4 | 22 | 18 | 7.0 | 4.10 | 9 | 16 | 28.0 | 18.00 | 40.0 | 6.3 |
| **45** | 45 | 20 | 39.10 | 3986 | 22.4 | 30 | 20 | 7.0 | 4.10 | 14 | 18 | 36.5 | 24.25 | 52.5 | 10.3 |
| **55** | 53 | 24 | 47.85 | 3956 | 28.7 | 30 | 20 | 7.0 | 4.35 | 16 | 20 | 42.0 | 28.00 | 60.0 | 13.1 |
| **65** | 63 | 26 | 58.15 | 3971 | 36.5 | 40 | 20 | 7.0 | 4.35 | 18 | 21 | 55.0 | 35.50 | 75.0 | 17.4 |

**1)** Dimension $H_2$ with cover strip
Size 25 with cover strip 0.2 mm
Size 35 with cover strip 0.3 mm
**2)** Size 35: also deliverable as one piece up to a length of 5996 mm
Size 45: also deliverable as one piece up to a length of 5981 mm
Size 55: also deliverable as one piece up to a length of 5936 mm
Size 65: also deliverable as one piece up to a length of 5921 mm
**3)** Preferred dimension $T_{1S}$ with tolerances ± 0.75
**4)** When undercutting $T_{1\,min}$, no front-side thread possible. Secure the cover strip! See instruction for mounting

# SNS/SNO for cover strip R1805 .2. 3./R1805 .A. 3.



**For mounting from above, for cover strip (not included in scope of delivery)**

**Notes**

- Secure the cover strip!
- Order cover strip and strip clamps or protective caps separately. See section entitled "Accessories" for material numbers and dimensions.
- Observe the instruction for mounting!
- Please request the "Mounting instructions for roller rail systems" and "Mounting instructions for cover strip".
- Composite roller guide rail also available.

**Roller guide rails R1805 .A. 3. .. with smooth base for mounting surfaces from cast mineral parts**
**In size 35–65 and available in accuracy class H, P, SP, GP, UP upon request.**

**Material numbers**

| Size | Roller guide rail with size | Accuracy class | | | | | Number of sections | | Hole spacing T | Recommended rail lengths $L = n_B \cdot T - 4$ mm |
|---|---|---|---|---|---|---|---|---|---|---|
| | | H | P | SP | GP | UP | One-piece | Composite | (mm) | Maximum number of bore holes $n_B$ |
| **25** | R1805 22 | 3 | 2 | 1 | 8 | 9 | 31, .... | 3., ... | 30.0 | 133 |
| **35** | R1805 32 | 3 | 2 | 1 | 8 | 9 | 31, .... | 3., ... | 40.0 | 100 |
| **45** | R1805 42 | 3 | 2 | 1 | 8 | 9 | 31, .... | 3., ... | 52.5 | 76 |
| **55** | R1805 52 | 3 | 2 | 1 | 8 | 9 | 31, .... | 3., ... | 60.0 | 66 |
| **65** | R1805 62 | 3 | 2 | 1 | 8 | 9 | 31, .... | 3., ... | 75.0 | 53 |

**Ordering example 1 (up to $L_{max}$)**
Options:
- Roller guide rail SNS
- Size 35
- Accuracy class P
- One-piece
- Rail length
  L = 1676 mm

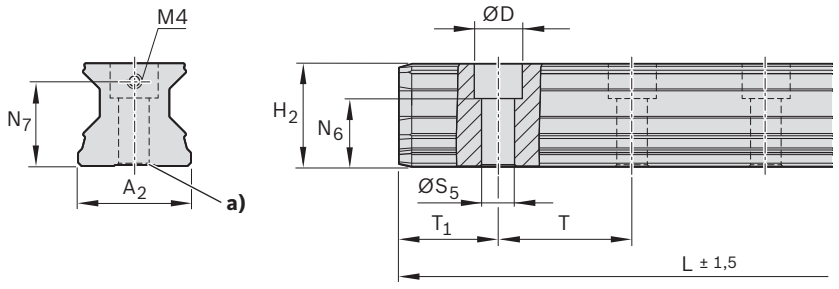
Material number:
R1805 322 31, 1676 mm

**Ordering example 2 (beyond $L_{max}$)**
Options:
- Roller guide rail SNS
- Size 35
- Accuracy class P
- **Multi-part (2 parts)**
- Rail length
  L = 5036 mm

Material number:
R1805 322 3**2**, 5036 mm

**Ordering example 3 (up to $L_{max}$ with smooth surface)**
Options:
- Roller guide rail SNO
- Size 35
- Accuracy class P
- One-piece
- Rail length
  L = 1676 mm

Material number:
R1805 3**A**2 31, 1676 mm




Roller guide rail with front-side thread bore holes without cover strip (cover strip and strip clamp or protective cap are to be ordered separately).

**a)** For roller guide rails of accuracy class H, this base area may be without a groove for manufacturing reasons.

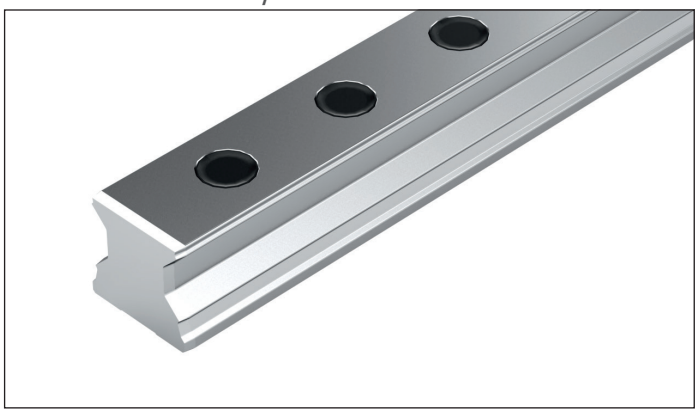


## Dimensions (mm)

| Size | $A_2$ | D | $H_2$ | $L_{max}$ 1) | $N_6^{\pm 0.5}$ | $N_7$ | $S_5$ | $T_{1\,min}$ | $T_{1\,max}$ | $T_{1S}$ 2) 3) | T | Mass (kg/m) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **25** | 23 | 11 | 23.40 | 3986 | 14.3 | 15 | 7 | 13 | 20.0 | 13.00 | 30.0 | 3.1 |
| **35** | 34 | 15 | 30.80 | 3996 | 19.4 | 22 | 9 | 16 | 28.0 | 18.00 | 40.0 | 6.3 |
| **45** | 45 | 20 | 38.80 | 3986 | 22.4 | 30 | 14 | 18 | 36.5 | 24.25 | 52.5 | 10.3 |
| **55** | 53 | 24 | 47.55 | 3956 | 28.7 | 30 | 16 | 20 | 42.0 | 28.00 | 60.0 | 13.1 |
| **65** | 63 | 26 | 57.85 | 3971 | 36.5 | 40 | 18 | 21 | 55.0 | 35.50 | 75.0 | 17.4 |

**1)** Size 35: also deliverable as one piece up to a length of 5996 mm
Size 45: also deliverable as one piece up to a length of 5981 mm
Size 55: also deliverable as one piece up to a length of 5936 mm
Size 65: also deliverable as one piece up to a length of 5921 mm
**2)** Preferred dimension $T_{1S}$ with tolerances ± 0.75
**3)** When undercutting $T_{1\,min}$, no front-side thread possible. Secure the cover strip! See instruction for mounting

# SNS/SNO with plastic mounting hole plugs R1805 .5. 3./R1805 .C. 3.



**For mounting from above with plastic mounting hole plugs**

**Notes**

- Plastic mounting hole plugs included in scope of supply.
- Observe the instruction for mounting!
- Please ask for the "Mounting Instructions for roller rail systems".
- Composite roller guide Rail also available.

**Roller guide rails R1805 .C. 3. .. with smooth base area for mounting surfaces from cast mineral parts**
**In size 35–65 and available in accuracy class H, P, SP, GP, UP upon request.**

**Material numbers**

| Size | Roller guide rail with size | Accuracy class | | | | | Number of sections | | Hole spacing T | Recommended rail lengths $L = n_B \cdot T - 4$ mm |
|---|---|---|---|---|---|---|---|---|---|---|
| | | H | P | SP | GP | UP | One-piece | Composite | (mm) | Maximum number of bore holes $n_B$ |
| **25** | R1805 25 | 3 | 2 | 1 | 8 | 9 | 31, .... | 3., ... | 30.0 | 133 |
| **35** | R1805 35 | 3 | 2 | 1 | 8 | 9 | 31, .... | 3., ... | 40.0 | 100 |
| **45** | R1805 45 | 3 | 2 | 1 | 8 | 9 | 31, .... | 3., ... | 52.5 | 76 |
| **55** | R1805 55 | 3 | 2 | 1 | 8 | 9 | 31, .... | 3., ... | 60.0 | 66 |
| **65** | R1805 65 | 3 | 2 | 1 | 8 | 9 | 31, .... | 3., ... | 75.0 | 53 |

**Ordering example 1**
**(up to $L_{max}$)**
Options:
- Roller guide rail SNS
- Size 35
- Accuracy class P
- One-piece
- Rail length
  L = 1676 mm

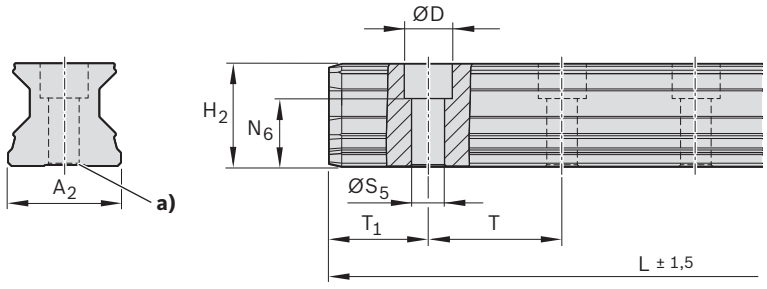
Material number:
R1805 352 31, 1676 mm

**Ordering example 2**
**(beyond $L_{max}$)**
Options:
- Roller guide rail SNS
- Size 35
- Accuracy class P
- **Multi-part (2 parts)**
- Rail length
  L = 5036 mm

Material number:
R1805 352 3**2**, 5036 mm

**Ordering example 3**
**(up to $L_{max}$ with smooth surface)**
Options:
- Roller guide rail SNO
- Size 35
- Accuracy class P
- One-piece
- Rail length
  L = 1676 mm

Material number:
R1805 3**C**2 31, 1676 mm




Mounting hole plugs made of plastic are delivered with the roller guide rail and are also available as accessories.
For mounting plastic mounting hole plugs, see "Mounting instructions for roller rail systems"

**a)** For roller guide rails of accuracy class H, this base area may be without a groove for manufacturing reasons.



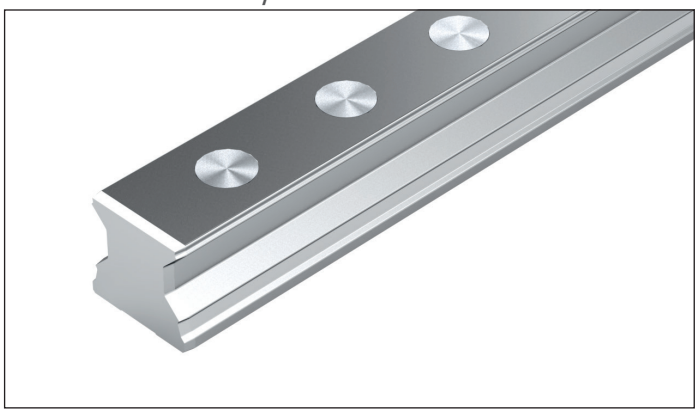
## Dimensions (mm)

| Size | $A_2$ | D | $H_2$ | $L_{max}$ 1) | $N_6^{\pm 0.5}$ | $S_5$ | $T_{1\,min}$ | $T_{1\,max}$ | $T_{1S}$ 2) | T | Mass (kg/m) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **25** | 23 | 11 | 23.40 | 3986 | 14.3 | 7 | 10 | 20.0 | 13.00 | 30.0 | 3.1 |
| **35** | 34 | 15 | 30.80 | 3996 | 19.4 | 9 | 12 | 28.0 | 18.00 | 40.0 | 6.3 |
| **45** | 45 | 20 | 38.80 | 3986 | 22.4 | 14 | 16 | 36.5 | 24.25 | 52.5 | 10.3 |
| **55** | 53 | 24 | 47.55 | 3956 | 28.7 | 16 | 18 | 42.0 | 28.00 | 60.0 | 13.1 |
| **65** | 63 | 26 | 57.85 | 3971 | 36.5 | 18 | 20 | 55.0 | 35.50 | 75.0 | 17.4 |

**1)** Size 35: also deliverable as one piece up to a length of 5996 mm
Size 45: also deliverable as one piece up to a length of 5981 mm
Size 55: also deliverable as one piece up to a length of 5936 mm
Size 65 and 65/100: also deliverable as one piece up to a length of 5921 mm

**2)** Preferred dimension $T_{1S}$ with tolerances ± 0.75

# SNS/SNO with steel mounting hole plugs R1806 .5. 3./R1806 .C. 3.



**For mounting from above, for mounting hole plugs made of steel (not included in the scope of delivery)**

**Notes**

- Steel mounting hole plugs are not included in the scope of delivery of the roller guide rails. Order separately (see "Accessories for roller guide rails")
- The mounting tool is to be ordered separately (see "Accessories for roller guide rails")!
- Observe the instruction for mounting!
- Please ask for the "Mounting Instructions for roller rail systems".
- Composite roller guide rail also available.

**Roller guide rails R1806 .C. 3. .. with smooth base area for mounting surfaces from cast mineral parts**
**In size 35–65 and available in accuracy class H, P, SP, GP, UP upon request.**

**Material numbers**

| Size | Roller guide rail with size | Accuracy class | | | | | Number of sections | | Hole spacing T | Recommended rail lengths $L = n_B \cdot T - 4$ mm |
|---|---|---|---|---|---|---|---|---|---|---|
| | | H | P | SP | GP | UP | One-piece | Composite | (mm) | Maximum number of bore holes $n_B$ |
| **25** | R1806 25 | 3 | 2 | 1 | 8 | – | 31, .... | 3., ... | 30.0 | 133 |
| **35** | R1806 35 | 3 | 2 | 1 | 8 | 9 | 31, .... | 3., ... | 40.0 | 100 |
| **45** | R1806 45 | 3 | 2 | 1 | 8 | 9 | 31, .... | 3., ... | 52.5 | 76 |
| **55** | R1806 55 | 3 | 2 | 1 | 8 | 9 | 31, .... | 3., ... | 60.0 | 66 |
| **65** | R1806 65 | 3 | 2 | 1 | 8 | 9 | 31, .... | 3., ... | 75.0 | 53 |

**Ordering example 1 (up to $L_{max}$)**
Options:
- Roller guide rail SNS
- Size 35
- Accuracy class P
- One-piece
- Rail length
  L = 1676 mm

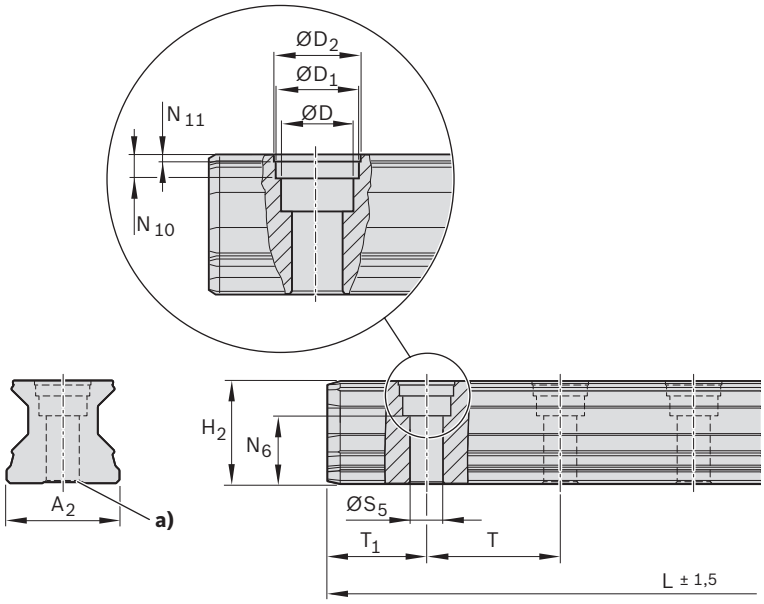
Material number:
R1806 352 31, 1676 mm

**Ordering example 2 (beyond $L_{max}$)**
Options:
- Roller guide rail SNS
- Size 35
- Accuracy class P
- **Multi-part (2 parts)**
- Rail length
  L = 5036 mm

Material number:
R1806 352 3**2**, 5036 mm

**Ordering example 3 (up to $L_{max}$ with smooth surface)**
Options:
- Roller guide rail SNO
- Size 35
- Accuracy class P
- One-piece
- Rail length
  L = 1676 mm

Material number:
R1806 3**C**2 31, 1676 mm




Steel mounting hole plugs are not included in the scope of delivery of the roller guide rails. Order the mounting tool too! For mounting steel mounting hole plugs, see "Mounting instructions for roller rail systems"

**a)** For roller guide rails of accuracy class H, this base area may be without a groove for manufacturing reasons.



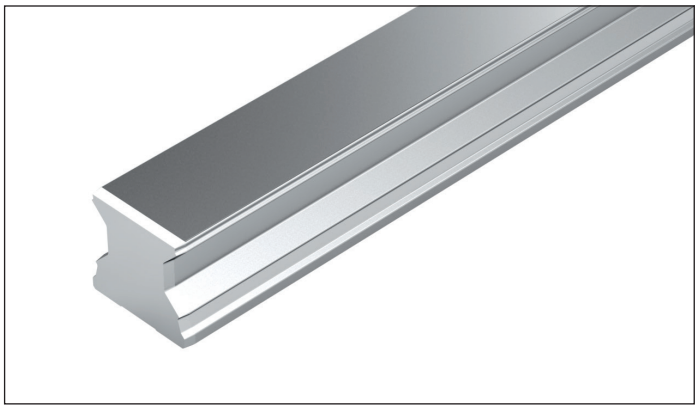
## Dimensions (mm)

| Size | $A_2$ | D | $D_1$ | $D_2$ | $H_2$ | $L_{max}$ [1] | $N_6^{\pm 0.5}$ | $N_{10}$ | $N_{11}$ | $S_5$ | $T_{1\,min}$ | $T_{1\,max}$ | $T_{1\,S}$ [2] | T | Mass (kg/m) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **25** | 23 | 11 | 12.55 | 13 | 23.40 | 3986 | 14.3 | 3.7 | 0.90 | 7 | 10 | 20.0 | 13.00 | 30.0 | 3.1 |
| **35** | 34 | 15 | 17.55 | 18 | 30.80 | 3996 | 19.4 | 3.6 | 0.90 | 9 | 12 | 28.0 | 18.00 | 40.0 | 6.3 |
| **45** | 45 | 20 | 22.55 | 23 | 38.80 | 3986 | 22.4 | 8.0 | 1.45 | 14 | 16 | 36.5 | 24.25 | 52.5 | 10.3 |
| **55** | 53 | 24 | 27.55 | 28 | 47.55 | 3956 | 28.7 | 8.0 | 1.45 | 16 | 18 | 42.0 | 28.00 | 60.0 | 13.1 |
| **65** | 63 | 26 | 29.55 | 30 | 57.85 | 3971 | 36.5 | 8.0 | 1.45 | 18 | 20 | 55.0 | 35.50 | 75.0 | 17.4 |

**1)** Size 35: also deliverable as one piece up to a length of 5996 mm
Size 45: also deliverable as one piece up to a length of 5981 mm
Size 55: also deliverable as one piece up to a length of 5936 mm
Size 65: also deliverable as one piece up to a length of 5921 mm

**2)** Preferred dimension $T_{1S}$ with tolerances ± 0.75

# SNS for mounting from below
# R1807 .0. 3.



**For mounting from below**

**Notes**

- Observe the instruction for mounting!
- Please ask for the "Mounting Instructions for roller rail systems".
- Composite roller guide rail also available.

**Material numbers**

| Size | Roller guide rail with size | Accuracy class | | | | | Number of sections | | Hole spacing T | Recommended rail lengths $L = n_B \cdot T - 4$ mm |
|---|---|---|---|---|---|---|---|---|---|---|
| | | H | P | SP | GP | UP | One-piece | Composite | (mm) | Maximum number of bore holes $n_B$ |
| **25** | R1807 20 | 3 | 2 | 1 | 8 | 9 | 31, .... | 3., ... | 30.0 | 133 |
| **35** | R1807 30 | 3 | 2 | 1 | 8 | 9 | 31, .... | 3., ... | 40.0 | 100 |
| **45** | R1807 40 | 3 | 2 | 1 | 8 | 9 | 31, .... | 3., ... | 52.5 | 76 |
| **55** | R1807 50 | 3 | 2 | 1 | 8 | 9 | 31, .... | 3., ... | 60.0 | 66 |
| **65** | R1807 60 | 3 | 2 | 1 | 8 | 9 | 31, .... | 3., ... | 75.0 | 53 |

**Ordering example 1 (up to $L_{max}$)**

Options:

- Roller guide rail SNS
- Size 35
- Accuracy class P
- One-piece
- Rail length
  L = 1676 mm

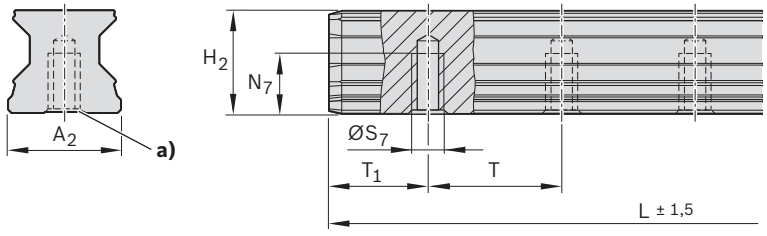
Material number:
R1807 302 31, 1676 mm

**Ordering example 2 (beyond $L_{max}$)**

Options:

- Roller guide rail SNS
- Size 35
- Accuracy class P
- **Multi-part (2 parts)**
- Rail length
  L = 5036 mm

Material number:
R1807 302 3**2**, 5036 mm




**a)** For rorller guide rails of accuracy class H, this base area may be without a groove for manufacturing reasons.



**Dimensions (mm)**

| Size | $A_2$ | $H_2$ | $L_{max}$ | $N_7$ | $S_7$ | $T_{1\,min}$ | $T_{1\,max}$ | $T_{1\,S}$ 1) | T | Mass (kg/m) |
|---|---|---|---|---|---|---|---|---|---|---|
| **25** | 23 | 23.40 | 3986 | 12 | M6 | 10 | 20.0 | 13.00 | 30.0 | 3.1 |
| **35** | 34 | 30.80 | 3996 | 15 | M8 | 12 | 28.0 | 18.00 | 40.0 | 6.3 |
| **45** | 45 | 38.80 | 3986 | 19 | M12 | 16 | 36.5 | 24.25 | 52.5 | 10.3 |
| **55** | 53 | 47.55 | 3956 | 22 | M14 | 18 | 42.0 | 28.00 | 60.0 | 13.1 |
| **65** | 63 | 57.85 | 3971 | 25 | M16 | 20 | 55.0 | 35.50 | 75.0 | 17.4 |

**1)** Preferred dimension $T_{1S}$ with tolerances ± 0.75

# Product description resist CR roller guide rails matte-silver, hard chrome plated

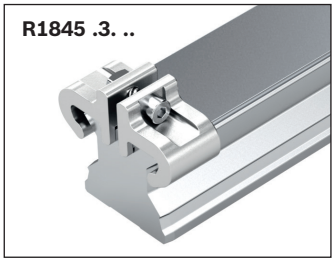
## General notes on the resist CR roller guide rails

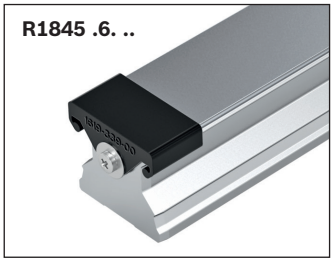
**Corrosion-resistant resist CR coating: matte-silver, hard chrome plated**
Steel roller guide rails with corrosion-resistant "resist CR" coating, matte-silver finish, hard chrome plated.
For material numbers, please refer to the following page. Recommended rail lengths up to $L_{max.}$ < 4 m, for dimensions and weights please refer to the corresponding standard steel roller guide rails.

## Impact on tolerances and preload

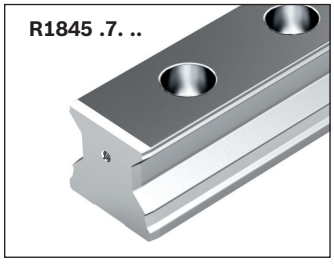
**Differing tolerances for "resist CR" coating**
⚠ For resist CR roller runner blocks and roller guide rails, matte-silver, hard chrome plated, deviating tolerances of the dimensions H and $A_3$ are to be observed (see "Accuracy classes and their tolerances").

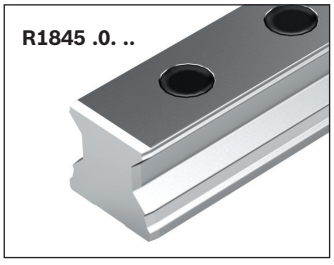
**Higher preload upon combination of hard chrome-plated roller runner blocks and hard chrome plated roller guide rails**
When hard chrome-plated roller runner blocks are combined with preload C2 hard chrome plated roller guide rails, this increases the preload by approx. half a preload class.

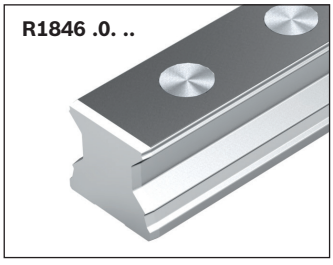


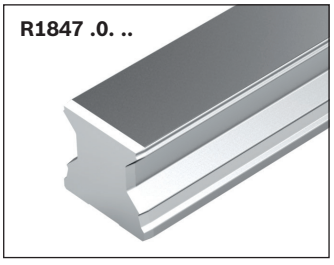








## Identification system of material numbers

| **Material number** | | Example: **R** **18** **45** **3** **3** **3** **71,** **1676** |
|---|---|---|
| **Rolling element** | = | Roller = **18** |
| **Version** | = | Standard rail for mounting from above = **45** |
| **Size** | = | **3**5 |
| **Model** | = | with cover strip and strip clamp = **3** |
| **Accuracy class** | = | H = **3** / P = 2 / SP = 1 |
| **Number of sections** | = | One-piece = 41 or **71** |
| **Rail length (mm)** | = | **1676** mm |

### Material numbers, resist CR, matte-silver, hard chrome plated

| Size | Roller guide rail with size | Accuracy class[1)] | Number of sections | |
|---|---|---|---|---|
| | | H | One-piece | Composite |
| **R1845 .3. .. SNS with cover strip and strip clamps** | | | | |
| **25** | R1845 23 | 3 | 41, .... | 4., ... |
| **35** | R1845 33 | 3 | 71, .... | 7., ... |
| **45** | R1845 43 | 3 | 71, .... | 7., ... |
| **55** | R1845 53 | 3 | 71, .... | 7., ... |
| **65** | R1845 63 | 3 | 71, .... | 7., ... |
| **R1845 .6. .. SNS with cover strip and protective caps** | | | | |
| **25** | R1845 26 | 3 | 41, .... | 4., ... |
| **35** | R1845 36 | 3 | 71, .... | 7., ... |
| **45** | R1845 46 | 3 | 71, .... | 7., ... |
| **55** | R1845 56 | 3 | 71, .... | 7., ... |
| **65** | R1845 66 | 3 | 71, .... | 7., ... |
| **R1845 .7. .. SNS for cover strip** | | | | |
| **25** | R1845 27 | 3 | 41, .... | 4., ... |
| **35** | R1845 37 | 3 | 41, .... | 4., ... |
| **45** | R1845 47 | 3 | 41, .... | 4., ... |
| **55** | R1845 57 | 3 | 41, .... | 4., ... |
| **65** | R1845 67 | 3 | 41, .... | 4., ... |
| **R1845 .0. .. SNS with plastic mounting hole plugs** | | | | |
| **25** | R1845 20 | 3 | 41, .... | 4., ... |
| **35** | R1845 30 | 3 | 41, .... | 4., ... |
| **45** | R1845 40 | 3 | 41, .... | 4., ... |
| **55** | R1845 50 | 3 | 41, .... | 4., ... |
| **65** | R1845 60 | 3 | 41, .... | 4., ... |
| **R1846 .0. .. SNS with steel mounting hole plugs** | | | | |
| **25** | R1846 20 | 3 | 41, .... | 4., ... |
| **35** | R1846 30 | 3 | 41, .... | 4., ... |
| **45** | R1846 40 | 3 | 41, .... | 4., ... |
| **55** | R1846 50 | 3 | 41, .... | 4., ... |
| **65** | R1846 60 | 3 | 41, .... | 4., ... |
| **R1847 .0. .. SNS for mounting from below** | | | | |
| **25** | R1847 20 | 3 | 41, .... | 4., ... |
| **35** | R1847 30 | 3 | 41, .... | 4., ... |
| **45** | R1847 40 | 3 | 41, .... | 4., ... |
| **55** | R1847 50 | 3 | 41, .... | 4., ... |
| **65** | R1847 60 | 3 | 41, .... | 4., ... |

**1)** Accuracy classes P and SP on request

### Ordering example (above $L_{max}$)

Options:

- Rail for mounting from below
- Size 45
- Accuracy class H
- Multi-part (2 parts)
- Rail length

  L = 5036 mm

Material number: R1847 403 42, 5036 mm

# Product description resist CR II roller guide rails black, hard chrome plated

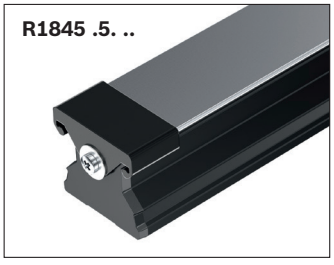
## General notes on the resist CR II roller guide rails

**Corrosion-resistant resist CR II coating: black finish, hard chrome plated**
Steel roller guide rails with corrosion-resistant coating "resist CR II", black, hard chrome plated
For material numbers, please refer to the following page. Recommended rail lengths up to $L_{max.}$ < 4 m, for dimensions and weights please refer to the corresponding standard steel roller guide rails.

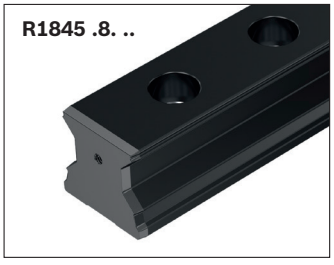
## Impact on tolerances and preload

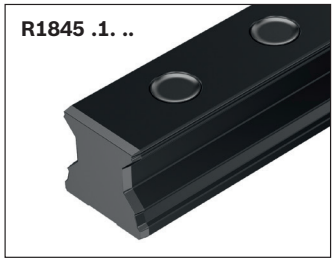
**Differing tolerances for "resist CR II" coating**
⚠ For resist CR roller runner blocks and roller guide rails, black, hard chrome plated, deviating tolerances of the dimensions H and $A_3$ are to be observed (see "Accuracy classes and their tolerances").

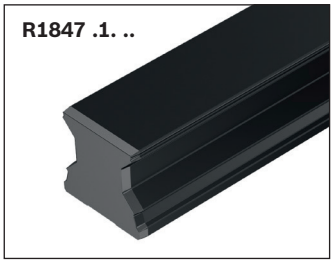
**Higher preload upon combination of hard chrome-plated roller runner blocks and hard chrome plated roller guide rails**
When hard chrome plated roller runner blocks are combined with preload C2 hard chrome plated roller guide rails, this increases the preload by approx. half a preload class.








## Identification system of material numbers

| | | | Example: | R | 18 | 45 | 3 | 5 | 3 | 71, | 1676 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Material number** | | | | | | | | | | | |
| **Rolling element** | = | Roller = **18** | | | | | | | | | |
| **Version** | = | Standard rail for mounting from above = **45** | | | | | | | | | |
| **Size** | = | **3**5 | | | | | | | | | |
| **Model** | = | with cover strip and protective caps = **5** | | | | | | | | | |
| **Accuracy class** | = | H = **3** / P = 2 / SP = 1 | | | | | | | | | |
| **Number of sections** | = | One-piece = 41 or **71** | | | | | | | | | |
| **Rail length (mm)** | = | **1676** mm | | | | | | | | | |

**Material numbers resist CR II, black, hard chrome plated**

| Size | Roller guide rail with size | Accuracy class[1] | Number of sections | |
|---|---|---|---|---|
| | | H | One-piece | Composite |
| **R1845 .5. .. SNS with cover strip[2] and protective caps** | | | | |
| **25** | R1845 25 | 3 | 41, .... | 4., ... |
| **35** | R1845 35 | 3 | 71, .... | 7., ... |
| **45** | R1845 45 | 3 | 71, .... | 7., ... |
| **55** | R1845 55 | 3 | 71, .... | 7., ... |
| **65** | R1845 65 | 3 | 71, .... | 7., ... |
| **R1845 .8. .. SNS for cover strip** | | | | |
| **25** | R1845 28 | 3 | 41, .... | 4., ... |
| **35** | R1845 38 | 3 | 41, .... | 4., ... |
| **45** | R1845 48 | 3 | 41, .... | 4., ... |
| **55** | R1845 58 | 3 | 41, .... | 4., ... |
| **65** | R1845 68 | 3 | 41, .... | 4., ... |
| **R1845 .1. .. SNS with plastic mounting hole plugs** | | | | |
| **25** | R1845 21 | 3 | 41, .... | 4., ... |
| **35** | R1845 31 | 3 | 41, .... | 4., ... |
| **45** | R1845 41 | 3 | 41, .... | 4., ... |
| **55** | R1845 51 | 3 | 41, .... | 4., ... |
| **65** | R1845 61 | 3 | 41, .... | 4., ... |
| **R1847 .1. .. SNS for mounting from below** | | | | |
| **25** | R1847 21 | 3 | 41, .... | 4., ... |
| **35** | R1847 31 | 3 | 41, .... | 4., ... |
| **45** | R1847 41 | 3 | 41, .... | 4., ... |
| **55** | R1847 51 | 3 | 41, .... | 4., ... |
| **65** | R1847 61 | 3 | 41, .... | 4., ... |

**1)** Accuracy classes P and SP on request
**2)** cover strip not coated.

**Ordering example (above $L_{max}$)**

Options:

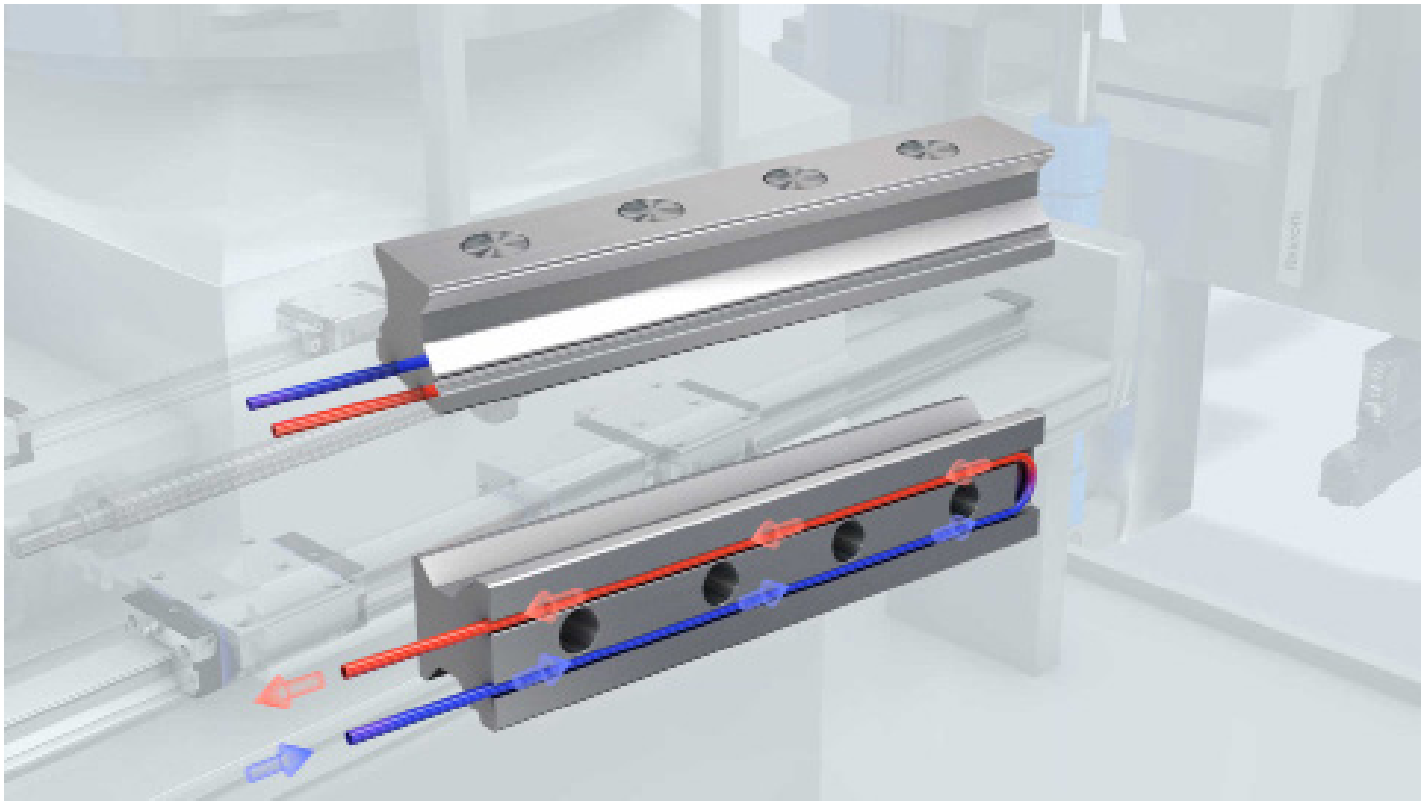
- Rail for mounting from below
- Size 45
- Accuracy class H
- Multi-part (2 parts)
- Rail length
  L = 5036 mm

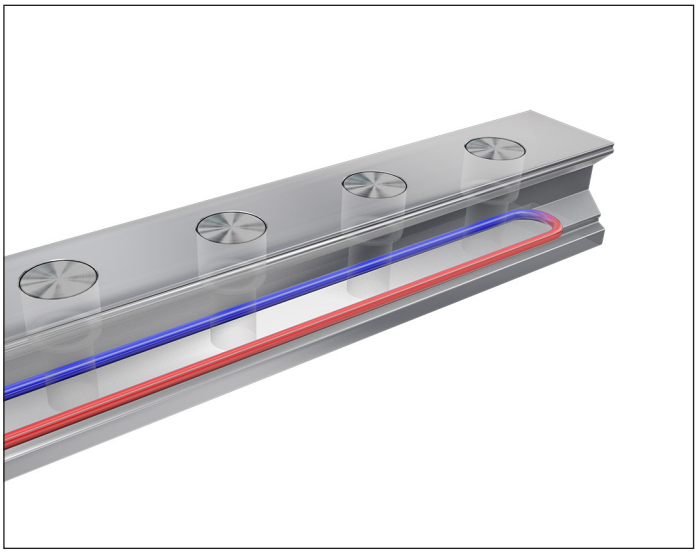
Material number: R1847 413 42, 5036 mm

# Roller guide rail with temperature control
# Product description

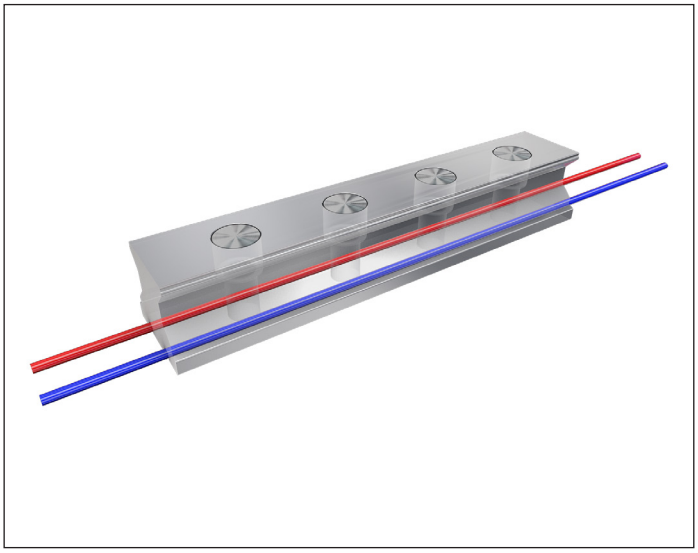
## Characteristic features

**Faster starting, more precise movement, simple conversion**
What used to only be possible with a lot of effort and special solutions is now available for the first time as standard: Rexroth has integrated temperature control into the guide rail. Wherever fast travel cycles and the highest precision are required, guide rails can now be started without any run-in time. Always at the perfect temperature and thermally stable. And with less waste. Ideal for retrofitting: simply replace the rail and connect to the existing cooling circuit. You can turn your standard machines into precision machines in no time at all!



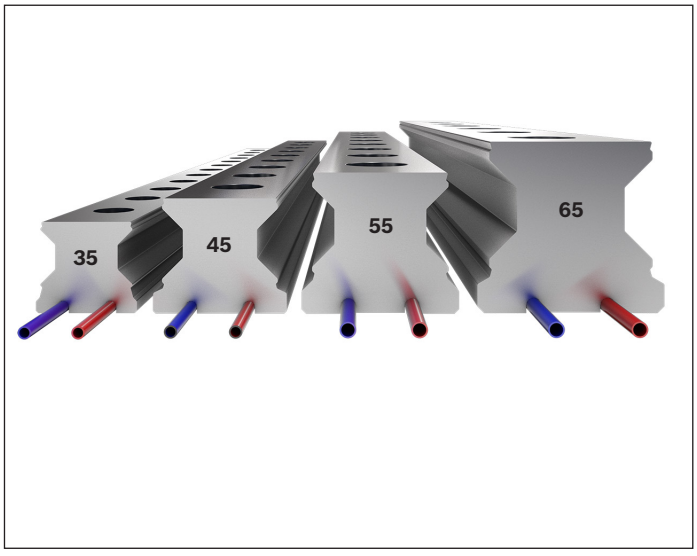


**Extremely precise movement, flexible adjustment**
Since the new guide rails by Rexroth remove the heat from where it is created or supplies it to where it is needed you have complete freedom. No matter where your machine is positioned or what material the machine bed is made from, the linear guide rails work with high precision and are thermally stable. No run-in time, with good parts from the first part. This ensures the greatest availability and increases part accuracy by up to 75%. Even with existing machines: rails can be easily connected to existing cooling circuits with ready to connect piping. Finished.



## Further highlights

- High precision: up to 75% higher part accuracy, regardless of environment
- Always available: no run-in to the operating temperature
- Flexible: can be adjusted to changes as required
- Can be retrofitted: compatible with existing systems
- Simple: pipes are ready to connect, uses existing cooling circuits




## Technical features

- Roller guide sizes: 35/45/55/65
- Formats: R1805
- Rail covers: cover strip, plastic caps
- Series with groove
- Accuracy classes: P/GP/SP
- Rail lengths: up to max. 4000 mm
- Redirecting temperature control: to the rails or universal
- Patent pending

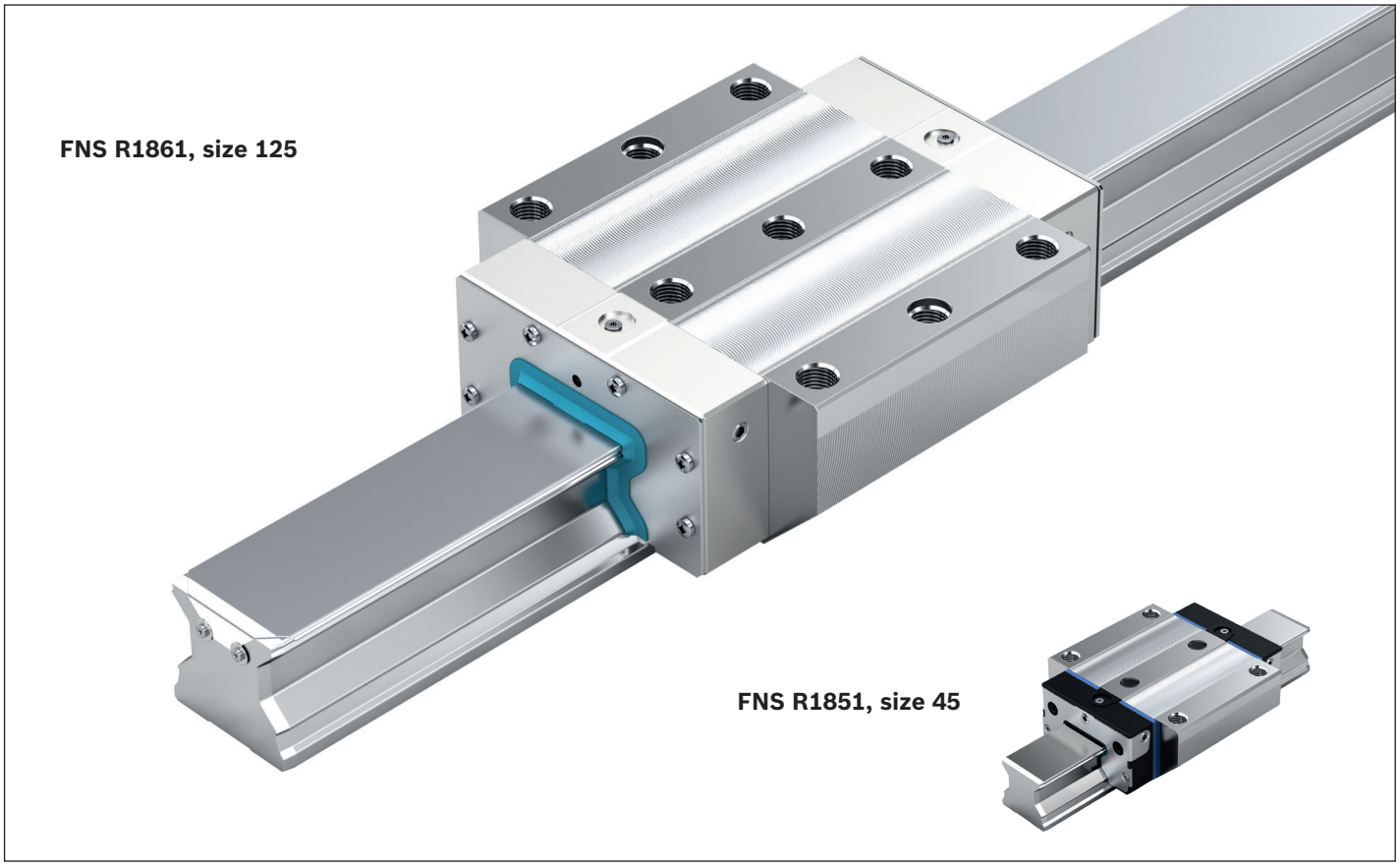
# Product description

## Characteristic features

- Heavy-Duty roller runner block for heavy machine construction with extremely high load capacity
- Maximum rigidity in all load directions
- Improved rigidity under lift-off and side loading conditions due to three additional mounting screw holes at the center of the roller runner block
- High torque load capacity
- Limitless interchangeability and any number of combination options thanks to uniform roller guide rails in different versions across all roller runner block variants
- Attachments on the roller runner block can be mounted from above and below

## Further highlights

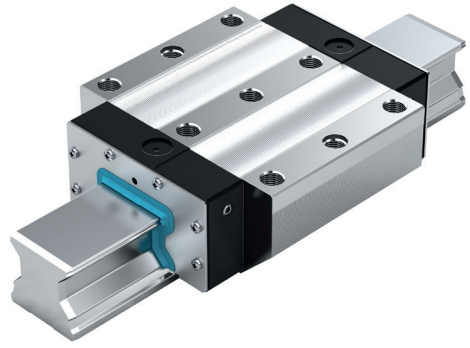
- Lube nipples possible on all sides for easy maintenance
- Low lubrication quantities thanks to innovative channel design
- Roller runner blocks made from anti-friction bearing steel with hardened and ground tracks (Roller guide rails also hardened and smoothed in the track zone)
- Smooth, quiet running thanks to optimally designed return and guideways of the rollers
- Minimal variation in elastic deflection thanks to optimized entry-zone geometry and high number of rollers
- Aluminum or plastic end caps
- Integrated front seals are included as standard for improved sealing of all running tracks and to protect the plastic parts



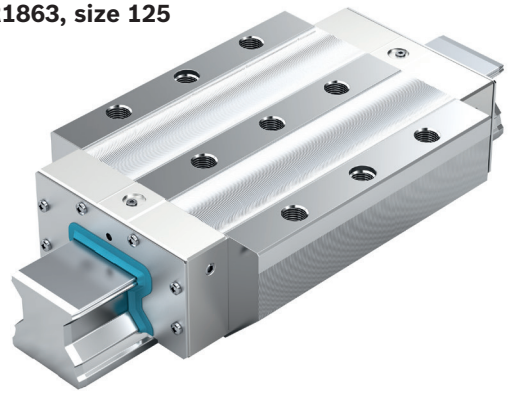
## Optional versions

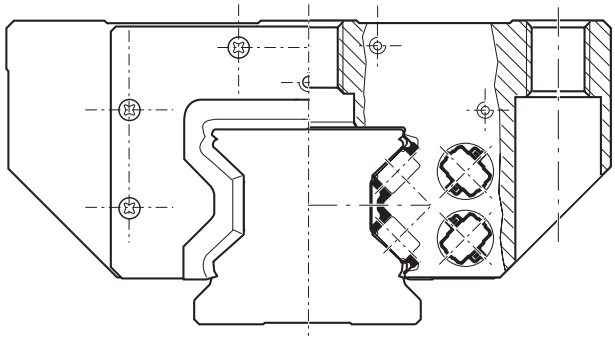
- Corrosion-resistant heavy-duty roller runner blocks and roller guide rails in resist CR, matte-silver finish, hard chrome plated, available in accuracy class H (preloads C2 and C3).

**FNS R1861, size 100**



**FLS R1863, size 125**





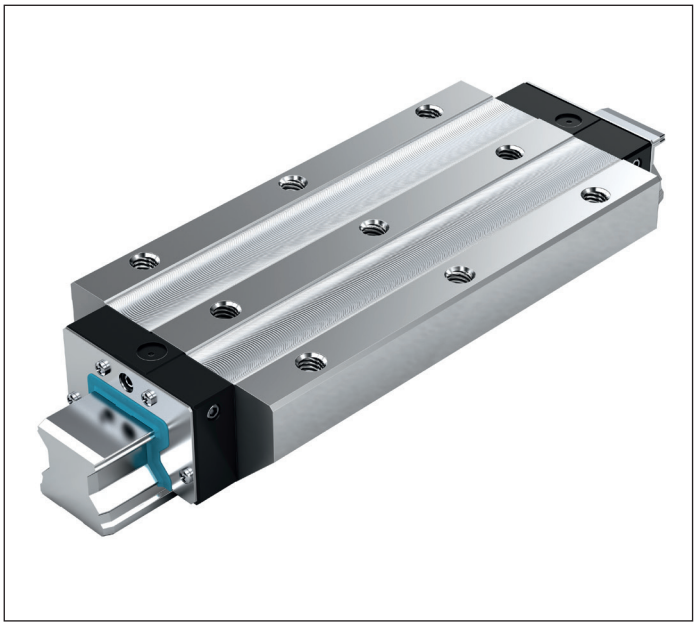
**Heavy-duty roller runner block for heavy machine construction**

- Aluminum end caps (size 125) and/or plastic (size 100)
- Standard front seals

**Optimum design of the roller guide rail**

- Quiet running thanks to optimally designed roller return and guideway

# FXS heavy-duty roller runner blocks - flange, extra long, standard height, made of steel R1854 ... 1.



**Dynamic characteristics**
Travel speed: $v_{max}$ = 3 m/s
Acceleration: $a_{max}$ = 150 m/s$^2$

**Recommended combination based on preload and accuracy class**

- For preload C2: H and P (preferably)
- For preload C3: P and SP

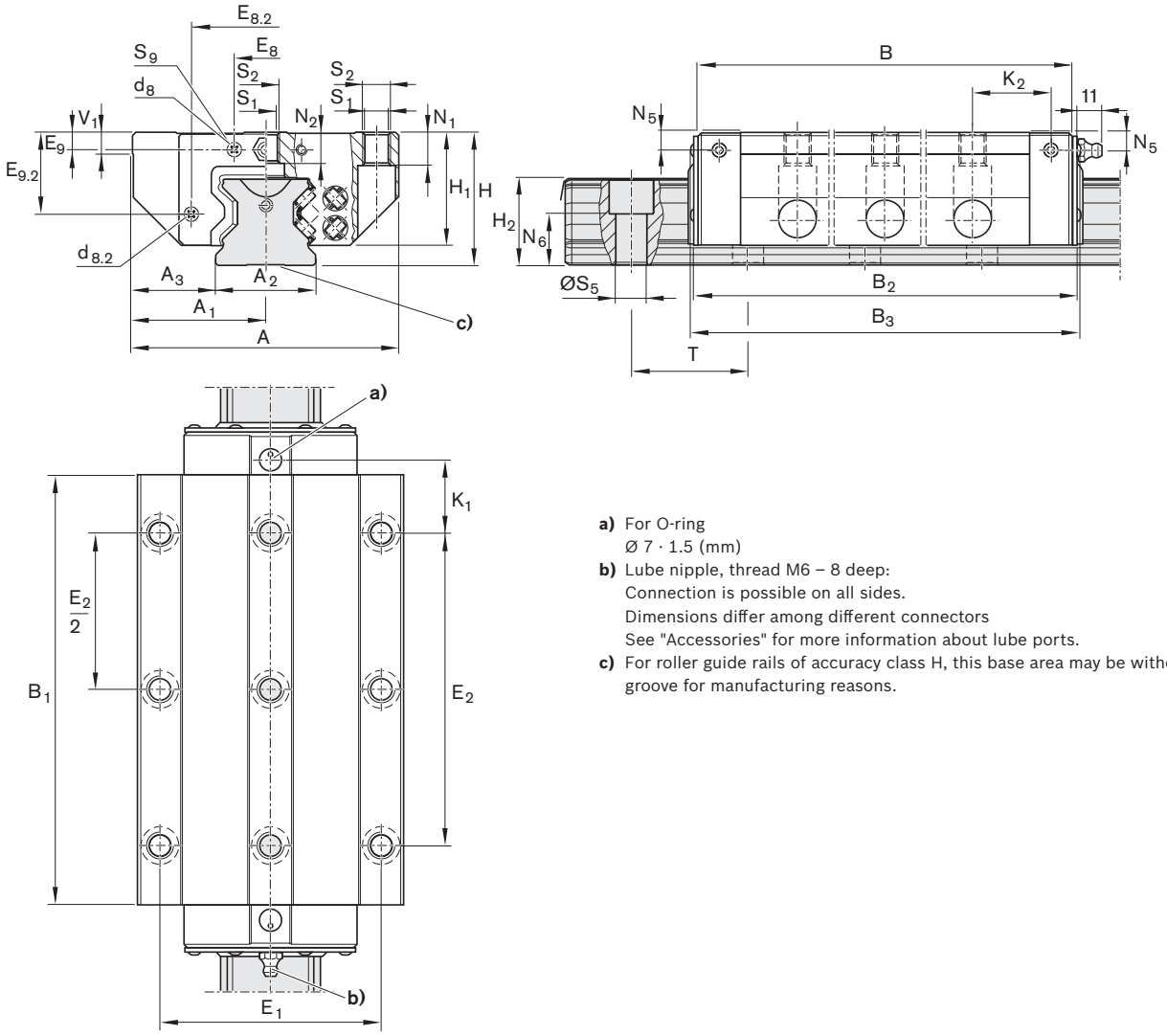
## Material numbers

| Size | Roller runner block with size | Preload class | | Accuracy class | | | | Seal |
|---|---|---|---|---|---|---|---|---|
| | | C2 | C3 | H | P | SP | UP | DS |
| **65** | R1854 6 | 2 | | 3 | 2 | 1 | 9 | 10 |
| | | | 3 | | 2 | 1 | 9 | 10 |

## Technical data

| Size | Mass (kg) | Load capacities [1] (N) | | Torsional moment load capacity[1] (Nm) | | Longitudinal moment load capacity[1] (Nm) | |
|---|---|---|---|---|---|---|---|
| | m | C | $C_0$ | $M_t$ | $M_{t0}$ | $M_L$ | $M_{L0}$ |
| **65** | 20.30 | 366800 | 792800 | 13030 | 28170 | 15760 | 34060 |

**1)** Determination of the dynamic load capacities and load moments is based on a stroke travel of 100,000 m according to DIN ISO 14728-1. However, often only 50,000 m is actually stipulated. For comparison: Multiply values C, $M_t$ and $M_L$ from the table by 1.23.




**a)** For O-ring
Ø 7 · 1.5 (mm)

**b)** Lube nipple, thread M6 – 8 deep:
Connection is possible on all sides.
Dimensions differ among different connectors
See "Accessories" for more information about lube ports.

**c)** For roller guide rails of accuracy class H, this base area may be without a groove for manufacturing reasons.



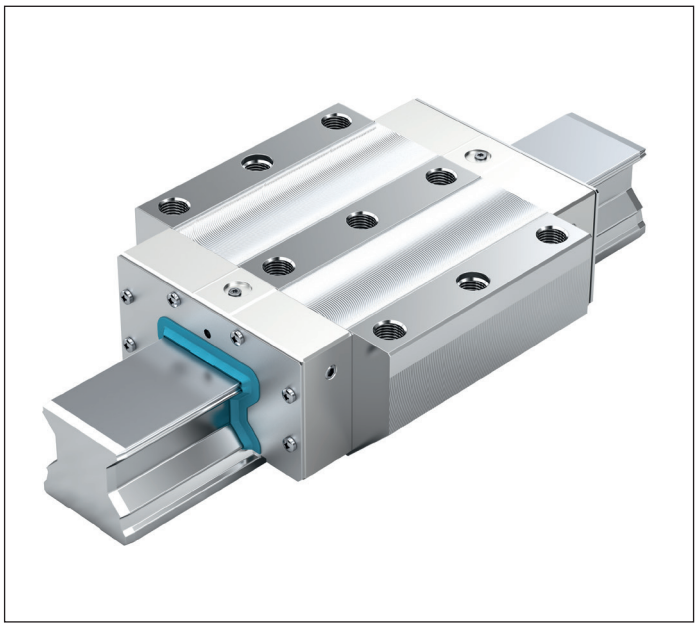
## Dimensions (mm)

| Size | A | $A_1$ | $A_2$ | $A_3$ | B | $B_1$ | $B_2$ | $B_3$ | $d_8$ | $d_{8.2}$ | $E_1$ | $E_2$ | $E_8$ | $E_{8.2}$ | $E_9$ | $E_{9.2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **65** | 170 | 85 | 63 | 53.5 | 335 | 275 | 339.5 | 345 | 8 | 8 | 142 | 200 | 35.0 | 106.00 | 9.30 | 55.00 |

| Size | H | $H_1$ | $H_2$ 1) | $H_2$ 2) | $K_1$ | $K_2$ | $N_1$ | $N_2$ | $N_5$ | $N_6^{\pm 0.5}$ | $S_1$ | $S_2$ | $S_5$ | $S_9$ 3) | T 4) | $V_1$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **65** | 90 | 76 | 58.15 | 57.85 | 49.5 | 52.5 | 23 | 21.5 | 9.3 | 36.5 | 14.5 | M16 | 18 | M4-7deep | 75.0 | 15.0 |

**1)** Dimension $H_2$ with cover strip
**2)** Dimension $H_2$ without cover strip
**3)** Thread for connecting parts
**4)** T = Rail separation of the roller guide rail

# FNS heavy-duty roller runner blocks - flange, normal, standard height made of steel R1861 ... 1. / resist CR R1861 ... 6.



**Dynamic characteristics**
Travel speed: $v_{max}$ = 2 m/s
Acceleration: $a_{max}$ = 150 m/s$^2$

**Recommended combination based on preload and accuracy class**

- For preload C2: H and P (preferably)
- For preload C3: P and SP

**Note**
For resist CR roller runner blocks, matte-silver, hard chrome plated, deviating tolerances of the dimensions H and $A_3$ (see "Accuracy classes and their tolerances").
When hard chrome plated roller runner blocks are combined with hard chrome plated roller guide rails, this increases the preload by approximately half a preload class.
For short stroke (< 2 · $B_1$) additional lubrication nipples are to be used: Size 125: $B_4$ and $N_7$
All lube ports with thread M8x1 (for size 125 in metal).

**Material numbers for heavy-duty roller runner block made of steel**

| Size | Roller runner block with size | Preload class | | Accuracy class | | | Seal |
|---|---|---|---|---|---|---|---|
| | | C2 | C3 | H | P | SP | DS |
| **100** | R1861 2 | 2 | | 3 | 2 | 1 | 10 |
| | | | 3 | 3 | 2 | 1 | 10 |
| **125** | R1861 3 | 2 | | 3 | 2 | | 10 |
| | | | 3 | 3 | 2 | | 10 |

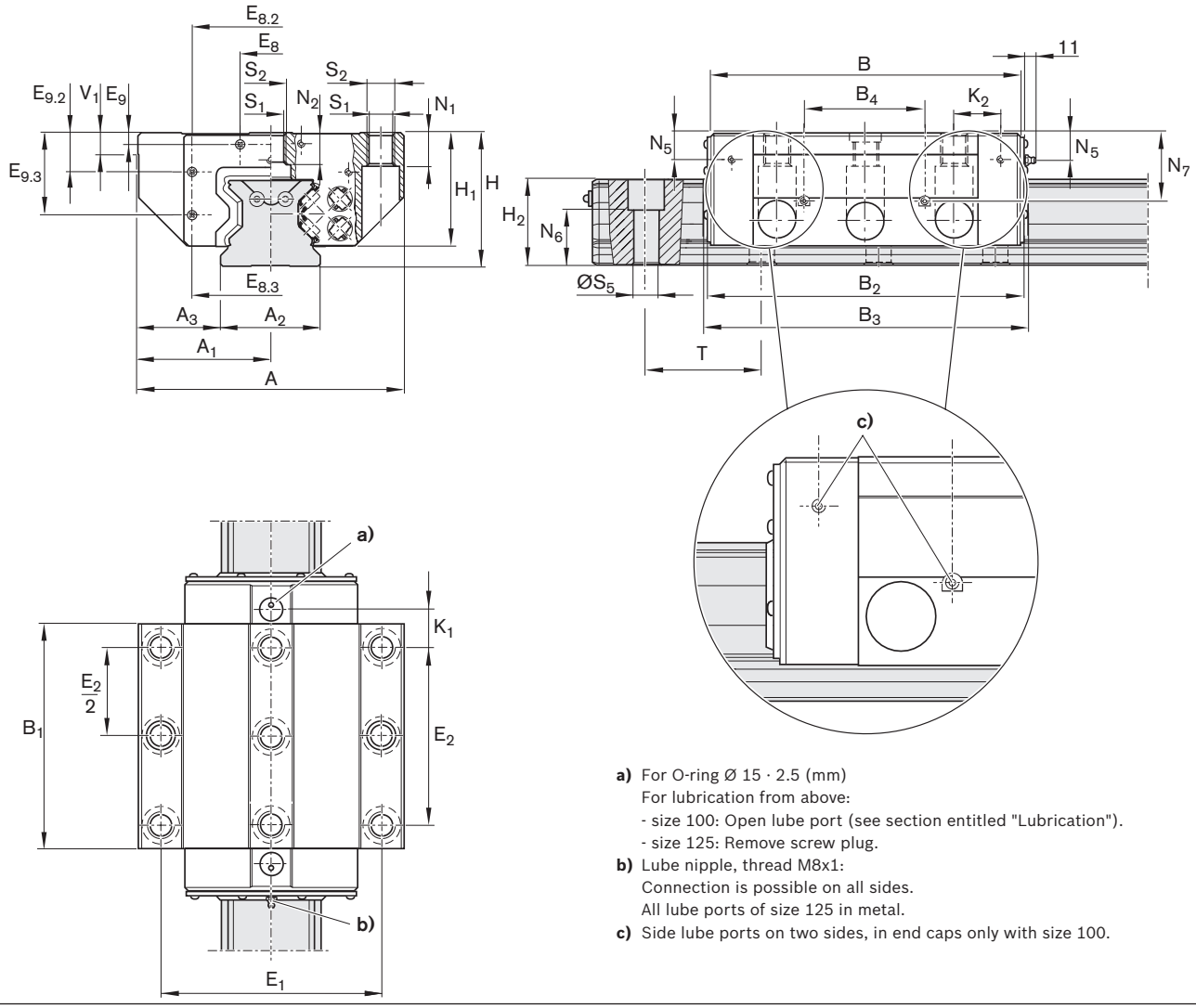
**Material numbers, resist CR heavy-duty roller runner block, matte-silver, hard chrome plated**

| Size | Roller Runner Block with size | Preload class | | Accuracy class | Seal |
|---|---|---|---|---|---|
| | | C2 | C3 | H | DS |
| **100** | R1861 2 | 2 | 3 | 3 | 60 |
| **125** | R1861 3 | 2 | 3 | 3 | 60 |

**Technical data**

| Size | Mass (kg) | Load capacities [1] (N) | | Torsional moment load capacity[1] (Nm) | | Longitudinal moment load capacity[1] (Nm) | |
|---|---|---|---|---|---|---|---|
| | m | C | $C_0$ | $M_t$ | $M_{t0}$ | $M_L$ | $M_{L0}$ |
| **100** | 32.0 | 461000 | 811700 | 25720 | 45290 | 13550 | 23850 |
| **125** | 62.1 | 757200 | 1324000 | 54520 | 95330 | 29660 | 51860 |

**1)** Determination of the dynamic load capacities and load moments is based on a stroke travel of 100,000 m according to DIN ISO 14728-1. However, often only 50,000 m is actually stipulated. For comparison: Multiply values C, $M_t$ and $M_L$ from the table by 1.23.



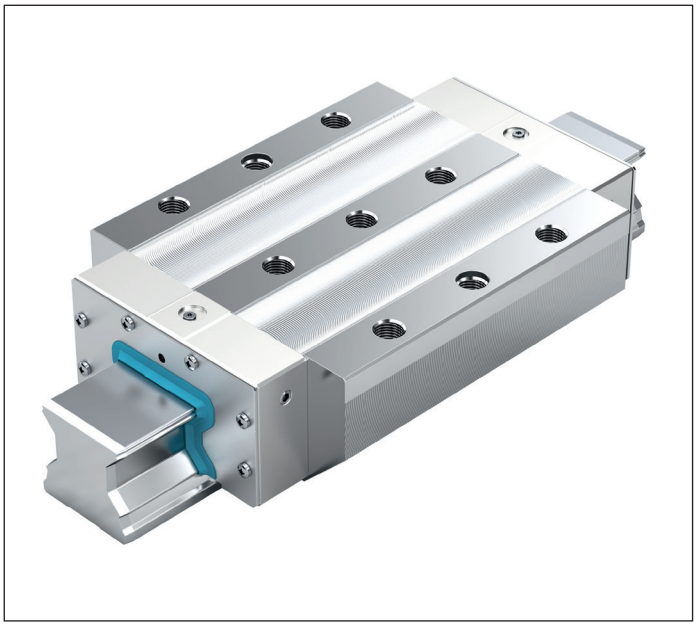

## Dimensions (mm)

| Size | A | $A_1$ | $A_2$ | $A_3$ | B | $B_1$ | $B_2$ | $B_3$ | $B_4$ | $E_1$ | $E_2$ | $E_8$ | $E_{8.2}$ | $E_{8.3}$ | $E_9$ | $E_{9.2}$ | $E_{9.3}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **100** | 250 | 125 | 100 | 75.0 | 296.5 | 204 | 301.5 | 309.5 | – | 200 | 150 | 64 | 130 | 162.6 | 9 | 29.4 | 70 |
| **125** | 320 | 160 | 125 | 97.5 | 371 | 255 | 377 | 386.5 | 130 | 270 | 205 | 80 | 205 | 205.0 | 12 | 40.0 | 92 |

| Size | H | $H_1$ | $H_2$[1)] | $K_1$ | $K_2$ | $N_1$ | $N_2$ | $N_5$ | $N_6^{\pm 0.5}$ | $N_7$ | $S_1$ | $S_2$ | $S_5$ | T | $V_1$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **100** | 120 | 105.0 | 87.3 | 44.0 | 49.9 | 30 | 22 | 17.5 | 55.0 | – | 17.5 | M20 | 25 | 105 | 20 |
| **125** | 160 | 135.5 | 115.3 | 50.0 | 50.0 | 45 | 29 | 29.0 | 74.5 | 92 | 25.0 | M27 | 33 | 120 | 25 |

**1)** Dimension $H_2$ with cover strip
**2)** T = Rail separation of the roller guide rail

# FLS heavy-duty roller runner blocks - flange, long, standard height, made of steel R1863 ... 1. / resist CR R1863 ... 6.



**Dynamic characteristics**
Travel speed: $v_{max}$ = 2 m/s
Acceleration: $a_{max}$ = 150 m/s$^2$

**Recommended combination based on preload and accuracy class**
- For preload C2: H and P (preferably)
- For preload C3: P and SP

**Note**
For resist CR roller runner blocks, matte-silver, hard chrome plated, deviating tolerances of the dimensions H and $A_3$ (see "Accuracy classes and their tolerances").
When hard chrome plated roller runner blocks are combined with hard chrome plated roller guide rails, this increases the preload by approx. half a preload class.
For short stroke (< 2 · $B_1$) additional lubrication nipples are to be used: Size 125: $B_4$ and $N_7$
All lube ports with thread M8x1 (for size 125 in metal).

**Material numbers for heavy-duty roller runner block made of steel**

| Size | Roller runner block with size | Preload class | | Accuracy class | | | Seal |
|---|---|---|---|---|---|---|---|
| | | C2 | C3 | H | P | SP | DS |
| **100** | R1863 2 | 2 | | 3 | 2 | 1 | 10 |
| | | | 3 | 3 | 2 | 1 | 10 |
| **125** | R1863 3 | 2 | | 3 | 2 | | 10 |
| | | | 3 | 3 | 2 | | 10 |

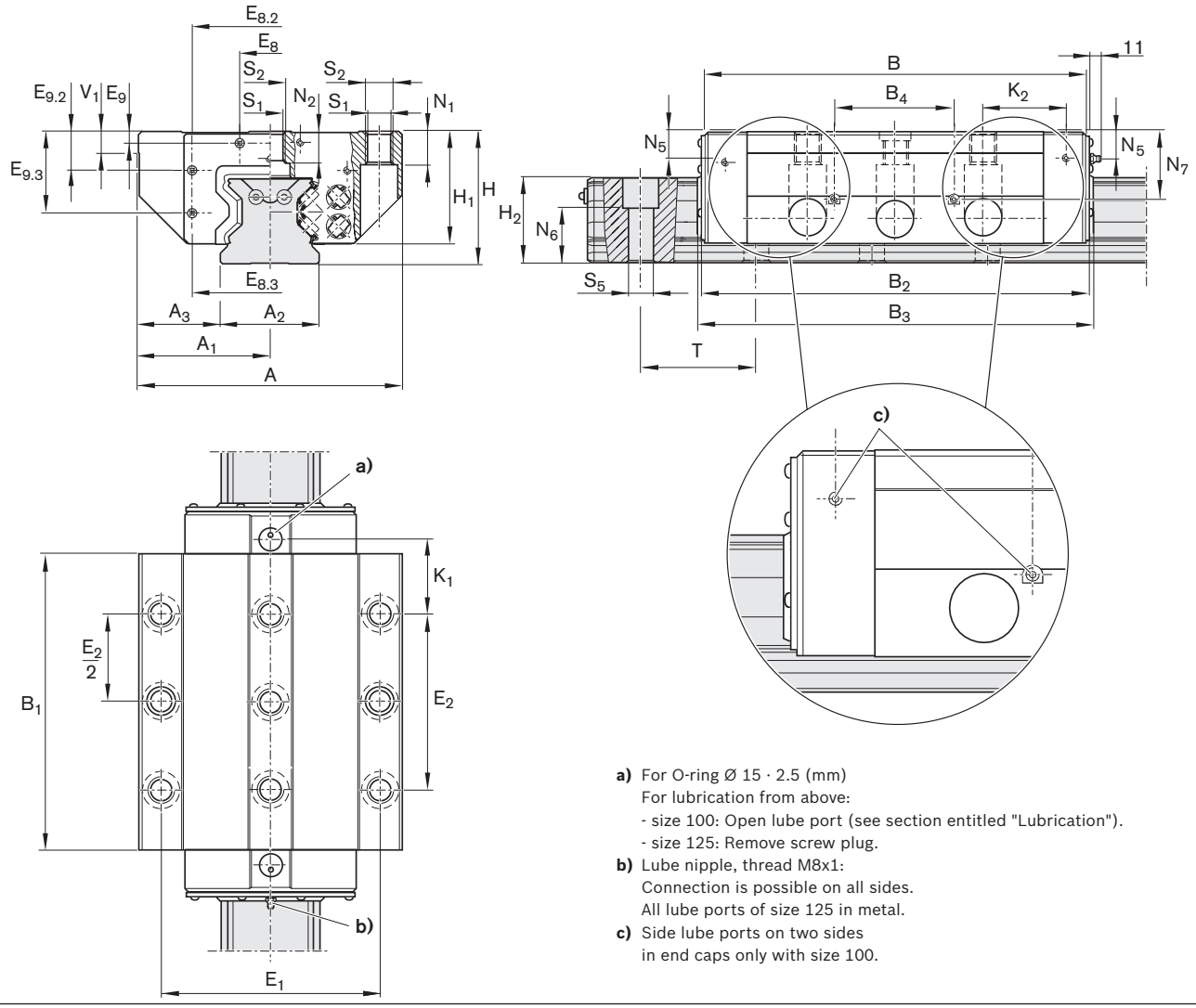
**Material numbers, resist CR heavy-duty roller runner block, matte-silver, hard chrome plated**

| Size | Roller runner block with size | Preload class | | Accuracy class | Seal |
|---|---|---|---|---|---|
| | | C2 | C3 | H | DS |
| **100** | R1863 2 | 2 | 3 | 3 | 60 |
| **125** | R1863 3 | 2 | 3 | 3 | 60 |

**Technical data**

| Size | Mass (kg) | Load capacities [1] (N) | | Torsional moment load capacity[1] (Nm) | | Longitudinal moment load capacity[1] (Nm) | |
|---|---|---|---|---|---|---|---|
| | m | C | $C_0$ | $M_t$ | $M_{t0}$ | $M_L$ | $M_{L0}$ |
| **100** | 42.0 | 632000 | 1218000 | 35300 | 67900 | 27200 | 52400 |
| **125** | 89.8 | 1020000 | 1941900 | 73440 | 139820 | 57330 | 109150 |

**1)** Determination of the dynamic load capacities and load moments is based on a stroke travel of 100,000 m according to DIN ISO 14728-1. However, often only 50,000 m is actually stipulated. For comparison: Multiply values C, $M_t$ and $M_L$ from the table by 1.23.




**a)** For O-ring Ø 15 · 2.5 (mm)
For lubrication from above:
- size 100: Open lube port (see section entitled "Lubrication").
- size 125: Remove screw plug.

**b)** Lube nipple, thread M8x1:
Connection is possible on all sides.
All lube ports of size 125 in metal.

**c)** Side lube ports on two sides
in end caps only with size 100.

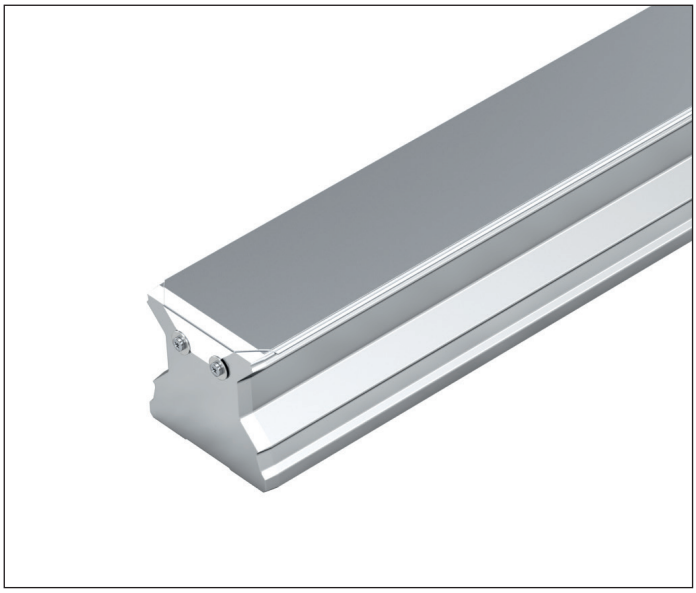
## Dimensions (mm)

| Size | A | $A_1$ | $A_2$ | $A_3$ | B | $B_1$ | $B_2$ | $B_3$ | $B_4$ | $E_1$ | $E_2$ | $E_8$ | $E_{8.2}$ | $E_{8.3}$ | $E_9$ | $E_{9.2}$ | $E_{9.3}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **100** | 250 | 125 | 100 | 75.0 | 380.5 | 288 | 385.5 | 393.5 | – | 200 | 230 | 64 | 130 | 162.6 | 9 | 29.4 | 70 |
| **125** | 320 | 160 | 125 | 97.5 | 476 | 360 | 482 | 491.5 | 150 | 270 | 205 | 80 | 205 | 205.0 | 12 | 40.0 | 92 |

| Size | H | $H_1$ | $H_2$ [1)] | $K_1$ | $K_2$ | $N_1$ | $N_2$ | $N_5$ | $N_6^{\pm 0.5}$ | $N_7$ | $S_1$ | $S_2$ | $S_5$ | T | $V_1$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **100** | 120 | 105.0 | 87.3 | 46.0 | 51.9 | 30 | 22 | 17.5 | 55.0 | – | 17.5 | M20 | 26 | 105 | 20 |
| **125** | 160 | 135.5 | 115.3 | 102.5 | 102.5 | 45 | 29 | 29.0 | 74.5 | 92 | 25.0 | M27 | 33 | 120 | 25 |

**1)** Dimension $H_2$ with cover strip
**2)** T = Rail separation of the roller guide rail

# SNS heavy-duty roller guide rail with cover strip made of steel R1835 .6. .. / resist CR R1865 .6. ..



**For mounting from above, with cover strip made of corrosion-resistant spring steel per EN 10088 (with threaded mounting holes on end faces)**

**Notes**

- Secure the cover strip.
- Screws and washers included in the scope of delivery.
- Observe the instruction for mounting!
- Please request the "Mounting instructions for roller rail systems" and "Mounting instructions for cover strip".
- Composite roller guide rail also available.

**Material numbers of heavy-duty roller guide rails made of steel**

| Size | Roller guide rail with size | Accuracy class | | | Number of sections | | Hole spacing T | Recommended rail lengths $L = n_B \cdot T - 7$ mm |
|---|---|---|---|---|---|---|---|---|
| | | H | P | SP | One-piece | Composite | (mm) | Maximum number of bore holes $n_B$ |
| **100** | R1835 26 | 3 | 2 | 1 | 61, .... | 6., ... | 105 | 35 |
| **125** | R1835 36 | 3 | 2 | – | 61, .... | 6., ... | 120 | 22 |

**Material numbers of resist CR heavy-duty roller guide rails**

| Size | Roller guide rail with size | Accuracy class | Number of sections | | Hole spacing T | Recommended rail lengths $L = n_B \cdot T - 7$ mm |
|---|---|---|---|---|---|---|
| | | H | One-piece | Composite | (mm) | Maximum number of bore holes $n_B$ |
| **100** | R1865 26 | 3 | 71, .... | 7., ... | 105 | 35 |
| **125** | R1865 36 | 3 | 71, .... | 7., ... | 120 | 22 |

**Ordering example 1 (up to $L_{max}$)**

Options:

- Roller guide rail SNS
- Size 125
- Accuracy class P
- One-piece
- Rail length
  L = 1637 mm

Material number:

R1835 362 61, 1637 mm

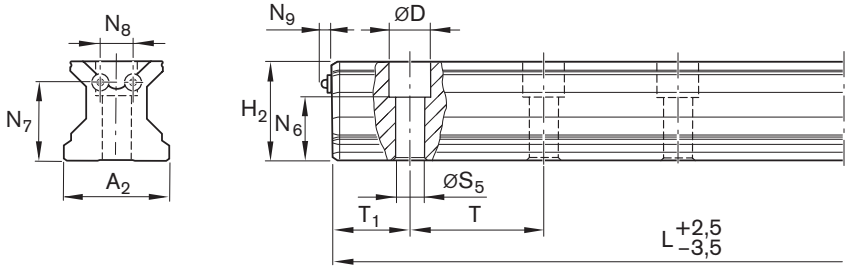
**Ordering example 2 (beyond $L_{max}$)**

Options:

- Roller guide rail SNS
- Size 125
- Accuracy class P
- **Multi-part (2 parts)**
- Rail length
  L = 5033 mm

Material number:

R1835 362 6**2**, 5033 mm



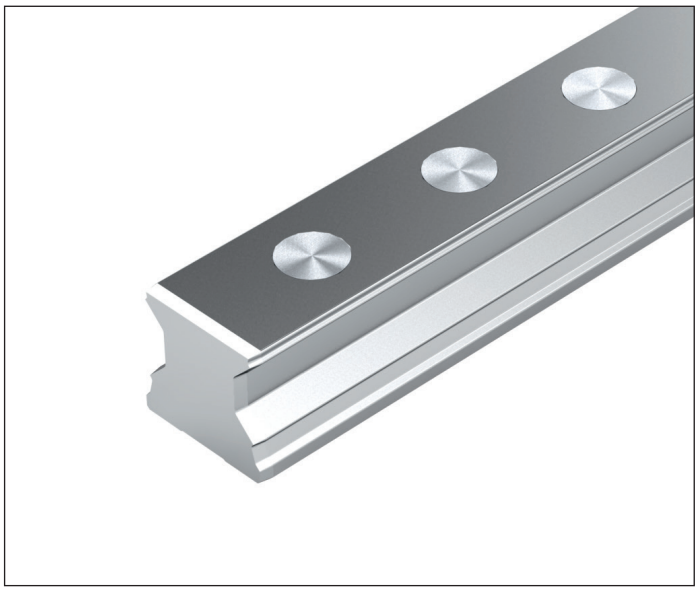

Roller guide rail with cover strip and threaded holes on end faces.
Retaining with screws and washers (included).

**Dimensions (mm)**

| Size | $A_2$ | D | $H_2$ [1] | $L_{max}$ | $N_6^{\pm 0.5}$ | $N_7$ | $N_8$ | $N_9$ | $S_5$ | $T_{1\,min}$ [2] | $T_{1\,max}$ | $T_{1S}$ [3] | T | Mass (kg/m) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **100** | 100 | 40 | 87.3 | 3986 [4] | 55.0 | 65 | 28 | 4.8 | 26 | 35 | | 49.0 | 105 | 42.5 |
| **125** | 125 | 49 | 115.3 | 2760 [5] | 74.5 | 91 | 38 | 4.8 | 33 | 40 | | 56.5 | 120 | 75.6 |

**1)** Dimension $H_2$ with cover strip 0.3 mm
**2)** When undercutting $T_{1\,min}$, no front-side thread possible. Secure the cover strip! Observe the instruction for mounting!
**3)** Preferred dimension $T_{1S}$ with tolerances +1/−1.5
**4)** $L_{max}$ for resist CR heavy-duty roller guide rails: 2500 mm
**5)** $L_{max}$ for resist CR heavy-duty roller guide rails: 2000 mm

# Heavy-duty roller guide rails SNS with steel mounting hole plugs R1836 .5. ..



**For mounting from above, for mounting hole plugs made of steel (not included in the scope of delivery)**

**Notes**

- Steel mounting hole plugs are not included in the scope of delivery of the roller guide rails. Order separately (see "Accessories for roller guide rails")
- The mounting tool is to be ordered separately (see "Accessories for roller guide rails")!
- Observe the instruction for mounting!
- Please ask for the "Mounting instructions for roller rail systems".
- Composite roller guide rail also available.

**Material numbers**

| Size | Roller guide rail with size | Accuracy class | | | Number of sections | | Hole spacing T | Recommended rail lengths $L = n_B \cdot T - 7$ mm |
|---|---|---|---|---|---|---|---|---|
| | | H | P | SP | One-piece | Composite | (mm) | Maximum number of bore holes $n_B$ |
| **100** | R1836 25 | 3 | 2 | 1 | 31, .... | 3., ... | 105 | 35 |

**Ordering example 1 (up to $L_{max}$)**
Options:

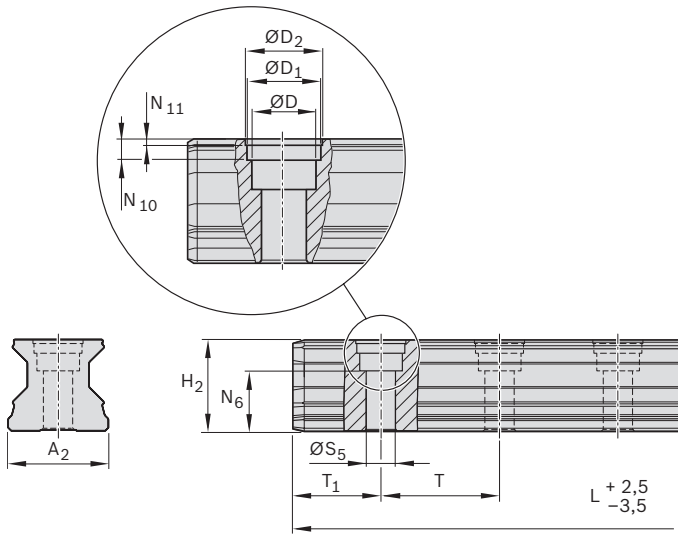
- Roller guide rail SNS
- Size 100
- Accuracy class P
- One-piece
- Rail length
  L = 1673 mm

Material number:
R1836 352 31, 1673 mm

**Ordering example 2 (beyond $L_{max}$)**
Options:

- Roller guide rail SNS
- Size 100
- Accuracy class P
- **Multi-part (2 parts)**
- Rail length
  L = 5768 mm

Material number:
R1836 352 3**2**, 5768 mm




Steel mounting hole plugs are not included in the scope of delivery of the roller guide rails. Order the mounting tool too! For mounting steel mounting hole plugs, see "Mounting instructions for roller rail systems"

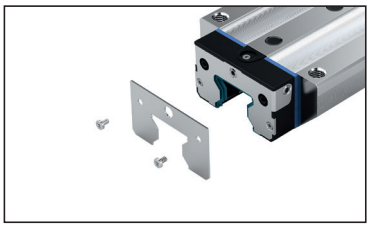
## Dimensions (mm)

| Size | $A_2$ | D | $D_1$ | $D_2$ | $H_2$ | $L_{max}$ | $N_6^{\pm 0.5}$ | $N_{10}$ | $N_{11}$ | $S_5$ | $T_{1\,min}$ | $T_{1\,max}$ | $T_{1\,S}$ 1) | T | Mass (kg/m) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **100** | 100 | 40 | 43.55 | 46 | 87.00 | 3986 | 55.00 | 9.0 | 1.60 | 26 | 35 | | 49.00 | 105 | 42.5 |

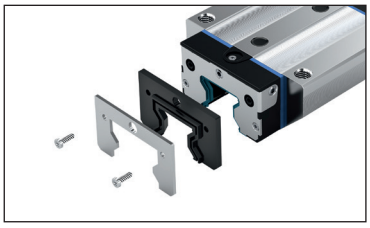
**1)** Preferred dimension $T_{1S}$ with tolerances +1.0/-1.5

# Overview of accessories for roller runner blocks

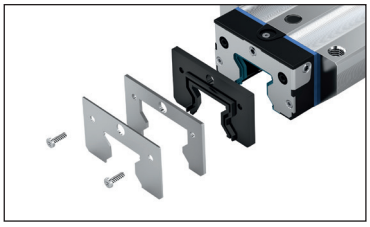
**Cover plate wiper**



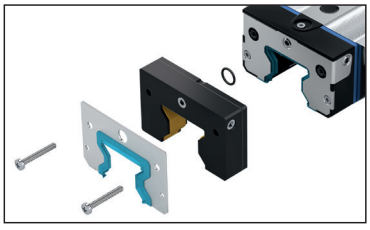
**FKM seal**



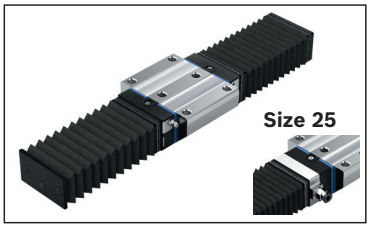
**FKM seal set**



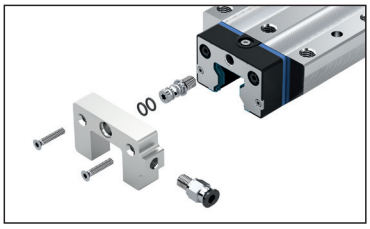
**Front lube unit**



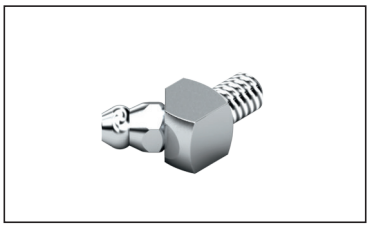
**Bellows**



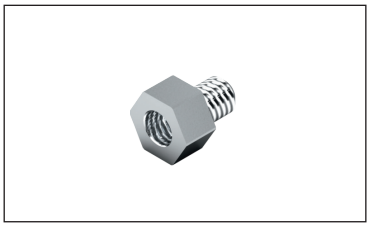

**Lubrication plate for size 25**



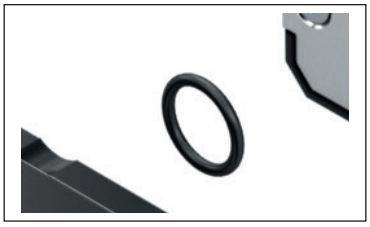
**Lube nipple**



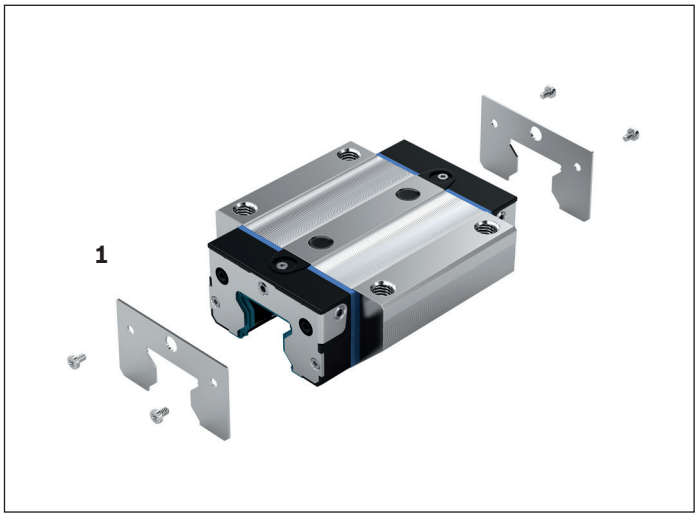
**Lube fittings**



**O-rings**



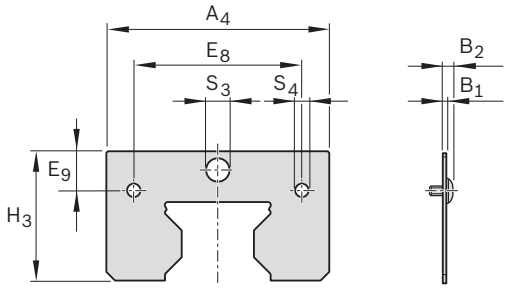
# Cover plate wiper
# R1820 .1. 3. / 1810 291 40

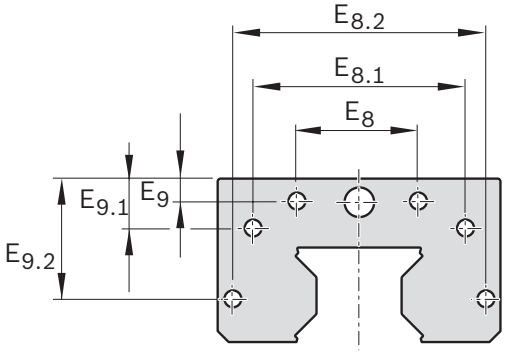



For mounting on roller runner blocks for roller guide rails with cover strip

**1** Cover plate wiper
- Material: Rust-free spring steel in as per DIN EN 10088
- Design: bright

Instruction for mounting
When mounting, ensure an even gap between the roller guide rail and the cover plate wiper.
With front lube connection:
Use special lube nipple or adapter (see "Accessories").



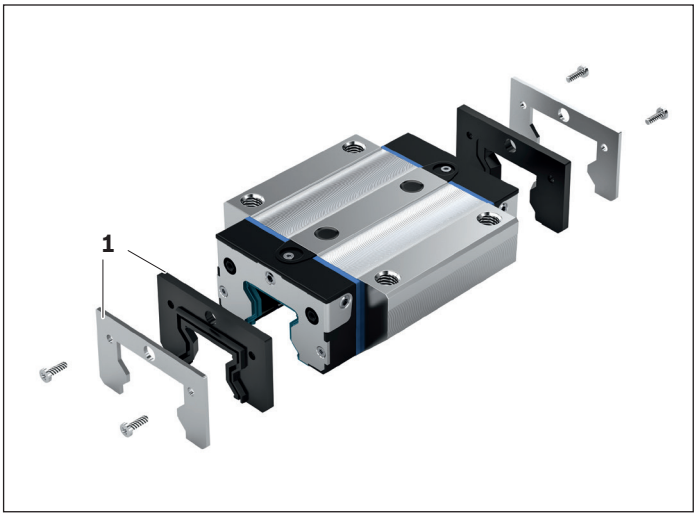




Size 65

**Material numbers and dimensions**

| Size | Material number | Dimensions (mm) | | | | | | | | | | | | Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $A_4$ | $H_3$ | $B_1$ | $B_2$ | $E_8$ | $E_{8.1}$ | $E_{8.2}$ | $E_9$ | $E_{9.1}$ | $E_{9.2}$ | $S_3$ | $S_4$ | (g) |
| **25** | R1820 210 30 | 45.40 | 29.15 | 1.00 | 3.00 | 33.40 | – | – | 7.45 | – | – | Ø 7.00 | Ø 4.00 | 7 |
| **35** | R1820 310 30 | 67.40 | 39.70 | 1.00 | 3.00 | 50.30 | – | – | 12.05 | – | – | Ø 7.00 | Ø 4.00 | 15 |
| **45** | R1820 410 30 | 80.40 | 49.70 | 2.00 | 5.10 | 62.90 | – | – | 15.70 | – | – | Ø 7.00 | Ø 5.00 | 44 |
| **55** | R1820 510 30 | 92.80 | 56.70 | 2.00 | 5.80 | 74.20 | – | – | 17.80 | – | – | Ø 7.00 | Ø 6.00 | 52 |
| **65** | R1820 610 30 | 118.40 | 73.90 | 2.00 | 5.10 | 35.00 | 93.00 | – | 8.00 | 24.70 | – | Ø 7.00 | Ø 5.00 | 104 |

# FKM seal
# R1810 .2. 3.

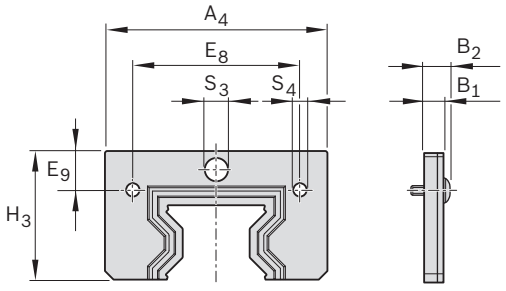


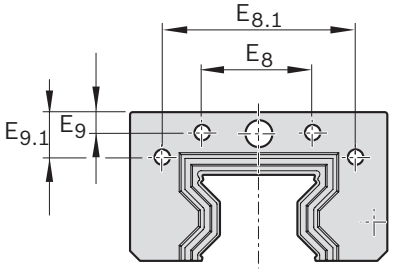

For mounting at the roller runner block

**1** Two-piece FKM seal
- Material: Stainless steel plus FKM seal

Special feature: Easy mounting/removal on fixed roller guide rail Observe the mounting instructions.

Instruction for mounting:
The fastening screws are included.
Max. tightening torque 0.4 Nm
With front lube connection: Use special lube nipple or adapter (see "Accessories").
Combination with additional cover plate wiper possible. For sizes 35 to 65, use the FKM seal set and sheet cover plate wiper (see following page).



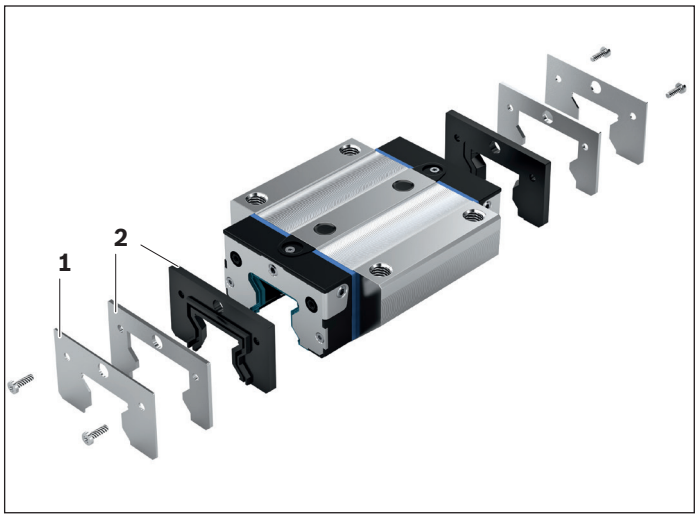




Size 65

**Material numbers and dimensions**

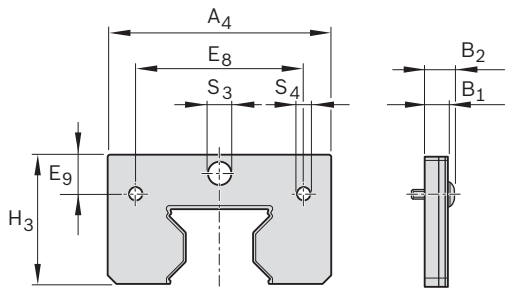
| Size | Material number | Dimensions (mm) | | | | | | | | | | Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $A_4$ | $H_3$ | $B_1$ | $B_2$ | $E_8$ | $E_{8.1}$ | $E_9$ | $E_{9.1}$ | $S_3$ | $S_4$ | (g) |
| **25** | R1810 220 30 | 45.40 | 29.15 | 6.00 | 8.00 | 33.40 | – | 7.45 | – | Ø 7.00 | Ø 4.00 | 18 |
| **35** | R1810 320 30 | 67.40 | 39.70 | 6.00 | 8.00 | 50.30 | – | 12.05 | – | Ø 7.00 | Ø 4.00 | 40 |
| **45** | R1810 420 30 | 80.40 | 49.70 | 6.00 | 9.10 | 62.90 | – | 15.70 | – | Ø 7.00 | Ø 5.00 | 62 |
| **55** | R1810 520 30 | 92.80 | 56.70 | 6.00 | 9.80 | 74.20 | – | 17.80 | – | Ø 7.00 | Ø 6.00 | 76 |
| **65** | R1810 620 30 | 118.40 | 73.90 | 6.00 | 9.10 | 93.00 | 93.00 | 8.00 | 24.70 | Ø 7.00 | Ø 5.00 | 146 |

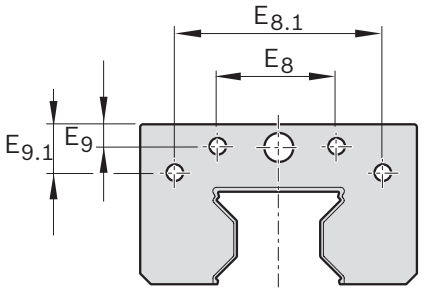
# FKM seal set
# R1810 .2. 7.




For mounting at the roller runner block
FKM seal and cover plate wiper:
**1** Cover plate wiper
**2** Two-piece FKM seal

Instruction for mounting:
The fastening screws are included.
Max. tightening torque 0.4 Nm
With front lube connection:
Use special lube nipple or adapter (see "Accessories").
Observe the mounting instructions.



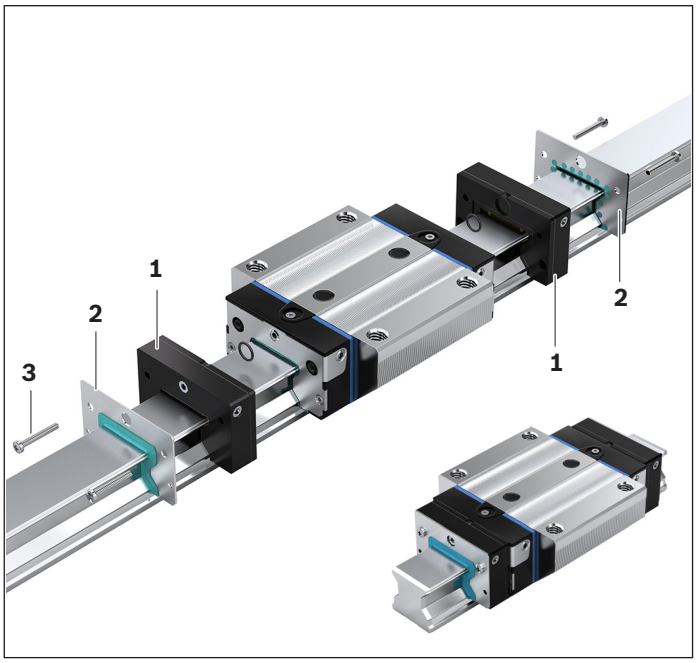




Size 65

**Material numbers and dimensions**

| Size | Material number | Dimensions (mm) | | | | | | | | | | Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $A_4$ | $H_3$ | $B_1$ | $B_2$ | $E_8$ | $E_{8.1}$ | $E_9$ | $E_{9.1}$ | $S_3$ | $S_4$ | (g) |
| **25** | R1810 220 70 | 45.40 | 29.15 | 7.00 | 9.00 | 33.40 | – | 7.45 | – | Ø 7.00 | Ø 4.00 | 25 |
| **35** | R1810 320 70 | 67.40 | 39.70 | 7.00 | 9.00 | 50.30 | – | 12.05 | – | Ø 7.00 | Ø 4.00 | 55 |
| **45** | R1810 420 70 | 80.40 | 49.70 | 8.00 | 11.10 | 62.90 | – | 15.70 | – | Ø 7.00 | Ø 5.00 | 106 |
| **55** | R1810 520 70 | 92.80 | 56.70 | 8.00 | 11.80 | 74.20 | – | 17.80 | – | Ø 7.00 | Ø 6.00 | 128 |
| **65** | R1810 620 70 | 118.40 | 73.90 | 8.00 | 11.10 | 93.00 | 93.00 | 8.00 | 24.70 | Ø 7.00 | Ø 5.00 | 250 |

# Front lube units




**Advantages for mounting and operation**

- For a travel distance of up to 5000 km without re-lubrication
- Roller runner block only needs initial lubrication with grease
- Front lube units on both sides of the roller runner block
- Low lubricant loss
- Reduced oil consumption
- No lubrication lines
- Max. operating temperature 60°C
- Front lube unit can be refilled using the lube nipple on the end-face or at the side.
- Size 25:
  Lube connection on the end-face of the front lube unit is suitable for the grease lubrication of the roller runner block. For this purpose, a lube pin is attached. For a detailed instruction for mounting with size 25, please refer to the roller rail system instruction.

⚠ Before mounting the front lube unit, an initial lubrication of the roller runner blocks with **grease lubricant** is required! See section "Lubrication".

**Mounting of front lube units**

The coated screws required for attachment additional front seals are supplied along with the unit.

1. In each case, mount a front lube unit (1) on both sides of the roller runner block!
2. Do not remove the roller runner block from the rail!
3. Slide on the front lube units (1) and front seals (2) and align them on the roller runner block.
4. Tighten screws (3) to tightening torque $M_A$ (see table ).

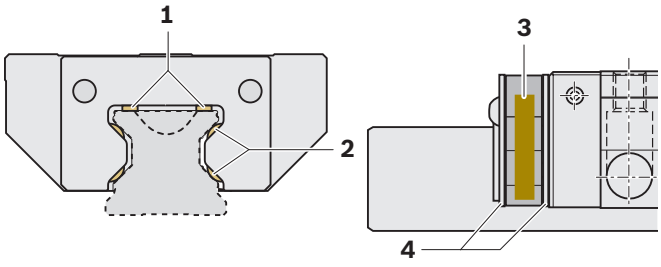
| Size | Item 3 | Tightening torque $M_A$ (Nm) |
|---|---|---|
| **25** | M3 x 15 | 0.7 |
| **35** | M3 x 22 | 0.7 |
| **45** | M4 x 25 | 1.0 |
| **55** | M5 x 30 | 1.3 |
| **65** | M4 x 30 | 1.0 |

**Notes**

The coated screws required for attachment on the roller runner block, additional front seals and lube nipples are supplied along with the unit. The front lube units are already filled with oil (Mobil SHC 639) and can be mounted immediately after basic lubrication of the roller runner blocks.

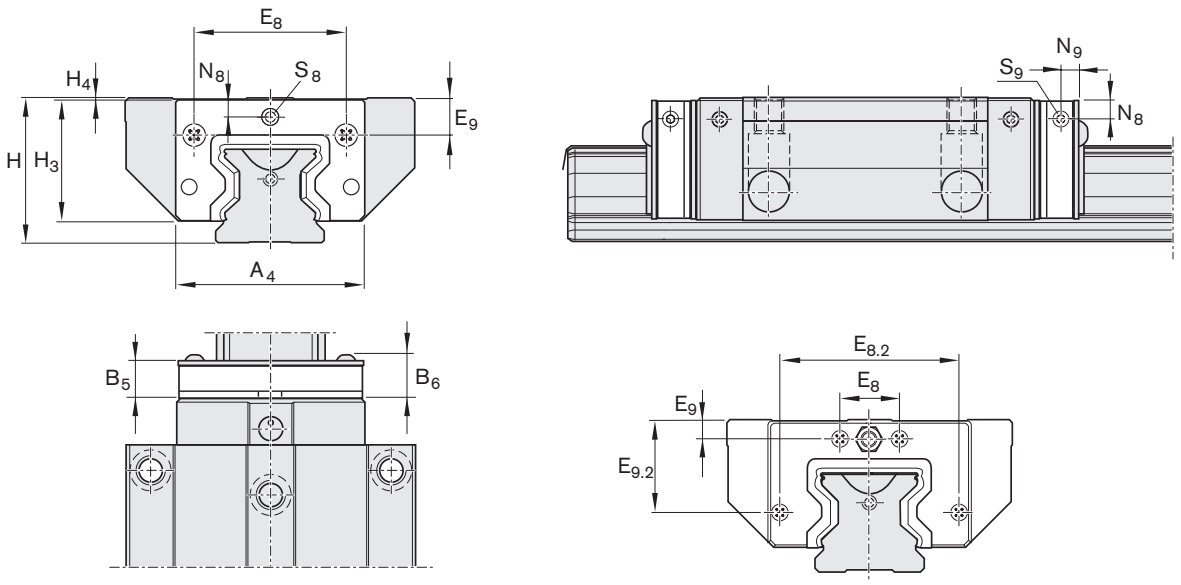
**Lubricant distribution**

Due to the special lubricant distribution design, lubrication occurs primarily where it is needed: directly on the running tracks and the top surfaces of the roller guide rails.




**1** Top surfaces of the roller guide rails
**2** Running tracks of the roller rail system
**3** Oil tank
**4** Front seals

## Design and technical data




**Size 65**

| Size | Material numbers | Dimensions (mm) | | | | | | | | | | | | | | | Oil ($cm^3$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $A_4$ | $B_5$ | $B_6$ | $E_8$ | $E_{8.2}$ | $E_9$ | $E_{9.2}$ | H | $H_3$ | $H_4$ | $N_8$ | $N_9$ | $S_8$ | $S_9$ | | |
| **25** | R1810 225 00 | 44.0 | 13.0 | 15.5 | 33.4 | – | 8.40[1)]<br>12.40[2)] | – | 36[1)]<br>40[2)] | 29.2 | 0.50[1)]<br>4.50[2)] | 5.00[1)]<br>9.00[2)] | – | M6 | – | 2.6 | 24 |
| **35** | R1810 325 00 | 64.0 | 16.5 | 19.0 | 50.3 | – | 13.10[1)]<br>20.10[2)] | – | 48[1)]<br>55[2)] | 40.0 | 0.75[1)]<br>7.75[2)] | 6.25[1)]<br>13.25[2)] | 5.5 | M6 | M6 | 8.3 | 46 |
| **45** | R1810 425 00 | 78.0 | 18.5 | 21.8 | 62.9 | – | 16.70[1)]<br>26.75[2)] | – | 60[1)]<br>70[2)] | 50.0 | 0.75[1)]<br>10.75[2)] | 7.25[1)]<br>17.25[2)] | 7.5 | M6 | M6 | 13.8 | 88 |
| **55** | R1810 525 00 | 91.5 | 20.3 | 24.3 | 74.2 | – | 18.85[1)]<br>28.95[2)] | – | 70[1)]<br>80[2)] | 56.3 | 0.75[1)]<br>10.75[2)] | 8.25[1)]<br>18.25[2)] | 9.0 | M6 | M6 | 22.8 | 122 |
| **65** | R1810 625 00 | 119.0 | 21.0 | 24.3 | 35.0 | 106 | 9.30 | 55.0 | 90 | 74.8 | 0.75 | 8.55 | 8.5 | M6 | M6 | 47.6 | 225 |

**1)** Dimension with regard to mounting surface of roller runner block for a standard higher version
**2)** Dimension with regard to mounting surface of roller runner block for a higher version

# Front lube units

**Lubrication intervals for roller runner blocks with front lube units**

- Check the front lube units once the travel distance in figure 1 is attained.

Upon reaching the travel distance according to image 1 or after no more than 3 years, we recommend replacing the front lube units and re-lubricating the roller runner block prior to mounting the new front lube unit.
In clean operating conditions, the roller runner blocks (sizes 35 to 65 on the side and size 25 at the front) can be re-lubricated with grease (Dynalub 510) (see table 1).

⚠ If other lubricants are used, this may lead to a reduction in the lubrication intervals, performance losses 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.

⚠ The recommended lubrication intervals depend on environmental factors, load and load type.
Examples of environmental factors include swarf, mineral abrasion (or similar), solvent and temperature. Examples of loads and stress types are oscillations, shocks and tilting.

⚠ The conditions of use are unknown to the manufacturer. Only the user's own trials or accurate monitoring can yield safety across lubrication intervals.

⚠ No water-based coolant/lubricant on the roller guide rails and roller runner block!

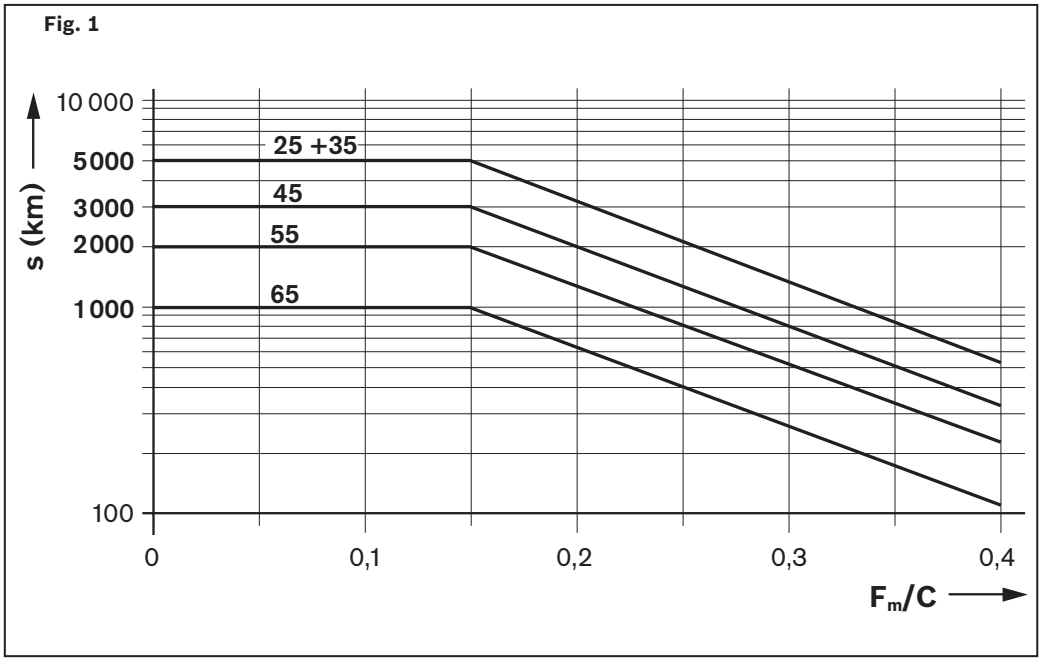
**Table 1**

| Size | Re-lubrication ($cm^3$) |
|---|---|
| **25** | 0.8 |
| **35** | 0.9 |
| **45** | 1.0 |
| **55** | 2.5 |
| **65** | 2.7 |

**Load-dependent lubrication intervals for roller runner block with front lube units**
**Sizes 25 to 65**
**This applies to the following conditions:**

- Roller runner block lubricants:
  Dynalub 510 (NLGI 2 grease) or, alternatively, Castrol Longtime PD 2 (NLGI 2 grease)
- Front lube units lubricant:
  Mobil SHC 639 (synthetic oil)
- Maximum speed: $v_{max}$ = 2 m/s
- No media pressurization
- Standard seals
- Ambient temperature: T = 10 – 40 °C

**Fig. 1**

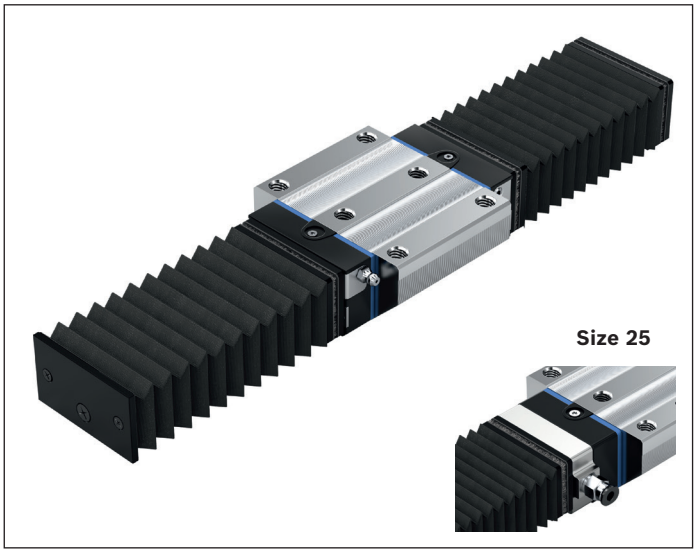



**Note**
The load ratio F/C is the quotient of the equivalent dynamic load on bearing F (making allowance for the preload for C2 or C3) divided by the dynamic load rating C (see "General Technical Data and Calculations").

**Key to illustration**

| | | | |
|---|---|---|---|
| s | = | Lubrication interval as travel distance | (km) |
| C | = | Dynamic load capacity | (N) |
| $F_m/C$ | = | Dynamic equivalent load on bearing | (N) |

# Bellows




## Bellows

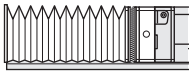
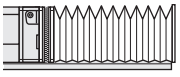
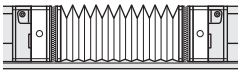
- Material: Polyurethane-coated polyester fabric
- Size 25: Aluminum lubrication plate. The lube nipple of the roller runner block can be used.

## Heat-resistant bellows

- Material: Nomex fabric, metalized

**Temperature stability**

- Non combustible, non flammable
- Resistant to sparks, welding spatter and hot chips.
- The protective metal coating can withstand peak temperatures of up to 200 °C.
- Operating temperature for the total bellows: 100 °C.

| Size |  | |  | |  | |
|---|---|---|---|---|---|---|
| | **Type 1: with lubrication plate and end plate** | | **Type 2: with fastening frame and end plate** | | **Type 3: with 2 lubrication plates** | |
| | **Part number, fold count** | **Mass** | **Part number, fold count** | **Mass** | **Part number, fold count** | **Mass** |
| | **Bellows** | | **Bellows** | | **Bellows** | |
| **25** | R1820 241 00, ... | On request | R1820 202 00, ... | On request | R1820 243 00, ... | On request |
| **35** | – | – | R1820 302 00, ... | | – | – |
| **45** | – | – | R1820 402 00, ... | | – | – |
| **55** | – | – | R1820 502 00, ... | | – | – |
| **65** | – | – | R1820 602 00, ... | | – | – |
| | **Heat-resistant bellows** | | **Heat-resistant bellows** | | **Heat-resistant bellows** | |
| **25** | R1820 271 00, ... | On request | R1820 252 00, ... | On request | R1820 273 00, ... | On request |
| **35** | – | – | R1820 352 00, ... | | – | – |
| **45** | – | – | R1820 452 00, ... | | – | – |
| **55** | – | – | R1820 552 00, ... | | – | – |
| **65** | – | – | R1820 652 00, ... | | – | – |

**Ordering examples**

**Bellows**

- Size 35, type 2
- Number of folds: 36

**Ordering data**

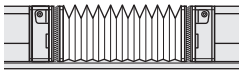
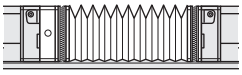
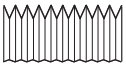
Part number, fold count: R1820 3**0**2 00, 36 folds

**Heat-resistant bellows**

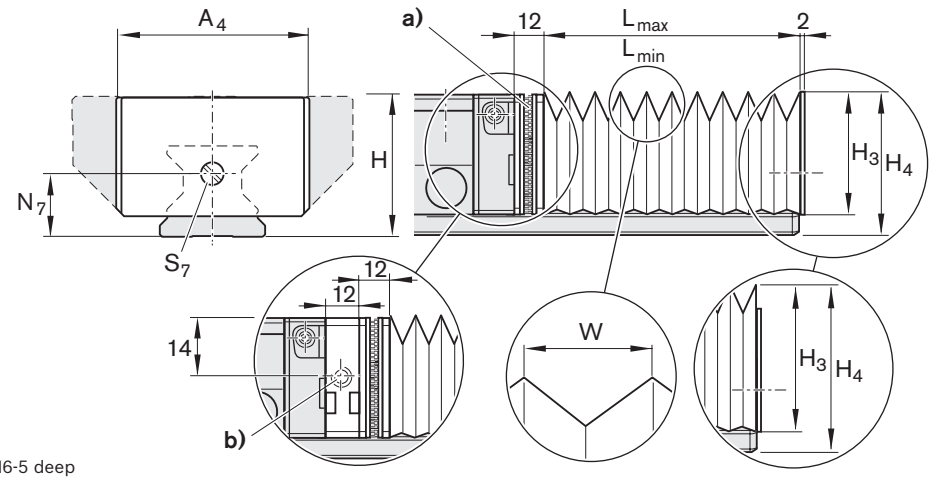
- Size 35, type 2
- Number of folds: 36

**Ordering data**

Part number, fold count: R1820 3**5**2 00, 36 folds

| Size |  | |  | |  | |
|---|---|---|---|---|---|---|
| | **Type 4: with 2 fastening frames** | | **Type 5: with lubrication plate and fastening frame** | | **Type 9: Loose bellows (spare part)** | |
| | **Part number, fold count** | **Mass** | **Part number, fold count** | **Mass** | **Part number, fold count** | **Mass** |
| | **Bellows** | | **Bellows** | | **Bellows** | |
| **25** | R1820 204 00, ... | On request | R1820 245 00 | On request | R1600 209 00 | On request |
| **35** | R1820 304 00, ... | | – | – | R1600 309 00 | |
| **45** | R1820 404 00, ... | | – | – | R1600 409 00 | |
| **55** | R1820 504 00 | | – | – | R1600 509 00 | |
| **65** | R1820 604 00, ... | | – | – | R1600 609 00 | |
| | **Heat-resistant bellows** | | **Heat-resistant bellows** | | **Heat-resistant bellows** | |
| **25** | R1820 254 00, ... | On request | R1820 275 00 | On request | R1600 259 00 | On request |
| **35** | R1820 354 00, ... | | – | – | R1600 359 00 | |
| **45** | R1820 454 00, ... | | – | – | R1600 459 00 | |
| **55** | R1820 554 00, ... | | – | – | R1600 559 00 | |
| **65** | R1820 654 00, ... | | – | – | R1600 659 00 | |

# Bellows




**a)** Velcro fastener
**b)** Lube connection M6-5 deep

**Size 25** **Heat-resistant bellows**

| Size | Bellows dimensions (mm) | | | | | | | Factor |
|---|---|---|---|---|---|---|---|---|
| | $A_4$ | H | $H_3$ | $H_4$ | $N_7$ | $S_7$ | W | U |
| **25** | 45 | 36 | 28.5 | 35.0 | 15 | M4 | 12.9 | 1.32 |
| **35** | 64 | 48 | 39.0 | 47.0 | 22 | M4 | 19.9 | 1.18 |
| **45** | 83 | 60 | 49.0 | 59.0 | 30 | M4 | 26.9 | 1.13 |
| **55** | 96 | 70 | 56.0 | 69.0 | 30 | M4 | 29.9 | 1.12 |
| **65** | 120 | 90 | 75.0 | 89.0 | 40 | M4 | 40.4 | 1.08 |

| Size | Dimensions of bellows, heat-resistant (mm) | | | | | | | Factor |
|---|---|---|---|---|---|---|---|---|
| | $A_4$ | H | $H_3$ | $H_4$ | $N_7$ | $S_7$ | W | U |
| **25** | 62 | 36 | 39.0 | 44.5 | 15 | M4 | 25.9 | 1.25 |
| **35** | 74 | 48 | 46.0 | 54.0 | 22 | M4 | 29.9 | 1.21 |
| **45** | 88 | 60 | 54.0 | 64.0 | 30 | M4 | 32.9 | 1.18 |
| **55** | 102 | 70 | 62.0 | 75.0 | 30 | M4 | 37.9 | 1.16 |
| **65** | 134 | 90 | 86.0 | 99.0 | 40 | M4 | 52.4 | 1.11 |

**Instruction for mounting for bellows**

The bellows are pre-assembled. The fastening screws are included. The lube nipple of the roller runner block can be used.

For type 1 and type 2, a thread M4-10 deep, 2 x 45° must be countersunk and placed in the end face of the rail in each case.

For assembly, see "Mounting instructions for bellows".

## Calculation of the bellows

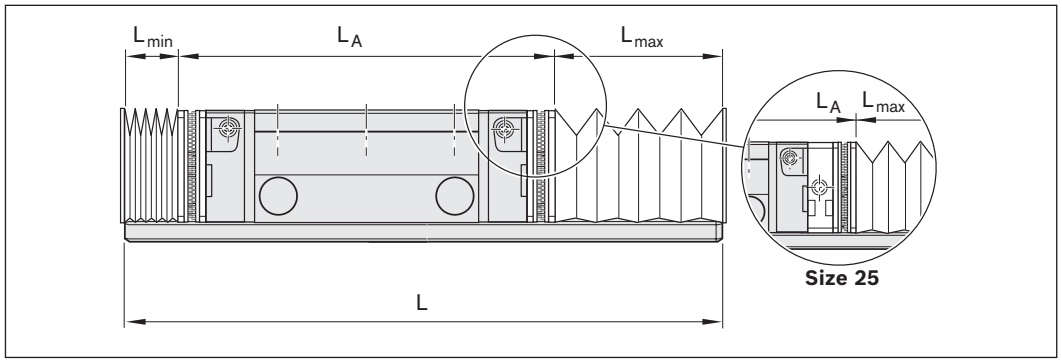
$L_{max}$ = (Stroke + 30 mm) · U

$L_{min}$ = $L_{max}$ – stroke

Number of folds = $\frac{L_{max}}{W}$ + 2

| | | |
|---|---|---|
| $L_{max}$ | = Bellows, uncompressed | (mm) |
| $L_{min}$ | = Bellows, compressed | (mm) |
| Stroke | = Stroke | (mm) |
| U | = Calculation factor | |
| W | = Maximum bellows extraction | (mm) |

## Calculating the rail length




$L = L_{min} + L_{max} + L_A$

| | | |
|---|---|---|
| L | = Rail length | (mm) |
| $L_A$ | = Roller runner block length with fastening frame | (mm) |

# Bellows

**Bellows mounting instructions**
**a) Mounting the bellows at the roller runner block (types 2 and 4), including attachment to the end of the rail (types 1 and 2)**
**Only for types 1 and 2:**

1. Before mounting, provide the thread bore holes at the front side of the roller guide rail (5), see dimensions $N_7$ and $S_7$ in the table and the dimensional figure under "instruction for mounting" on the previous page.

**For types 2 and 4:**

1. Possibly remove lube nipples from the front lube port (1) and screw them into a lateral lube port (re-lubrication side) (3).
2. Use a set screw (2) to close the open lube port.
3. Remove the upper fastening screw of the cover plate wiper.
4. Mount the fastener (with velcro strip (4) to the roller runner block, using the fastening screws included in the scope of delivery.
5. Push on the bellows.

**Only for types 1 and 2:**

1. After mounting, screw on the bellows to the end of the rail (5).

**b) Only size 25: Mounting of the lubrication plate and bellows (types 1, 3 and 5)**
**Notes**
With size 25, the lube connection is covered by the bellows. Therefore, for re-lubrication, a lubrication plate is to be mounted at least on one side of the roller runner block. The lubrication plate can be turned around. Thus, lubricant can be introduced from any desired side.

1. Remove the lube nipple (1) or set screw (2) from the lube port of the roller runner block (re-lubrication side).
2. Screw the lube nipple (3) in on the side of the lubrication plate (6).
3. Insert the round sealing ring (7) into the groove.
4. Screw the lubrication plate (6) together with the fastening frame (4) onto the roller runner block.
5. Close the lube port that is no longer needed with a set screw.

⚠ Set screws must be flush with the external surface of the lubrication plate!

**For all types:**
**Velcro fastener for the fastening frame (4)**

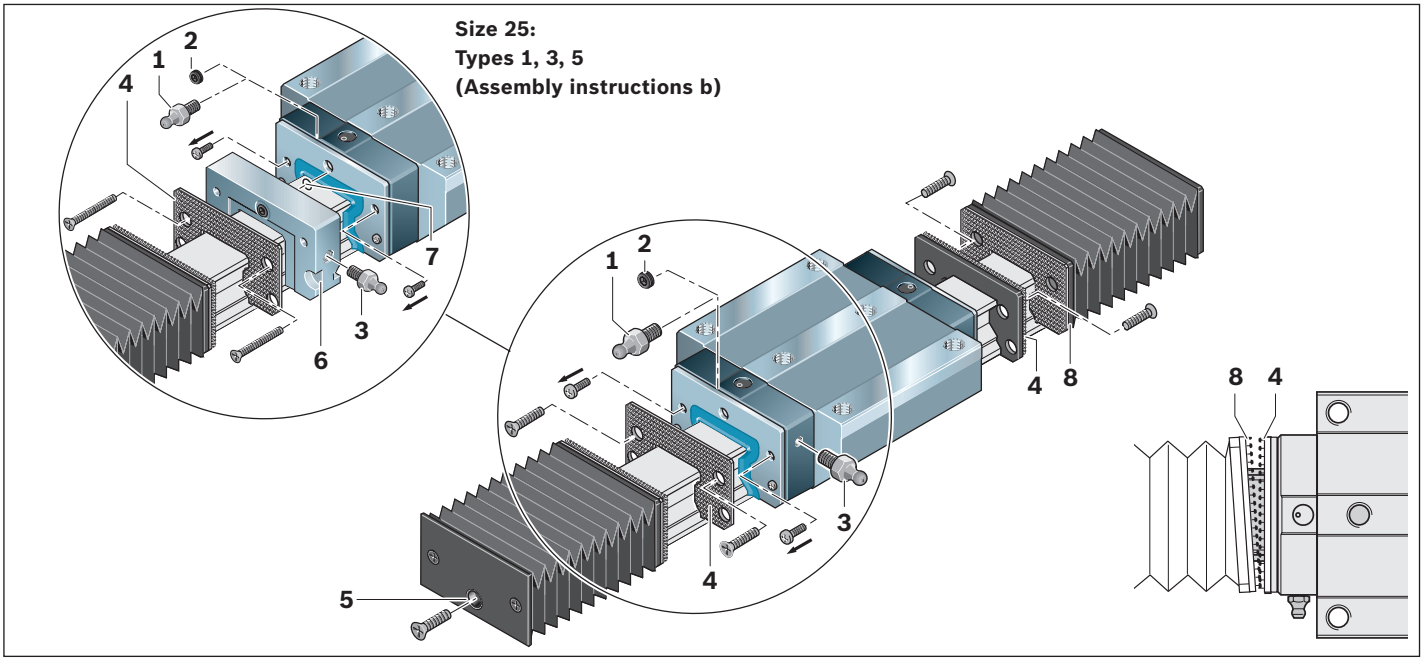
**Connect the velcro fastener:**

1. Attach the velcro fastener of the bellows (8) on one side of the fastening frame (4).
2. Ensure the correct position!
3. Strongly press the bellows against the fastening frame!

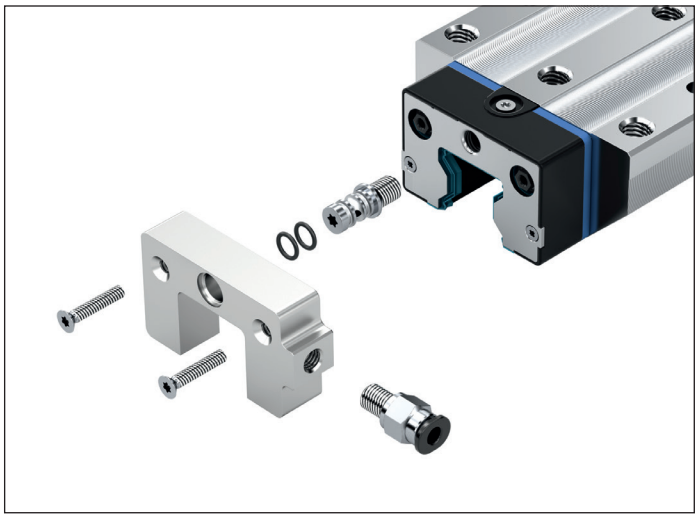
**Loosen the velcro fastener:**

4. Attach a flat object laterally at the velcro fastener (ideally in a corner).
5. Carefully separate the velcro fastener.

⚠ Do not shear off the velcro fastener!



# Lubrication plate for size 25



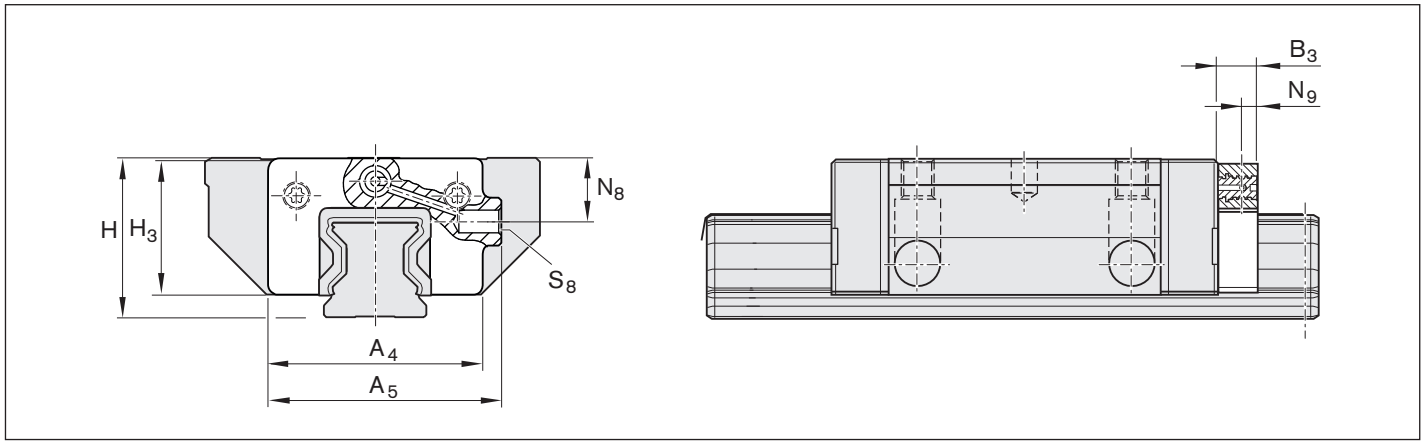
**Lubrication plate for standard lube nipples**

- Material: Aluminum

Instruction for mounting:
Those parts needed for the attachment to the runner block are included.
The lube nipples of the runner block can be used.
For mounting, see the "Instructions for roller rail systems".

**Note**

When using the lubrication plate, an increased initial lubrication quantity is required.
In this respect, please refer to the notes in the chapter "RSHP lubrication".



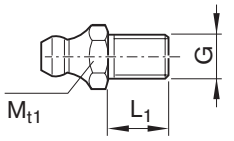

| Size | Material numbers | Dimensions (mm) | | | | | | | | | | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $A_4$ | $A_5$ | $B_3$ | $H^{1)}$ | $H^{2)}$ | $H_3$ | $N_8{}^{1)3)}$ | $N_8{}^{2)3)}$ | $N_9$ | $S_8$ | |
| **25** | R1820 241 20 | 45.4 | 49.4 | 12 | 36 | 40 | 28.9 | 14 | 18 | 6 | M6 | 32 |

**1)** Dimension for runner block, flange
**2)** Dimension for runner block, narrow
**3)** Dimension with regard to the screw-on surface of the runner block

# Lube fittings

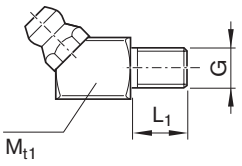
### Hydraulic-type lube nipple

(Lube nipple included in the scope of delivery)



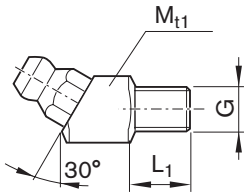

| Material numbers | Dimensions (mm) | | Tightening torque (Nm) | Mass |
|---|---|---|---|---|
| | G | $L_1$ | $M_{t1}$ | (g) |
| **R3417 008 02** | M6 | 8 | 1.8 | 2.6 |
| **R3417 014 02** | M8×1 | 10 | 1.8 | 4.5 |

### Hydraulic-type lube nipple 45°



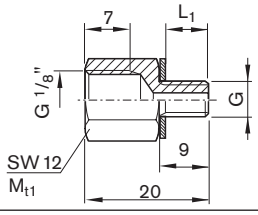

| Material numbers | Dimensions (mm) | | Tightening torque (Nm) | Mass |
|---|---|---|---|---|
| | G | $L_1$ | $M_{t1}$ | (g) |
| **R3417 007 02** | M6 | 8 | 1.8 | 7.4 |

### Hydraulic-type lube nipple 30°



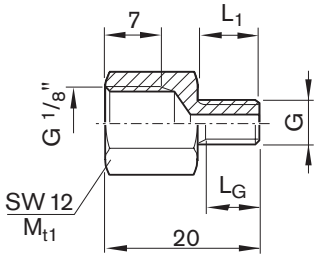

| Material numbers | Dimensions (mm) | | Tightening torque (Nm) | Mass |
|---|---|---|---|---|
| | G | $L_1$ | $M_{t1}$ | (g) |
| **R3417 023 02** | M6 | 8 | 1.8 | 7.4 |

### Reducer M6



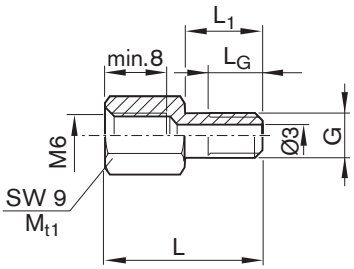

| Material numbers | Dimensions (mm) | | Tightening torque (Nm) | Mass |
|---|---|---|---|---|
| | G | $L_1$ | $M_{t1}$ | (g) |
| **R3455 032 04** | M6 | 8 | 1.8 | 1.5 |

### Reducer M8 x 1




| Material numbers | Dimensions (mm) | | | Tightening torque (Nm) | Mass |
|---|---|---|---|---|---|
| | G | $L_1$ | $L_G$ | $M_{t1}$ | (g) |
| **R3455 030 51** | M8x1 | 8 | 6.5 | 1.8 | 8.6 |

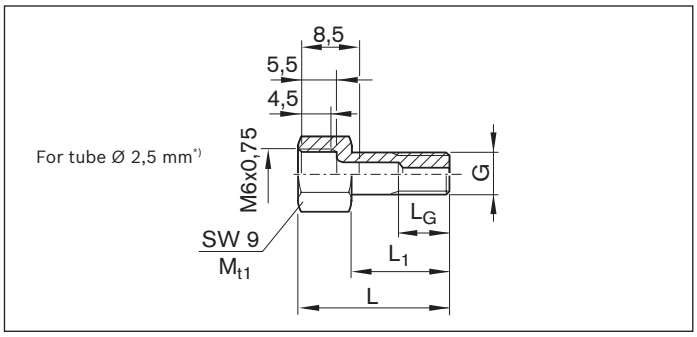
### Extensions

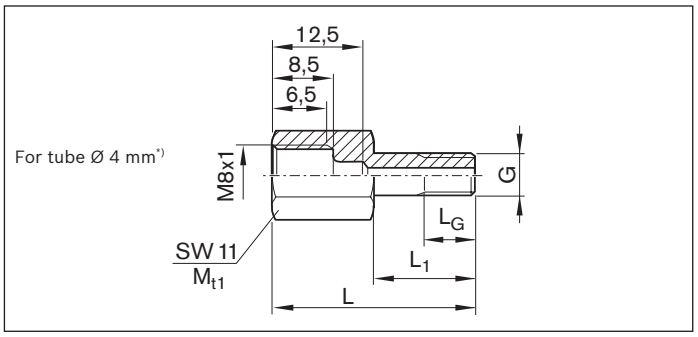



| Material numbers | Dimensions (mm) | | | | Tightening torque (Nm) | Mass |
|---|---|---|---|---|---|---|
| | G | L | $L_1$ | $L_G$ | $M_{t1}$ | (g) |
| **R3455 033 04**[1)] | M6 | 19.5 | 9.0 | 7.5 | 1.8 | 5.0 |
| **R3455 034 04**[2)] | M6 | 20.5 | 10.0 | 8.0 | 1.8 | 5.5 |
| **R3455 035 04**[3)] | M6 | 24.5 | 14.0 | 8.0 | 1.8 | 5.5 |
| **R3455 036 04**[4)] | M6 | 25.5 | 15.0 | 8.0 | 1.8 | 6.0 |
| **R3455 037 04**[5)] | M6 | 26.5 | 16.0 | 8.0 | 1.8 | 6.0 |

**1)** With cover plate wiper, sizes 25 to 35
**2)** With cover plate wiper, sizes 45 to 65
**3)** With FKM seal, sizes 25 to 65
**4)** With Set FKM, sizes 25 to 35
**5)** With Set FKM, sizes 45 to 65

## Connectors

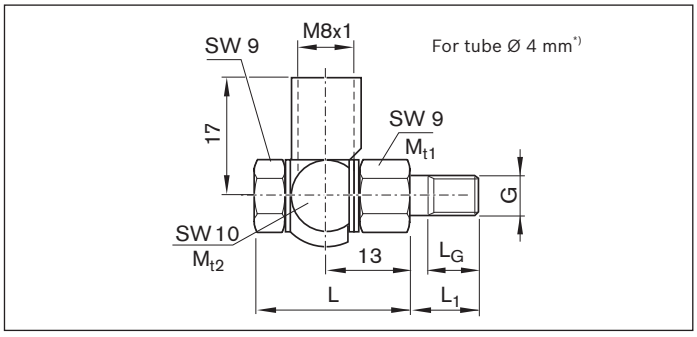


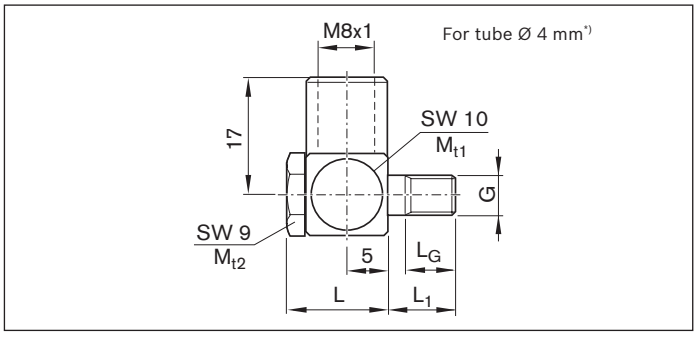




| Material numbers | Dimensions (mm) | | | | Tightening torque (Nm) | Mass |
|---|---|---|---|---|---|---|
| | G | L | $L_1$ | $L_G$ | $M_{t1}$ | (g) |
| **R3455 030 38**[1)] | M6 | 15.5 | 8.0 | 6.5 | 1.8 | 4.0 |
| **R3455 038 04**[2)] | M6 | 16.5 | 9.0 | 7.5 | 1.8 | 5.0 |
| **R3455 039 04**[3)] | M6 | 17.5 | 10.0 | 8.0 | 1.8 | 5.5 |
| **R3455 040 04**[4)] | M6 | 21.5 | 14.0 | 8.0 | 1.8 | 5.5 |
| **R3455 041 04**[5)] | M6 | 22.5 | 15.0 | 8.0 | 1.8 | 6.0 |
| **R3455 042 04**[6)] | M6 | 23.5 | 16.0 | 8.0 | 1.8 | 6.0 |

| Material numbers | Dimensions (mm) | | | | Tightening torque (Nm) | Mass |
|---|---|---|---|---|---|---|
| | G | L | $L_1$ | $L_G$ | $M_{t1}$ | (g) |
| **R3455 030 37**[1)] | M6 | 22.0 | 8.0 | 6.5 | 1.8 | 9.0 |
| **R3455 043 04**[2)] | M6 | 23.0 | 9.0 | 7.5 | 1.8 | 9.5 |
| **R3455 044 04**[3)] | M6 | 24.0 | 10.0 | 8.0 | 1.8 | 10.0 |
| **R3455 045 04**[4)] | M6 | 28.0 | 14.0 | 8.0 | 1.8 | 10.5 |
| **R3455 046 04**[5)] | M6 | 29.0 | 15.0 | 8.0 | 1.8 | 10.5 |
| **R3455 030 52**[6)] | M6 | 30.0 | 16.0 | 8.0 | 1.8 | 11.0 |

## Swivel fittings




| Material numbers | Dimensions (mm) | | | | Tightening torque (Nm) | | Mass |
|---|---|---|---|---|---|---|---|
| | G | L | $L_1$ | $L_G$ | $M_{t1}$ | $M_{t2}$ | (g) |
| **R3417 018 09**[1)] | M6 | 22 | 8.0 | 6.5 | 1.8 | 5.0 | 17.0 |
| **R3417 059 09**[2)] | M6 | 22 | 9.0 | 7.5 | 1.8 | 5.0 | 17.0 |
| **R3417 060 09**[3)] | M6 | 22 | 10.0 | 8.0 | 1.8 | 5.0 | 17.5 |
| **R3417 061 09**[4)] | M6 | 22 | 14.0 | 8.0 | 1.8 | 5.0 | 19.0 |
| **R3417 062 09**[5)] | M6 | 22 | 15.0 | 8.0 | 1.8 | 5.0 | 19.5 |
| **R3417 063 09**[6)] | M6 | 22 | 16.0 | 8.0 | 1.8 | 5.0 | 20.0 |

| Material numbers | Dimensions (mm) | | | | Tightening torque (Nm) | | Mass |
|---|---|---|---|---|---|---|---|
| | G | L | $L_1$ | $L_G$ | $M_{t1}$ | $M_{t2}$ | (g) |
| **R3417 047 09**[1)] | M6 | 12 | 8.0 | 8.0 | 1.8 | 5.0 | 10.0 |
| **R3417 064 09**[2)] | M6 | 12 | 9.0 | 7.5 | 1.8 | 5.0 | 10.0 |
| **R3417 065 09**[3)] | M6 | 12 | 10.0 | 8.0 | 1.8 | 5.0 | 10.5 |
| **R3417 066 09**[4)] | M6 | 12 | 14.0 | 8.0 | 1.8 | 5.0 | 10.5 |
| **R3417 067 09**[5)] | M6 | 12 | 15.0 | 8.0 | 1.8 | 5.0 | 11.0 |
| **R3417 068 09**[6)] | M6 | 12 | 18.0 | 8.0 | 1.8 | 5.0 | 12.0 |

**1)** Side and front lube connection (without connection elements).
**2)** With cover plate wiper, sizes 25 to 35
**3)** With cover plate wiper, sizes 35 to 65
**4)** With FKM, sizes 25 to 65
**5)** With Set FKM, sizes 25 to 35
**6)** With Set FKM, sizes 45 to 65

*) For connection according to DIN 3854 and DIN 3862 (solderless pipe fittings)

### Note on swivel fittings

$M_{t2}$ is required for sealing the swivel arm above the copper washers. Since $M_{t2}$ is greater than $M_{t1}$, it is to be held against when mounting the swivel arm. Otherwise, the lube connection would be screwed into the runner block with an excessive torque.

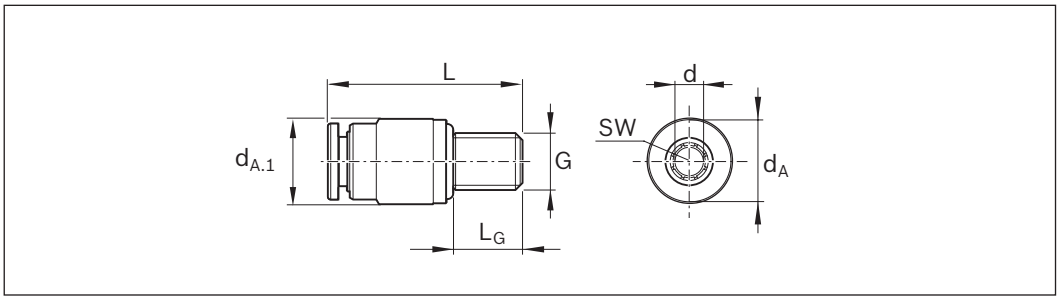
# Lube fittings

**Push-in fittings for tubes**

**Tube materials**

- Copper
- Brass
- PU
- Nylon

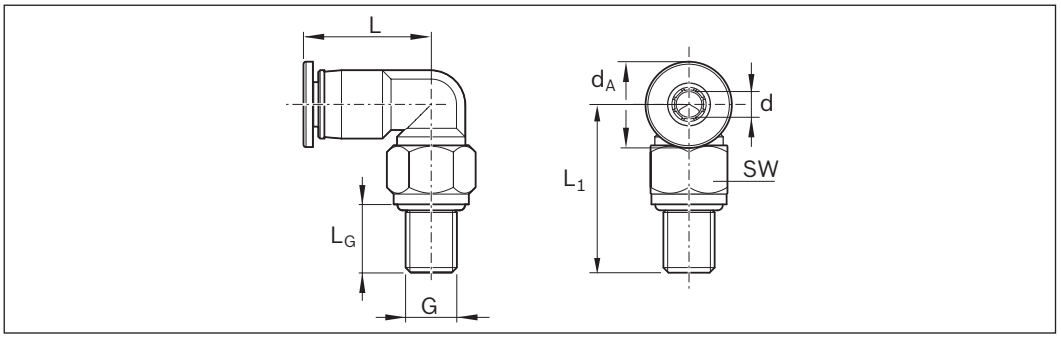
## Straight connectors




| Material numbers | Dimensions (mm) | | | | | | | Tightening torque (Nm) | Mass |
|---|---|---|---|---|---|---|---|---|---|
| | $d_A$ | $d_{A.1}$ | d[1] | G | L | $L_G$ | SW[2] | $M_{t1}$ | (g) |
| **R3417 075 09** | 9.0 | 9.0 | 4 | M6 | 24.5 | 8 | 2.5 | 1.8 | 4.9 |
| **R3417 076 09** | 11.0 | 11.0 | 6 | M6 | 26.0 | 8 | 2.5 | 1.8 | 6.2 |

**1)** Tube diameter
**2)** Internal width across flats

## Elbow plug-in connections rotatable[1]

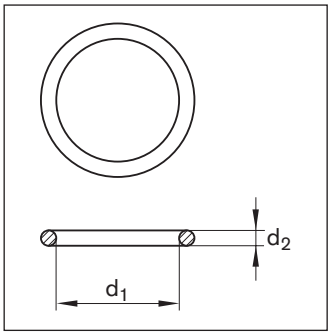



| Material numbers | Dimensions (mm) | | | | | | | Tightening torque (Nm) | Mass |
|---|---|---|---|---|---|---|---|---|---|
| | $d_A$ | d[2] | G | L | $L_1$ | $L_G$ | SW[3] | $M_{t1}$ | (g) |
| **R3417 078 09** | 9.0 | 4 | M6 | 18.1 | 18.1 | 8 | 9 | 1.8 | 10.8 |
| **R3417 079 09** | 11.0 | 6 | M6 | 20.8 | 18.1 | 8 | 9 | 1.8 | 12.9 |

**1)** Max. lubrication pressure: 30 bar (when using a grease gun, pump slowly)
**2)** Tube diameter
**3)** External width across flats

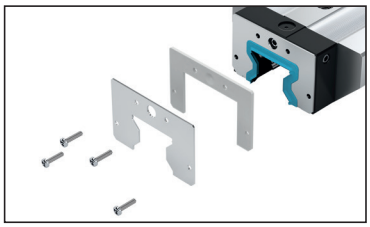
## O-rings

| Material numbers | $d_1$ x $d_2$ | Mass |
|---|---|---|
| | mm | g |
| **R3411 108 01** | 5 x 1.5 | 0.04 |
| **R3411 122 01** | 7 x 1.5 | 0.06 |
| **R3411 018 01** | 12 x 1.5 | 0.09 |
| **R3411 145 01** | 15 x 2.5 | 0.34 |

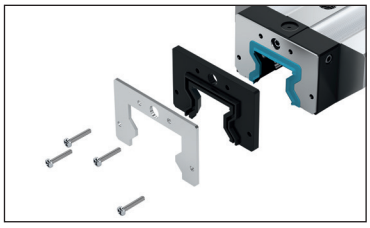


# Overview of accessories for heavy-duty roller runner blocks

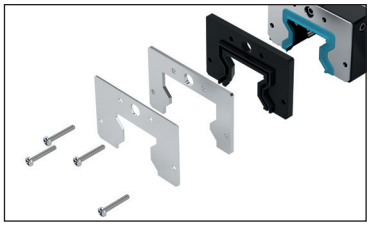
**Cover plate wiper**



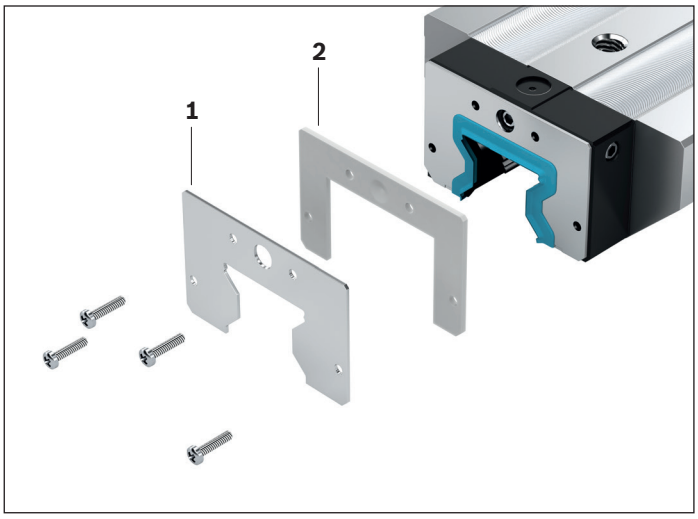
**FKM seal**



**FKM seal set**



# Cover plate wiper
# R18.0 ... 40

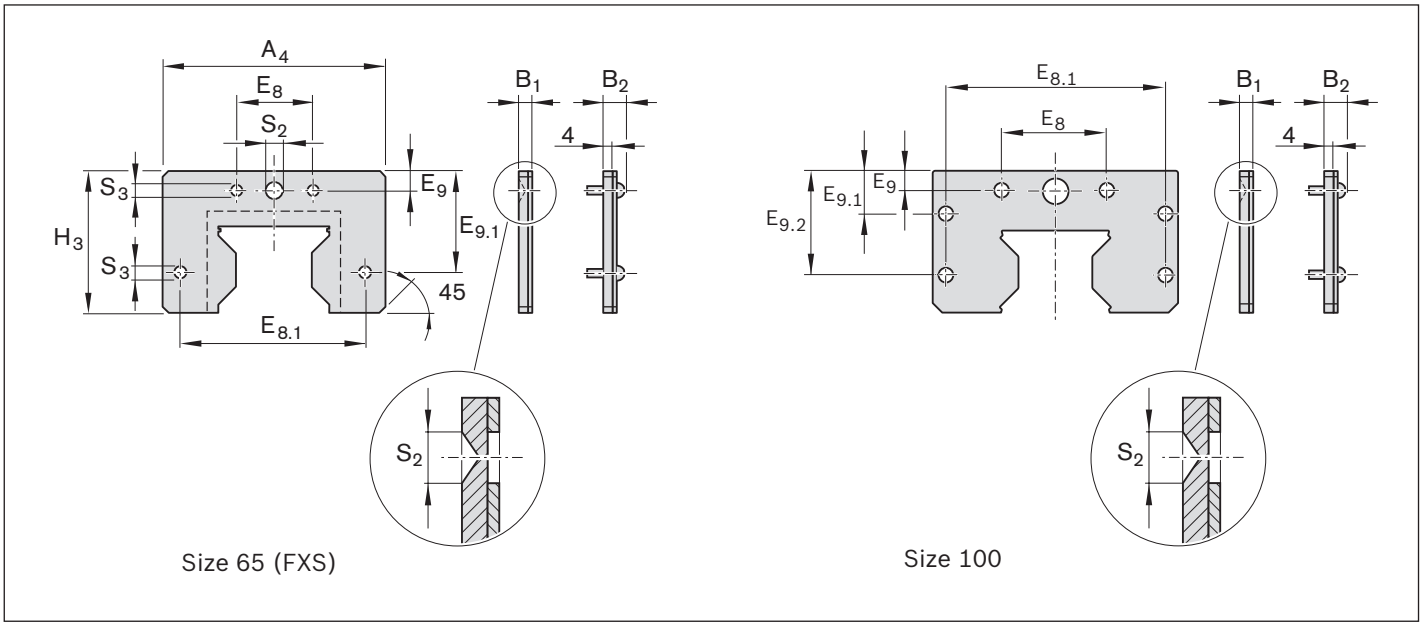



For mounting on roller runner blocks for roller guide rails with cover strip

**1** Cover plate wiper
- Material: Rust-free spring steel in as per DIN EN 10088; version: blank

**2** Spacer plate; material: aluminum

Instruction for mounting:
The spacer plate and the fixing screws are included (without lube nipple). When mounting, ensure an even gap between the guide rail and the cover plate wiper.
With front lube connection:
Drill through bore hole $S_2$ in the spacer plate.
Use special lube nipple or adapter (see "Accessories").




Size 65 (FXS)

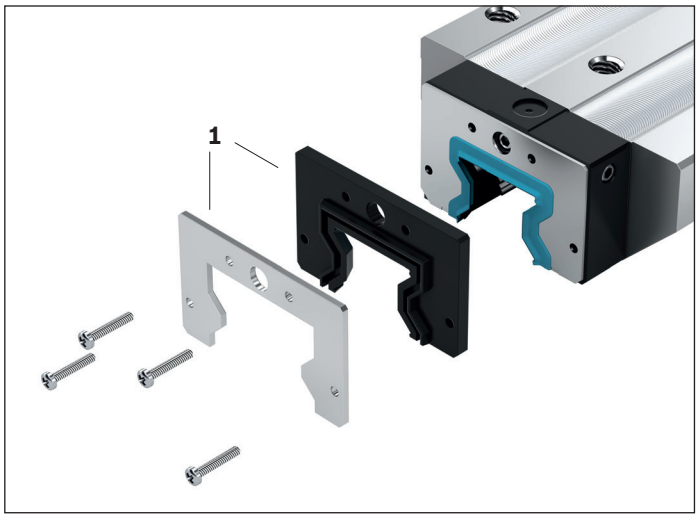
Size 100

**Material numbers and dimensions**

| Size | Material number | Dimensions (mm) | | | | | | | | | | | Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $A_4$ | $H_3$ | $B_1$ | $B_2$ | $E_8$ | $E_{8.1}$ | $E_9$ | $E_{9.1}$ | $E_{9.2}$ | $S_2$ | $S_3$ | (g) |
| **65 (FXS)** | R1820 610 40 | 119.0 | 74.5 | 6.0 | 8.75 | 35 | 106.0 | 8.3 | 54.0 | – | Ø 7 | Ø 5 | 170 |
| **100**[1)] | R1810 291 40 | 180.5 | 103.5 | 2.5 | 6.50 | 64 | 162.6 | 8.0 | 28.4 | 69.0 | Ø 9 | Ø 6 | 300 |

**1)** Generation 1

# FKM seal
# R1810 .2. 3.



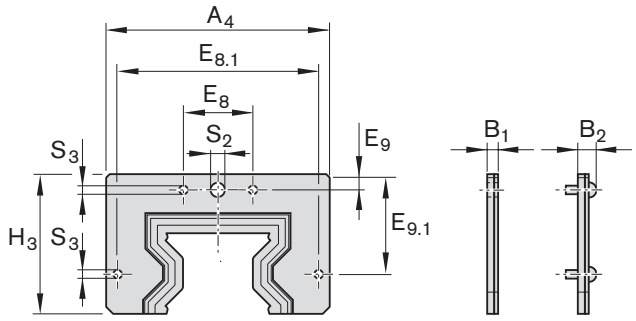

For mounting at the roller runner block

**1** Two-piece FKM seal

– Material: Stainless steel plus FKM seal

Special feature: Easy mounting/removal on fixed roller guide rail. Observe the mounting instructions.

Instruction for mounting:
The fastening screws are included.
Max. tightening torque 0.4 Nm
With front lube connection: Use special lube nipple or adapter (see "Accessories").
Combination with additional cover plate wiper possible. Use the FKM seal set and sheet cover plate wiper (see following page).

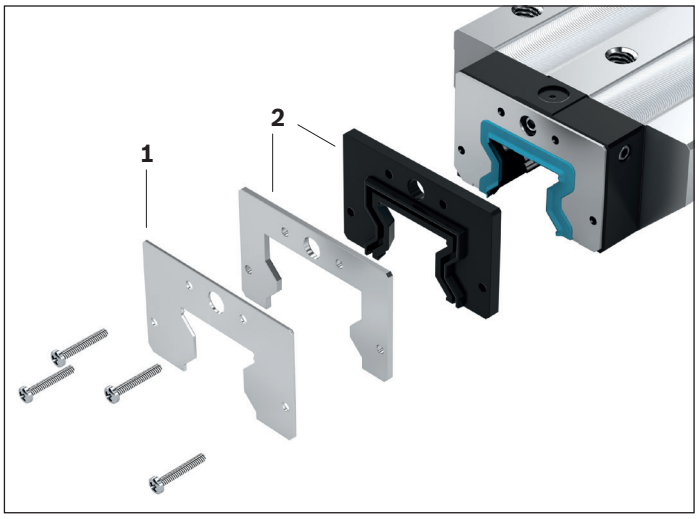



Size 65 (FXS)

**Material numbers and dimensions**

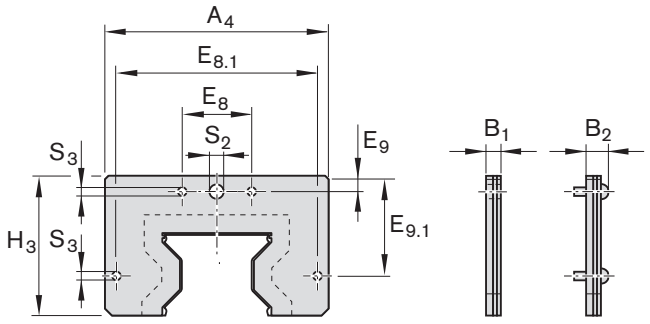
| Size | Material number | Dimensions (mm) | | | | | | | | | | Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $A_4$ | $H_3$ | $B_1$ | $B_2$ | $E_8$ | $E_{8.1}$ | $E_9$ | $E_{9.1}$ | $S_2$ | $S_3$ | (g) |
| **65 (FXS)** | R1810 600 90 | 119 | 75 | 6.5 | 9.25 | 35 | 106 | 8.55 | 54.25 | Ø 7 | Ø 5 | 160 |

# FKM seal set
# R1810 605 70




For mounting at the roller runner block
FKM seal and cover plate wiper:
**1** Cover plate wiper
**2** Two-piece FKM seal

Instruction for mounting:
The fastening screws are included.
Max. tightening torque 0.4 Nm
With front lube connection:
Use special lube nipple or adapter (see "Accessories").
Observe the mounting instructions.



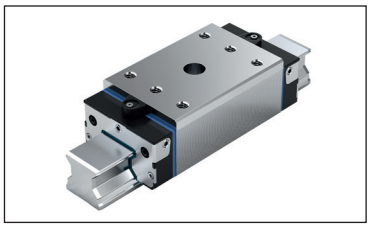

Size 65 (FXS)

**Material numbers and dimensions**

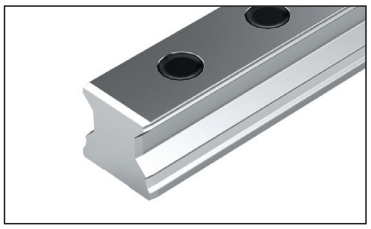
| Size | Material number | Dimensions (mm) | | | | | | | | | | Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $A_4$ | $H_3$ | $B_1$ | $B_2$ | $E_8$ | $E_{8.1}$ | $E_9$ | $E_{9.1}$ | $S_2$ | $S_3$ | (g) |
| **65 (FXS)** | R1810 605 70 | 119 | 75 | 8.5 | 11.25 | 35 | 106 | 8.55 | 54.25 | Ø 7 | Ø 5 | 240 |

# Overview of accessories for roller guide rails

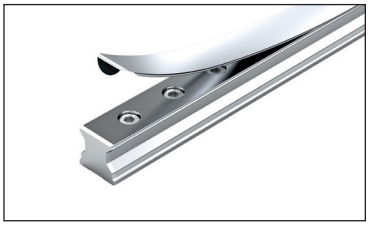
**Mounting runner block**



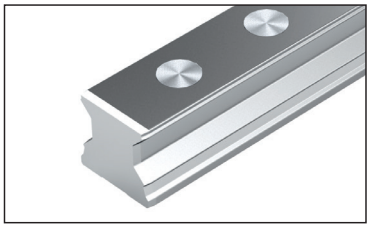
**Plastic caps**



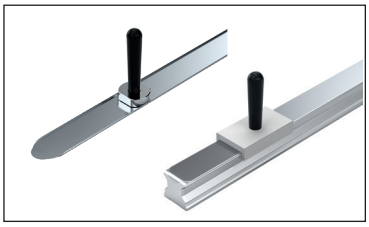
**Cover strip**



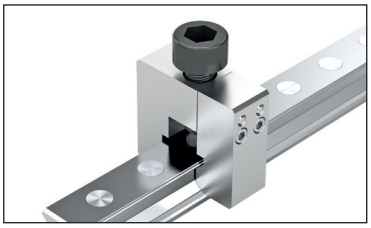
**Steel caps**



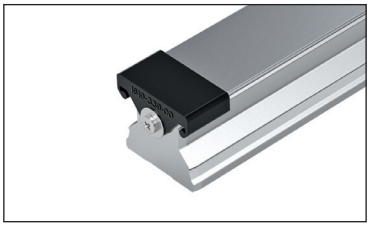
**Mounting devices for cover strip**



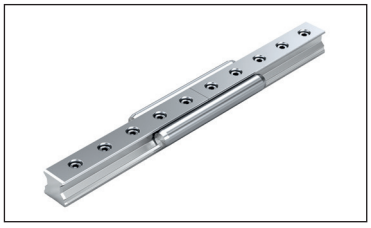
**Mounting devices for steel caps**



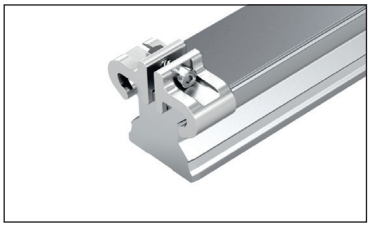
**Protective cap**



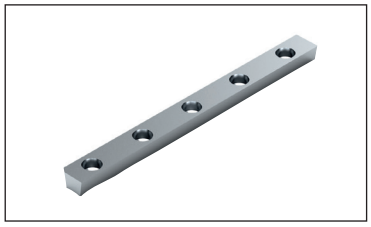
**Adjusting shafts**



**Strip clamp**

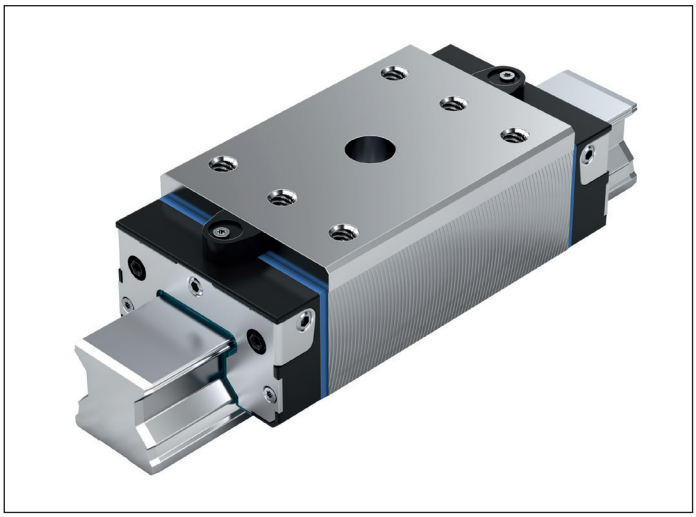


**V-guide**



**Cardboard box opener**

# Mounting runner block



## Mounting runner block SLH R1829 Slimline, long, high

**Mounting device for parallel alignment of standard roller guide rails**

| Size | Material numbers with preload class C3 |
|---|---|
| **25** | R1829 220 90 |
| **35** | R1829 320 90 |
| **45** | R1829 420 90 |
| **55** | R1829 520 90 |
| **65** | R1829 620 90 |

## Mounting with mounting runner block

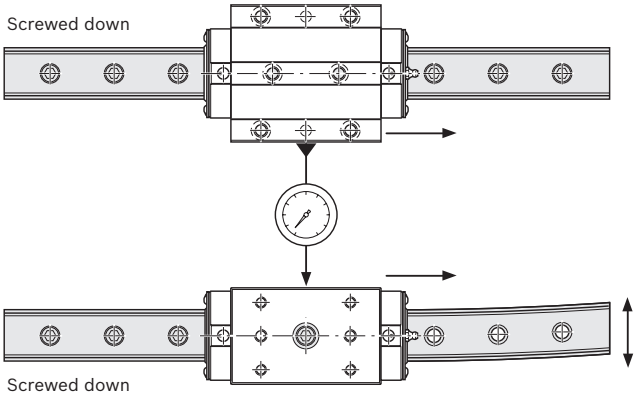
**Note**

Hole D is at the same time a key and a screw hole. Use the middle hole D in the mounting runner block to measure exactly in the center, then fasten the roller guide rail with the mounting runner block.

**Aligning the rails**

1. Align and mount the first roller guide rail using a graduated straightedge.
2. Set up a mounting bridge with dial gauge between the roller runner blocks.
3. Move both roller runner blocks in parallel until hole D in the mounting runner block is positioned precisely above a mounting hole in the rail.
4. Align the roller guide rail manually until the dial gauge shows the correct dimension.
5. Then screw down the roller guide rail using the mounting runner block.

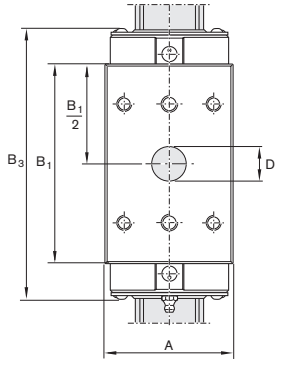
**Standard roller runner blocks**




**Mounting runner block SLH R1829**

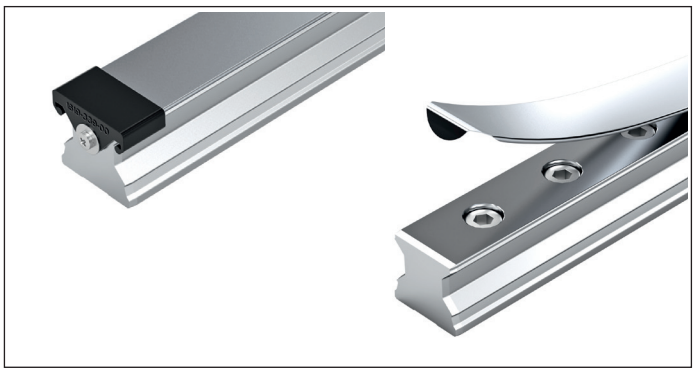
| Size | Dimensions[1] (mm) | | | | Mass |
|---|---|---|---|---|---|
| | A | $B_1$ | $B_3$ | D | (kg) |
| **25** | 48 | 81.5 | 115 | 19 | 0.8 |
| **35** | 70 | 103.6 | 145 | 25 | 1.9 |
| **45** | 86 | 134.0 | 183 | 27 | 4.0 |
| **55** | 100 | 162.1 | 216 | 27 | 6.0 |
| **65** | 126 | 194.0 | 264 | 30 | 11.8 |

**1)** For all other dimensions, see roller runner block SLH R1824 ... 10



# Cover strip

## Note on cover strip



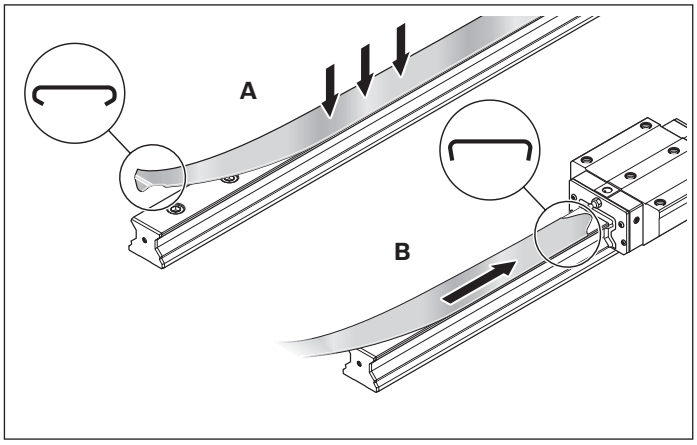
For detailed information, see "Mounting instructions for cover strip".

**Advantages**

The cover strip is easy to clip on and remove.

- This considerably facilitates and speeds up the mounting process:
- Multiple mounting and removal possible.

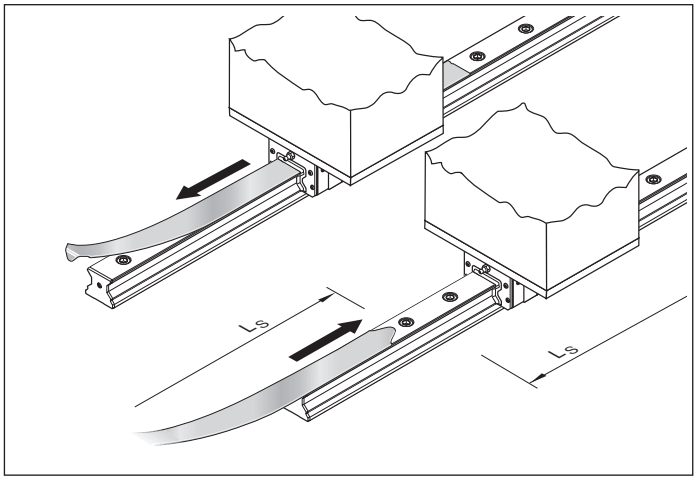
**Designs and functions**




**A** Cover strip with snap fit (standard)
- The cover strip is clipped on before the roller runner block is mounted and fits tightly.

**B** Cover strip with sliding fit
- For mounting or replacing a cover strip, if the roller runner block or connection structure cannot be removed.
- A section of the snap fit cover strip is very slightly widened and can then be easily slid under the roller runner block.

An expanding tool for cover strips can be used to create a sliding fit after installation.
In particular, the sliding length $L_S$ can be adapted in accordance with the installation case.
Observe the detailed mounting instructions!



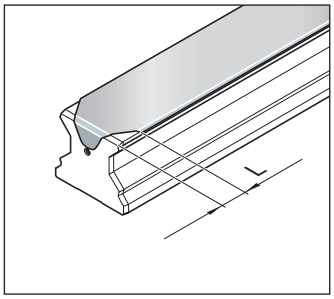

For material numbers, please refer to the following pages.

⚠ The cover strip is a precision-machined part that requires careful handling. Above all, it must not be bent.

⚠ Do not execute stroke to the end of the rail continuously! The seals on the roller runner block can get damaged on the bevel of the cover strip.

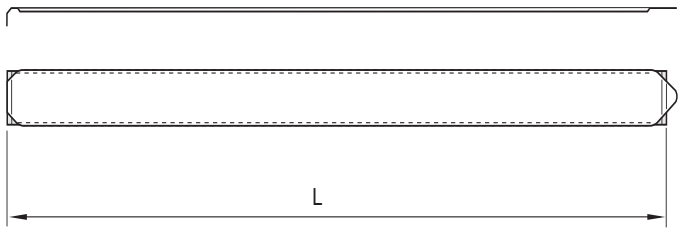
- Minimum distance $L_{min}$ from the end of the rail to be complied with.

| Size | L (mm) |
|---|---|
| **25** | Approx. 10.0 |
| **35–65** | Approx. 12.0 |
| **100** | Approx. 12.0 |
| **125** | Approx. 21.5 |



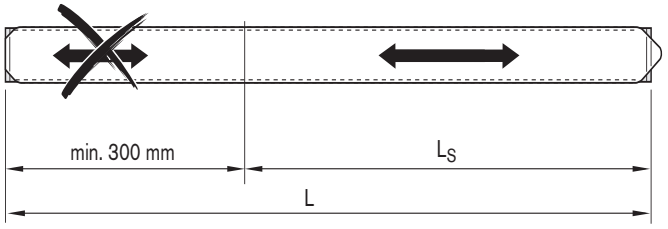
# Cover strip

**Standard loose cover strip with tight fit**




| Size | Standard loose cover strip with tight fit<br>Material number, length L (mm) | Mass (g/m) |
|---|---|---|
| **25** | R1619 230 00, .... | 32 |
| **35** | R1619 330 20, .... | 80 |
| **45** | R1619 430 20, .... | 100 |
| **55** | R1619 530 20, .... | 120 |
| **65** | R1619 630 20, .... | 140 |
| **100** | R1810 231 20, .... | 200 |
| **125** | R1810 331 20, .... | 270 |

**Cover strip with sliding fit section**




$L_S$ = length of the sliding fits
L = rail length

| Size | Cover strip with sliding fit section<br>Material number, length L (mm) | Mass (g/m) |
|---|---|---|
| **25** | R1619 230 10, .... | 25 |
| **35** | R1619 330 30, .... | 80 |
| **45** | R1619 430 30, .... | 100 |
| **55** | R1619 530 30, .... | 120 |
| **65** | R1619 630 30, .... | 140 |
| **100** | R1810 231 30, .... | 200 |
| **125** | R1810 331 30, .... | 270 |

## Loose cover strip

**For initial installation, storage and replacement**

**Note**
A suitable cover strip with snap fit or with sliding fit is available for each roller guide rail length (see preceding page).

**Order example**
**Standard loose cover strip with tight fit**
- Roller guide rail size 35
- Rail length L = 2,696 mm

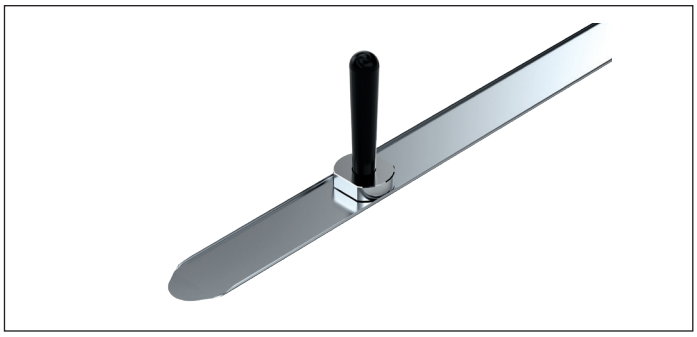
**Ordering data**
Material number, length L (mm)
**R1619 330 20, 2696 mm**

**Order example**
**Cover strip with sliding fit section**
- Roller guide rail size 35
- Rail length L = 2,696 mm
- Length of the sliding fits
  $L_S$ = 1200 mm

**Ordering data**
Material number, length L (mm),
Length of sliding fit $L_S$ (mm)
**R1619 330 30, 2696, 1200 mm**

For additional, detailed information the order and assembly of cover strips, see "Mounting instructions for cover strip".

# Mounting device for cover strip

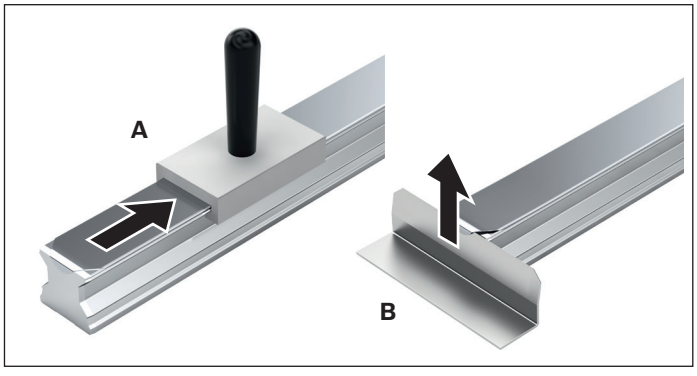


## Expanding tool

**For creating a sliding fit in the cover strip**

**Note**
For detailed information on creation and assembly of cover strips with sliding fit, see "Mounting instructions for cover strip".

| Size | Material numbers | Mass (kg) |
|---|---|---|
| **25** | R1619 215 10 | 0.08 |
| **35** | R1619 315 30 | 0.10 |
| **45** | R1619 415 30 | 0.13 |
| **55** | R1619 515 30 | 0.21 |
| **65** | R1619 615 30 | 0.27 |
| **100** | R1810 291 30 | On request |
| **125** | R1810 391 30 | |



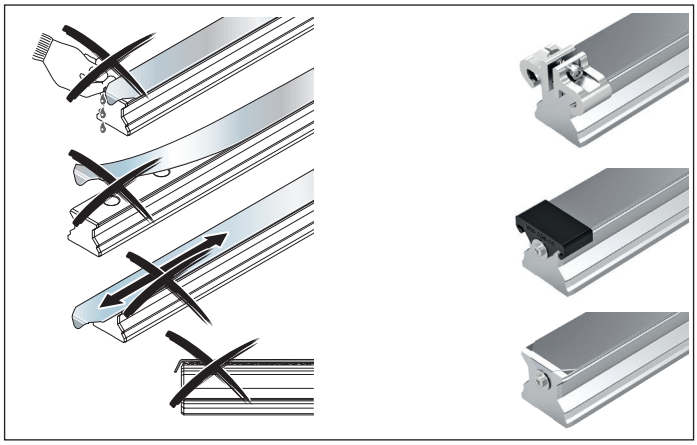

## Cover strip mounting kit

**Mounting device and lift-off plate**

**Notes**
To clip on the cover strip, a mounting device (A) is available; for removal, there is a lift-off plate (B).
For additional, detailed information, see "Mounting instructions for cover strip".

| Size | Material numbers | Mass (kg) |
|---|---|---|
| **25** | R1619 210 70 | 0.17 |
| **35** | R1619 310 50 | 0.21 |
| **45** | R1619 410 50 | 0.20 |
| **55** | R1619 510 50 | 0.21 |
| **65** | R1619 610 50 | 0.28 |
| **100** | R1810 291 53 | On request |
| **125** | R1810 391 53 | |

# Retainers for cover strip



## Retainer for cover strip

Rexroth recommends securing the cover strip with:

- Protective caps
- Screws and washers
- Strip clamps (see the following page)

For additional securing options for the cover strip, see "Mounting instructions for cover strip".

### Protective caps

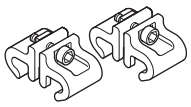
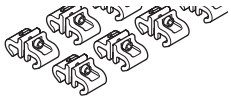
| Size | Single cap | | Bulk packaging | | Set (2 per unit with screws) | |
|---|---|---|---|---|---|---|
| | Material numbers (without screws) | Mass (g) | Part number/piece (without screws) | Mass (kg) | Material numbers (Unit) | Mass (g) |
| **25** | R1619 239 00 | 1.0 | R1619 239 01 / 1000 | 1.3 | R1619 239 20 | 7 |
| **35** | R1619 339 10 | 2.0 | R1619 339 01 / 1000 | 2.5 | R1619 339 30 | 10 |
| **45** | R1619 439 00 | 4.0 | R1619 439 01 / 700 | 2.6 | R1619 439 20 | 13 |
| **55** | R1619 539 00 | 4.0 | R1619 539 01 / 500 | 2.1 | R1619 539 20 | 20 |
| **65** | R1619 639 00 | 6.0 | R1619 639 01 / 300 | 1.7 | R1619 639 20 | 20 |

### Screws and washers

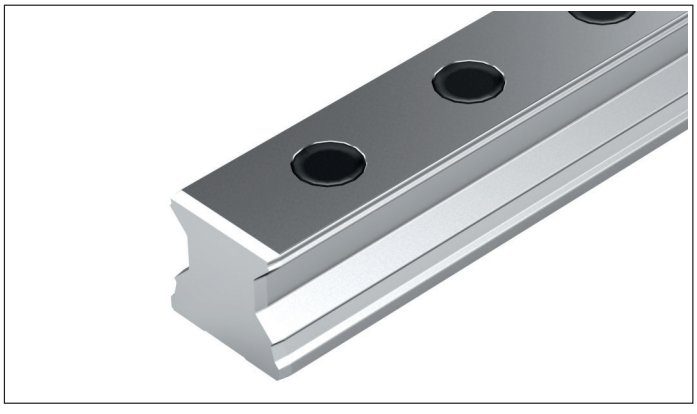
| Size | Screws (1200 pieces per unit) | | Washers (1200 pieces per unit) | |
|---|---|---|---|---|
| | Material numbers (Unit) | Mass (kg) | Material numbers (Unit) | Mass (kg) |
| **25** | R3427 046 05 | 1.8 | R3448 026 01 | 0.92 |
| **35** | R3427 046 05 | 1.8 | R3448 024 01 | 1.30 |
| **45** | R3427 046 05 | 1.8 | R3448 024 01 | 1.30 |
| **55** | R3427 046 05 | 1.8 | R3448 027 01 | 2.90 |
| **65** | R3427 046 05 | 1.8 | R3448 027 01 | 2.90 |
| **100** | R3427 046 05 | 1.8 | R3448 027 01 | 2.90 |
| **125** | R3427 046 05 | 1.8 | R3448 027 01 | 2.90 |

# Retainers for cover strip

**Strip clamps**

| Size | Set (2 pieces per unit) | | Bulk packaging (100 pieces per unit) | |
|---|---|---|---|---|
| |  | |  | |
| | **Material numbers (Unit)** | **Mass (g)** | **Material numbers (Unit)** | **Mass (kg)** |
| **25** | R1619 239 50 | 14 | R1619 239 60 | 1.4 |
| **35** | R1619 339 50 | 38 | R1619 339 60 | 3.8 |
| **45** | R1619 439 50 | 56 | R1619 439 60 | 5.6 |
| **55** | R1619 539 50 | 62 | R1619 539 60 | 6.2 |
| **65** | R1619 639 50 | 84 | R1619 639 60 | 8.4 |

# Plastic mounting hole plugs



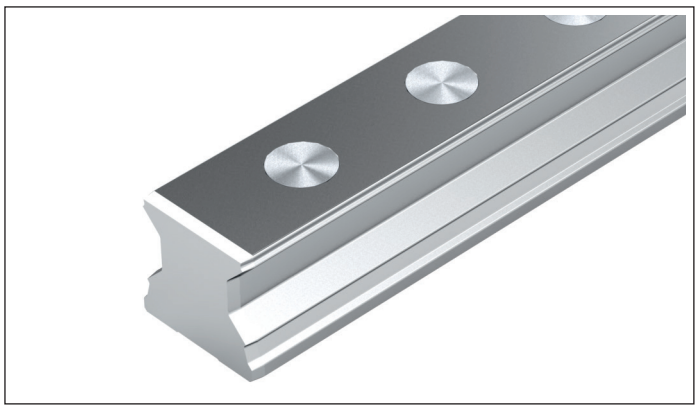
**Instruction for mounting**

- For mounting plastic mounting hole plugs, see "Mounting instructions for roller rail systems"

**Plastic caps material numbers**

| Size | Single plastic cap | | Bulk packaging | |
|---|---|---|---|---|
| | **Material numbers** | **Mass (g)** | **Material numbers/pieces** | **Mass / packaging (kg)** |
| **25** | R1605 200 80 | 0.3 | R1605 200 80 / 5000 | 1.2 |
| **35** | R1605 300 80 | 0.6 | R1605 300 80 / 2000 | 1.2 |
| **45** | R1605 400 80 | 1.0 | R1605 400 80 / 1000 | 1.0 |
| **55** | R1605 500 80 | 1.7 | R1605 500 80 / 500 | 1.7 |
| **65** | R1605 600 80 | 2.1 | – | – |

# Mounting hole plugs made of steel



**Notes**

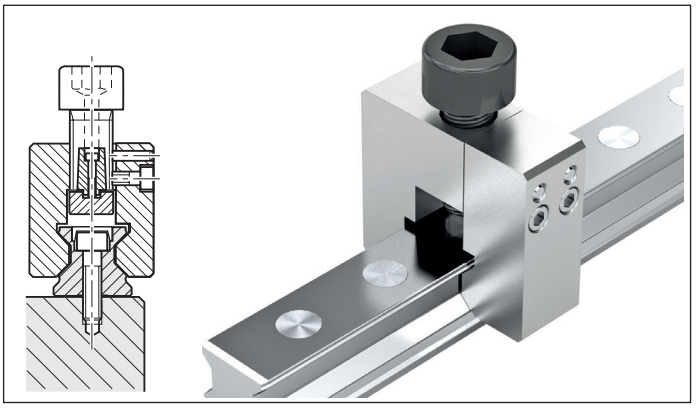
- Steel mounting hole plugs are not included in the scope of delivery of the roller guide rails.
- Order the mounting tool too!
- For mounting steel mounting hole plugs, see "Mounting instructions for roller rail systems"

**Material numbers of steel caps**

| Size | Single cap made of machining steel | | Single cap Resist NR II[1)] | |
|---|---|---|---|---|
| | Material numbers | Mass (g) | Material numbers | Mass (g) |
| **25** | R1606 200 75 | 2 | – | – |
| **35** | R1606 300 75 | 3 | R1606 300 78 | 3 |
| **45** | R1606 400 75 | 6 | R1606 400 78 | 6 |
| **55** | R1606 500 75 | 8 | R1606 500 78 | 8 |
| **65** | R1606 600 75 | 9 | R1606 600 78 | 9 |
| **100** | R1836 200 75 | 23 | – | – |

**1)** made of corrosion-resistant steel 1.4305

# Mounting tool for mounting hole plugs made of steel



**Notes**

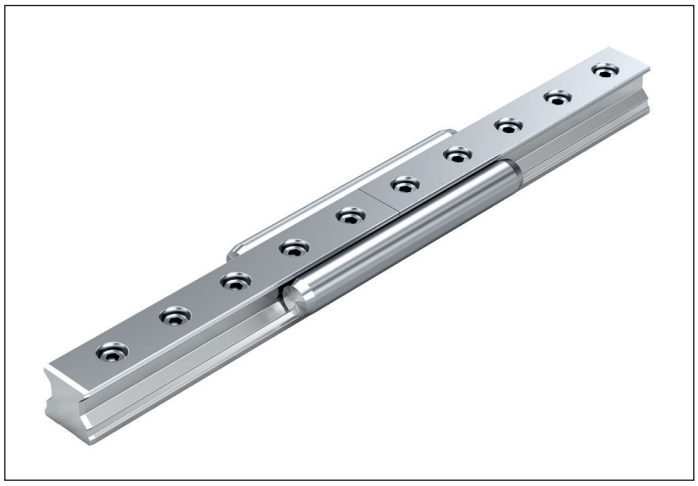
- The two-piece mounting tool is suitable for mounting hole plugs in built-in roller guide rail (mounting instructions enclosed)

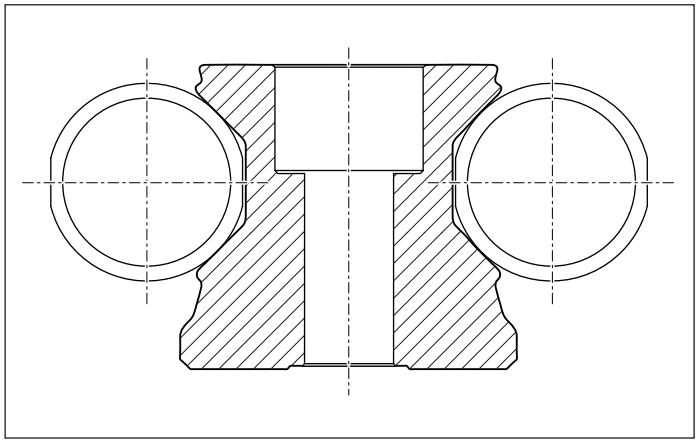
**Material numbers for mounting tool**

| Size | | |
|---|---|---|
| | Material numbers | Mass (kg) |
| **25**[2)] | R1619 210 20 | 0.37 |
| **35** | R1619 310 30 | 0.57 |
| **45** | R1619 410 30 | 0.85 |
| **55** | R1619 510 30 | 1.50 |
| **65** | R1619 610 30 | 1.85 |
| **100** | R1810 251 30 | 2.80 |

**2)** Can only be delivered as one part

# Adjusting shafts





## Adjusting shafts

**Mounting device for multi-piece roller guide rails**

**Notes**
Adjusting shafts are particularly helpful when there is no reference edge.

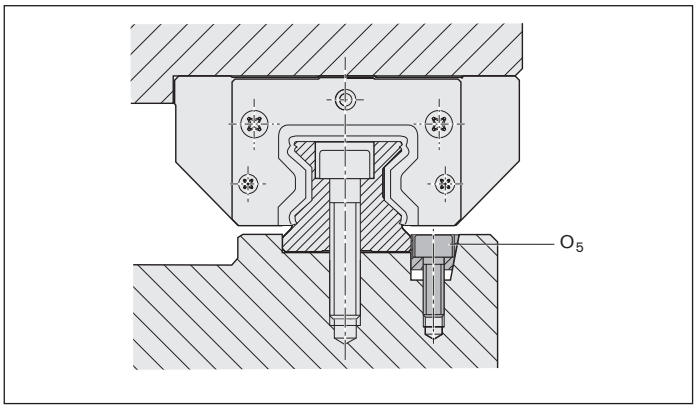
Observe "Mounting instructions for roller rail systems".

**Order note**
For mounting, always order **two** adjustment shafts

Alignment of the flattened adjustment shafts

| Size | Material numbers | Dimensions (mm) | | Mass |
|---|---|---|---|---|
| | Adjustment shaft (separate) | Ø shaft | Length | (kg) |
| **35** | R1810 390 01 | 20 | 160 | 0.4 |
| **45** | R1810 490 01 | 25 | 200 | 0.8 |
| **55** | R1810 590 01 | 30 | 250 | 1.4 |
| **65** | R1810 690 01 | 35 | 300 | 2.3 |
| **100** | R1810 291 01 | 75 | 400 | 13.9 |
| **125** | R1810 391 01 | 80 | 600 | 23.7 |

# V-guide

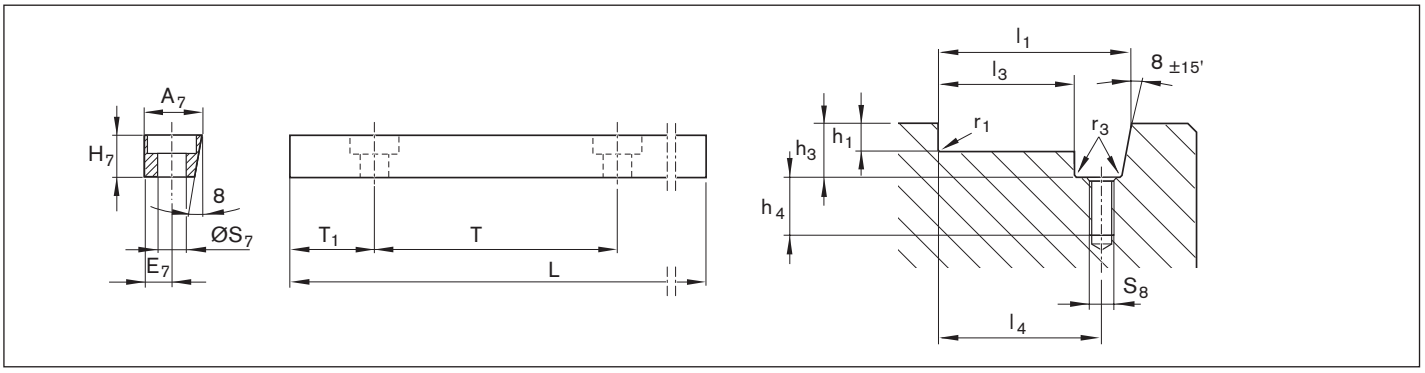



## V-guide

**Mounting device for lateral retention of roller guide rail**

- Material: Steel
- Design: black finished

Observe "Mounting instructions for roller rail systems".




### V-guide

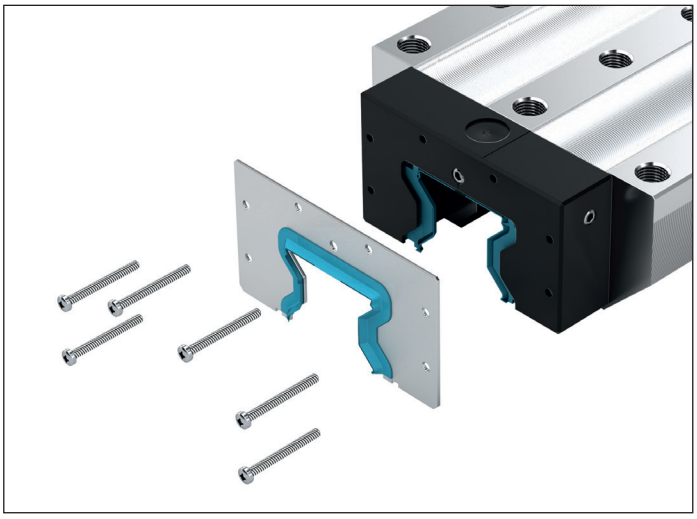
| Size | Material numbers | Dimensions (mm) | | | | | | | | Mass |
|---|---|---|---|---|---|---|---|---|---|---|
| | | $A_7$ | $E_7$ | $H_7$ | L | $O_5$[1)] | $S_7$ | T | $T_1$ | (kg) |
| **25/35** | R1619 200 01 | 12.0 | 6 | 10 | 957 | M5x20 | 6.0 | 60 | 28.5 | 0.8 |
| **45/55/65** | R1619 400 01 | 19.0 | 9 | 16 | 942 | M8x25 | 9.0 | 105 | 51.0 | 2.0 |
| **100**[2)] | R1810 291 02 | 34.0 | 16 | 23 | 938 | M12x35 | 13.5 | 105 | 49 | 5.3 |
| **125** | R1810 391 02 | 47.5 | 23 | 30 | 954 | M16x45 | 17.5 | 120 | 57.0 | 9.5 |

**1)** Screw $O_5$ according to DIN 6912
**2)** Size 100 upon request

### V-guide groove

| Size | Dimensions (mm) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | $h_{1\ -0.2}$ | $h_3^{+1}$ | $h_4^{+2}$ | $l_1^{\pm 0.05}$ | $l_3^{-0.1}$ | $l_4^{\pm 0.1}$ | $r_{1\ max}$ | $r_{3\ max}$ | $S_8$ |
| **25** | 4.5 | 12.5 | 15 | 35.1 | 22.9 | 29 | 0.8 | 0.5 | M5 |
| **35** | 5.0 | 12.5 | 15 | 46.1 | 33.9 | 40 | 0.8 | 0.5 | M5 |
| **45** | 7.0 | 19.0 | 16 | 64.1 | 44.9 | 54 | 0.8 | 0.5 | M8 |
| **55** | 9.0 | 19.0 | 16 | 72.1 | 52.9 | 62 | 1.2 | 0.5 | M8 |
| **65** | 9.0 | 19.0 | 16 | 82.1 | 62.9 | 72 | 1.2 | 0.5 | M8 |
| **100** | 12.0 | 26.0 | 20 | 134.0 | 99.9 | 116 | 1.8 | 1.0 | M12 |
| **125** | 20.0 | 34.0 | 29 | 172.6 | 124.9 | 148 | 1.8 | 1.0 | M16 |

# Front seal



## Front seal

**Already integrated in RSHP (replacement only for 1st generation roller runner blocks)**

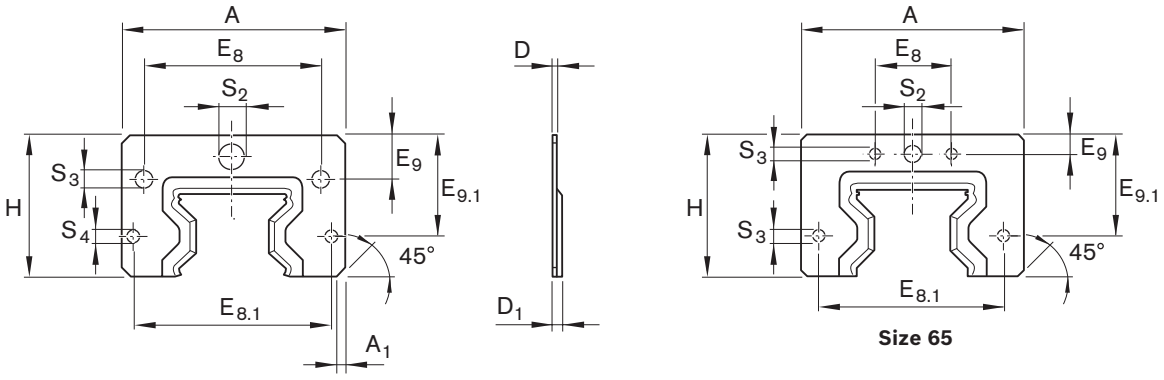
- Material: Corrosion-resistant spring steel according to DIN EN 10088 with plastic seal
- Design: bright

**Instruction for mounting**

The fastening screws are included.

- Dispose of old screws.

For detailed information on assembly, see "Mounting instructions for the roller rail systems".

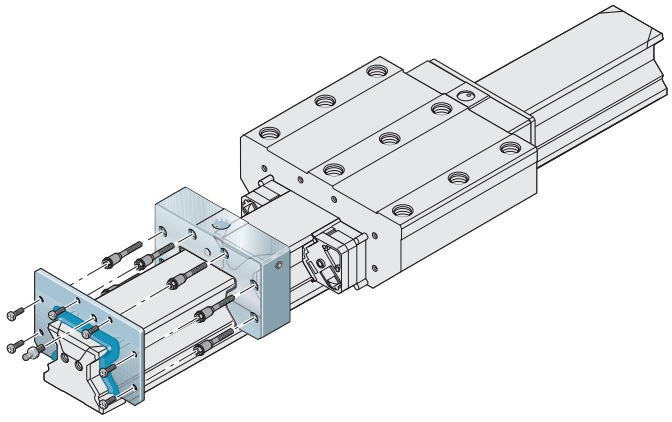



**Size 65**

| Size | Material numbers | Dimensions (mm) | | | | | | | | | | | | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Set | A | $A_1$ | D | $D_1$ | $E_8$ | $E_{8.1}$ | $E_9$ | $E_{9.1}$ | H | $S_2$ | $S_3$ | $S_4$ | |
| **65 (FXS)** | R1810 610 00 | 119.0 | 3 | 2.0 | 5.0 | 35 | 106.0 | 8.3 | 54 | 74.5 | 7 | 5.0 | 5.0 | 108 |
| **100** | R1810 211 00 | 181.0 | 2 | 2.5 | 5.5 | 130 | 162.6 | 28.4 | 61 | 104.0 | 9 | 6.0 | 6.0 | 280 |
| **125** | R1810 311 00 | 230.0 | 5 | 3.0 | 6.0 | 205 | 205.0 | 38.0 | 90 | 133.0 | 9 | 6.5 | 6.5 | 530 |

# End cap with front seal set

**(Only schematic diagrams)**



**Sizes 65FXS, 100 and 125**

## Set for heavy-duty roller runner blocks

**For replacement when servicing roller runner blocks**

**Notes**

The fastening screws are included.

- Dispose of old screws.

For more information, see "Mounting instructions for roller rail systems".

| Size | Material numbers for set of end caps with front seal, suitable for heavy-duty roller runner blocks | Set mass with end cap | |
|---|---|---|---|
| | | Plastic (kg) | Aluminum (kg) |
| **65 (FXS)** | R1810 690 10 | 0.26 | – |
| **100** | R1810 291 10 | 0.61 | – |
| **125** | R1810 391 60 | – | 2.30 |

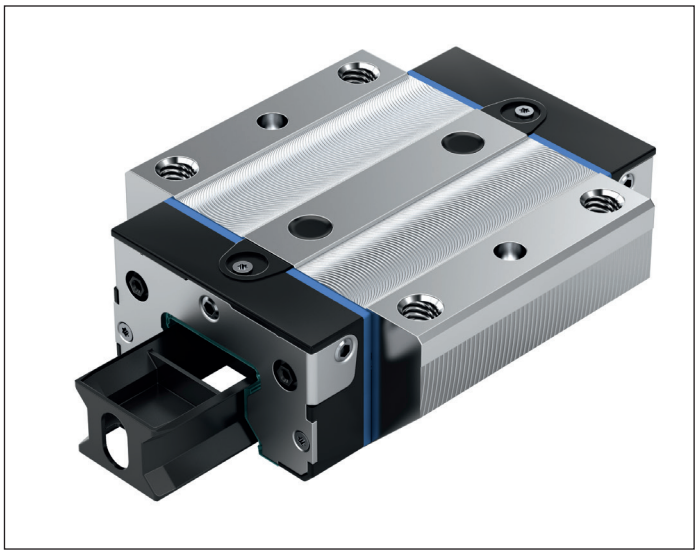
# Cardboard box opener

- Tool for opening the Guide Rails packaging.
- Prevents risk of injury

**Ordering data**

Material number R320105175

# Transport lock

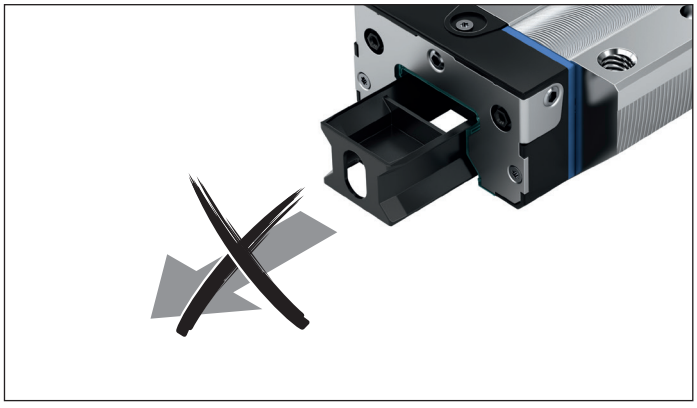


## Transport lock for roller runner block

**For transporting and as a mounting device**

- Material: Plastic

| Size | Normal | | Long | |
|---|---|---|---|---|
| | Material numbers | Mass (g) | Material numbers | Mass (g) |
| **25** | R1851 207 89 | 3.8 | R1853 207 89 | 4.2 |
| **35** | R1851 307 89 | 8.7 | R1853 307 89 | 10.2 |
| **45** | R1651 402 89 | 17.2 | R1653 402 89 | 20.5 |
| **55** | R1653 502 89 | 32.8 | R1653 502 89 | 32.8 |
| **65** | R1653 602 89 | 40.7 | R1653 602 89 | 40.7 |
| **65 (FXS)** | – | – | R1854 600 91 | 68.0 |
| **100** | R1861 200 91 | 154.0 | R1863 200 91 | 197.0 |
| **125** | R1861 300 81 | 1888.0 | R1863 300 81 | 2600.0 |



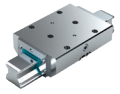
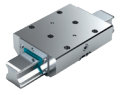
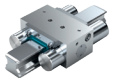
**Notes**

The roller runner block is slid from the transport lock onto the rail.

See the chapter entitled "Instruction for mounting".

⚠ The transport lock must remain in the roller runner block until it slides onto the roller guide rail! Otherwise it is possible to lose the rollers!

# Clamping and braking units
# Product overview

| Clamping and braking Units | | | | Page | Holding force[1] (N) | Size | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 25 | 35 | 45 | 55 | 65 | 100 | 125 |
| **Hydraulic** |  | KBH | R1810 ... 21 | 134 | 7400 – 22700 | – | – | ● | ● | ● | – | – |
| |  | KWH | R1810 ... 22 | 139 | 2200 – 46000 | ● | ● | ● | ● | ● | ● | ● |
| **Pneumatic** |  | MBPS | R1810 ... 31 | 144 | 1300 – 4700 | ● | ● | ● | ● | – | – | – |
| |  | UBPS | R1810 ... 51 | 146 | 1500 – 7700 | ● | ● | ● | ● | – | – | – |
| |  | MK | R1810 ..2 60 | 150 | 1200 – 2250 | ● | ● | ● | ● | ● | – | – |
| |  | MKS | R1810 ..0 60 | 152 | 750 – 1450 | ● | ● | ● | ● | ● | – | – |
| **Manual** |  | HK | R1619 ... 82 | 156 | 1200 – 2000 | ● | ● | ● | ● | ● | – | – |

**1)** The inspection is done in a mounted state with a lubricated layer (ISO-VG 68).
**2)** The B10d-value specifies the number of switching cycles until 10% of components fail dangerously.
**3)** Normally open / opened without pressure
**4)** Normally closed / closed without pressure
**5)** Bistable / stays in the current position

| | **Technical features** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | When de-energized | Spring-loaded accumulator | CE-marking | PLUS connection | Wiper kit available | Slimline built | Increased positioning accuracy | Release pressure (bar) | Tightening torque (Nm) | Gripper operating pressure (bar) | Clamping cycles (B10d value[2]) | Braking cycles |
| | NO[3] | – | – | – | ● | – | ● | – | – | 100 – 150 | 10 million | 2000 |
| | NO[3] | – | – | – | ● | – | ● | – | – | 100 – 150 | 10 million | – |
| | NC[4] | ● | ● | – | – | – | – | 4.5 | – | 6 | 5 million | 2000 |
| | NC[4] | ● | ● | ● | ● | – | ● | 5.5 | – | 6 | 5 million | 2000 |
| | NO[3] | – | – | – | – | – | – | – | – | 6 | 5 million | – |
| | NC[4] | ● | ● | ● | – | – | – | 5.5 | – | 6 | 5 million | – |
| | N[5] | – | – | – | – | – | – | – | 0.07–2.5 | – | 50000 | – |

# Hydraulic clamping and braking units
# Product description

## Areas of application

**Clamping**
- During assembly work and standstill of the machine with energy with hydraulic clamping and braking Units
- of heavy handling systems
- Clamping of machine tables from heavily machined machining centers

**Brakes**
- Support as brake for linear motors
- of heavy handling systems

## Characteristic features

- Very high axial holding forces
- Dynamic and static stabilization in the axial direction
- Heavy-duty brake

⚠ Observe the safety instructions on clamping and braking units.

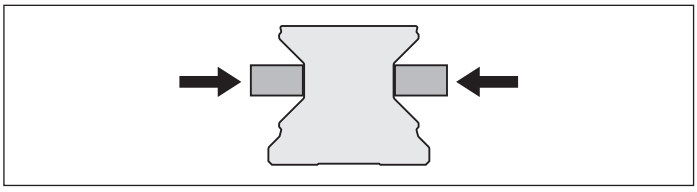
## Further highlights

- Up to 1 million clamping cycles
- Up to 2,000 emergency braking operations
- Threaded on both sides for the hydraulic connection
- Solid, rigid steel housing, chemically nickel-plated
- High positioning accuracy
- Release pressure 150 bar
- Integrated all-round sealing
- Special pressure diaphragm technology for maximum functional reliability without pressure losses or leakage
- Brake shoes with integrated positive-locking, large-surface contact profiles for maximum axial rigidity
- Super heavy-duty model

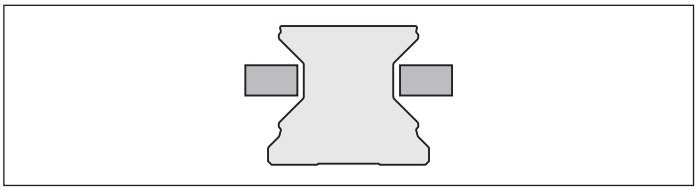
**Special features of hydraulic clamping and braking units:**
- Low displacement
- Compact design, compatible with DIN 645
- 10 million clamping cycles (B10d value)

## Functional principle

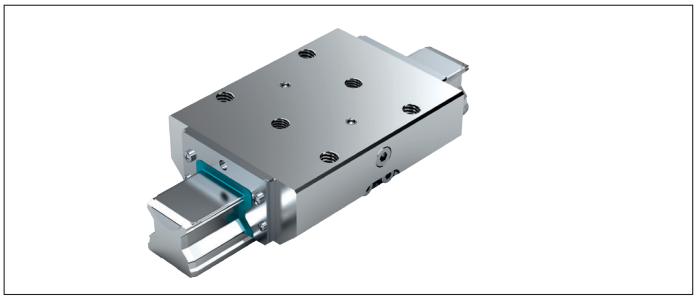
**Hydraulic pressure: 50 – 150 bar**
**Clamps and brakes with pressure**
The large-scale clamping profiles are pressed directly through the hydraulic oil via a piston principle to the flanks of the Roller Guide Rail.



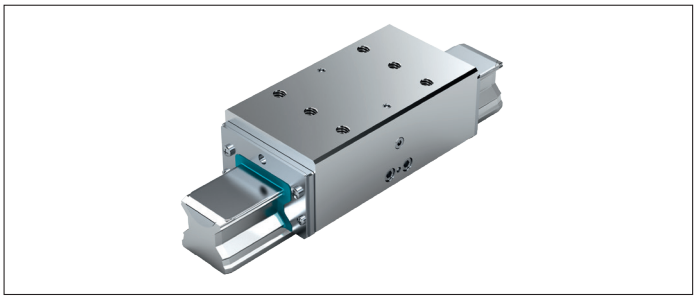
**Hydraulic pressure: 0 bar**
**Decompression with spring force**
A pre-tensioned return spring allows for short decompression cycles.



## KBH, FLS



## KBH, SLS



## Additional information

**Hydraulic connections**
The hydraulic clamping units are pre-filled with HLP 46 at the factory. The hydraulic connection is attached on two sides. One connection is suitable for pressurization. Take care when venting fixed and flexible hydraulic lines because air ports can damage sealing elements.

**Connection structure, mounting the clamping units**
To prevent detrimental effects, e.g. permanent grinding on the linear guide, the connection structure must be rigid and in accordance with its load and requirements. If the clamping units tilt, this can result in contact, wear and therefore damage to the linear guide.

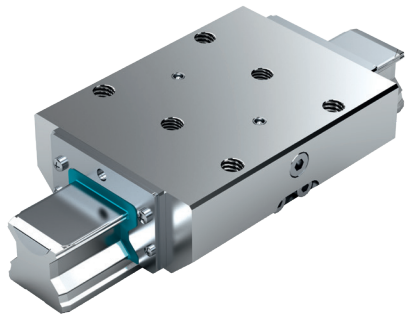
The setting at the factory is adapted for the linear guide and may not be altered when mounting. It is imperative to observe the mounting instructions for the clamping and braking units and the linear guides.
Some spring-loaded accumulators are equipped with a transport lock between the contact profiles.
This must be removed when mounting by pressurizing the unit. When the pressure is removed, the transport lock or the associated linear guide must always lie between the contact profiles.
The clamping units do not have any guiding function. Therefore, it is not possible to replace a roller runner block with a clamping unit. The ideal position of the clamping unit lies between two roller runner blocks.
When using several clamping units, these should be distributed evenly on both roller guide rails
in order to attain a maximum rigidity of the overall construction.

**Lubrication**
When using the prescribed pressurizing medium, lubrication is not required.

**Surface protection**
All housings of the clamping units are chemically nickel-plated and therefore have limited rust protection. Aluminum subsections are chemically nickel-plated or hard-coated according to their requirement.

**B10d value**
The B10d-value specifies the number of switching cycles until 10% of components fail dangerously.

# Hydraulic clamping and braking units KBH FLS



**Note**

Can be used on all SNS roller guide rails.

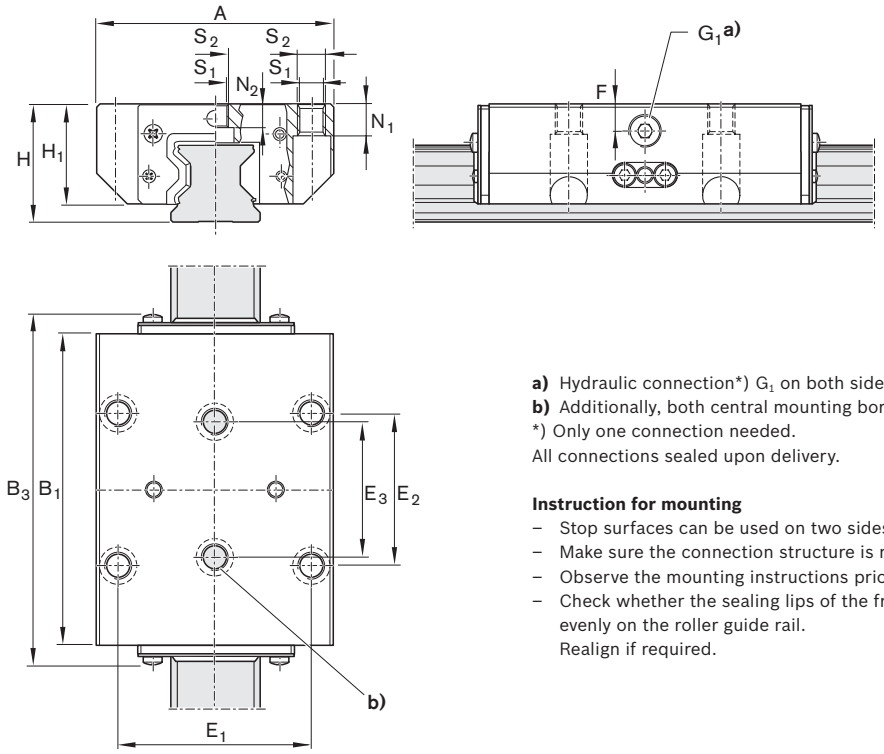
**Clamps and brakes with pressure**

- Max. hydraulic operating pressure:
- Sizes 45 – 65: 150 bar
- Operating temperature range t: 0 – 70°C

**Note on lubrication**

- Initial filling of hydraulic oil HLP46
- Check for compatibility when using different oils

⚠ Observe the safety instructions on clamping and braking units.




**a)** Hydraulic connection*) $G_1$ on both sides
**b)** Additionally, both central mounting bore holes must be used!
*) Only one connection needed.
All connections sealed upon delivery.

**Instruction for mounting**

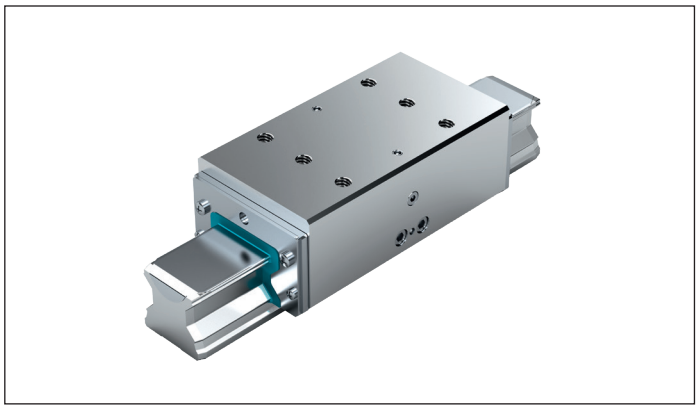
- Stop surfaces can be used on two sides.
- Make sure the connection structure is rigid.
- Observe the mounting instructions prior to start-up.
- Check whether the sealing lips of the front seals are resting evenly on the roller guide rail.
  Realign if required.

## Material numbers and dimensions

| Size | Material number | Holding force[1] | Dimensions (mm) | | | | | | | | | | | | | | Displacement[5] | Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (N) | A | $B_1$ | $B_3$ | H | $H_1$ | $E_1$ | $E_2$ | $E_3$ | F | $G_1$ | $N_1$[3] | $N_2$[4] | $S_1$ | $S_2$ | ($cm^3$) | (kg) |
| **45** | R1810 440 21 | 9900[2] | 120 | 155.0 | 174.0 | 60 | 51.0 | 100 | 80 | 60 | 15 | 1/8" | 15 | 13.5 | 10.5 | M12 | 1.8 | 5.2 |
| **55** | R1810 540 21 | 13700[2] | 140 | 184.0 | 204.0 | 70 | 58.0 | 116 | 95 | 70 | 16 | 1/8" | 18 | 13.7 | 12.5 | M14 | 2.4 | 8.4 |
| **65** | R1810 640 21 | 22700[2] | 170 | 227.0 | 245.0 | 90 | 76.0 | 142 | 110 | 82 | 20 | 1/4" | 23 | 21.5 | 14.5 | M16 | 3.8 | 17.3 |

**1)** The inspection is done in a mounted state with a lubricated layer (ISO-VG 68).
**2)** At 150 bar
**3)** For mounting from below with ISO 4762
**4)** For mounting from below with DIN 7984
**5)** Per clamping

# Hydraulic clamping and braking units KBH SLH



**Note**

Can be used on all SNS roller guide rails.

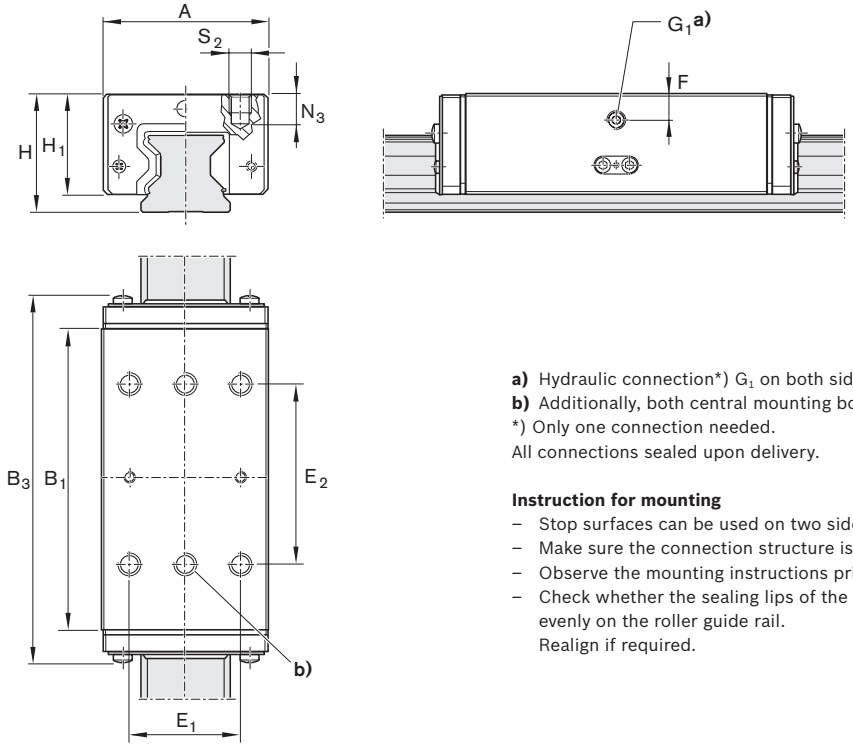
**Clamps and brakes with pressure**

- Max. hydraulic operating pressure:
- Size 45: 150 bar
- Operating temperature range t: 0 – 70°C

**Note on lubrication**

- Initial filling of hydraulic oil HLP46
- Check for compatibility when using different oils

⚠ Observe the safety instructions on clamping and braking units.




**a)** Hydraulic connection*) $G_1$ on both sides
**b)** Additionally, both central mounting bore holes must be used!
*) Only one connection needed.
All connections sealed upon delivery.

**Instruction for mounting**

- Stop surfaces can be used on two sides.
- Make sure the connection structure is rigid.
- Observe the mounting instructions prior to start-up.
- Check whether the sealing lips of the front seals are resting evenly on the roller guide rail.
  Realign if required.

## Material numbers and dimensions

| Size | Material number | Holding force[1] | Dimensions (mm) | | | | | | | | | | | Displacement[3] | Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (N) | A | $B_1$ | $B_3$ | H | $H_1$ | $E_1$ | $E_2$ | F | $G_1$ | $N_2$ | $S_2$ | ($cm^3$) | (kg) |
| **45** | R1810 440 22 | 7400[2] | 86 | 163 | 174 | 70 | 61 | 60 | 80 | 24 | 1/8" | 18 | M10 | 1.8 | 5.2 |

**1)** The inspection is done in a mounted state with a lubricated layer (ISO-VG 68).
**2)** At 150 bar
**3)** Per clamping

# Hydraulic clamping units
# Product description

## Areas of application

- Clamping of heavy handling systems
- Clamping of machine tables from heavily machined machining centers

## Characteristic features

- Very high axial holding forces
- Compact design, compatible with DIN 645
- Dynamic and static stabilization in the axial direction

⚠ Observe the safety instructions on clamping and braking units.

## Further highlights

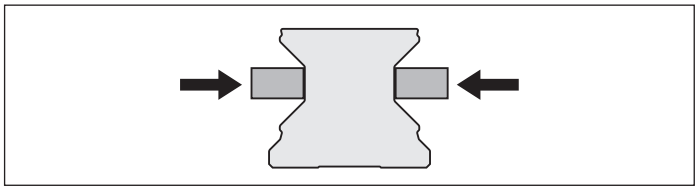
- Threaded on both sides for the hydraulic connection
- Solid, rigid steel housing, chemically nickel-plated
- High positioning accuracy
- Continuously adjustable pressure from 50 - 150 bar
- Integrated all-round sealing
- Special pressure diaphragm technology for maximum functional reliability without pressure losses or leakage
- Integrated positive-locking, large-surface contact profiles for maximum axial rigidity

**Special features of the hydraulic clamping and braking units:**

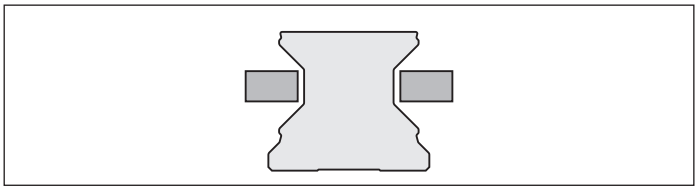
- 10 million clamping cycles (B10d value)

## Functional principle

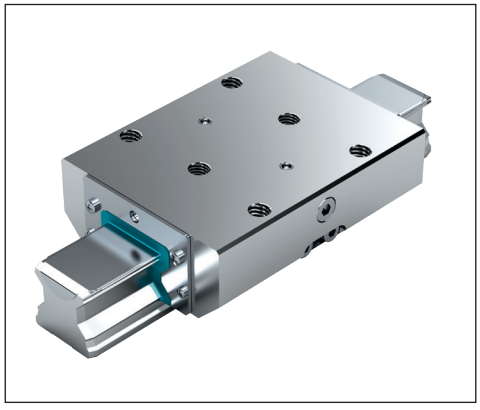
**Hydraulic pressure: 50 – 150 bar**
**Clamps and brakes with pressure**
The large-scale clamping profiles are pressed directly through the hydraulic oil via a piston principle to the flanks of the roller guide rail.



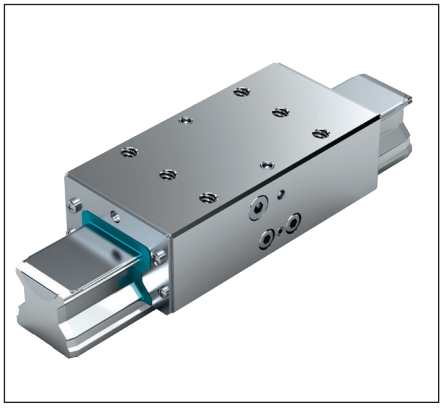
**Hydraulic pressure: 0 bar**
**Decompression with spring force**
A pre-tensioned return spring allows for short decompression cycles.



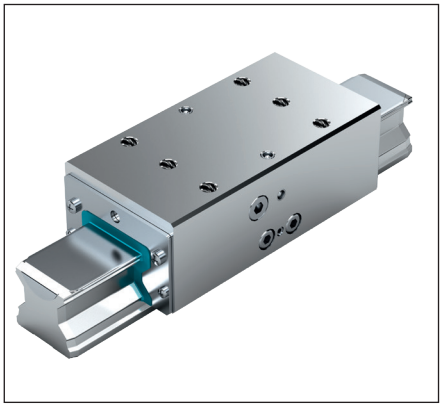
### Hydraulic clamping and braking units, FLS



### Hydraulic clamping and braking units, SLS



### Hydraulic clamping and braking units, SLH



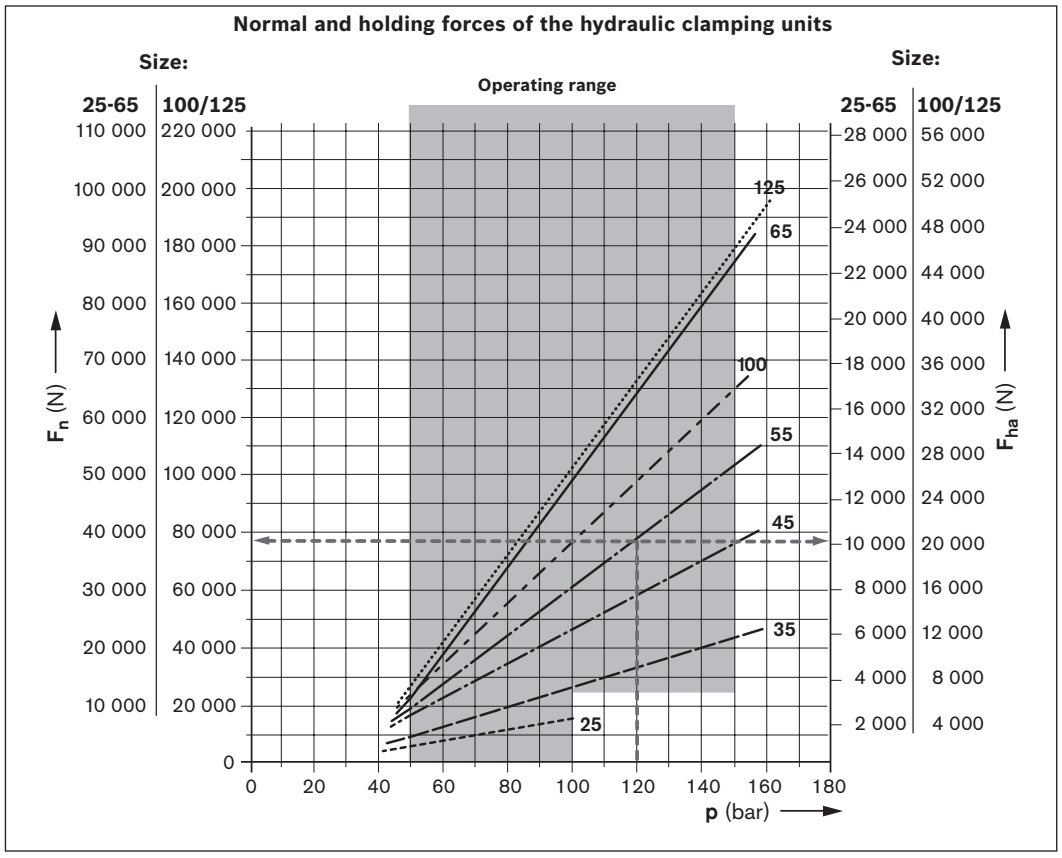
# Technical data and calculations

## Normal forces and retaining forces

Measured values with the hydraulic clamping unit KWH, FLS flange, long, standard height, size 25 – 65

**Max. hydraulic operating pressure:**

- Size 25: 100 bar
- Sizes 35 – 65: 150 bar



# Technical data and calculations

## Calculation of the holding force

### Holding force for hydraulic clamping units

$$F_{ha} = F_n \cdot 2 \cdot \mu_0$$

Normal (perpendicular) force (measured): $F_n$ see diagram

Stiction coefficient: $\mu_0$ = 0,13 (ca.) for steel/steel, oiled, referring to roller guide rail

**Calculation example: Clamping unit KWH, size 55**

| | | |
|---|---|---|
| Pressure: | p | = 120 bar |
| Normal (perpendicular) force: | $F_n$ | = 38500 N (see diagram) |
| Holding force: | $F_{ha}$ | = 38500 N · 2 · 0.13 |
| | | = 10010 N |

### Permissible holding force for hydraulic clamping units

$$F_{ha,\,perm} = F_{ha} / f_S$$

$f_S$ = Safety factor (-)
$F_{ha}$ = Holding force (with $\mu_0$ = 0.13) (N)
$F_{ha,\,perm}$ = Permissible holding force (N)
$F_n$ = Normal (perpendicular) force (N)
$\mu_0$ = Stiction coefficient: (-)
p = Pressure (bar)

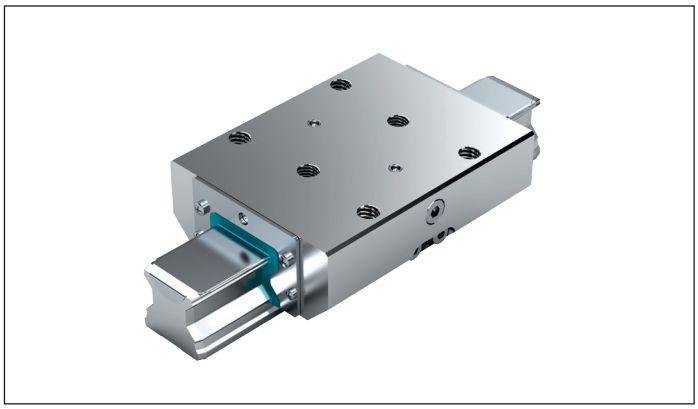
The safety factor $f_S$ depends on:

- Vibrations
- Force surges
- Application-specific requirements etc.

**Example: Clamping unit KWH, size 55**

| | | |
|---|---|---|
| Holding force: | $F_{ha}$ | = 10010 N (see calculation example) |
| Safety factor: | $f_S$ | = 1.25 (assumed) |
| Permissible holding force: | $F_{ha,\,perm}$ | = 10010 N / 1.25 |
| | | ≈ 8000 N |

# Hydraulic clamping units KWH FLS



**Note**

Can be used on all SNS roller guide rails.

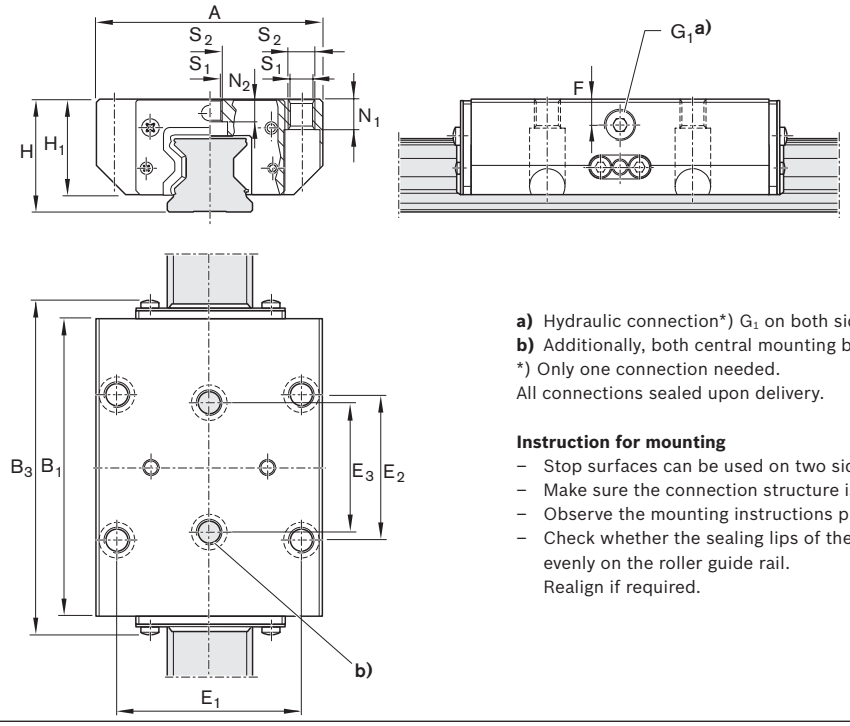
**Clamps and brakes with pressure**

- Max. hydraulic operating pressure:
- Size 25: 100 bar
  Sizes 35 – 125: 150 bar
- Operating temperature range t: 0 – 70°C

**Note on lubrication**

- Initial filling of hydraulic oil HLP46
- Check for compatibility when using different oils

⚠ Observe the safety instructions on clamping and braking units.




**a)** Hydraulic connection*) $G_1$ on both sides
**b)** Additionally, both central mounting bore holes must be used!
*) Only one connection needed.
All connections sealed upon delivery.

**Instruction for mounting**

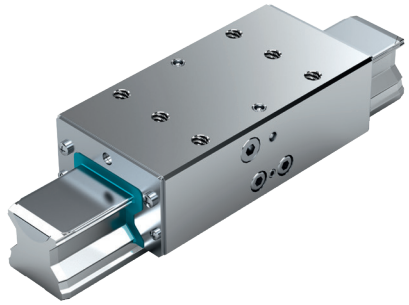
- Stop surfaces can be used on two sides.
- Make sure the connection structure is rigid.
- Observe the mounting instructions prior to start-up.
- Check whether the sealing lips of the front seals are resting evenly on the roller guide rail.
  Realign if required.

## Material numbers and dimensions

| Size | Material number | Holding force[1] | Dimensions (mm) | | | | | | | | | | | | | | Displacement[6] | Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (N) | A | $B_1$ | $B_3$ | H | $H_1$ | $E_1$ | $E_2$ | $E_3$ | F | $G_1$ | $N_1$[4] | $N_2$[5] | $S_1$ | $S_2$ | ($cm^3$) | (kg) |
| **25** | R1810 242 11 | 2200[2] | 70 | 92.0 | 105.0 | 36 | 30.0 | 57 | 45 | 40 | 9.5 | 1/8" | 9 | 7.3 | 6.8 | M8 | 0.6 | 1.22 |
| **35** | R1810 342 11 | 5700[3] | 100 | 120.5 | 135.2 | 48 | 41.0 | 82 | 62 | 52 | 12.0 | 1/8" | 12 | 11.0 | 8.6 | M10 | 1.1 | 2.69 |
| **45** | R1810 442 11 | 9900[3] | 120 | 155.0 | 174.0 | 60 | 51.0 | 100 | 80 | 60 | 15.0 | 1/8" | 15 | 13.5 | 10.5 | M12 | 1.8 | 5.32 |
| **55** | R1810 542 11 | 13700[3] | 140 | 184.0 | 204.0 | 70 | 58.0 | 116 | 95 | 70 | 16.0 | 1/8" | 18 | 13.7 | 12.5 | M14 | 2.4 | 8.40 |
| **65** | R1810 642 11 | 22700[3] | 170 | 227.0 | 245.0 | 90 | 76.0 | 142 | 110 | 82 | 20.0 | 1/4" | 23 | 21.5 | 14.5 | M16 | 3.8 | 17.30 |
| **100** | R1810 243 11 | 34000[3] | 250 | 200.0 | 221.6 | 120 | 105.0 | 200 | 150 | 150 | 20.0 | 1/4" | 30 | 17.5 | 17.5 | M20 | 5.0 | 29.1 |
| **125** | R1810 343 11 | 46000[3] | 320 | 227.0 | 245.0 | 160 | 135.0 | 270 | 102.5 | 102.5 | 50.0 | 1/4" | 45 | 29.0 | 24.0 | M27 | 7.6 | 53.7 |

**1)** The inspection is done in a mounted state with a lubricated layer (ISO-VG 68). For permissible holding forces see "Technical data and calculations."
**2)** At 100 bar
**3)** At 150 bar
**4)** For mounting from below with ISO 4762
**5)** For mounting from below with DIN 7984
**6)** Per clamping

# Hydraulic clamping units KWH SLS



**Note**

Can be used on all SNS roller guide rails.

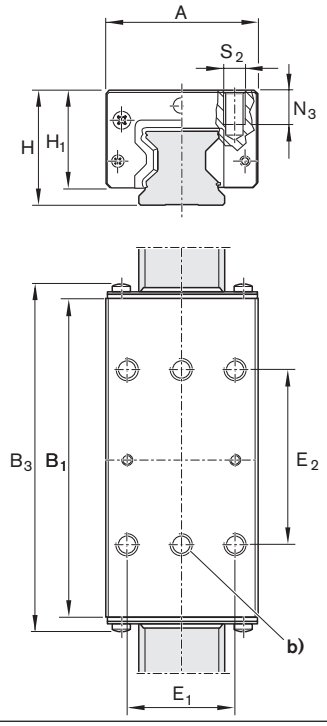
**Clamps and brakes with pressure**

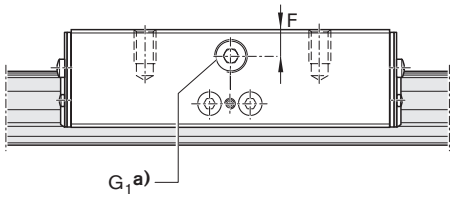
- Max. hydraulic operating pressure:
- Size 65: 150 bar
- Operating temperature range t: 0 – 70°C

**Note on lubrication**

- Initial filling of hydraulic oil HLP46
- Check for compatibility when using different oils

⚠ Observe the safety instructions on clamping and braking units.




**a)** Hydraulic connection*) $G_1$ on both sides
**b)** Additionally, both central mounting bore holes must be used!
*) Only one connection needed.
All connections sealed upon delivery.

**Instruction for mounting**

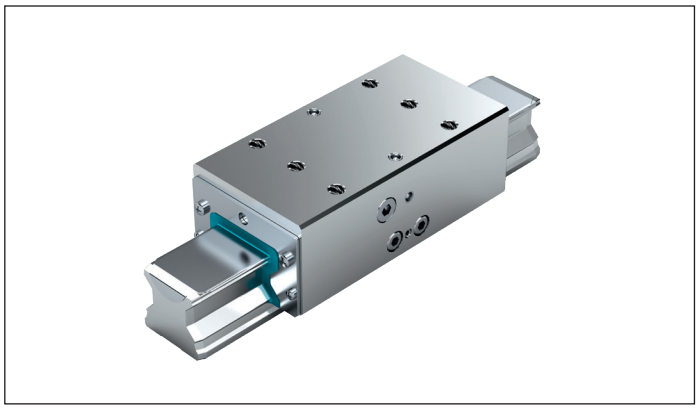
- Stop surfaces can be used on two sides.
- Make sure the connection structure is rigid.
- Observe the mounting instructions prior to start-up.
- Check whether the sealing lips of the front seals are resting evenly on the roller guide rail. Realign if required.

## Material numbers and dimensions

| Size | Material number | Holding force[1] | Dimensions (mm) | | | | | | | | | | | Displacement[3] | Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (N) | A | $B_1$ | $B_3$ | H | $H_1$ | $E_1$ | $E_2$ | F | $G_1$ | $N_3$ | $S_2$ | ($cm^3$) | (kg) |
| **65** | R1810 642 51 | 22700[2] | 126 | 227.0 | 245.1 | 90 | 76.0 | 76 | 120 | 20 | 1/4" | 21 | M16 | 3.8 | 15.4 |

**1)** The inspection is done in a mounted state with a lubricated layer (ISO-VG 68). For permissible holding forces see "Technical data and calculations."
**2)** At 150 bar
**3)** Per clamping

# Hydraulic clamping units KWH SLH



**Note**

Can be used on all SNS roller guide rails.

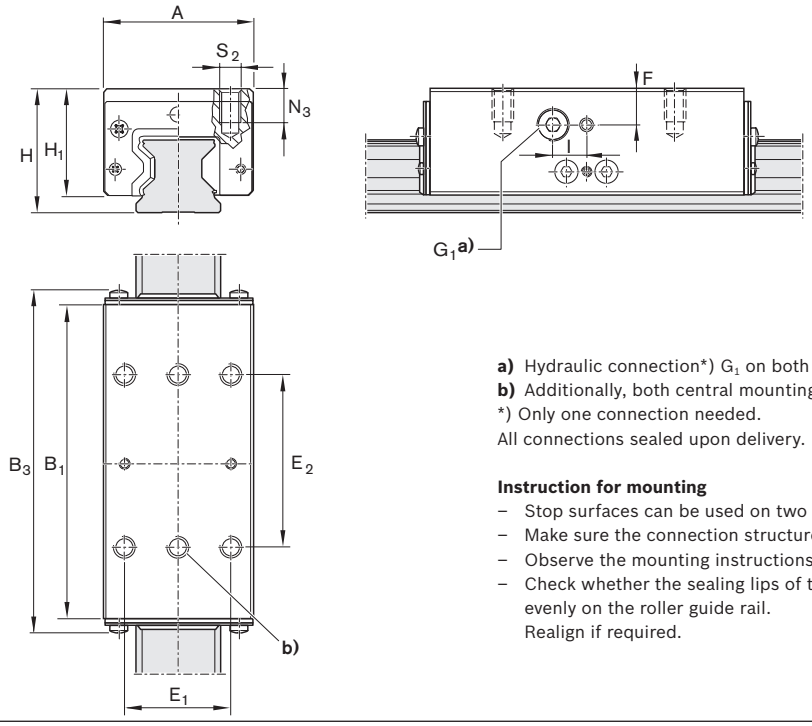
**Clamps and brakes with pressure**

- Max. hydraulic operating pressure:
- Sizes 25 – 35: 100 bar
- Sizes 45 – 55: 150 bar
- Operating temperature range t: 0 – 70°C

**Note on lubrication**

- Initial filling of hydraulic oil HLP46
- Check for compatibility when using different oils

⚠ Observe the safety instructions on clamping and braking units.




**a)** Hydraulic connection*) $G_1$ on both sides
**b)** Additionally, both central mounting bore holes must be used!
*) Only one connection needed.
All connections sealed upon delivery.

**Instruction for mounting**

- Stop surfaces can be used on two sides.
- Make sure the connection structure is rigid.
- Observe the mounting instructions prior to start-up.
- Check whether the sealing lips of the front seals are resting evenly on the roller guide rail. Realign if required.

## Material numbers and dimensions

| Size | Material number | Holding force[1] | Dimensions (mm) | | | | | | | | | | | | Displacement[4] | Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (N) | A | $B_1$ | $B_3$ | H | $H_1$ | $E_1$ | $E_2$ | F | $G_1$ | i | $N_3$ | $S_2$ | ($cm^3$) | (kg) |
| **25** | R1810 242 31 | 1600[2] | 48 | 92.0 | 100.0 | 40 | 33.5 | 35 | 50 | 12 | 1/8" | 10 | 12 | M6 | 0.6 | 1.10 |
| **35** | R1810 342 31 | 3500[2] | 70 | 120.5 | 135.2 | 55 | 48.0 | 50 | 72 | 18 | 1/8" | – | 13 | M8 | 1.1 | 2.46 |
| **45** | R1810 442 31 | 7400[3] | 86 | 155.0 | 174.0 | 70 | 61.0 | 60 | 80 | 24 | 1/8" | – | 18 | M10 | 1.8 | 4.95 |
| **55** | R1810 542 31 | 13700[3] | 100 | 184.0 | 204.0 | 80 | 68.0 | 75 | 95 | 26 | 1/8" | – | 19 | M12 | 2.4 | 7.90 |

**1)** The inspection is done in a mounted state with a lubricated layer (ISO-VG 68). For permissible holding forces see "Technical data and calculations."
**2)** At 100 bar
**3)** At 150 bar
**4)** Per clamping

# Pneumatic clamping and braking units Product description

## Areas of application

**Clamping**
- In the event of loss of pressure
- During assembly work and standstill of the machine without energy
- of machine tables from machining centers
- of z-axis positioning in the resting position

**Brakes**
- In the event of energy failure
- In the event of a pressure drop
- Support of the emergency stop function
- Support as brake for linear motors

⚠ Observe the safety instructions on clamping and braking units.

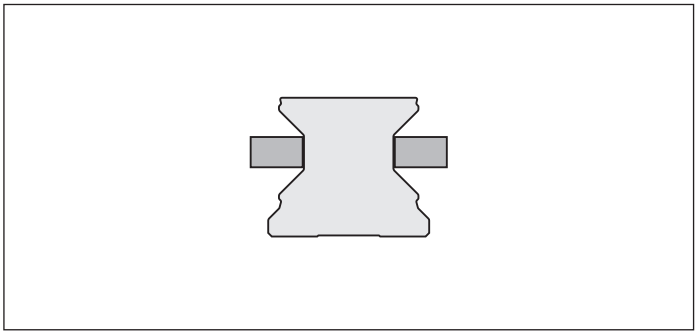
## Characteristic features

- Clamps and brakes with spring energy accumulator
- Positive-locking integrated contact profiles ensure maximum axial and horizontal rigidity, and thus an excellent braking effect
- Dynamic and static stability in axial direction

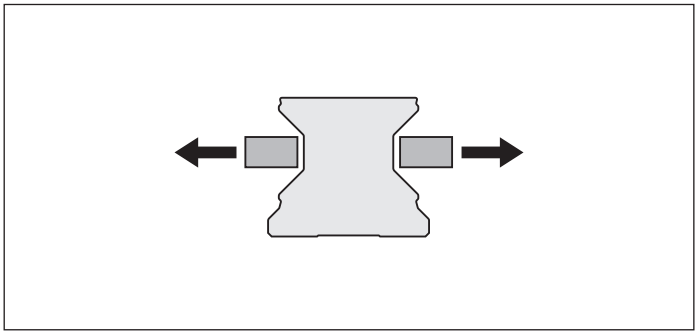
**Special features MBPS/UBPS:**
- 5 million clamping cycles (B10d value)

## Functional principle

**Air pressure: 0 bar**
**Clamps and brakes with spring force**
In the event of a pressure drop, the clamping or braking effect is generated via a dual acting gate valve gear mechanism, each with one spring assembly (spring energy accumulator).
An integrated quick-exhaust valve ensures short response times.



**Air pressure: 4.5 – 8 bar (MBPS)**
**5.5 – 8 bar (UBPS)**
**Decompression with air pressure**
The clamping profiles are held apart by the compressed air.
- Free movement is possible



## Further highlights

- Up to 1 million clamping cycles
- Up to 2,000 emergency braking operations
- Integrated all-round sealing
- High continuous output
- High positioning accuracy
- Mechanical gate valve gear mechanism
- Solid, rigid steel housing, chemically nickel-plated
- Low air consumption
- Maintenance-free

**Special features of MBPS:**

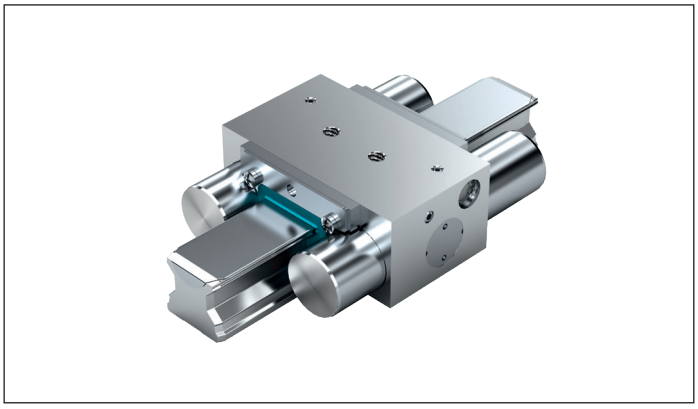
- Clamping and braking units in short format
- Add-ons with three pistons connected in series combined with strong springs result in holding forces up to 3800 N at just 4.5 bar release pressure
- 5 million clamping cycles (B10d value)[1)]

**Special features of UBPS:**

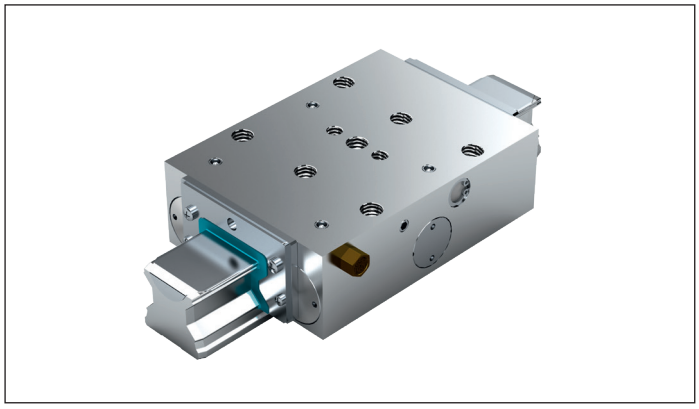
- Very high axial holding forces of up to 7700 N at 5.5 bar release pressure with high-power spring energy accumulator
- Increased holding force of up to 9200 N thanks to additional pressurization on the air-plus port
- Extremely low air consumption
- Compact design, compatible with DIN 645
- 5 million clamping cycles (B10d value)[1)]

**1)** B10d value is not achieved on air-plus port

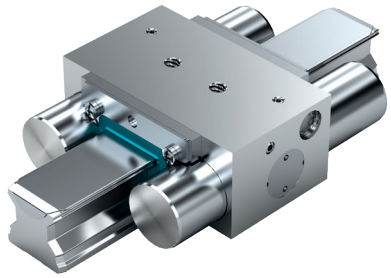
## MBPS



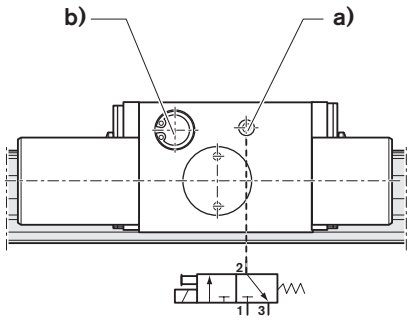
## UBPS



# Pneumatic clamping and braking units MBPS R1810 .40 31



**Circuit for standard air port**




**1** Air port
**2** Working connections
**3** Venting

**Note**

- Can be used on all SNS roller guide rails.

**Clamps and brakes without pressurization (spring energy)**

- Minimum release pressure 4.5 bar
- Maximum pneumatic operating pressure: 8 bar
- Operating temperature range t: 0 – 70°C

**Instruction for mounting**

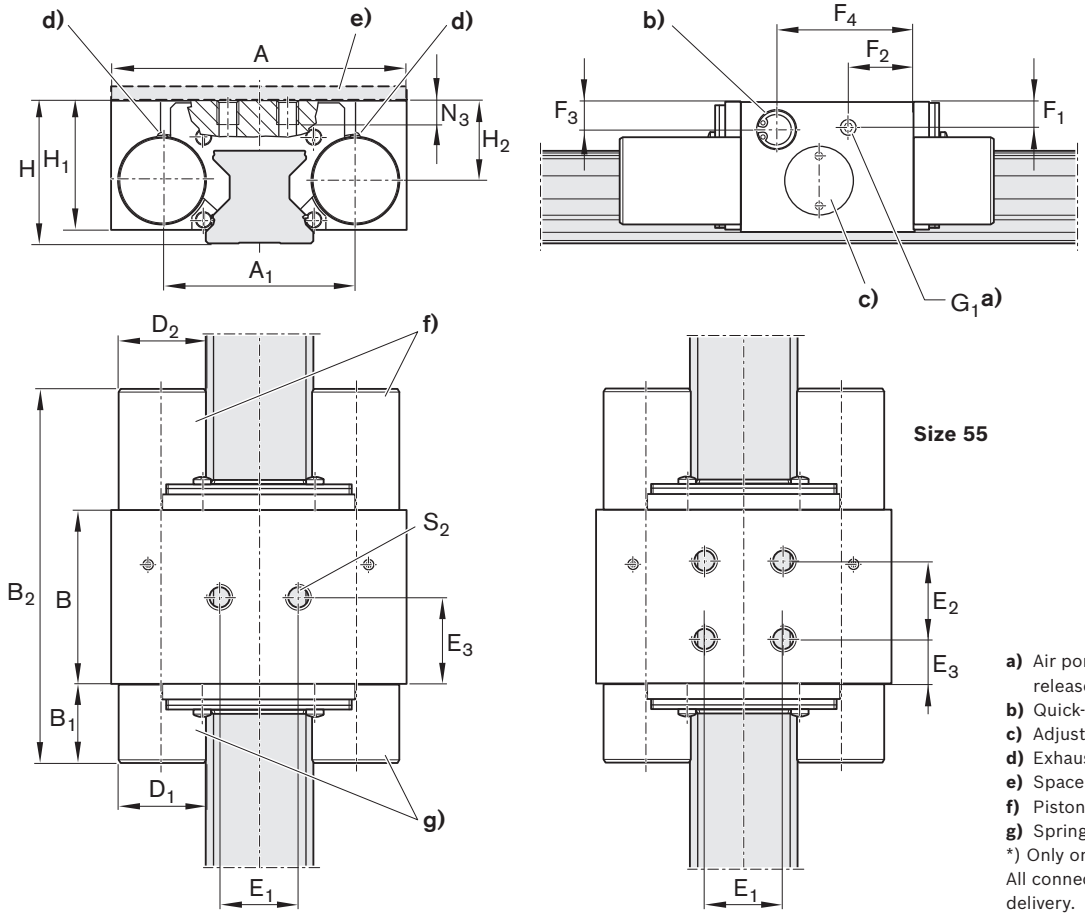
- Make sure the connection structure is rigid.
- Use only purified air. The prescribed filter mesh size is 25 µm.
- Observe the mounting instructions prior to start-up.
- Check whether the sealing lips of the front seals are resting evenly on the roller guide rail. Realign if required.

⚠ Observe the safety instructions on clamping and braking units.

**Technical data**

| Size | Material number | Holding force Spring energy[1)] (N) | Air consumption (normal liter) Air port ($dm^3$/stroke) | Mass (kg) |
|---|---|---|---|---|
| **25** | R1810 240 31 | 1300 | 0.048 | 1.0 |
| **35** | R1810 340 31 | 2600 | 0.093 | 1.9 |
| **45** | R1810 440 31 | 3600 | 0.099 | 2.3 |
| **55** | R1810 540 31 | 4700 | 0.244 | 3.7 |

**1)** Holding force achieved by spring energy. The inspection is done in a mounted state with a lubricated layer (ISO-VG 68).




**a)** Air port*) $G_1$ on two sides for release pressure.
**b)** Quick-exhaust on two sides
**c)** Adjusting screw on two sides
**d)** Exhaust on two sides
**e)** Spacer plate (accessory)
**f)** Piston
**g)** Spring-loaded accumulator
*) Only one connection needed
All connections sealed upon delivery.

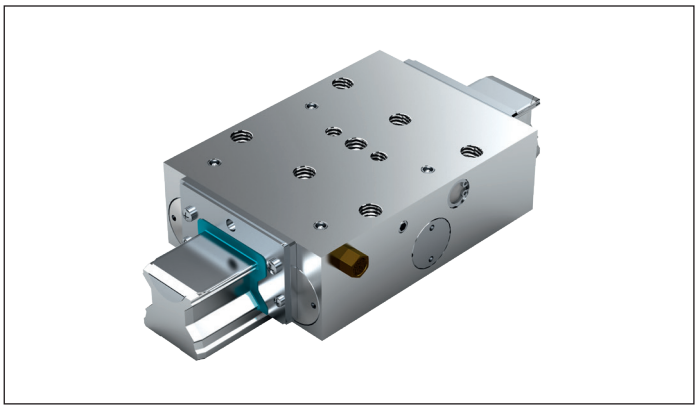
## Dimensions (mm)

| Size | A | $A_1$ | B | $B_1$ | $B_{2\ max}$ | $D_1$ | $D_2$ | $E_1$ | $E_2$ | $E_3$ |
|---|---|---|---|---|---|---|---|---|---|---|
| **25** | 75 | 49.0 | 44 | 20.2 | 93.4 | 22 | 22 | 20 | - | 22.0 |
| **35** | 100 | 68.0 | 46 | 27.7 | 105.7 | 28 | 28 | 24 | - | 24.5 |
| **45** | 120 | 78.8 | 49 | 32.2 | 113.2 | 30 | 30 | 26 | - | 24.5 |
| **55** | 140 | 97.0 | 62 | 41.0 | 144.0 | 39 | 39 | 38 | 38 | 12.0 |

| Size | $F_1$ | $F_2$ | $F_3$ | $F_4$ | $G_1$ | H | $H_1$[1)] | $H_2$ | $N_3$ | $S_2$ |
|---|---|---|---|---|---|---|---|---|---|---|
| **25** | 6.5 | 16.5 | 7.0 | 34.7 | M5 | 36 | 32.5 | 20.0 | 8 | M6 |
| **35** | 9.0 | 19.0 | 9.5 | 38.0 | G1/8" | 48 | 42.0 | 26.5 | 10 | M8 |
| **45** | 15.0 | 31.1 | 12.2 | 41.6 | G1/8" | 60 | 52.0 | 35.5 | 15 | M10 |
| **55** | 11.0 | 23.0 | 11.0 | 40.0 | M5 | 70 | 59.0 | 38.0 | 18 | M10 |

**1)** For roller runner block .H. (High) spacer plate required.

# Pneumatic clamping and braking units UBPS R1810 .40 51



**Very high axial holding forces due to three pistons connected in series combined with strong spring energy accumulator; increased holding force thanks to additional pressure through the air-plus port.**

**Note**

- Can be used on all SNS roller guide rails.

**Clamps and brakes without pressurization (spring energy)**

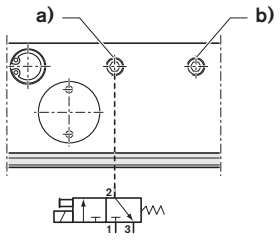
- Minimum release pressure 5.5 bar
- Maximum pneumatic operating pressure: 8 bar
- Operating temperature range t: 0 – 70°C

**Instruction for mounting**

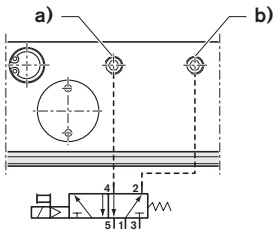
- Stop surfaces can be used on two sides.
- Make sure the connection structure is rigid.
- Use only purified air.
  The prescribed filter mesh size is 25 µm.
- Observe the mounting instructions prior to start-up.
- Check whether the sealing lips of the front seals are resting evenly on the roller guide rail. Realign if required.

⚠ Observe the safety instructions on clamping and braking units.

**Circuit type[1] for standard air port**




**Circuit type[2] for air-plus port**

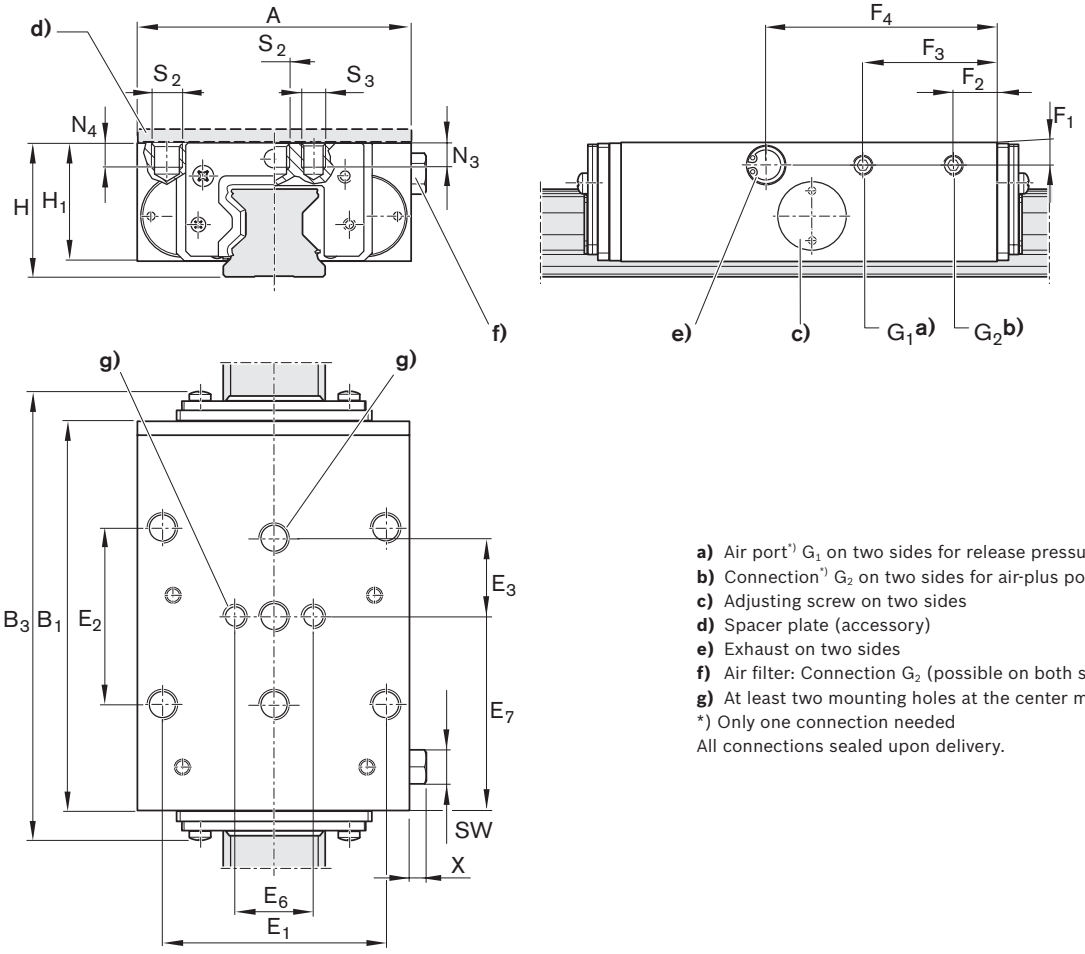



**1** Air port
**2** Working connections
**3** Venting

## Technical data

| Size | Material number | Holding force achieved by spring energy[1] | | Air consumption (normal liter) | | Mass |
|---|---|---|---|---|---|---|
| | | Air port (N) | with air-plus port[2] (N) | Air port ($dm^3$/stroke) | Air-plus port ($dm^3$/stroke) | (kg) |
| **25** | R1810 240 51 | 1500 | 2650 | 0.080 | 0.165 | 1.20 |
| **35** | R1810 340 51 | 2800 | 3800 | 0.139 | 0.303 | 2.25 |
| **45** | R1810 440 51 | 5200 | 7600 | 0.153 | 0.483 | 6.20 |
| **55** | R1810 540 51 | 7700 | 9200 | 0.554 | 0.952 | 9.40 |

**1)** Holding force achieved by spring energy. The inspection is done in a mounted state with a lubricated layer (ISO-VG 68).
**2)** Increased holding force by additional air admission at air-plus port with 6.0 bar. Switching via 5/2- or 5/3-way directional control valve.




**a)** Air port*) $G_1$ on two sides for release pressure.
**b)** Connection*) $G_2$ on two sides for air-plus port or air filter.
**c)** Adjusting screw on two sides
**d)** Spacer plate (accessory)
**e)** Exhaust on two sides
**f)** Air filter: Connection $G_2$ (possible on both sides)
**g)** At least two mounting holes at the center must be used!
*) Only one connection needed
All connections sealed upon delivery.

## Dimensions (mm)

| Size | A | $B_1$ | $B_{3\,max}$ | $E_1$ | $E_2$ | $E_3$ | $E_6$ | $E_7$ | $F_1$ | $F_2$ | $F_3$ | $F_4$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **25** | 70 | 99 | 111.8 | 57 | 45 | 20 | 20 | 49.5 | 6.5 | 11.0 | 34.3 | 59.0 |
| **35** | 100 | 109 | 123.8 | 82 | 62 | 26 | 24 | 54.5 | 8.0 | 11.0 | 40.8 | 66.5 |
| **45** | 120 | 199 | 215.4 | 100 | 80 | 30 | - | 99.5 | 12.0 | 32.0 | 167.0 | 106.5 |
| **55** | 140 | 197 | 214.8 | 116 | 95 | 35 | - | 98.5 | 13.0 | 32.0 | 165.0 | 103.5 |

| Size | $G_1$ | $G_2$ | H | $H_1$[1)] | $N_3$ | $N_4$ | $S_2$ | $S_3$ | X | SW |
|---|---|---|---|---|---|---|---|---|---|---|
| **25** | M5 | M5 | 36 | 31 | 7 | 7 | M8 | M6 | 5.5 | Ø8, SW7 |
| **35** | G1/8" | G1/8" | 48 | 42 | 10 | 10 | M10 | M8 | 6.5 | Ø15, SW13 |
| **45** | G1/8" | G1/8" | 60 | 52 | - | 12 | M12 | - | 6.5 | Ø15, SW13 |
| **55** | G1/8" | G1/8" | 70 | 60 | - | 14 | M14 | - | 6.5 | Ø15, SW13 |

**1)** For roller runner block .H. (High) spacer plate required.

# Pneumatic clamping units
# Product description

## Areas of application

**Clamping**
- Pneumatic clamping of machine axes
- Table crossbars in the timber industry
- Positioning of lifting gear

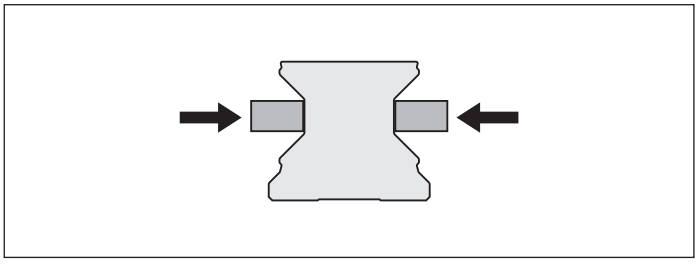
⚠ Observe the safety instructions on Clamping and Braking Units.

## Characteristic features

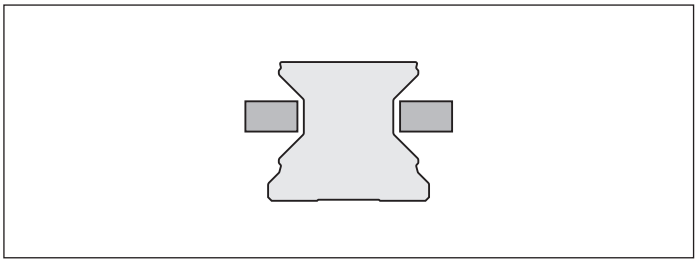
- High axial holding forces with short format
- Dynamic and static stability in axial direction

## Functional principle MK

**Air pressure: 4.0 – 8 bar**
**Clamps with air pressure**
For MK, the clamping profiles are pressed by compressed air to the web surfaces of the roller guide rail via a dual acting gate valve gear mechanism.

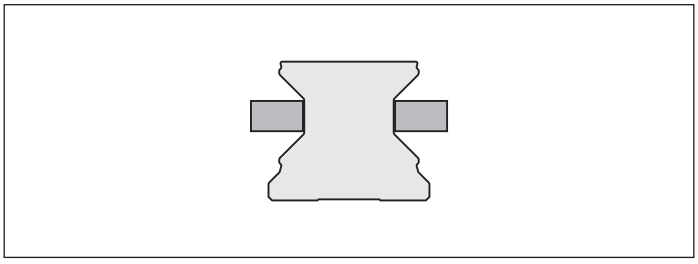


**Air pressure: 0 bar**
**Decompression with spring force**
A pre-tensioned return spring allows for short decompression cycles.

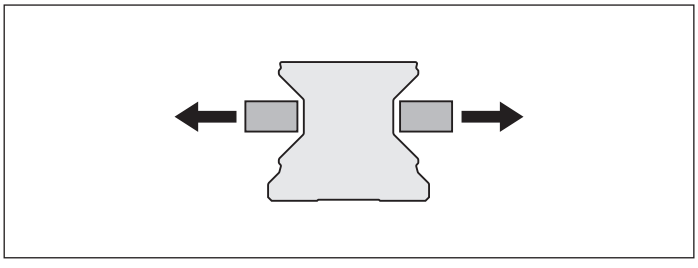


## Functional principle MKS

**Air pressure: 0 bar**
**Clamps with spring force**
In the event of a pressure drop, the MKS clamps via a dual acting gate valve gear mechanism, each with one spring assembly (spring energy accumulator). An integrated quick-exhaust valve ensures short response times.



**Air pressure: 5.5 – 8 bar**
**Decompression with air pressure**
The clamping profiles are held apart by the compressed air.
- Free movement is possible



## Further highlights

- Easy mounting
- Chemically nickel-plated steel housing
- High axial and horizontal rigidity
- Precise positioning

**Special features of MK:**

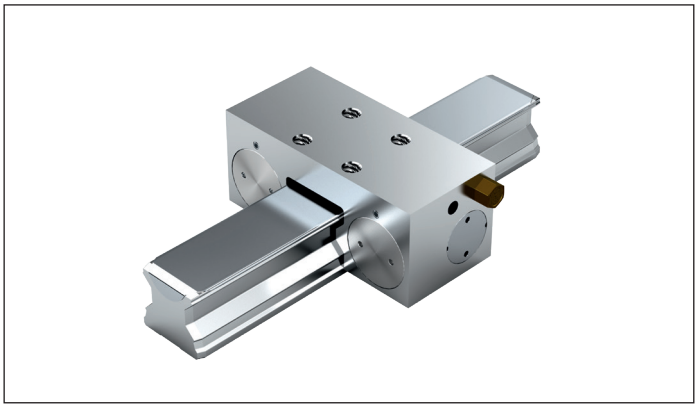
- Clamps with pressure (pneumatic) via a dual acting gate valve gear mechanism
- Continuously adjustable pressure from 4 – 8 bar
- Short decompression cycles
- 5 million clamping cycles (B10d value)

**Special features of MKS:**

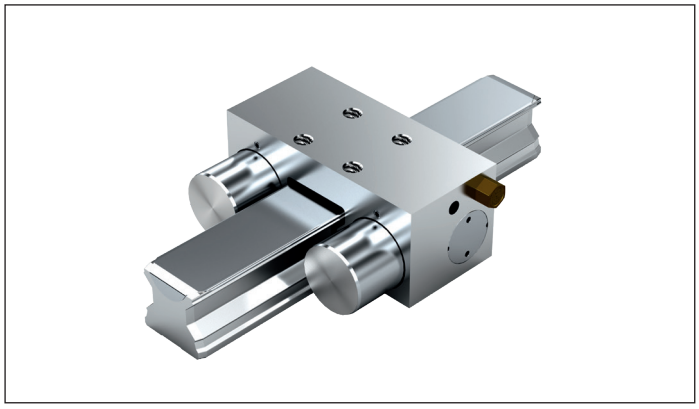
- Clamps without pressurization (spring energy) via the gate valve gear mechanism with two spring assemblies
- Release pressure 5.5 bar (pneumatic)
- Higher holding force due to the air-plus port
- 5 million clamping cycles (B10d value)*)

*) with the air-plus port, the B10d value cannot be achieved

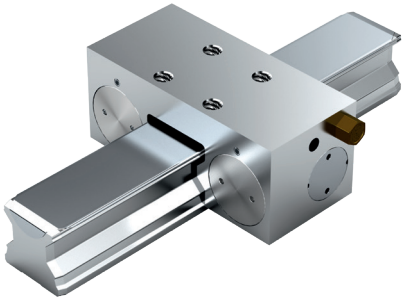
## MK



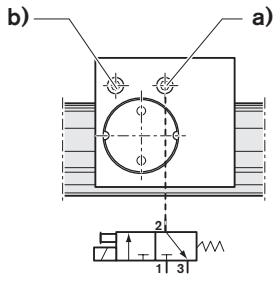
## MKS



# Pneumatic clamping units MK R1810 .42 60



**Circuit for standard air port**




**1** Air port
**2** Working connections
**3** Venting

**Note**

- Can be used on all SNS roller guide rails.

**Clamps with pressure**

- Maximum pneumatic operating pressure: 8 bar
- Operating temperature range t: 0 – 70°C

**Instruction for mounting**

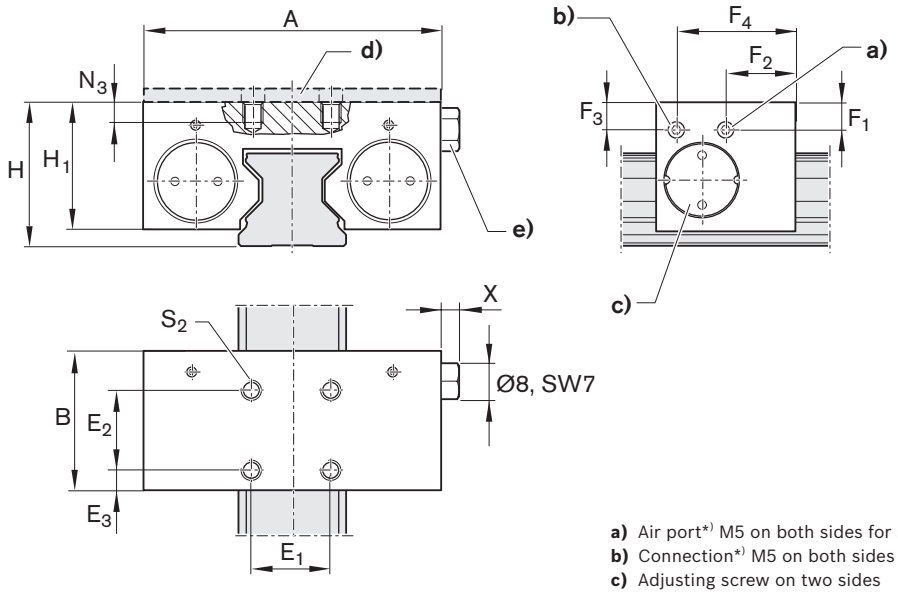
- Make sure the connection structure is rigid.
- Use only purified air. The prescribed filter mesh size is 25 µm.
- Observe the mounting instructions prior to start-up.

⚠ Observe the safety instructions on clamping and braking units.

**Technical data**

| Size | Material number | Pneumatic holding force[1] (N) | Air consumption (normal liter) ($dm^3$/stroke) Air port | Mass (kg) |
|---|---|---|---|---|
| **25** | R1810 242 60 | 1200 | 0.021 | 0.45 |
| **35** | R1810 342 60 | 2000 | 0.031 | 0.88 |
| **45** | R1810 442 60 | 2250 | 0.041 | 1.70 |
| **55** | R1810 542 60 | 2250 | 0.041 | 1.95 |
| **65** | R1810 642 60 | 2250 | 0.041 | 2.68 |

**1)** Holding force at 6 bar. The inspection is done in a mounted state with a lubricated layer (ISO-VG 68).



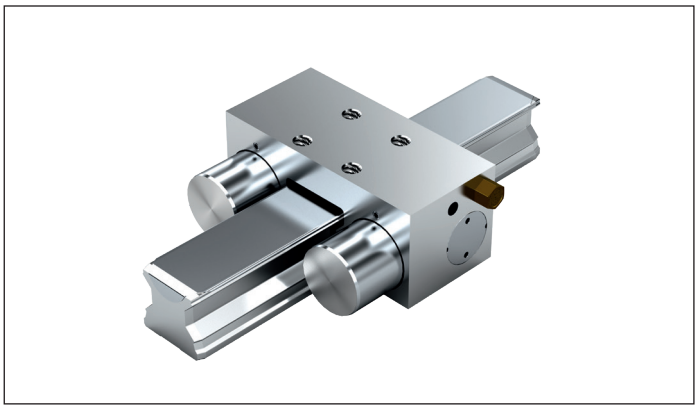

**a)** Air port*) M5 on both sides for release pressure
**b)** Connection*) M5 on both sides for air filter
**c)** Adjusting screw on two sides
**d)** Spacer plate (accessory) for MK
**e)** Air filter: Connection M5 (possible on two sides)
*) Only one connection needed
All connections sealed upon delivery.

**Dimensions (mm)**

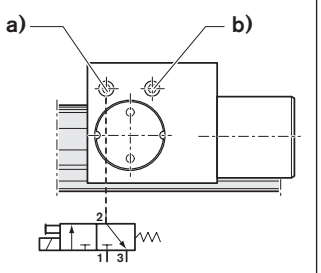
| Size | A | B | $E_1$ | $E_2$ | $E_3$ | $F_1$ | $F_2$ | $F_3$ | $F_4$ | H | $H_1$[1)] | $N_3$ | $S_2$ | X |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **25** | 75 | 35 | 20 | 20 | 5.0 | 6.5 | 17.5 | 6.5 | 30.0 | 36 | 32.5 | 8.0 | M6 | 5.5 |
| **35** | 100 | 39 | 24 | 24 | 7.5 | 11.0 | 14.5 | 12.0 | 24.5 | 48 | 44.0 | 10.0 | M8 | 5.5 |
| **45** | 120 | 49 | 26 | 26 | 11.5 | 14.5 | 19.5 | 14.5 | 29.5 | 60 | 52.0 | 15.0 | M10 | 5.5 |
| **55** | 128 | 49 | 30 | 30 | 9.5 | 17.0 | 19.5 | 17.0 | 29.5 | 70 | 57.0 | 15.0 | M10 | 5.5 |
| **65** | 138 | 49 | 30 | 30 | 9.5 | 14.5 | 19.5 | 14.5 | 29.5 | 90 | 73.5 | 20.0 | M10 | 5.5 |

**1)** For roller runner block .H. (High) spacer plate required.

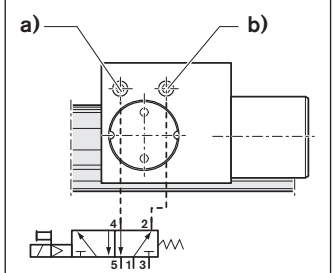
# Pneumatic clamping units MKS
# R1810 .40 60



**Circuitry[1] for standard air port**




**Circuitry[2] for air-plus port**




**1** Air port
**2** Working connections
**3** Venting

**Note**

- Can be used on all SNS roller guide rrails.

**Clamps without pressurization (spring energy)**

- Minimum release pressure 5.5 bar
- Maximum pneumatic operating pressure: 8 bar
- Operating temperature range t: 0 – 70°C

**Instruction for mounting**

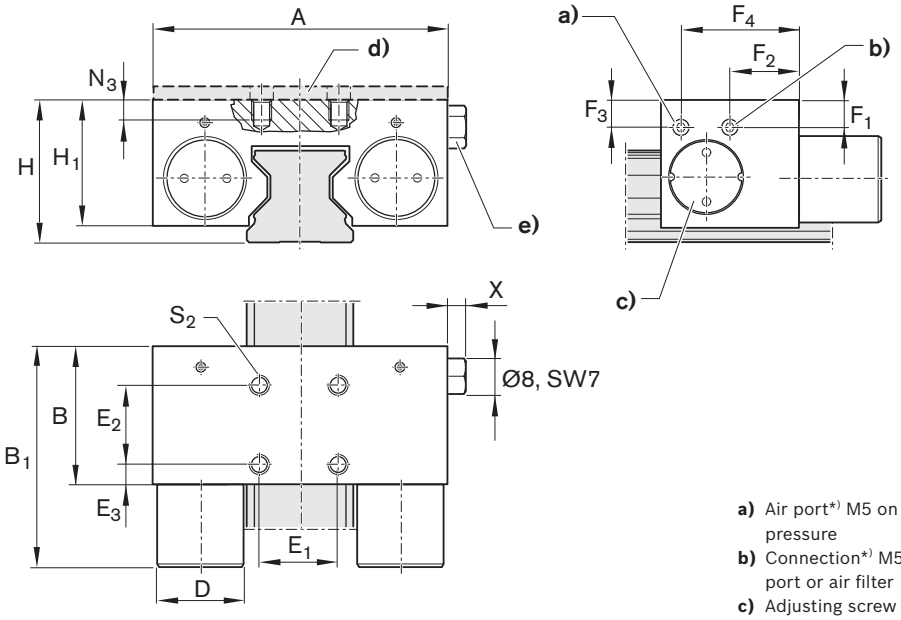
- Make sure the connection structure is rigid.
- Use only purified air. The prescribed filter mesh size is 25 µm.
- Observe the mounting instructions prior to start-up.

⚠ Observe the safety instructions on clamping and braking units.

**Technical data**

| Size | Material number | Holding force, spring energy[1] (N) | | Air consumption (normal liter) ($dm^3$/stroke) | | Mass (kg) |
|---|---|---|---|---|---|---|
| | | Air port | with air-plus port[2] | Air port | Air-plus port | |
| **25** | R1810 240 60 | 750 | 1500 | 0.021 | 0.068 | 0.50 |
| **35** | R1810 340 60 | 1250 | 3250 | 0.031 | 0.129 | 1.00 |
| **45** | R1810 440 60 | 1450 | 3300 | 0.041 | 0.175 | 1.84 |
| **55** | R1810 540 60 | 1450 | 3300 | 0.041 | 0.175 | 2.08 |
| **65** | R1810 640 60 | 1450 | 3300 | 0.041 | 0.175 | 2.86 |

**1)** Holding force achieved by spring energy. The inspection is done in a mounted state with a lubricated layer (ISO-VG 68).
**2)** Increased holding force by additional air admission at air-plus port with 6.0 bar. Switching via 5/2- or 5/3-way directional control valve.




**a)** Air port*) M5 on both sides for release pressure
**b)** Connection*) M5 on both sides for air-plus port or air filter
**c)** Adjusting screw on two sides
**d)** Spacer plate (accessory) for MKS
**e)** Air filter: Connection M5 (possible on two sides)
*) Only one connection needed
All connections sealed upon delivery.

**Dimensions (mm)**

| Size | A | $A_1$ | B | $B_1$ | D | $E_1$ | $E_2$ | $E_3$ | $F_1$ | $F_2$ | $F_3$ | $F_4$ | H | $H_1$[1)] | $H_2$ | $N_3$ | $S_2$ | X |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **25** | 75 | 49.0 | 35 | 56 | 22 | 20 | 20 | 5.0 | 6.5 | 30.0 | 6.5 | 17.5 | 36 | 32.5 | 20.0 | 8.0 | M6 | 5.5 |
| **35** | 100 | 68.0 | 39 | 67 | 28 | 24 | 24 | 7.5 | 12.0 | 24.5 | 11.0 | 14.5 | 48 | 44.0 | 28.0 | 10.0 | M8 | 5.5 |
| **45** | 120 | 78.8 | 49 | 82 | 30 | 26 | 26 | 11.5 | 14.5 | 29.5 | 14.5 | 19.5 | 60 | 52.0 | 35.5 | 15.0 | M10 | 5.5 |
| **55** | 128 | 86.8 | 49 | 82 | 30 | 30 | 30 | 9.5 | 17.0 | 29.5 | 17.0 | 19.5 | 70 | 57.0 | 40.0 | 15.0 | M10 | 5.5 |
| **65** | 138 | 96.8 | 49 | 82 | 30 | 30 | 30 | 9.5 | 14.5 | 29.5 | 14.5 | 19.5 | 90 | 73.5 | 55.0 | 20.0 | M10 | 5.5 |

**1)** For roller runner block .H. (High) spacer plate required.

# Manual clamping units, spacer plates
# Product description

## Manual clamping units

### Areas of application

- Table crossbars and carriage
- Width adjustment
- Stops
- Positioning on optical devices and measuring tables

### Characteristic features

- Simple and safe design in compact format
- Manually operated clamping unit without auxiliary power

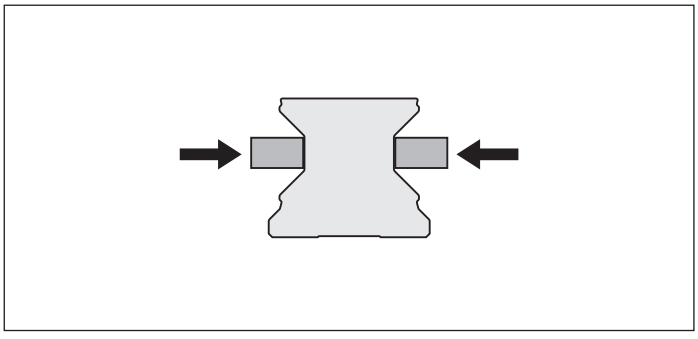
**Special features of HK:**

- 500000 clamping cycles (B10d value)

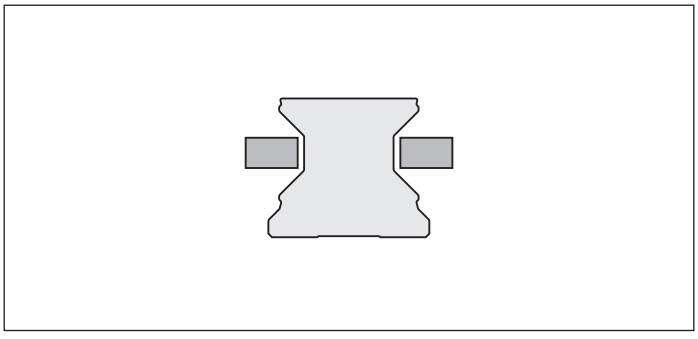
⚠ Observe the safety instructions on clamping and braking units.

### Functional principle of HK

**Pressure via hand lever**
**Clamps with manual pressure**
The clamping profiles are pressed to the web surfaces of the roller guide rail by the hand lever.



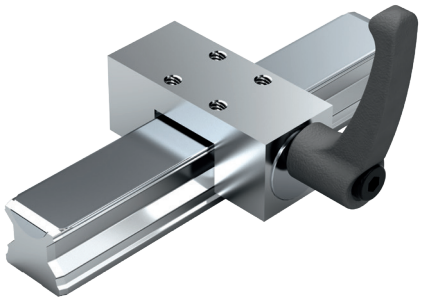
**Decompress by loosening the hand lever**



## Further highlights

- Freely adjustable hand lever
- Symmetrical force application on roller guide rail via floating contact profiles
- Precise positioning
- Holding forces up to 2000 N

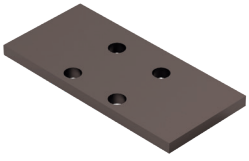
## Manual clamping unit HK



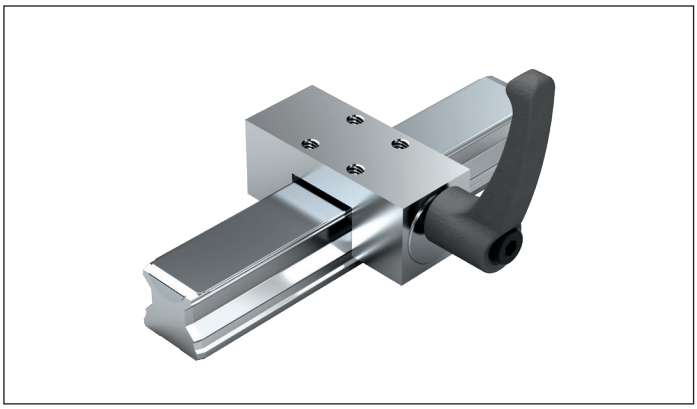
## Spacer plate

**Suitable for mounting with high roller runner block SNH R1821 and SLH R1824.**

**For clamping units MK, MKS and HK**



# Manual clamping unit HK
# R1619 .42 82



**Note**

Can be used on all SNS roller guide rails.

**Manual clamping unit**

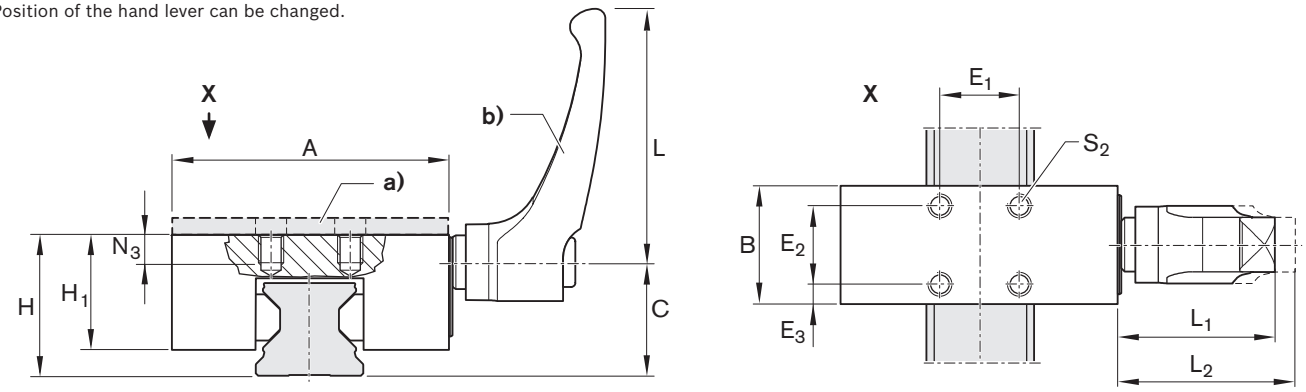
- Operating temperature range t: 0 – 70°C

**Instruction for mounting**

- Make sure the connection structure is rigid.
- Observe the mounting instructions prior to start-up.

**HK**

**a)** Spacer plate (accessory)
**b)** Position of the hand lever can be changed.

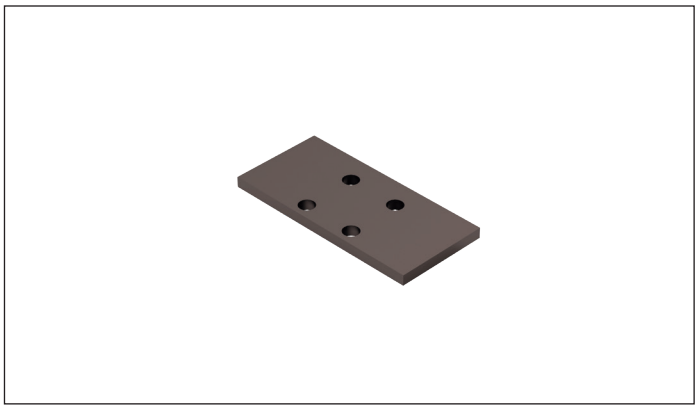



| Size | Material number | Holding force[4] (N) | Tightening torque (Nm) |
|---|---|---|---|
| **25** | R1619 242 82 | 1200 | 7 |
| **35** | R1619 342 82 | 2000 | 15 |
| **45** | R1619 442 82 | 2000 | 15 |
| **55** | R1619 542 82 | 2000 | 22 |
| **65** | R1619 642 82 | 2000 | 22 |

| Size | Dimensions (mm) | | | | | | | | | | | | | Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | $E_1$ | $E_2$ | $E_3$ | H | $H_1$[3] | L | $L_1$ | $L_2$[2] | $N_3$ | $S_2$ | (kg) |
| **25** | 70 | 30 | 29.3 | 20 | 20 | 5.0 | 36 | 29 | 64 | 38.5 | 41.5 | 7 | M6 | 0.43 |
| **35** | 100 | 39 | 38.0 | 24 | 24 | 7.5 | 48 | 41 | 78 | 46.5 | 50.5 | 10 | M8 | 1.08 |
| **45** | 120 | 44 | 47.0 | 26 | 26 | 9.0 | 60 | 48 | 78 | 46.5 | 50.5 | 14 | M10 | 1.64 |
| **55** | 140 | 49 | 56.5 | 30 | 30 | 9.5 | 70 | 51 | 95 | 56.5 | 61.5 | 14 | M14 | 1.71 |
| **65** | 160 | 64 | 69.5 | 35 | 35 | 14.5 | 90 | 66 | 95 | 56.5 | 61.5 | 20 | M16 | 2.84 |

**1)** The inspection is done in a mounted state with a lubricated layer (ISO-VG 68).
**2)** Hand lever disengaged
**3)** For roller runner block .H. (...High ...) Spacer plate necessary

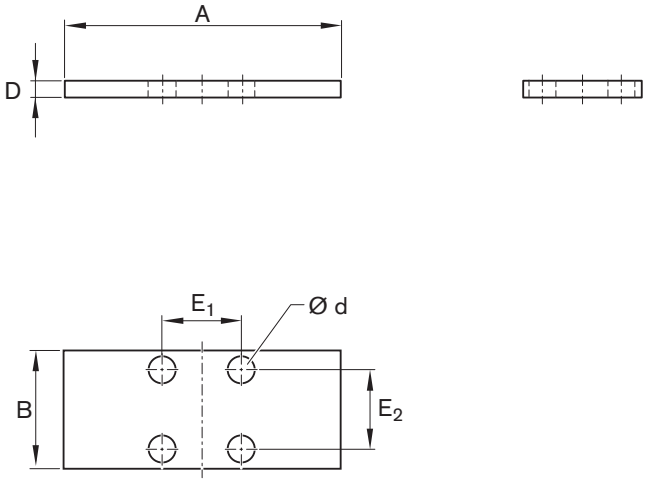
# Spacer plate for MK, MKS, HK



**Note**

Suitable for mounting with high roller runner block SNH R1821 and SLH R1824.

**Spacer plate**




**R1619 .40 65**

**Suitable for clamping units**

- R1810 .42 60 (MK)
- R1810 .40 60 (MKS)

**Material numbers and dimensions**

| Size | Material number | Dimensions (mm) | | | | | | Mass |
|---|---|---|---|---|---|---|---|---|
| | | A | B | D | d | $E_1$ | $E_2$ | (kg) |
| **25** | R1619 240 65 | 75 | 35 | 4 | 6.5 | 20 | 20 | 0.078 |
| **35** | R1619 340 65 | 100 | 39 | 7 | 8.5 | 24 | 24 | 0.202 |
| **45** | R1619 440 65 | 120 | 49 | 10 | 10.5 | 26 | 26 | 0.434 |
| **55** | R1619 540 65 | 128 | 49 | 10 | 10.5 | 30 | 30 | 0.465 |

**R1619 .42 .5**

**Suitable for clamping units**

- R1619 .42 82 (HK)

**Material numbers and dimensions**

| Size | Material number | Dimensions (mm) | | | | | | Mass |
|---|---|---|---|---|---|---|---|---|
| | | A | B | D | d | $E_1$ | $E_2$ | (kg) |
| **25** | R1619 242 85 | 70 | 30 | 4 | 6.5 | 20 | 20 | 0.062 |
| **35** | R1619 340 65 | 100 | 39 | 7 | 8.5 | 24 | 24 | 0.202 |
| **45** | R1619 442 85 | 120 | 44 | 10 | 10.5 | 26 | 26 | 0.387 |
| **55** | R1619 542 85 | 140 | 49 | 10 | 14.5 | 30 | 30 | 0.511 |

# Clamping and braking units
# Safety instructions

## General safety instructions

⚠ During all work on the clamping units, the respective valid instructions by UVV, VDE, the safety notes and instruction for mounting are to be observed!

⚠ The clamping units do not have any guiding function. Therefore, it is not possible to replace a roller runner block with a clamping unit. The ideal position of the clamping unit lies between two roller runner blocks. When using several clamping units, these should be distributed evenly on both roller guide rails in order to attain a maximum rigidity of the overall construction.

⚠ For hydraulic clamping and braking units, the return pressure in the tank line must be lower than 1.5 bar!

⚠ Consider the response times of the clamping and braking units!

⚠ The clamping unit is not intended for securing suspended loads!

⚠ Do not remove the cover of the safety clamping unit - spring under tension!

⚠ The transport lock may only be removed if:
- The hydraulic port has been pressurized with the operating pressure according to instructions.
- The air port has been pressurized with compressed air to at least 4.5 bar (MBPS) or 5.5 bar (UBPS, MKS) according to instructions.

⚠ The clamping unit may only be de-pressurized when the appropriate roller guide rail or transport lock is in position between the contact profiles!

⚠ The use of clamping and braking units is not permissible on roller guide rails with integrated measuring systems.

## Additional notes for clamping and braking units

⚠ The camping and craking units are suitable for usage in safety-critical applications for braking and clamping. The safe function of the total system in which the clamping and braking units are used is primarily defined by the controller for this system. The technical dimensioning of this system and the controller is to be undertaken by the manufacturer of the higher level system, assembly, plant or machine. During this process the safety-related requirements for functional safety are to be observed.

## Additional notes for clamping units

⚠ The unit may not be used as a braking unit! For use only when the axis is at a standstill!

⚠ Pressure may only be applied when the unit is properly mounted on the roller guide rail!

# General instruction for mounting

## General notes

The following mounting notes apply to all roller rail systems.

Rexroth Roller Rail Systems are high-grade quality products. Use with extreme care during transport and mounting. The same care must be taken with cover strips.

All steel parts are protected with anti-corrosion oil.
It is not necessary to remove this oil, provided that the recommended lubricants are used.

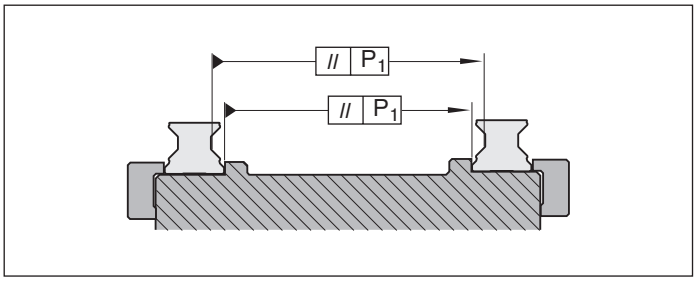
⚠ In overhead mounting orientations (suspended top down) the roller runner block could possibly come away from the roller guide rail due to loss or breakage of rollers. Secure the roller runner block against falling!

## Parallelism offset of the installed rails

**Values measured at the roller guide rails and at the roller runner blocks**
The parallelism offset P1 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.

**Preload classes**
C1, C2, C3

The precision installation unit is a rigid, high-precision surrounding structure. With standard installation, the surrounding structure is of flexible design and it is possible to work with double the tolerance values of the parallelism offset.



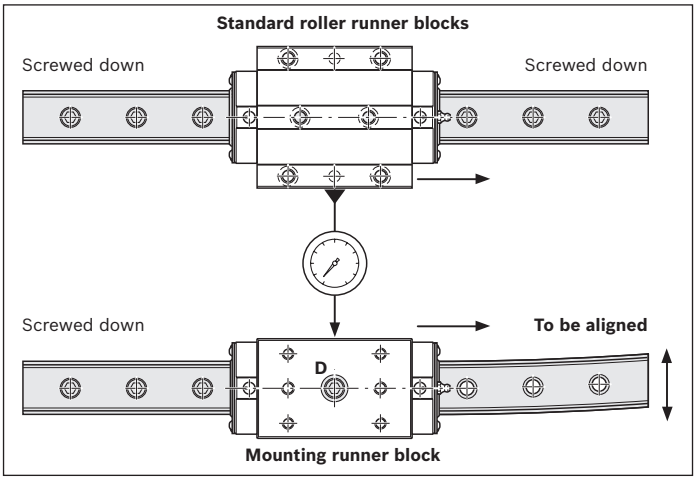

| Roller rail system | Size | Parallelism offset $P_1$ (mm) for preload class | |
|---|---|---|---|
| | | C2 | C3 |
| **Standard** | 25 | 0.007 | 0.005 |
| | 35 | 0.010 | 0.007 |
| | 45 | 0.012 | 0.009 |
| | 55 | 0.016 | 0.011 |
| | 65 | 0.022 | 0.016 |
| **Heavy-duty** | 65FXS | 0.022 | 0.016 |
| | 100 | 0.029 | 0.022 |
| | 125 | 0.034 | 0.026 |

## Mounting with mounting runner block

Use the middle hole D in the mounting runner block to measure exactly in the center, then fasten the roller guide rail with the mounting runner block.

**Aligning the rails**

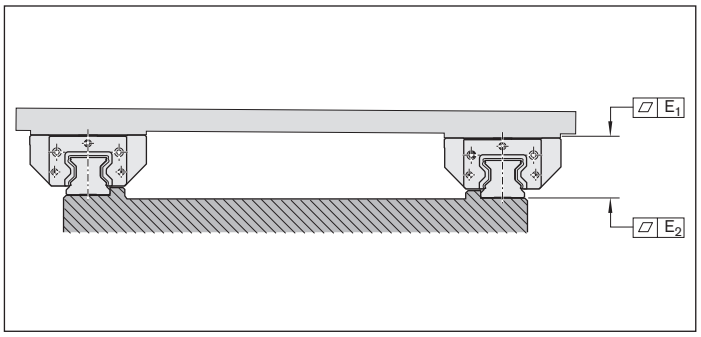
1. Align and mount the first roller guide rail using a graduated straightedge.
2. Set up a mounting bridge with dial gauge between the roller runner blocks.
3. Move both roller runner blocks in parallel until hole D in the mounting runner block is positioned precisely above a mounting hole in the rail.
4. Align the roller guide rail manually until the dial gauge shows the correct dimension.
5. Then screw down the roller guide rail using the mounting runner block.



## Flatness of mounting surfaces

**Flatness of runner block support $E_1$**
See table 1.

**Flatness of guide rail support $E_2$**
Recommendation: Use the values for the parallelism offset $P_1$ of the roller rail system in operation (see diagram 1).




| Size | Flatness (µm) |
|---|---|
| **25** | 0.5 |
| **35** | 0.8 |
| **45** | 1.0 |
| **55** | 1.0 |
| **65** | 2.0 |
| **100** | 2.0 |
| **125** | 3.0 |

**Table 1**

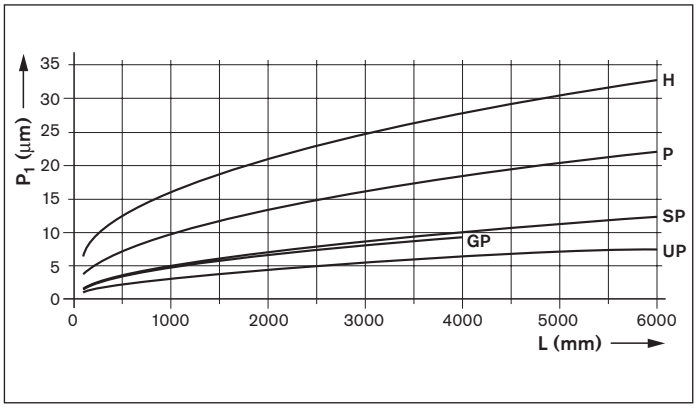


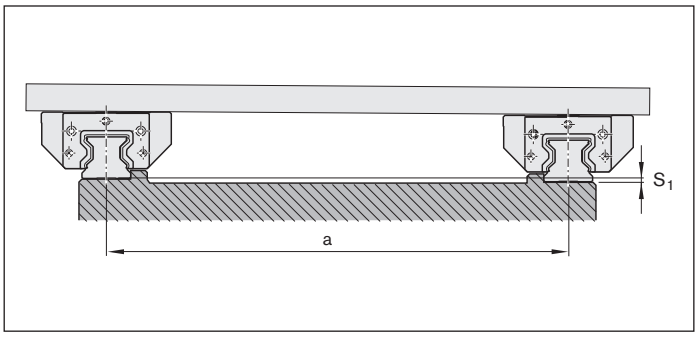

**Diagram 1:**

**Key to illustration**
$P_1$ = Parallelism offset (µm)
L = Rail length (mm)

# General instruction for mounting

## Vertical offset

Provided the permissible vertical offset is kept within the stated tolerances for $S_1$ and $S_2$, its influence on the service life is generally negligible.



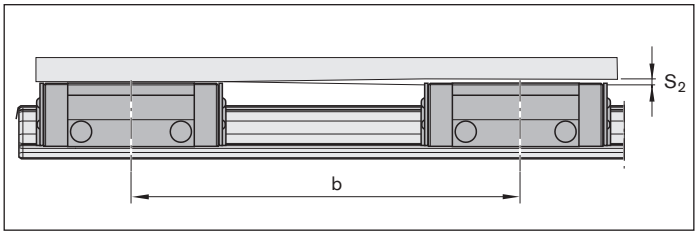

**Permissible vertical offset in transverse direction $S_1$**
The tolerance for dimension H, as given in the table with accuracy classes in the "General product description" section, must be deducted from the permissible vertical offset $S_1$ of the roller guide rails.

| Calculation factor | for preload class | |
|---|---|---|
| | C2 | C3 |
| Y | $1.7 \cdot 10^{-4}$ | $1.2 \cdot 10^{-4}$ |

$$S_1 = a \cdot Y$$

$S_1$ = Permissible vertical offset of the roller guide rails (mm)
a = Center-to-center distance between the roller guide rails (mm)
Y = Calculation factor

**Permissible vertical offset in longitudinal direction $S_2$**
The tolerance "max. difference in dimensions H on the same rail", as given in the table with accuracy classes in the "General product description" section, must be deducted from the permissible vertical offset $S_2$ of the roller runner blocks.




| Calculation factor | for roller runner block length | | |
|---|---|---|---|
| | Normal | Long | Extra long |
| X | $4.3 \cdot 10^{-5}$ | $3.0 \cdot 10^{-5}$ | $2.2 \cdot 10^{-5}$ |

$$S_2 = b \cdot X$$

$S_2$ = Permissible vertical offset of the roller runner block (mm)
b = Center-to-center distance between the roller runner blocks (mm)
X = Calculation factor

**Roller runner block normal**

- Standard roller rail system FNS R1851, SNS R1822, SNH R1821
- Heavy-duty roller rail system FNS R1861

**Roller runner block long**

- Standard roller rail system FLS R1853, SLH R1824 SLS R1823
- Heavy-duty roller rail system FLS R1863

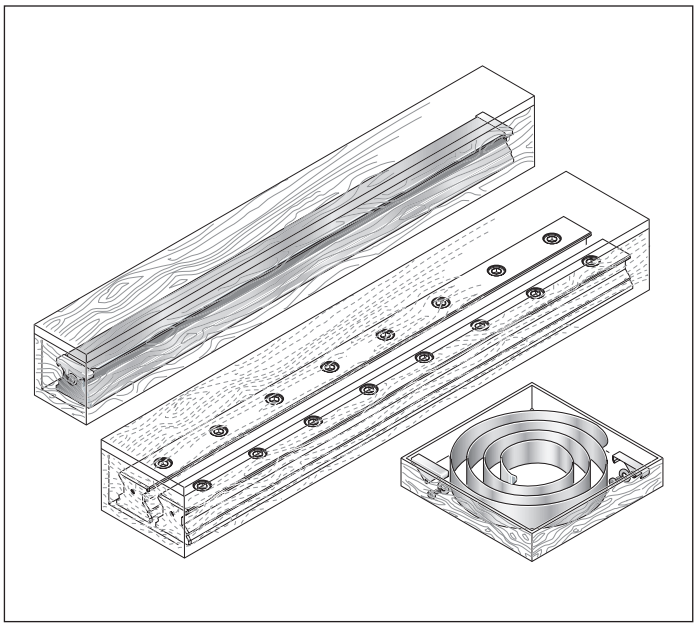
**Roller runner block, extra long**

- Heavy-ruty roller rail system FLS R1854

## Delivery of the roller guide rails

**One-piece roller guide rails**
Standard: One-piece roller guide rails with cover strip are shipped with the cover strip clipped on, both ends angled down and with protective caps screwed on.
If required, roller guide rails can also be supplied with a separate cover strip.

**Composite roller guide rails**
The cover strip and protective caps are supplied complete with screws and washers in a separate packaging unit.
The packaging unit is marked with the same manufacturing job number as the labels on the roller guide rails.
The cover strips have one angled down and one straight end (strip tongue).



# General instruction for mounting

## Composite standard roller guide rails

Matching sections of a composite roller guide rail are identified as such by a label on the packaging. All partial sections of the same rail have the same serial rail number. The numbering is marked on the top of the roller guide rail.

### Notes on gap width

For the maximum gap width at the joints, see table 1.

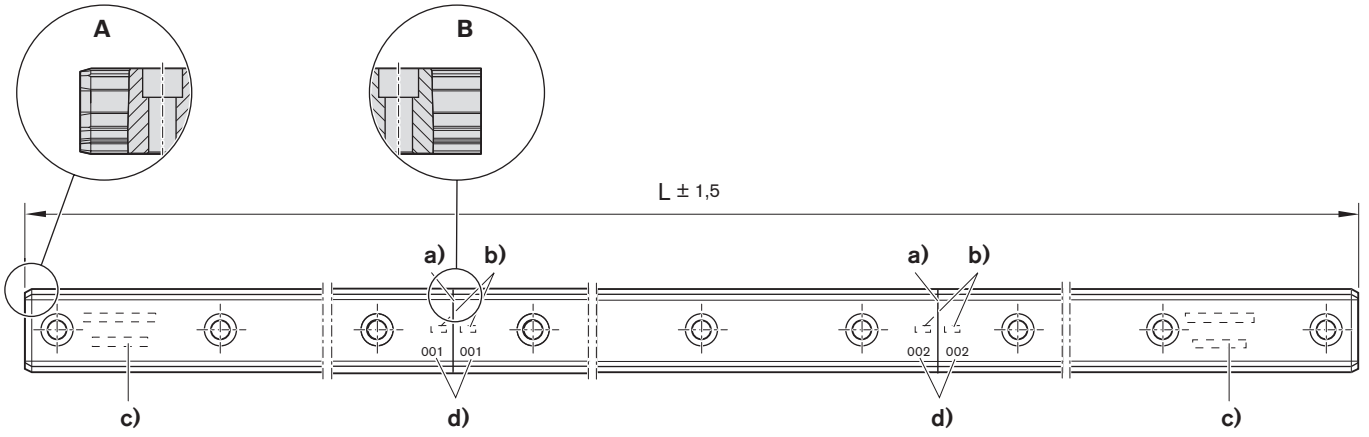
| Size | Gap width (µm) |
|---|---|
| **25** | 40 |
| **35** | 50 |
| **45** | 50 |
| **55** | 60 |
| **65** | 60 |
| **100** | 60 |
| **125** | 60 |

**Table 1**

### Note on cover strip

For composite roller guide rails, a one-piece cover strip to cover the total length L is supplied separately.

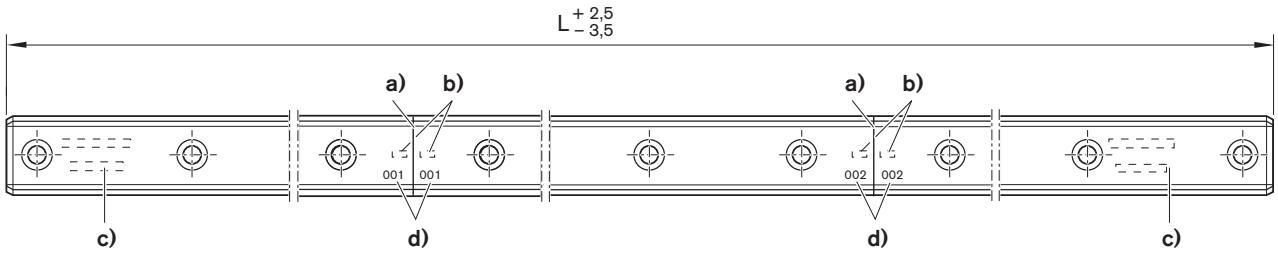
**Composite standard roller guide rail**




**A** Rail end with standard chamfer for sliding on the roller runner block
**B** Rail end with sharp-edged joint (without chamfer)
(Analogously for heavy-duty roller guide rails)

**a)** Joint (sharp-edged, also in hard chrome plated roller guide rails)
**b)** Rail number
**c)** Full rail identification on first and last sections
**d)** Joint identification number

**Heavy-duty roller guide rail**




**a)** Joint (sharp-edged, now also in hard chrome plated roller guide rails)
**b)** Rail number
**c)** Full rail identification on first and last sections
**d)** Joint identification number

**Note on adjacent structures**

Permissible mounting hole tolerances for adjacent structures, see table 2.

For composite roller guide rails, the actual tolerances of the individual sections may sum up. In such case, the fastening bore holes in the connecting structure may lie outside of the tolerances and a rework of the connecting structure may be required.

| Size | Hole position tolerance (mm) |
|---|---|
| **25 – 35** | Ø 0.2 |
| **45 – 100** | Ø 0.3 |
| **125** | Ø 0.6 |

**Table 2**

## Composite roller guide rails with modular joint

Modular roller guide rails by Rexroth offer flexibility in machine concepts which require variable rail lengths with unrestricted travel speed.

**Benefits / special features**

- Variable composite rail lengths may be realized flexibly with rail modules in various lengths.
- Rails may directly join each other.
- Due to the small chamfer (C) at the upper edge of the joint, a procedure with full travel speed is possible.
- Problem-free sliding on of the roller runner block via standard chamfer (A) on the end pieces
- Optimized storage and replaceability

**To be observed/restriction**

- Maximum number of sections: 8
- Problem-free sliding on of the roller runner block via standard chamfer (A) on the end pieces only

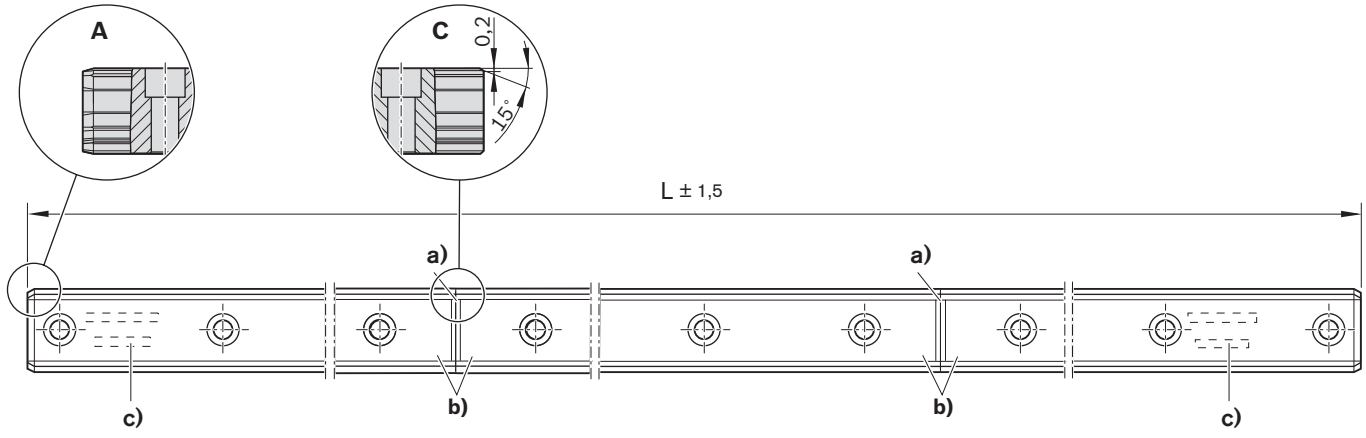
**Order**

Only via direct inquiry.

**Note on Cover**

The fastening bore holes can be closed with a one-piece cover strip with steel mounting hole plugs.
Separately available upon request.

**Roller guide rail with modular joint**




**A** Rail end with standard chamfer for sliding on the roller runner block
**C** Rail end with sharp joint and chamfer (C) on upper edge

**a)** Joint (sharp edges with chamfer (C) also with hard chrome plated roller guide rails)
**b)** No special markings required due to modularity
**c)** Full rail identification on first and last sections

## Composite roller guide rails with universal joint

Composite roller guide rails with universal joint by Rexroth offer flexibility with machine concepts, the variable rail lengths as well as replaceability of roller runner blocks on all sections.

**Benefits / special features**

- Variable composite rail lengths may be realized flexibly with rail modules in various lengths.
- Problem-free sliding on of the roller runner block via standard chamfer (A) on all sections and rail ends possible
- Optimized storage and replaceability

**To be observed/restriction**

- Maximum number of sections: 8
- Rails cannot directly join each other.
  - Maximum travel speed up to 1 m/s
  - Increased contamination possible
- Minimum accuracy class SP

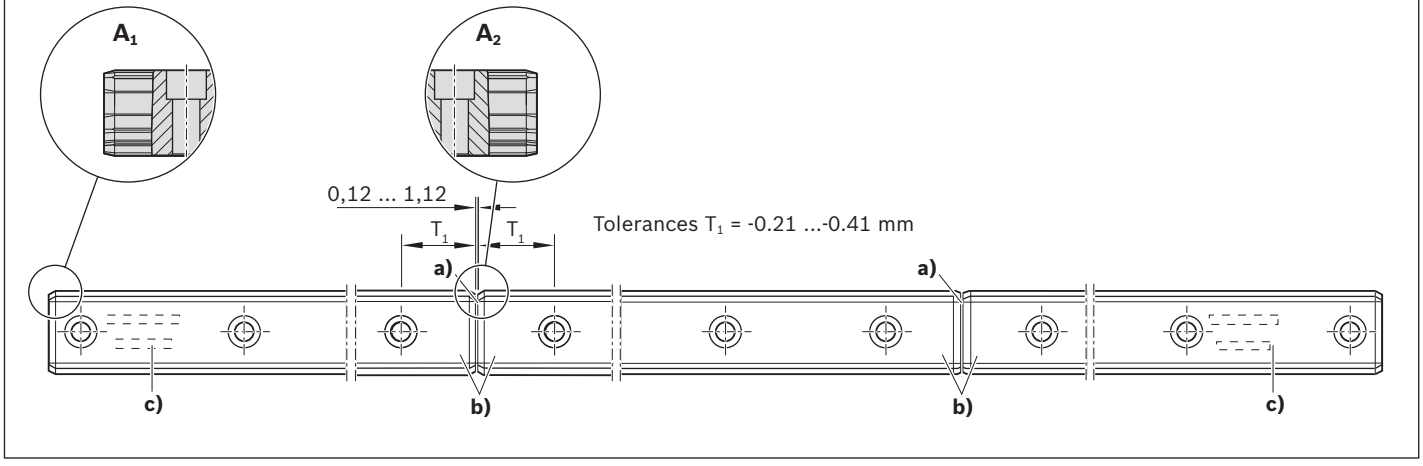
**Order**

Only via direct inquiry.

**Note on Cover**

The fastening bore holes can be closed with a one-piece cover strip with steel mounting hole plugs.
Separately available upon request.

**Roller guide rail with universal joint**

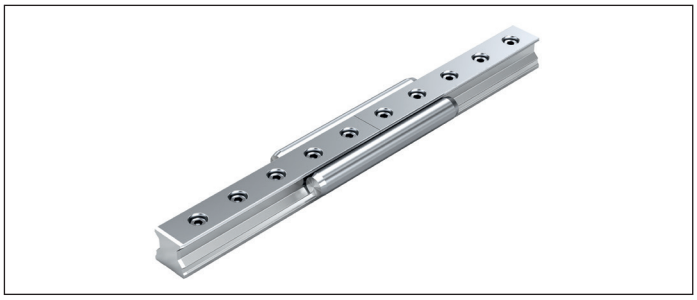



**$A_1$** Rail end with standard chamfer for sliding on the roller runner block
**$A_2$** Rail end with standard chamfer at joint (suitable for sliding on the roller runner block)

**a)** Joint (with standard chamfer (A) also with hard chrome plated roller guide rail)
**b)** No special markings required due to modularity
**c)** Full rail identification on first and last sections

**Adjusting shafts**

The sections of composite roller guide rails can be aligned with the aid of adjusting shafts. For more detailed information see "Accessories" and "Mounting instructions for roller rail systems."



# General instruction for mounting

## Installation examples

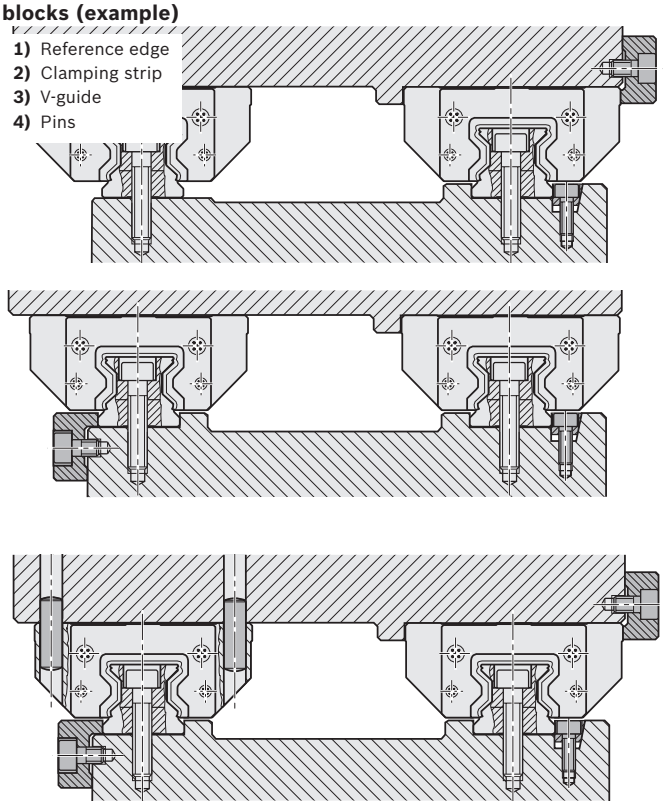
### Roller guide rails

Each roller guide rail has ground reference surfaces on both sides. These are not marked, since each roller guide rail can be mounted to the left or the right of a reference edge (1) for lateral retention.

### Notes

- For roller guide rails without lateral retention during mounting, we recommend using a straightedge to make sure the rails are properly aligned and parallel (recommended limits for permissible side load if no additional lateral retention is provided, see "Fastening").
- Use a mounting runner block (see "General instruction for mounting").
- Install mounting hole plugs or a cover strip (see the relevant mounting instructions)!

**Lateral retention of the roller guide rails and/or roller runner blocks (example)**

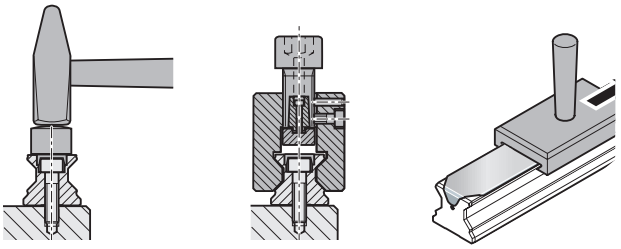



**A** After mounting the roller guide rails, tap the plastic mounting hole plugs into the screw holes with the aid of a plastic pad until flush with the surface of the rail.

**B** To fit steel mounting hole plugs, always use the special mounting tool (see "Accessories"). Equalize any difference in height between roller guide rails! Only then can the roller runner blocks be mounted.

**C** For roller guide rails with cover strip, see "Notes on cover strip."

**Installing mounting hole plugs or a cover strip to the roller guide rail**



**Roller runner rlock**

Standard and heavy-duty roller runner blocks have one ground reference edge (1) on each side (dimension $V_1$ in the dimension drawings).

⚠ Always fit steel mounting hole plugs before pushing on the roller runner blocks! Before mounting the roller runner block, oil or grease the sealing lips of the runner block and the chamfer on the end face of the roller guide rail!

- After sliding the roller runner block onto the rail, check that it moves easily.

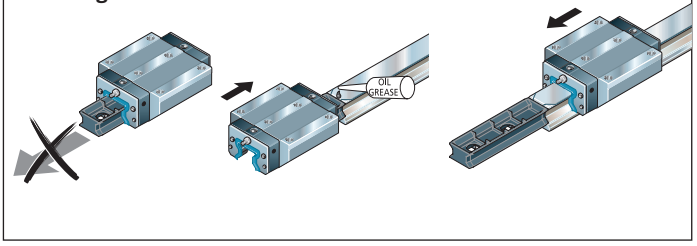
⚠ Then apply initial lubrication (see "Lubrication" section)!

- Detailed information on the mounting steps can be found in "Mounting Instructions for roller rail systems."

⚠ The roller runner block must remain on the transport lock (mounting device) until it is slid onto the roller guide rail! Otherwise, rolling elements (rollers) may be lost!

⚠ Use the transport lock if the roller runner block is removed from the roller guide rail!
When not installed on the rails, the roller runner blocks should always be kept on the transport lock!

**Mounting the roller runner blocks**

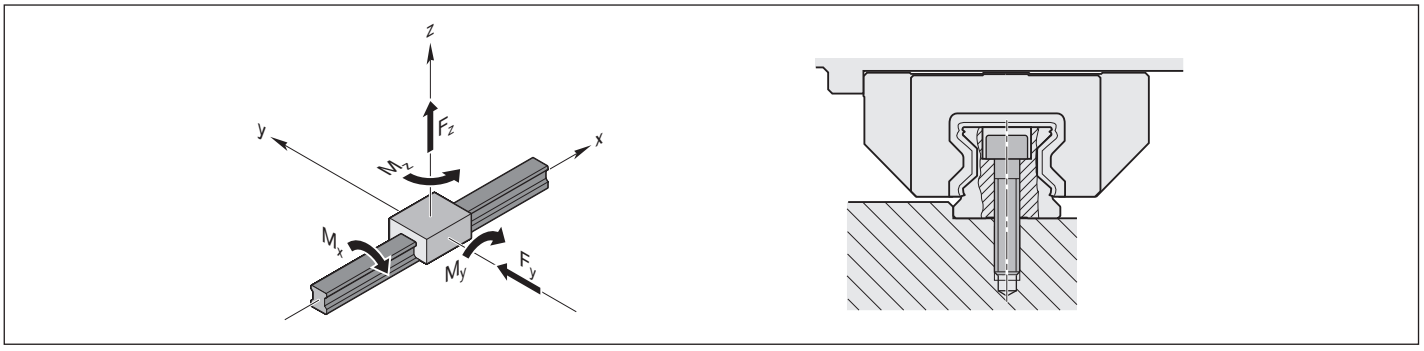


# Fastener

## Calculating threaded connections

The threaded connections in roller blocks and roller guide rails produce maximum traction forces $F_{0\,z\,max}$, maximum static torsional moments $M_{0\,x\,max}$ and maximum static side load $F_{0\,y\,max}$ without stop strips that the linear guide can transfer. The maximum load on a profiled rail system is defined not only by the static load-bearing capacity $C_0$ in accordance with ISO 14728 Part 2 and the static load moments $M_{t0}$ from the rolling contact, but also by the threaded connections.
As a rule, roller runner blocks are fastened using 4 or 6 screws. Roller guide rails have one or two rows of threaded connections in regular distances, whereby the screws located directly under the runner block are subject to the most stress. If the runner block and rail are fastened with screws in the same strength class, the connection between the rail and the mounting base ($O_3$) is critical to the maximum forces and moments that can be transferred.
The values in the table for strength class 8.8 are taken from DIN 637 (August 2013): Ball bearings – safety regulations for dimensioning and operation of profiled rail systems with recirculating rolling elements. Threaded connections with strength classes 10.9 and 12.9 are calculated based on the dimensions in the catalog (screw sizes, runner block lengths, clamping lengths, screw-in depths, bore diameters, rail separations of the rail bore holes, rail width, etc.). Deviant screw connections are to be recalculated according to VDI 2230. The maximum static traction force and maximum static torsional moment of a roller rail system are the product of the sum of the axial forces on the rail screws within the flow of forces. However, for the maximum static side load, the sum of the clamping forces on the rail screws within the flow of forces is crucial.
Input values for calculation:

- Friction coefficient in the thread $\mu_G = 0.125$
- Friction coefficient at the head surface $\mu_K = 0.125$
- Friction coefficient in the joint $\mu_T = 0.125$
- Tightening torque for torque wrench $\alpha_A = 1.5$

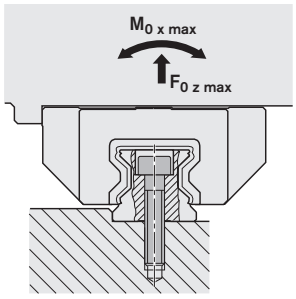



## Maximum static traction forces and torsional moments on profiled rail systems (according to DIN 637)

The threaded connections in a profiled rail system can only transfer a limited traction force $F_z$ or a limited torsional moment $M_x$. If these limit values are exceeded, the guideway will lift off of the adjacent structure or the threaded connection will fail. The permissible values for a guideway are the product of the maximum possible axial force on a threaded connection in the guide rail. Exceeding the indicated maximum static load is not permissible.
The table values are guidelines for the permissible static traction force $F_{0\,z\,max}$ and torsional moments $M_{0\,x\,max}$ that are only applicable when the following conditions are met:

- Screw sizes, screw quantity and connecting dimensions as listed in the catalog
- Same mounting screw strength class for blocks and rails
- Steel adjacent structure
- Traction force $F_z$ or torsional moment $M_x$ are static
- Traction force $F_z$ and torsional moment $M_x$ do not occur simultaneously
- No interaction with side load $F_y$ or longitudinal moment $M_y/M_z$

If these conditions are not met, recalculate the threaded connection in accordance with VDI 2230. If the applied loads are just below the limit values, Bosch Rexroth also recommends checking the threaded connections.




| **Roller rail systems** | | | | |
|---|---|---|---|---|
| **Size** | **Normal length**  | | **Long**  | |
| | **$F_{0\ z\ max}$ (N)** | **$M_{0\ x\ max}$ (Nm)** | **$F_{0\ z\ max}$ (N)** | **$M_{0\ x\ max}$ (Nm)** |
| **Strength class 8.8 (according to DIN 637)** | | | | |
| **25** | 18800 | 200 | 21500 | 230 |
| **35** | 36900 | 590 | 42200 | 680 |
| **45** | 91700 | 1900 | 104800 | 2,200 |
| **55** | 127400 | 3200 | 145600 | 3600 |
| **65** | 176400 | 5200 | 201700 | 6000 |
| **100** | 419400 | 19700 | 479300 | 22500 |
| **125** | 677700 | 39800 | 774500 | 45500 |
| **Strength class 10.9 (calculated with Rexroth roller rail system dimensions)** | | | | |
| **25** | 31700 | 330 | 36300 | 380 |
| **35** | 57000 | 910 | 65100 | 1040 |
| **45** | 140000 | 3000 | 159000 | 3430 |
| **55** | 193000 | 4820 | 220000 | 5510 |
| **65** | 267000 | 8010 | 305000 | 9150 |
| **100** | 612000 | 29700 | 699000 | 33900 |
| **125** | 980000 | 58800 | 1120000 | 67200 |
| **Strength class 12.9 (calculated with Rexroth roller rail system dimensions)** | | | | |
| **25** | 37900 | 400 | 43400 | 460 |
| **35** | 67800 | 1080 | 77500 | 1240 |
| **45** | 165000 | 3550 | 189000 | 4060 |
| **55** | 228000 | 5690 | 260000 | 6500 |
| **65** | 315000 | 9440 | 360000 | 10800 |
| **100** | 719000 | 34900 | 822000 | 39900 |
| **125** | 1151000 | 69100 | 1315000 | 78900 |

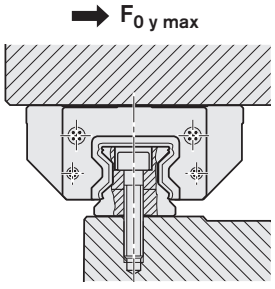
# Fastener

## Maximum static side load without stop strips (according to DIN 637)

For a secure structure, Rexroth recommends using stop strips on the runner block and guide rail. If stop strips are not used on the runner block or the rail, then if a load is applied in the transverse direction the guideway may slip. The clamping force on the threaded connection is too low as soon as the side loads in the table are exceeded. The table values are guidelines for the permissible static side loads $F_{0\,y\,max}$ that are only applicable when the following conditions are met:

- Screw sizes, screw quantity and connecting dimensions as listed in the catalog
- Same mounting screw strength class for blocks and rails
- Steel adjacent structure
- No interaction with traction force $F_z$, torsional moments $M_x$ or longitudinal moments $M_y/M_z$

If these conditions are not met, recalculate the threaded connection in accordance with VDI 2230. If the applied loads are just below the limit values, Bosch Rexroth also recommends checking the threaded connections.




**Roller rail systems**

| | Strength class | | | | | |
|---|---|---|---|---|---|---|
| | 8.8 | | 10.9 | | 12.9 | |
| Size | Normal length | Long | Normal long | Long | Normal length | Long |
| | $F_{0\,y\,max}$ (N) | $F_{0\,y\,max}$ (N) | $F_{0\,y\,max}$ (N) | $F_{0\,y\,max}$ (N) | $F_{0\,y\,max}$ (N) | $F_{0\,y\,max}$ (N) |
| **25** | 1400 | 1600 | 2230 | 2550 | 2660 | 3040 |
| **35** | 2800 | 3200 | 4210 | 4820 | 5010 | 5730 |
| **45** | 6900 | 7900 | 10000 | 11500 | 11900 | 13600 |
| **55** | 9600 | 10900 | 14000 | 16000 | 16500 | 18900 |
| **65** | 13200 | 15100 | 19400 | 22100 | 22800 | 26100 |
| **100** | 31500 | 36000 | 44200 | 50500 | 52000 | 59400 |
| **125** | 50800 | 58100 | 71200 | 81400 | 83700 | 95600 |

## Tightening torques for profiled rail systems (as per DIN 637)

The tightening torques for screw strength class 8.8 correspond to DIN 637. The tightening torques for screw strength classes 10.9 and 12.9 were calculated for the dimensions of a Rexroth roller rail system.

| | **Tightening torques $M_A$ (Nm) for strength class** | | |
|---|---|---|---|
| | **8.8** | **10.9** | **12.9** |
| **M6** | 10 | 15 | 17 |
| **M8** | 25 | 36 | 43 |
| **M10** | 49 | 71 | 83 |
| **M12** | 83 | 120 | 140 |
| **M14** | 130 | 190 | 230 |
| **M16** | 200 | 300 | 350 |
| **M20** | 410 | 590 | 690 |
| **M24** | 700 | 1000 | 1170 |
| **M27** | 1040 | 1480 | 1740 |
| **M30** | 1400 | 1990 | 2330 |

# Fastener

## Reference edges and corner radii

### Combination examples

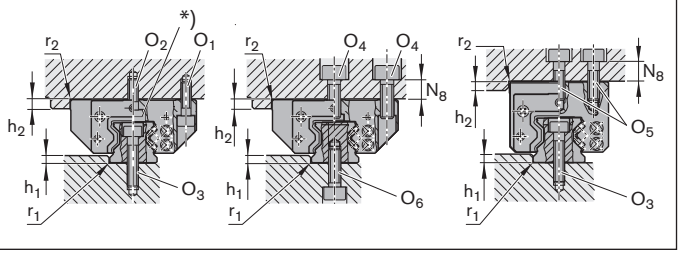
The combinations shown here are examples. Basically, any roller runner block may be combined with any of the roller guide rail types offered.

### Mounting and lubrication

For details of roller runner block and roller guide rail mounting, see "General instruction for mounting."
For initial and in-service lubrication, see "Lubrication."
Detailed information on the mounting steps can be found in "Mounting instructions for roller rail systems."

## Standard roller rail systems

| **Standard roller runner blocks FNS R1851, FLS R1853** (flanged) | | **Standard roller runner blocks SNH R1821, SLH (SLS) R1824** (slimline) |
|---|---|---|
| **Roller guide rails R1805, R1806, R1845, R1846** (for mounting from above) | **Roller guide rails R1807, R1847** (for mounting from below) | **Roller guide rails R1805, R1806, R1845, R1846** (for mounting from above) |




*) Countersink on request

| Size | Dimensions (mm) | | | | | |
|---|---|---|---|---|---|---|
| | $h_{1\ min}$ | $h_{1\ max}$ 1) | $h_2$ | $N_8$ | $r_{1\ max}$ | $r_{2\ max}$ |
| **25** | 3.0 | 4.5 | 5 | 10 | 0.8 | 0.8 |
| **35** | 3.5 | 5.0 | 6 | 13 | 0.8 | 0.8 |
| **45** | 4.5 | 7.0 | 8 | 14 | 0.8 | 0.8 |
| **55** | 7.0 | 9.0 | 10 | 20 | 1.2 | 1.0 |
| **65** | 7.0 | 9.0 | 14 | 22 | 1.2 | 1.0 |

**1)** When using clamping and braking units, please take account of the values $H_1$.

## Mounting screws

⚠ Always make sure the screws are secure where there are high screw loads!

| Size | Screw sizes | | | | | |
|---|---|---|---|---|---|---|
| | Roller runner block | | | | Roller guide rail | |
| | $O_1$ ISO 4762 4 pieces | $O_2$ 1) DIN 6912 2 pieces | $O_4$ 1) 2) ISO 4762 6 pieces | $O_5$ ISO 4762 6 pieces | $O_3$ ISO 4762 | $O_6$ ISO 4762 |
| **25** | M6×20 | M6×16 | M8×20 | M6×18 | M6×30 | M6×20 |
| **35** | M8×25 | M8×20 | M10×25 | M8×25 | M8×35 | M8×25 |
| **45** | M10×30 | M10×25 | M12×30 | M10×30 | M12×45 | M12×30 |
| **55** | M12×40 | M12×30 | M14×40 | M12×35 | M14×50 | M14×40 |
| **65** | M14×45 | M14×35 | M16×45 | M16×40 | M16×60 | M16×45 |

**1)** For fixing of the roller runner block with 6 screws: Tighten the middle screws ($O_2$, $O_4$) to a tightening torque for strength class 8.8
**2)** For fixing of the roller runner block from above with only 4 $O_4$ screws: Permissible side load 1/3 lower, and lower rigidity

## Locating pins

⚠ If the recommended limits for permissible side loads are exceeded, the roller runner block must be additionally fixed!

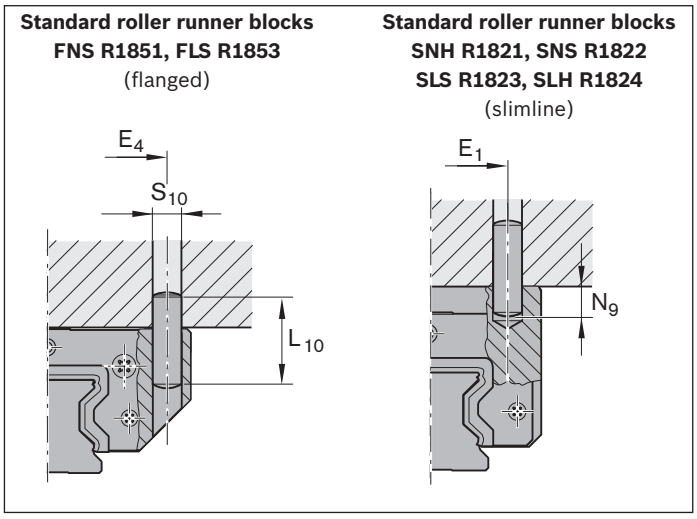
**Possible pin types**

- Tapered pin (hardened) or
- Straight pin DIN ISO 8734

**Notes**

Rough-drilled holes made for production reasons may exist at the recommended pin hole positions on the roller runner block centerline ($Ø < S_{10}$). They are suitable for drilling out.

If the locating pins have to be driven in in another position, dimension $E_2$ must not be exceeded in the longitudinal direction (for dimension $E_2$, see the dimension tables for the individual roller runner block types).
Comply with dimensions $E_1$ and $E_4$!




| Size | Dimensions (mm) | | | | |
|---|---|---|---|---|---|
| | $E_1$ | $E_4$ | $L_{10}$ 1) | $N_{9\ max}$ | $S_{10}$ 1) |
| **25** | 35 | 55 | 32 | 9 | 6 |
| **35** | 50 | 80 | 40 | 13 | 8 |
| **45** | 60 | 98 | 50 | 18 | 10 |
| **55** | 75 | 114 | 60 | 19 | 12 |
| **65** | 76 | 140 | 60 | 22 | 14 |

**1)** Tapered pin (hardened) or straight pin (ISO 8734)

# Fastener

## Reference edges and corner radii

**Mounting and lubrication**

For details of roller runner block and roller guide rail mounting, see "General instruction for mounting."

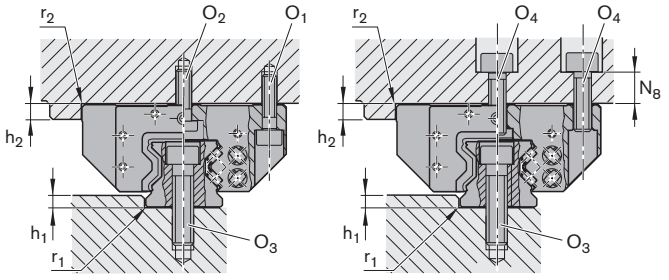
To facilitate the mounting of heavy-duty roller runner blocks on the rail, a mounting aid is available on request (see "Accessories").

For initial and in-service lubrication, see "Lubrication."

Detailed information on the mounting steps can be found in "Mounting instructions for roller rail systems."

## Heavy-duty roller rail systems

**Heavy-duty roller runner blocks FNS R1861, FLS 1863**
**Roller guide rails R1835, 1865**
(for mounting from above)




| Size | Dimensions (mm) | | | | | |
|---|---|---|---|---|---|---|
| | $h_{1\,min}$ | $h_{1\,max}$ | $h_2$ | $N_8$ | $r_{1\,max}$ | $r_{2\,max}$ |
| **100** | 10 | 14 | 18 | 30 | 1.8 | 1.3 |
| **125** | 15 | 20 | 23 | 40 | 1.8 | 1.8 |

## Mounting screws

⚠ Always make sure the screws are secure where there are high screw loads!

| Size | Screw sizes | | | |
|---|---|---|---|---|
| | Roller runner block | | | Roller guide rail |
| | $O_1$ ISO 4762 6 pieces | $O_2$[1] DIN 6912 3 pieces | $O_4$[1) 2)] ISO 4762 9 pieces | $O_3$ ISO 4762 |
| **100** | M16×60 | M16×55 | M20×60 | M24×100 |
| **125** | M24×85 | M24×70 | M27×80 | M30×120 |

**1)** When fastening the roller runner block with 9 screws: Tighten the centerline screws $O_2$ or $O_4$ along the roller guide rail with the tightening torque for strength class 8.8

**2)** For fixing the roller runner block from above with only 6 $O_4$ screws: Permissible side load 1/3 lower, and lower rigidity

# Note on lubrication

- The service life of the roller rail systems crucially depends on the lubrication. For this purpose, the documentation, especially the chapter on lubrication, must be read and understood completely.
- The operator is responsible for the selection and adequate supply of an appropriate lubricant to the roller rail system. These notes do not exempt the operator from the individual examination of the conformity and suitability of the lubricant for its application.
- For recommended lubricants, see the chapter "Notes on Dynalub".
- Rexroth roller rail systems are delivered filled with an anti-corrosion agent (sufficient for mounting and start-up). Immediately after mounting the roller runner blocks (before start-up), make sure the system has sufficient initial lubrication (basic lubrication). All roller runner blocks are designed for both grease lubrication and for oil lubrication.

⚠ To safeguard the supply of lubricant the lube fittings from the chapter "Accessories" must be used. When using other lube fittings it must be ensured that they are identical to Rexroth lube fittings (M6x8).

⚠ If using a progressive lubrication system, with grease lubrication, please pay attention to the minimum dosing amount for relubrication stated in table 5.

⚠ We recommend carrying out initial lubrication separately using a grease gun before connecting to the central lubrication system.
If using a central lubrication system, you must make sure that all the pipes and elements are filled with lubricant and do not contain any air pockets until they are connected to the consumer (roller runner block).
The number of pulses results from the partial amounts and the piston distributor size.

- **With fluid grease lubrication according to table 5**
- **With oil lubrication according to table 8**

⚠ The seals on the roller runner block must be oiled or greased with the respective lubricant before mounting.

⚠ If using different lubricants than the ones specified, relubrication intervals may be shorter and performance may decrease with short stroke and load ratio; in addition, chemical interactions can take place between the plastics, lubricants and preservative agents. Single-line central lubrication systems also need to be able to pump these lubricants.

⚠ Lubricant reservoirs should contain an agitator to ensure the lubricant can flow (avoids hardening in the reservoir).

⚠ Do not use lubricants with solid particles (e.g. graphite or $MoS_2$).

⚠ In the case of relubrication, it is not possible to change from grease to oil lubrication.

⚠ If environmental factors such as contamination, vibrations, impact loads, etc. are present, we recommend shorter lubrication intervals. Even under normal operating conditions, relubrication is required every 2 years due to grease aging.

- If your application involves more demanding environmental requirements (such as clean room, vacuum, food industry applications, increased exposure to fluids or aggressive media, extreme temperatures), please consult us. Each application must be considered on its own merits in order to chose the most appropriate lubricant. Be sure to have all the information concerning your application at hand when contacting us. Pay attention to the chapter "Maintenance".
- Rexroth recommends piston distributors by SKF. These should be installed as close as possible to the lube ports of the roller runner blocks. Long lines and small line diameters should be avoided, and the lines should be laid on an upward slant. Install the lines at a gradient.
- Refer to the chapter entitled "Accessories for roller runner blocks" for a selection of possible lube ports (in this connection, contact the manufacturer of your lubrication system too).
- If other consumers are connected to the single-line lubrication system, the weakest link in this chain determines the lubrication cycle.

**Note on the use of roller rail rystems in tool machines**

Roller Rail Systems in tool machines are usually operated using metalworking fluids and lubricants. The user alone is responsible for selecting suitable metalworking fluids.

⚠ An unfavorable selection of metalworking fluids may lead to damage to the roller rail system. We recommend getting in touch with the manufacturer of the coolant/lubricant. Bosch Rexroth accepts no liability. Lubricant and metalworking fluids must be coordinated.

⚠ When applying metalworking fluids at the start or after a relatively long standstill, carry out 2 to 5 lubrication pulses in succession. When the system is in operation, 3 to 4 pulses per hour are recommended, irrespective of the distance traveled. If possible, carry out lubrication in one lubricating stroke. Carry out cleaning cycles (see "Maintenance").

**Note on load ratio**

The load ratio F/C is the quotient of the equivalent dynamic load on bearing F (making allowance for the preload C) divided by the dynamic load capacity C (see "General Technical Data and Calculations").

## Notes on Dynalub

(Approved for EU countries only; not approved outside of the EU)

⚠ Pay attention to the assignment of the roller rail system.

Under conventional environmental conditions, this short-fibred, homogeneous grease is ideally suited for the lubrication of linear elements:

- With loads up to 50 % C
- With short-stroke applications > 1 mm
- For the permissible travel speed range of roller rail systems

The product and safety data sheets can be found on our website at: www.boschrexroth.com.

**Dynalub 510**

**Grease lubricant**

Features:

- Lithium-based, high-performance grease of NLGI grade 2 according to DIN 51818 (KP2K-20 according to DIN 51825)
- Good water resistance
- Corrosion protection
- Temperature range: –20 to +80 °C

Material numbers for Dynalub 510:

- R3416 037 00 (cartridge 400 g)
- R3416 035 00 (hobbock 25 kg)

**Alternative greases:**

- Castrol Longtime PD2 or Elkalub GLS 135/N2

**Dynalub 520**

**Liquid grease**

Features:

- Lithium-based, high-performance grease of NLGI grade 00 according to DIN 51818 (GP00K-20 according to DIN 51826)
- Good water resistance
- Corrosion protection
- Temperature range: –20 to +80 °C

Material numbers for Dynalub 520:

- R3416 043 00 (cartridge 400 g)
- R3416 042 00 (bucket 5 kg)

**Alternative greases:**

- Castrol Longtime PD00 or Elkalub GLS 135/N00

## Notes on lubricant oil

We recommend **Shell Tonna S3 M 220** or similar products with the following properties:

- Special demulsifying oil CLP or CGLP as per DIN 51517-3 for machine bed tracks and tool guides
- A blend of highly refined mineral oils and additives
- Can be used even when mixed with significant quantities of metalworking fluids

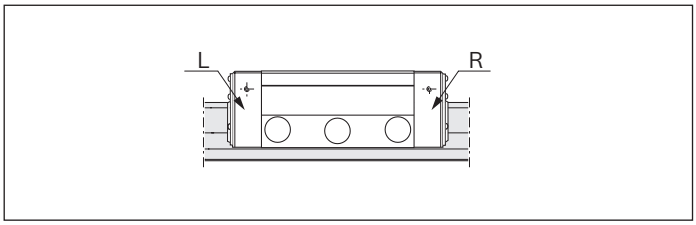
# Lubrication RSHP

## Grease lubrication with grease guns or progressive lubrication systems

⚠ See "Note on lubrication".

**Grease lubricant**
We recommend using **Dynalub 510.** For further information, please refer to chapter “Note on lubrication”.

**Lube connection, end cap**
L = Left
R = Right




## Initial lubrication of the roller runner block (basic lubrication)

**Stroke ≥ 2 · Roller runner block $B_1$ (normal stroke)**

- One lube connection per roller runner block, attach optionally on the left or right end cap and lubricate!

The initial lubrication is done three times with the partial quantities according to table 1:

1. Pre-lubricate the roller runner blocks with an initial partial amount according to table 1 by slowly applying pressure to the grease gun.
2. Slide the roller runner block back and forth by at least three times the runner block length for three full cycles.
3. Repeat steps 1 and 2 twice more.
4. Check whether a film of grease is visible on the roller guide rail.

**Stroke < 2 · Roller runner block length $B_1$ (short stroke)**

- Two lube connections per roller runner block, attach one connection optionally on the left and right end cap and lubricate!

The initial lubrication is done three times for each connection with the partial quantities according to table 1:

1. Pre-lubricate the roller runner blocks for each connection with an initial partial amount according to table 1 by slowly applying pressure to the grease gun.
2. Slide the roller runner block back and forth by at least three times the runner block length for three full cycles.
3. Repeat steps 1 and 2 twice more.
4. Check whether a film of grease is visible on the roller guide rail.

| Size | Initial lubrication amount | | |
|---|---|---|---|
| | Normal stroke<br>Partial quantity ($cm^3$) | Short stroke<br>Partial quantity per connection ($cm^3$) | |
| | | L | R |
| **25** | 0.8 (3×) [1)] | 0.8 (3×) [1)] | 0.8 (3×) [1)] |
| **35** | 0.9 (3×) | 0.9 (3×) | 0.9 (3×) |
| **45** | 1.0 (3×) | 1.0 (3×) | 1.0 (3×) |
| **55** | 2.5 (3×) | 2.5 (3×) | 2.5 (3×) |
| **65** | 2.7 (3×) | 2.7 (3×) | 2.7 (3×) |

**Table 1**

**1)** When using the lubrication plate (see "Lubrication plate for size 25"), the initial lubrication quantity should be increased by at least 0.24 $cm^3$.

## Relubrication of roller runner blocks

**Stroke ≥ 2 · Roller runner block $B_1$ (normal stroke)**

- Once the relubrication interval according to Diagram 1 has been reached, relubricate the amount stated in table 2.

**Stroke < 2 · Roller runner block length $B_1$ (short stroke)**

- Once the relubrication interval according to Diagram 1 has been reached, relubricate the amount stated in table 2 for each lube connection.
- For each lubrication circuit, the roller runner block should be moved with a lubricating stroke of 3 roller runner block length $B_1$; as minimum lubricating stroke, however, roller runner block length $B_1$ should be moved.

| Size | Relubrication quantity | | |
|---|---|---|---|
| | Normal stroke ($cm^3$) | Short stroke per connection ($cm^3$) | |
| | | L | R |
| **25** | 0.8 | 0.8 | 0.8 |
| **35** | 0.9 | 0.9 | 0.9 |
| **45** | 1.0 | 1.0 | 1.0 |
| **55** | 2.5 | 2.5 | 2.5 |
| **65** | 2.7 | 2.7 | 2.7 |

**Table 2**

**Calculating the lubrication cycle**

$f_{KSS}$ = 1 (no coolant/lubricant charge)

$f_{KSS}$ = 5 (with coolant/lubricant charge)

$$S_T = s \cdot \frac{1}{f_{KSS}}$$

**Load-dependent relubrication intervals**

**This applies to the following conditions:**

- Maximum speed: $v_{max}$ = 4 m/s
- No media pressurization
- Standard seals
- Ambient temperature: T = 10 – 40 °C

**Key**

| | | | |
|---|---|---|---|
| s | = | Lubrication interval as travel distance | (km) |
| C | = | Dynamic load capacity | (N) |
| $F_m/C$ | = | Dynamic equivalent load on bearing | (N) |
| $S_T$ | = | Lubrication cycle for the application | |
| $f_{KSS}$ | = | Correction factor for coolant/lubricant | |

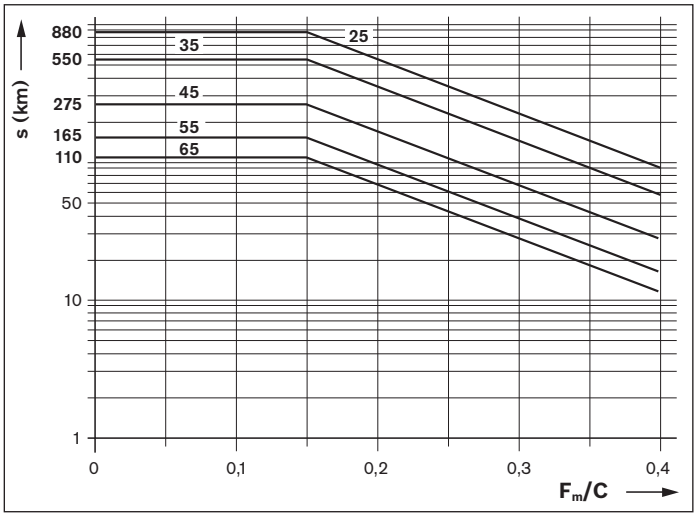



**Fig. 1 Relubrication interval**

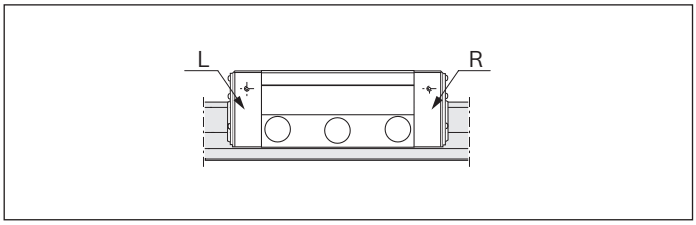
# Lubrication RSHP

## Liquid grease lubrication (NLGI 00) with central lubrication system via piston distributor

⚠ See "Note on lubrication".

**Liquid grease**
We recommend using **Dynalub 520.** For further information, please refer to chapter “Note on lubrication”.

**Lube connection, end cap**
L = Left
R = Right




### Initial lubrication of the roller runner block (basic lubrication)

We recommend carrying out initial lubrication separately using a grease gun before connecting to the central lubrication system. If the initial lubrication is implemented via the central lubrication system, it is to be ensured that all lines and piston distributors are filled. The number of pulses then results from the partial amounts as per table 3 and the piston distributor size according to table 5.

**Stroke ≥ 2 · Roller runner block $B_1$ (normal stroke)**

- One lube connection per roller runner block, attach optionally on the left or right end cap and lubricate!

The initial lubrication is done three times with the partial quantities according to table 3:

1. Pre-lubricate the roller runner blocks with an initial partial amount according to table 3 by slowly applying pressure to the grease gun.
2. Slide the roller runner block back and forth by at least three times the runner block length for three full cycles.
3. Repeat steps 1 and 2 twice more.
4. Check whether a film of grease is visible on the roller guide rail.

**Stroke < 2 · Roller runner block length $B_1$ (short stroke)**

- Two lube connections per roller runner block, attach one connection optionally on the left and right end cap and lubricate!

The initial lubrication is done three times for each connection with the partial quantities according to table 3:

1. Pre-lubricate the roller runner blocks for each connection with an initial partial amount according to table 3 by slowly applying pressure to the grease gun.
2. Slide the roller runner block back and forth by at least three times the runner block length for three full cycles.
3. Repeat steps 1 and 2 twice more.
4. Check whether a film of grease is visible on the roller guide rail.

| Size | Initial lubrication amount | | |
|---|---|---|---|
| | Normal stroke Partial quantity ($cm^3$) | Short stroke Partial quantity per connection ($cm^3$) | |
| | | L | R |
| **25** | 0.8 (3×) [1)] | 0.8 (3×) [1)] | 0.8 (3×) [1)] |
| **35** | 0.9 (3×) | 0.9 (3×) | 0.9 (3×) |
| **45** | 1.0 (3×) | 1.0 (3×) | 1.0 (3×) |
| **55** | 1.4 (3×) | 1.4 (3×) | 1.4 (3×) |
| **65** | 2.7 (3×) | 2.7 (3×) | 2.7 (3×) |

**Table 3**

**1)** When using the lubrication plate (see "Lubrication plate for size 25"), the initial lubrication quantity should be increased by at least 0.24 $cm^3$.

**Key**

| | | | |
|---|---|---|---|
| s | = | Lubrication interval as travel distance | (km) |
| C | = | Dynamic load capacity | (N) |
| $F_m/C$ | = | Dynamic equivalent load on bearing | (N) |
| $S_T$ | = | Lubrication cycle for the application | |
| $f_{KSS}$ | = | Correction factor for coolant/lubricant | |

## Relubrication of roller runner blocks

**Stroke ≥ 2 · Roller runner block $B_1$ (normal stroke)**

- Apply the minimum quantity according to table 4 at the lube connection until the relubrication interval (figure 2) has been reached.

**Stroke < 2 · Roller runner block length $B_1$ (short stroke)**

- Apply the minimum quantity according to table 4 for each lube connection until the relubrication interval (figure 2) has been reached. The number of pulses required for this purpose and the lubrication cycle are to be determined in a similar way as the relubrication (normal stroke).
- For each lubrication circuit, the roller runner block should be moved with a lubricating stroke of 3 roller runner block length $B_1$; as minimum lubricating stroke, however, roller runner block length $B_1$ should be moved.

| Size | Relubrication quantity | | |
|---|---|---|---|
| | Normal stroke ($cm^3$) | Short stroke per connection ($cm^3$) | |
| | | L | R |
| **25** | 0.8 | 0.8 | 0.8 |
| **35** | 0.9 | 0.9 | 0.9 |
| **45** | 1.0 | 1.0 | 1.0 |
| **55** | 1.4 | 1.4 | 1.4 |
| **65** | 2.7 | 2.7 | 2.7 |

**Table 4**

**Notes:** The number of pulses that is needed for this is the integer quotient of the minimum relubrication amount according to table 4 and the selected piston distributor size according to table 5. The smallest permissible piston distributor size does not depend on the installation position. The lubrication cycle according to formula 1 is the result from the division of the relubrication interval (according to figure 2) by the determined number of pulses (cf. dimensioning example).

**Calculating the lubrication cycle**

$f_{KSS}$ = 1 (no coolant/lubricant charge)

$f_{KSS}$ = 5 (with coolant/lubricant charge)

$$n_i = V_{grease} / K_v$$

$$S_T = s \cdot \frac{1}{f_{KSS}} \cdot \frac{1}{n_i}$$

**Formulas 1**

**Load-dependent relubrication intervals**

**This applies to the following conditions:**

- Maximum speed: $v_{max}$ = 4 m/s
- No media pressurization
- Standard seals
- Ambient temperature: T = 10 – 40 °C

**Key**

| | | |
|---|---|---|
| $n_i$ | = Number of pulses | (-) |
| $V_{Grease}$ | = Relubrication according to table 4 | ($cm^3$) |
| $K_v$ | = Piston distributor size according to table 5 | ($cm^3$) |
| $s_T$ | = Lubrication cycle | (km) |
| s | = Relubrication interval according to figure 2 | (km) |
| C | = Dynamic load capacity | (N) |
| $F_m/C$ | = Dynamic equivalent load on bearing | (N) |
| $S_T$ | = Lubrication cycle for the application | |
| $f_{KSS}$ | = Correction factor for coolant/lubricant | |

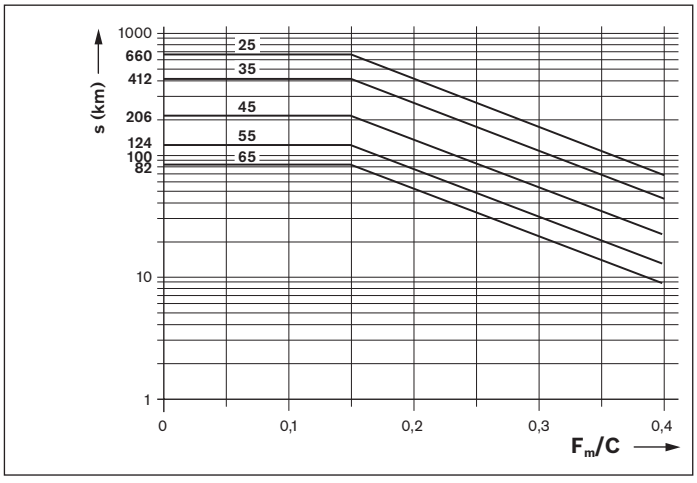



**Fig. 2: Relubrication interval**

| Material number roller runner block | Smallest permissible piston distributor size (≙ Minimum pulse quantity) for each connection ($cm^3$) | | | | | |
|---|---|---|---|---|---|---|
| | Size | 25 | 35 | 45 | 55 | 65 |
| **R18 .. ... 2X** | | 0.06 | 0.1 | 0.1 | 0.1 | 0.2 |

**Table 5**

# Liquid grease lubrication (NLGI 00) with central lubrication system via piston distributor (continued)

**Calculation example:**

Given data:

| | |
|---|---|
| **Roller runner block** | 1851 323 2X |
| **Dynamic load capacity C** | 61000 N |
| **Dynamic equivalent load on bearing** | 18300 N |
| **Stroke** | 500 mm |
| **Average linear speed $v_m$** | 1.0 m/s |
| **Temperature T** | 20 – 30 °C |
| **Installation position** | Horizontal |
| **Lubrication** | Introduction lubrication system for all axes with liquid grease Dynalub 520 |
| **Exposure to contaminants** | no exposure to media, chips, dust |

Calculation of the relubrication quantity:

| | | |
|---|---|---|
| **Normal stroke or short stroke** | Normal stroke | Stroke ≥ 2 • Roller runner block length B1<br>500mm ≥ 2 x 79.6mm<br>500mm ≥ 159.2mm<br>i.e. normal stroke applies! |
| **Initial lubrication amount** | 0.90 $cm^3$ (3×) | according to table 3 |
| **Relubrication quantity** | $V_{Grease}$ = 0.90 $cm^3$ | according to table 4 |
| **Permissible piston distributor size:** | $K_v$ = 0.1 $cm^3$ | according to table 5 |
| **Number of pulses** | $n_i = V_{grease}$ / KV = 0.90 $cm^3$ / 0.1 = 9 | according to formulas 1 |
| **Load ratio** | F/C = 18300 N/61000 N = 0.30 | |
| **Relubrication interval** | s = 100 km | according to image 2 |
| **Lubrication cycle** | $s_T = s / n_i$ = 100 Km / 9 = 11.11 km | according to formulas 1 |
| **Exposure to contaminants** | $s_T = s \cdot \frac{1}{1} \cdot \frac{1}{9}$ | no exposure to media:<br>Shavings, dust ... |

Result:

A minimum quantity of 0,1 $cm^3$ of Dynalub 520 is to be supplied to the roller runner block every 11.11 km.

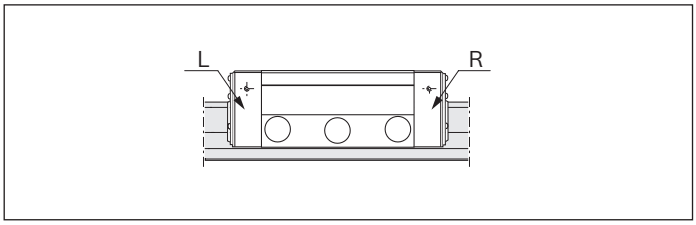
# Lubrication RSHP

## Oil lubrication with single-line piston distributor systems

⚠ See "Note on lubrication".

**Lubricant oil**
We recommend **Shell Tonna S3 M220.** For further information, please refer to chapter “Note on lubrication”.

**Lube connection, end cap**
L = Left
R = Right




### Initial lubrication of the roller runner block (basic lubrication)

We recommend carrying out initial lubrication separately using a manual grease gun before connecting to the central lubrication system. If the initial lubrication is implemented via the central lubrication system, it is to be ensured that all lines and piston distributors are filled.

**Stroke ≥ 2 · Roller runner block $B_1$ (normal stroke)**

- One lube connection per roller runner block, attach optionally on the left or right end cap and lubricate!

The initial lubrication is done two times with the partial quantity according to table 6:

1. Oil the roller runner block with the initial partial quantity according to table 6.
2. Slide the roller runner block back and forth by at least three times the runner block length for three full cycles.
3. Repeat steps 1 and 2 once again.
4. Check whether a film of grease is visible on the roller guide rail.

| Size | Initial lubrication amount | | |
|---|---|---|---|
| | Normal stroke Partial quantity ($cm^3$) | Short stroke Partial quantity per connection ($cm^3$) | |
| | | L | R |
| **25** | 0.8 (3x) [1] | 0.8 (3x) [1] | 0.8 (3x) [1] |
| **35** | 1.3 (2x) | 1.3 (2x) | 1.3 (2x) |
| **45** | 1.5 (2x) | 1.5 (2x) | 1.5 (2x) |
| **55** | 2.0 (2x) | 2.0 (2x) | 2.0 (2x) |
| **65** | 4.0 (2x) | 4.0 (2x) | 4.0 (2x) |

**Table 6**

**1)** When using the lubrication plate (see "Lubrication plate for size 25"), the initial lubrication quantity should be increased by at least 0.24 $cm^3$.

**Stroke < 2 · Roller runner block length $B_1$ (short stroke)**

- Two lube connections per roller runner block, attach one connection optionally on the left and right end cap and lubricate!

The initial lubrication is done two times for each connection with the partial quantities according to table 6:

1. Oil the roller runner block for each connection with the initial partial quantity according to table 6.
2. Slide the roller runner block back and forth by at least three times the runner block length for three full cycles.
3. Repeat steps 1 and 2 once again.
4. Check whether a film of grease is visible on the roller guide rail.

**Key**

| | | | |
|---|---|---|---|
| s | = | Lubrication interval as travel distance | (km) |
| C | = | Dynamic load capacity | (N) |
| $F_m/C$ | = | Dynamic equivalent load on bearing | (N) |
| $S_T$ | = | Lubrication cycle for the application | |
| $f_{KSS}$ | = | Correction factor for coolant/lubricant | |

## Relubrication of roller runner blocks

**Stroke ≥ 2 · Roller runner block $B_1$ (normal stroke)**

- Apply the minimum quantity according to table 7 at the lube connection until the relubrication interval has been reached.

**Stroke < 2 · Roller runner block length $B_1$ (short stroke)**

- Two lube connections per roller runner block, attach one connection optionally on the left and right end cap and lubricate!
- Apply the minimum quantity according to table 7 at the lube connection until the relubrication interval has been reached. Calculate the actually introduced quantity as described under relubrication (normal stroke) and adapt the piston distributor size and/or cycle time, if applicable.
- During the lubrication circuit, the roller runner block should be moved with a lubricating stroke of 3 roller runner block length $B_1$; as minimum lubricating stroke, however, roller runner block length $B_1$ should be moved.

| Size | Relubrication quantity $V_{min}$ | | |
|---|---|---|---|
| | Normal stroke ($cm^3$) | Short stroke per connection ($cm^3$) | |
| | | L | R |
| **25** | 1.2 | 1.2 | 1.2 |
| **35** | 1.3 | 1.3 | 1.3 |
| **45** | 1.5 | 1.5 | 1.5 |
| **55** | 2.0 | 2.0 | 2.0 |
| **65** | 4.0 | 4.0 | 4.0 |

**Table 7**

**Notes**

The actually applied quantity in the relubrication interval is calculated taking into account the mean travel speed, the selected piston distributor and the cycle time according to formula 2. The calculated quantity must be greater than or equal to the relubrication quantity according to table 7. If it is lower, either the cycle time is to be reduced and/or a larger piston distributor is to be selected. The calculation process according to formula 2 is to be repeated.

**Calculation of the relubrication quantity**

$f_{KSS}$ = 1 (no coolant/lubricant charge)

$f_{KSS}$ = 5 (with coolant/lubricant charge)

$$V_{oil} = \text{rounding-off } \frac{16.67 \cdot S_{AP} \cdot K_v}{v_m \cdot t_T} \geq V_{min} \text{ according to table 7}$$

**Calculation of the relubrication interval for the application**

$$S_{AP} = s \cdot \frac{1}{f_{KSS}}$$

**Formulas 2**

**Load-dependent relubrication intervals**

**This applies to the following conditions:**

- Maximum speed: $v_{max}$ = 4 m/s
- No media pressurization
- Standard seals
- Ambient temperature: T = 10 – 40 °C

**Key**

| | | | |
|---|---|---|---|
| $V_{oil}$ | = | introduced relubrication quantity in the Relubrication interval | ($cm^3$) |
| $V_{min}$ | = | Relubrication quantity | ($cm^3$) |
| s | = | Relubrication interval according to figure 3 | (km) |
| $K_v$ | = | Piston distributor size according to table 8 | ($cm^3$) |
| $V_m$ | = | mean travel speed (including waiting times) | (m/s) |
| $t_T$ | = | Cycle time of the central lubrication system | (min.) |
| C | = | Dynamic load capacity | (N) |
| $F_m/C$ | = | Dynamic equivalent load on bearing | (N) |
| $S_{AP}$ | = | Relubrication interval for the application | |
| $f_{KSS}$ | = | Correction factor for coolant/lubricant | |

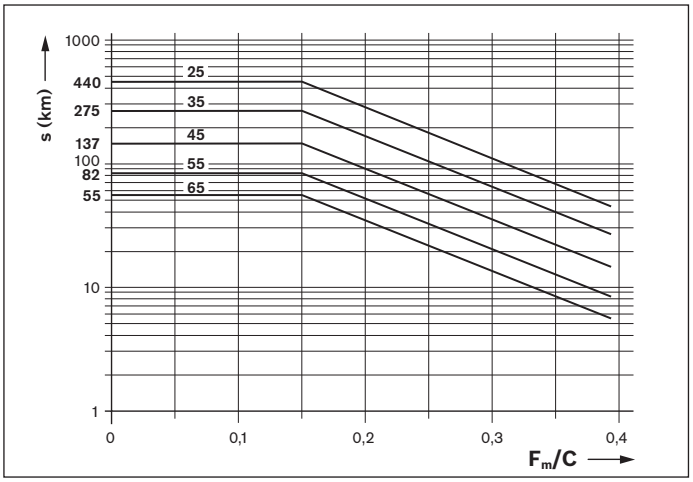
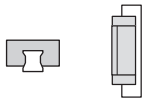
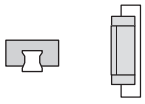
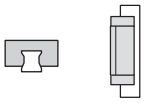
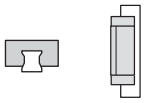


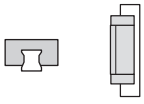

**Fig. 3: Relubrication interval**

# Lubrication RSHP

## Oil lubrication with single-line piston distributor systems (continued)

| Size roller runner block | 25 | | | 35 | | |
|---|---|---|---|---|---|---|
| **Installation position** |  |  |  |  |  |  |
| **Cycle time (min)** | **Permissible piston distributor size (cm³)** | | | | | |
| **up to 30** | 0.06 | 0.06 | 0.10 | 0.06 | 0.06 | 0.10 |
| **30 to 60** | 0.10 | 0.10 | 0.20 | 0.10 | 0.10 | 0.20 |
| **60 to 90** | 0.16 | 0.16 | 0.40 | 0.16 | 0.16 | 0.40 |
| **90 to 120** | 0.20 | 0.20 | 0.40 | 0.20 | 0.20 | 0.40 |
| **> 120** | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |

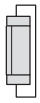
| Size roller runner block | 45 | | | 55 | | |
|---|---|---|---|---|---|---|
| **Installation position** |  |  |  |  |  |  |
| **Cycle time (min)** | **Permissible piston distributor size (cm³)** | | | | | |
| **up to 30** | 0.10 | 0.10 | 0.16 | 0.16 | 0.16 | 0.20 |
| **30 to 60** | 0.16 | 0.16 | 0.40 | 0.20 | 0.20 | 0.40 |
| **60 to 90** | 0.20 | 0.20 | 0.40 | 0.40 | 0.40 | 0.60 |
| **90 to 120** | 0.40 | 0.40 | 0.40 | 0.60 | 0.60 | 0.60 |
| **> 120** | 0.40 | 0.40 | 0.40 | 0.60 | 0.60 | 0.60 |

| Size roller runner block | 65 | | |
|---|---|---|---|
| **Installation position** |  |  |  |
| **Cycle time (min)** | **Permissible piston distributor size (cm³)** | | |
| **up to 30** | 0.20 | 0.20 | 0.40 |
| **30 to 60** | 0.40 | 0.40 | 0.60 |
| **60 to 90** | 0.60 | 0.60 | 1.00 |
| **90 to 120** | 1.00 | 1.00 | 1.00 |
| **> 120** | 1.00 | 1.00 | 1.00 |

Installation positions:

 Horizontal

 Horizontal over head

 Vertical

 Wall attachment

**Table 8**

When using lube connections which are not offered by Rexroth for the use at the RSHP, an extension for all installation positions is urgently required.

**Calculation example:**

Given data:

| | |
|---|---|
| **Roller runner block** | 1851 323 2X |
| **Dynamic load capacity C** | 61000 N |
| **Dynamic equivalent load on bearing** | 18300 N |
| **Stroke** | 500 mm |
| **Average linear speed $v_m$** | 1.0 m/s |
| **Temperature T** | 20 – 30 °C |
| **Installation position** | Horizontal |
| **Lubrication** | Single-line distributor system for all axes with Shell Tonna S3 M220 oil. |
| **Cycle time of the central lubrication system $t_T$** | 20 min |
| **Exposure to contaminants** | Exposure to cooling lubricants |

Calculation of the relubrication quantity:

| | | |
|---|---|---|
| **Normal stroke or short stroke** | Normal stroke | Stroke ≥ 2 • Roller runner block length B1<br>500mm ≥ 2 x 79.6mm<br>500mm ≥ 159.2mm<br>i.e. normal stroke applies! |
| **Initial lubrication amount** | 1.30cm³ (2x) | according to table 6 |
| **Relubrication quantity** | $V_{oil}$ = 1.30 cm³ | according to table 7 |
| **Piston distributor size** | $K_v$ = 0.06 cm³ | according to table 8 |
| **Load ratio** | F/C = 18300 N/61000 N = 0.30 | |
| **Relubrication interval with exposure to cooling lubricants** | $S_{AP} = 60\ km \cdot \frac{1}{f_{KSS}} = 60\ km \cdot \frac{1}{5} = 12\ km$ | according to figure 3 |
| **Introduced relubrication quantity in the relubrication interval:** | $V_{oil} = \text{rounding-off}\ \frac{16.67 \cdot S_{AP} \cdot K_v}{v_m \cdot t_T}$<br>$V_{oil} = \text{rounding-off}\ \frac{16.67 \cdot 12 \cdot 0.06}{1.0 \cdot 20} = 0.6\ cm^3$ | according to formulas 2 |

Result:

The lubrication dimensioning with a piston distributor of 0.06 cm³ is **insufficient** since the required relubrication according to table 7 of 1.30 cm³ is undercut in the relubrication interval. The calculation is to be repeated with a larger piston distributor.

| | | |
|---|---|---|
| **Newly selected piston distributor:** | $K_v$ = 0.16 cm³ | |
| **Introduced newly calculated relubrication quantity in the relubrication interval** | $V_{oil} = \text{rounding-off}\ \frac{16.67 \cdot S_{AP} \cdot K_v}{v_m \cdot t_T}$<br>$V_{oil} = \text{rounding-off}\ \frac{16.67 \cdot 12 \cdot 0.16}{1.0 \cdot 20} = 1.6\ cm^3$ | according to formulas 2 |

Result:

The lubrication dimensioning with a piston distributor of 0.16 cm³ is **sufficient** since the required relubrication according to table 7 of 1.30 cm³ is exceeded in the relubrication interval.

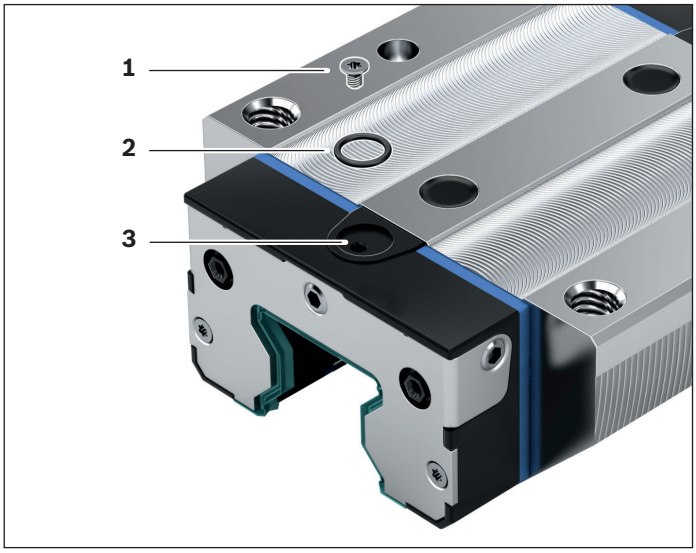
# Lubrication RSHP

## Lubrication from above

### Standard roller runner blocks with open lube connections for lubrication from above

Standard roller runner blocks comprise of a lube port on top which is already opened for lubrication but closed with a screw when being delivered.

- Unscrew the closing screw (1) from the lube port (3).
- Insert the O-ring (2) into the groove (O-ring is included in the scope of delivery of the roller runner block).



# Lubrication for heavy-duty roller rail system

## Grease lubrication with grease guns or progressive lubrication systems

⚠ See "Note on lubrication".

**Grease lubricant**

We recommend using **Dynalub 510.** For further information, please refer to chapter “Note on lubrication”.

### Initial lubrication of the roller runner block (basic lubrication)

**Stroke ≥ 2 · Roller runner block $B_1$ (normal stroke)**

- One lube connection per roller runner block, attach optionally on the left or right end cap and lubricate!

The initial lubrication is done three times with the partial quantities according to table 9:

1. Pre-lubricate the roller runner blocks with an initial partial amount according to table 9 by slowly applying pressure to the grease gun.
2. Slide the roller runner block back and forth by at least three times the runner block length for three full cycles (with size 125 by at least 300 mm).
3. Repeat steps 1 and 2 twice more.
4. Check whether a film of grease is visible on the roller guide rail.

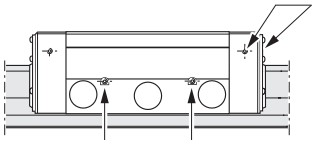
**Stroke < 2 · Roller runner block length $B_1$ (short stroke)**

- Two lube connections per roller runner block, attach one connection optionally on the left and right end cap and lubricate!

The initial lubrication is done three times for each connection with the partial quantities according to table 9:

1. Pre-lubricate the roller runner blocks for each connection with an initial partial amount according to table 9 by slowly applying pressure to the grease gun.
2. up to 4 carry out the process as for the initial lubrication (normal stroke).

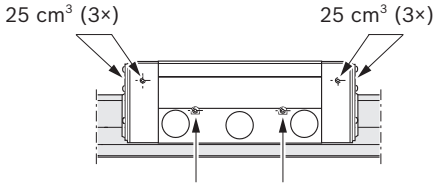
**Initial lubrication, size 125 (normal stroke)**
On a frontal or lateral lube connection, either on the left **or** on the right end cap: 25 $cm^3$ (3×)



**and** at the roller runner block on all four lateral lube connections: for each 7.5 $cm^3$ (3×)

**Fig. 4**

**Initial lubrication, size 125 (short stroke)**
On two lube connections, each on one connection on the left **and** right end cap:




**and** at the roller runner block on all four lateral lube connections: for each 7.5 $cm^3$ (3×)

**Fig. 5**

| Size | Initial lubrication | | |
|---|---|---|---|
| | Normal stroke Partial quantity ($cm^3$) | Short stroke Partial quantity per connection ($cm^3$) | |
| | | left | right |
| **65 (FXS)** | 3.2 (3×) | 3.2 (3×) | 3.2 (3×) |
| **100** | 15.0 (3×) | 15.0 (3×) | 15.0 (3×) |
| **125** | according to figure 4 | Connections left, right **and** lateral according to figure 5 | |

**Table 9**

## Relubrication of roller runner blocks

**Stroke ≥ 2 · Roller runner block $B_1$ (normal stroke)**

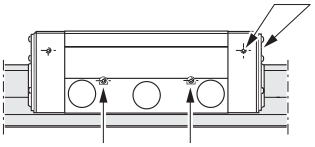
- Once the relubrication interval according to figure 8 has been reached, relubricate the amount stated in table 10.

**Stroke < 2 · Roller runner block length $B_1$ (short stroke)**

- Once the relubrication interval according to figure 8 has been reached, relubricate the amount stated in table 10 for each lube connection.
- For each lubrication circuit, the roller runner block should be moved with a lubricating stroke of 3 roller runner bblock length $B_1$; as minimum lubricating stroke, however, roller runner block length $B_1$ should be moved.

**Relubrication, size 125 (normal stroke)**

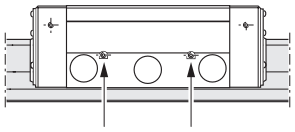
On a frontal or lateral lube connection, either on the left **or** on the right end cap: 55 $cm^3$



**or** at the roller runner block on all four lateral lube connections: for each 15 $cm^3$

**Fig. 6**

**Relubrication, size 125 (short stroke)**



At the roller runner block on all four lateral lube connections: for each 15 $cm^3$

**Fig. 7**

| Size | Relubrication | | |
|---|---|---|---|
| | Normal stroke Partial quantity ($cm^3$) | Short stroke Partial quantity per connection ($cm^3$) | |
| | | left | right |
| **65 (FXS)** | 3.2 | 3.2 | 3.2 |
| **100** | 15.0 | 15.0 | 15.0 |
| **125** | according to figure 6 | Lateral connections according to figure 7 | |

**Table 10**

**Load-dependent relubrication intervals ("dry axes")**

**This applies to the following conditions:**

- Maximum speed: $v_{max}$ = 2 m/s
- No media pressurization
- Standard seals
- Ambient temperature: T = 10 – 40 °C

**Key to illustration**

s = Lubrication interval as travel distance (km)
C = Dynamic load capacity (N)
$F_m/C$ = Dynamic equivalent load on bearing (N)

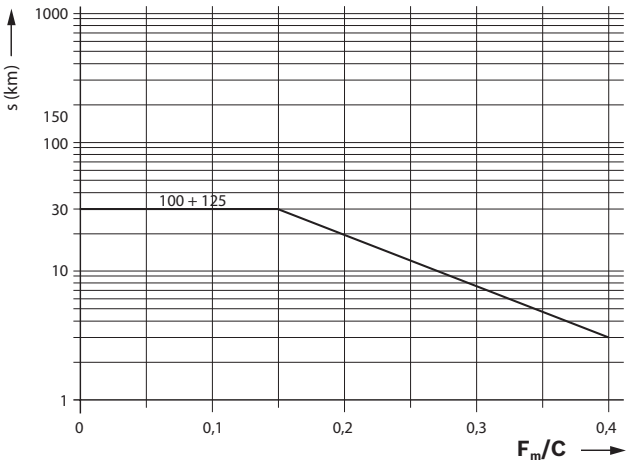



**Fig. 8**

# Lubrication for heavy-duty roller rail system

## Liquid grease lubrication with single-line piston distributor systems

⚠ See "Note on lubrication".

**Liquid grease**

We recommend using **Dynalub 520.** For further information, please refer to chapter “Note on lubrication”.

### Initial lubrication of the roller runner block (basic lubrication)

We recommend carrying out initial lubrication separately using a grease gun before connecting to the central lubrication system. If the initial lubrication is implemented via the central lubrication system, it is to be ensured that all lines and piston distributors are filled. The number of pulses then results from the partial amounts and the piston distributor size according to table 13.

**Stroke ≥ 2 · Roller runner block $B_1$ (normal stroke)**

- One lube connection per roller runner block, attach optionally on the left or right end cap and lubricate!

The initial lubrication is done three times with the partial quantities according to table 11:

1. Pre-lubricate the roller runner blocks with an initial partial amount according to table 11 by slowly applying pressure to the grease gun.
2. Slide the roller runner block back and forth by at least three times the runner block length for three full cycles (with size 125 by at least 300 mm).
3. Repeat steps 1 and 2 twice more.
4. Check whether a film of grease is visible on the roller guide rail.

**Stroke < 2 · Roller runner block length $B_1$ (short stroke)**

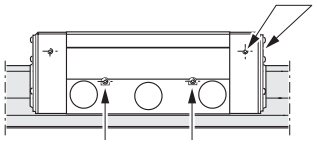
- Two lube connections per roller runner block, attach one connection optionally on the left and right end cap and lubricate!

The initial lubrication is done three times for each connection with the partial quantities according to table 11:

1. Pre-lubricate the roller runner blocks for each connection with an initial partial amount according to table 11 by slowly applying pressure to the grease gun.
2. up to 4 carry out the process as for the initial lubrication (normal stroke).

**Initial lubrication, size 125 (normal stroke)**

On a frontal or lateral lube connection, either on the left **or** on the right end cap: 25 $cm^3$ (3×)

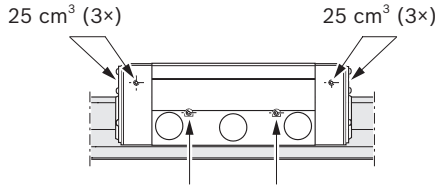


**and** at the roller runner block on all four lateral lube connections: for each 7.5 $cm^3$ (3×)

**Fig. 9**

**Initial lubrication, size 125 (short stroke)**

On two lube connections, each on one connection on the left **and** right end cap:




**and** at the roller runner block on all four lateral lube connections: for each 7.5 $cm^3$ (3×)

**Fig. 10**

| Size | Initial lubrication | | |
|---|---|---|---|
| | Normal stroke Partial quantity (cm3) | Short stroke Partial quantity per connection ($cm^3$) | |
| | | left | right |
| **65 (FXS)** | 3.2 (3×) | 3.2 (3×) | 3.2 (3×) |
| **100** | 15.0 (3×) | 15.0 (3×) | 15.0 (3×) |
| **125** | according to figure 9 | Connections left, right **and** lateral according to figure 10 | |

**Table 11**

## Relubrication of roller runner blocks

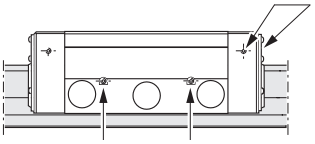
**Stroke ≥ 2 · Roller runner block $B_1$ (normal stroke)**

- Apply the minimum quantity according to table 12 at the lube connection until the relubrication interval (figure 13) has been reached.

**Stroke < 2 · Roller runner block length $B_1$ (short stroke)**

- Apply the minimum quantity according to table 12 for each lube connection until the relubrication interval (figure 13) has been reached.
  The number of pulses required for this purpose and the lubrication cycle are to be determined in a similar way as the relubrication (normal stroke).
- For each lubrication circuit, the roller runner block should be moved with a lubricating stroke of 3 roller runner block length $B_1$; as minimum lubricating stroke, however, roller runner block length $B_1$ should be moved.

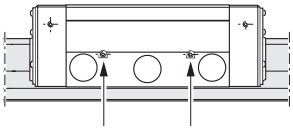
**Relubrication, size 125 (normal stroke)**
On a frontal or lateral lube connection, either on the left **or** on the right end cap: 55 cm³



**or** at the roller runner block on all four lateral lube connections: for each 15 cm³

**Fig. 11**

**Relubrication, size 125 (short stroke)**



At the roller runner block on all four lateral lube connections: for each 15 cm³

**Fig. 12**

| Size | Relubrication | | |
|---|---|---|---|
| | Normal stroke (cm³) | Short stroke per connection (cm³) | |
| | | left | right |
| **65 (FXS)** | 3.2 | 3.2 | 3.2 |
| **100** | 15.0 | 15.0 | 15.0 |
| **125** | according to figure 11 | Lateral connections according to figure 12 | |

**Table 12**

**Notes**
The number of pulses required for this purpose is the integer quotient of the minimum relubrication amount as per table 12 and the smallest permissible piston distributor size (minimum pulse quantity) according to table 13. The smallest permissible piston distributor size also depends on the installation position.

The lubricating cycle time is then the result of dividing the relubrication interval (according to figure 13) by the determined number of pulses (see dimensioning example).

**Load-dependent relubrication intervals ("dry axes")**

**This applies to the following conditions:**

- Maximum speed: $v_{max}$ = 2 m/s
- No media pressurization
- Standard seals
- Ambient temperature: T = 10 – 40 °C

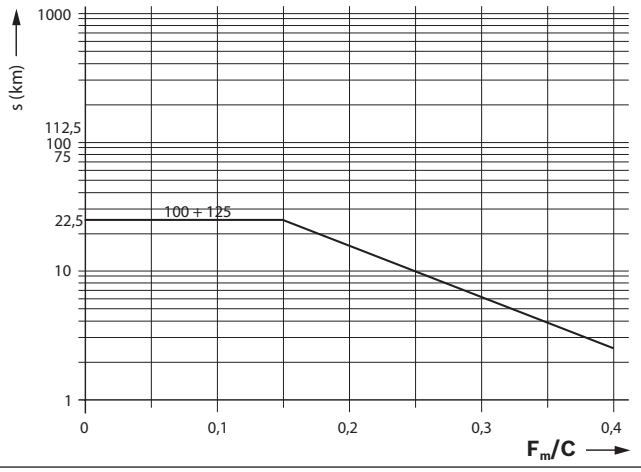



**Fig. 13**

**Key to illustration**

| | | | |
|---|---|---|---|
| s | = | Lubrication interval as travel distance | (km) |
| C | = | Dynamic load capacity | (N) |
| $F_m/C$ | = | Dynamic equivalent load on bearing | (N) |

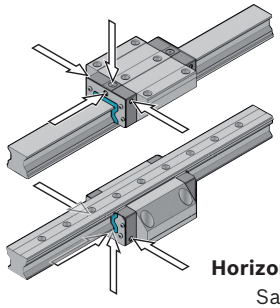
# Lubrication for heavy-duty roller rail system

## Liquid grease lubrication with single-line piston distributor systems (continued)

**Installation position I – Normal stroke**

**Horizontal**

1 lube connection, either on the left **or** on the right end cap

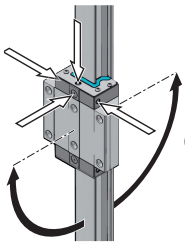


**Horizontal over head**
Same connection

**Installation position II – Normal stroke**

**Vertical to inclined horizontal**

1 lube connection at the upper end cap

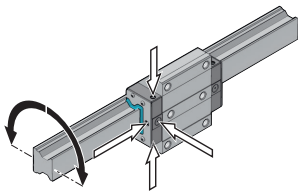



**Vertical to inclined over head**
Same connection

**Installation position III – Normal stroke**

**Wall mounting**

1 lube connection, either on the left **or** on the right end cap

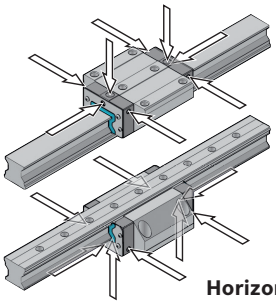


0° up to max. ±90°

**Installation position IV – short stroke**

**Horizontal**

2 lube connections, 1 connection each on the left **and** right end cap

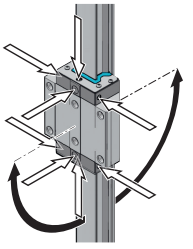


**Horizontal over head**
Same connection

**Installation position V – short stroke**

**Vertical to inclined horizontal**

2 lube connections, 1 connection each on the top **and** bottom end cap

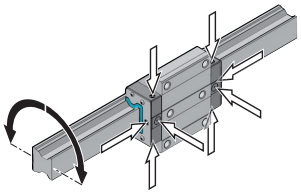



**Vertical to inclined over head**
Same connection

**Installation position VI – short stroke**

**Wall mounting**

2 lube connections, 1 connection each on the left **and** right end cap



0° up to max. ±90°

**Smallest permissible piston distributor size for liquid grease lubrication via single-line piston distributor[1)]**

| Roller runner block | | Smallest permissible piston distributor size (≙ minimum pulse quantity) for each connection ($cm^3$) with liquid grease of NLGI grade 00 | | |
|---|---|---|---|---|
| | | Size | | |
| | | 65 FXS | 100 | 125 |
| **Material numbers** | **Installation positions** | | | |
| **R18.. ... 10 or ... 60** | **Horizontal I, IV** | –0.2 | 0.3 | 1.5 |
| | **Vertical II, V** | –0.2 | 0.3 | 1.5 |
| | **Wall mounting III, VI** | –0.2 | 0.3 (2x) [2)] | 0.3 (2x)[2)3)] |

**Table 13**

**1)** This applies to the following conditions: Liquid grease Dynalub 520 (or Castrol Longtime PD 00, or Elkalub GLS 135/N00) and SKF piston distributor

**2)** Sizes 100 and 125: Either two pulses within a short sequence or two metering valves connected for a pulse

**3)** Size 125: 0.3 $cm^3$ for each connection when using all four connections in the roller runner block

# Lubrication for heavy-duty roller rail system

## Oil lubrication with single-line piston distributor systems

⚠ See "Note on lubrication".

**Lubricant oil**

We recommend **Shell Tonna S3 M220.** For further information, please refer to chapter “Note on lubrication”.

**Initial lubrication of the roller runner block (basic lubrication)**

We recommend carrying out initial lubrication separately using a manual grease gun before connecting to the central lubrication system.

**Stroke ≥ 2 · Roller runner block $B_1$ (normal stroke)**

- One lube connection per roller runner block, attach optionally on the left or right end cap and lubricate!

The initial lubrication is done two times with the partial quantity according to table 14:

1. Oil the roller runner block with the initial partial quantity according to table 14.
2. Slide the roller runner block back and forth by at least three times the runner block length for three full cycles (with size 125 by at least 300 mm).
3. Repeat steps 1 and 2 once again.
4. Check whether a film of grease is visible on the roller guide eail.

**Stroke < 2 · Roller runner block length $B_1$ (short stroke)**

- Two lube connections per roller runner block, attach one connection optionally on the left and right end cap and lubricate!

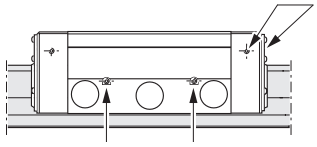
The initial lubrication is done two times for each connection with the partial quantities according to table 14:

1. Oil the roller runner block for each connection with the initial partial quantity according to table 14.
2. up to 4 carry out the process as for the initial lubrication (normal stroke).

If the initial lubrication is implemented via the central lubrication system, it is to be ensured that all lines and piston distributors are filled. The number of pulses then results from the partial amounts and the piston distributor size according to table 16.

**Initial lubrication, size 125**

On a frontal or lateral lube connection, either on the left **or** on the right end cap: 38 $cm^3$ (1x)



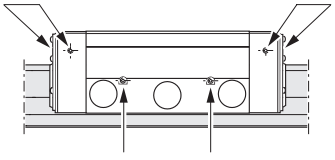
**and** at the roller runner block on all four lateral lube connections: for each 9 $cm^3$ (1×)

**Fig. 14**

**Initial lubrication, size 125**

On two lube connections, each on one connection on the left **and** right end cap:

38 $cm^3$ (1x) 38 $cm^3$ (1x)



**and** at the roller runner block on all four lateral lube connections: for each 9 $cm^3$ (1×)

**Fig. 15**

| Size | Initial lubrication | | |
|---|---|---|---|
| | Normal stroke Partial quantity ($cm^3$) | Short stroke Partial quantity per connection ($cm^3$) | |
| | | left | right |
| **65 (FXS)** | 4.8 (2x) | 4.8 (2x) | 4.8 (2x) |
| **100** | 11.0 (2x) | 11.0 (2x) | 11.0 (2x) |
| **125** | according to figure 14 | Connections left, right **and** lateral according to figure 15 | |

**Table 14**

### Relubrication of roller runner blocks

**Stroke ≥ 2 · Roller runner block $B_1$ (normal stroke)**

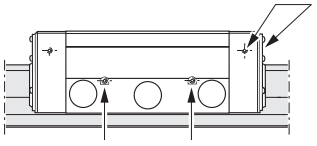
- Apply the minimum quantity according to table 15 at the lube connection until the relubrication interval (figure 18) has been reached.

**Stroke < 2 · Roller runner block length $B_1$ (short stroke)**

- Apply the minimum quantity according to table 15 at the lube connection until the relubrication interval (figure 18) has been reached.
  The number of pulses required for this purpose and the lubrication cycle are to be determined in a similar way as the relubrication (normal stroke).
- For each lubrication circuit, the roller runner block should be moved with a lubricating stroke of 3 roller runner block length $B_1$; as minimum lubricating stroke, however, roller runner block length $B_1$ should be moved.

**Relubrication, size 125**

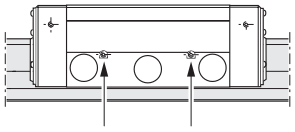
On one lube connection of an end cap, left **or** right 38 cm³



**or** at the roller runner block on all four lateral lube connections: for each 9 cm³

**Fig. 16**

**Relubrication, size 125**



At the roller runner block on all four lateral lube connections: for each 9 cm³

**Fig. 17**

**Notes**

The number of pulses required for this purpose is the integer quotient of the minimum relubrication amount as per table 15 and the smallest permissible piston distributor size (minimum pulse quantity) according to table 16. The smallest permissible piston distributor size also depends on the installation position.

The lubricating cycle time is then the result of dividing the relubrication interval (according to figure 18) by the determined number of pulses.

| Size | Relubrication | | |
|---|---|---|---|
| | Normal stroke (cm3) | Short stroke Partial quantity per connection (cm³) | |
| | | left | right |
| **65 (FXS)** | 4.8 | 4.8 | 4.8 |
| **100** | 11.0 | 11.0 | 11.0 |
| **125** | according to figure 16 | Lateral connections according to figure 17 | |

**Table 15**

### Load-dependent relubrication intervals ("dry axes")

**This applies to the following conditions:**

- Maximum speed: $v_{max}$ = 2 m/s
- No media pressurization
- Standard seals
- Ambient temperature: T = 20 – 30 °C

**Key to illustration**

s = Lubrication interval as travel distance (km)
C = Dynamic load capacity (N)
$F_m/C$ = Dynamic equivalent load on bearing (N)

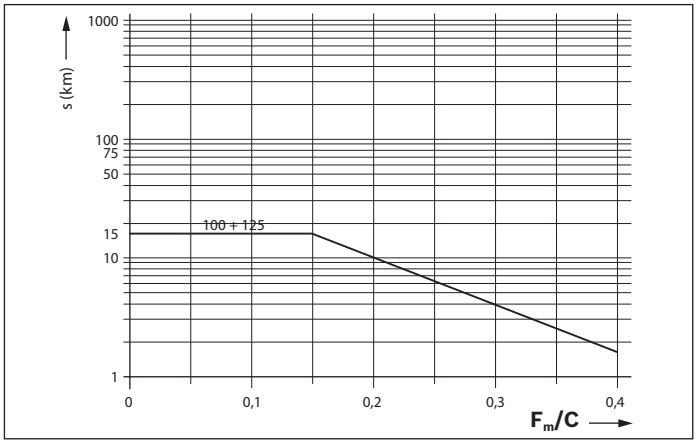


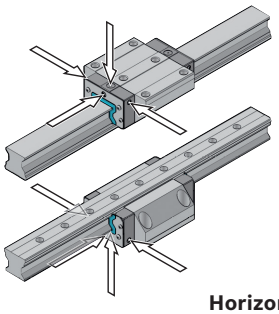

**Fig. 18**

# Lubrication for heavy-duty roller rail system

## Oil lubrication with single-line piston distributor systems (continued)

**Installation position I – Normal stroke**

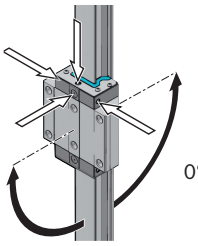
**Horizontal**
1 lube connection, either on the left **or** on the right end cap



**Horizontal over head**
Same connection

**Installation position II – Normal stroke**

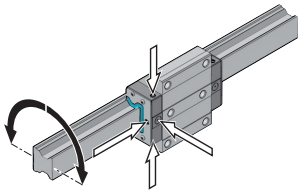
**Vertical to inclined horizontal**
1 lube connection at the upper end cap




**Vertical to inclined over head**
Same connection

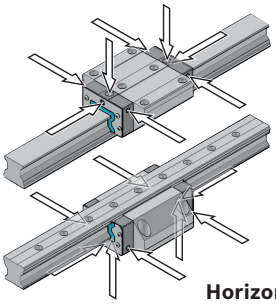
**Installation position III – Normal stroke**

**Wall mounting**
1 lube connection, either on the left **or** on the right end cap




**Installation position IV – short stroke**

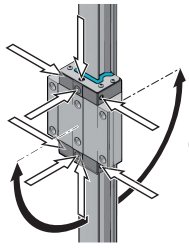
**Horizontal**
2 lube connections, 1 connection each on the left **and** right end cap



**Horizontal over head**
Same connection

**Installation position V – short stroke**

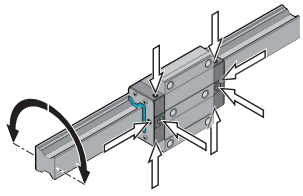
**Vertical to inclined horizontal**
2 lube connections, 1 connection each on the top **and** bottom end cap




**Vertical to inclined over head**
Same connection

**Installation position VI – short stroke**

**Wall mounting**
2 lube connections, 1 connection each on the left **and** right end cap




**Smallest permissible piston distributor size for oil lubrication via single-line piston distributor[1)]**

| Roller runner block | | Smallest permissible piston distributor size (≙ minimum pulse quantity) for each connection ($cm^3$) with oil viscosity of 220 $mm^2/s$ | | |
|---|---|---|---|---|
| | | Size | | |
| **Material numbers** | **Installation positions** | **65 FXS** | **100** | **125** |
| **R18.. ... 10 or ... 60** | **Horizontal I, IV** | 0.6 | 1.5 | 1.5 |
| | **Vertical II, V** | 0.6 | 1.5 | 1.5 |
| | **Wall mounting III, VI** | 1.5 | 1.5 (3×)[2)] | 1.5 (3×)[2)3)] |

**Table 16**

**1)** This applies to the following conditions: Lubricant oil Shell Tonna S3 M220 and SKF piston distributor
**2)** Sizes 100 and 125: Either three pulses within a short sequence or three metering valves connected for a pulse
**3)** Size 125: 1.5 $cm^3$ for each connection when using all four connections in the roller runner block

**Dimensioning example of lubrication a typical 2-axes application using central lubrication**
**X-axis**

| Component or characteristic value | Specifications |
|---|---|
| **Roller runner block** | Size 100, 4 pieces, C = 461000 N, material numbers: R1861 223 10 |
| **Roller guide rail** | Size 100, 2 pieces, L = 1500 mm; material numbers: R1835 263 61 |
| **Dynamic equivalent load on bearing** | F = 115250 N (for each roller runner block), taking into consideration the preload (here: 8 % C) |
| **Stroke** | 800 mm |
| **Average linear speed** | $v_m$ = 1 m/s |
| **Temperature** | 20 to 30 °C |
| **Installation position** | Horizontal |
| **Lubrication** | Single-line distributor system for all axes with liquid grease Dynalub 520 |
| **Exposure to contaminants** | No exposure to media, chips, dust |

| Dimensioning sizes | Dimensioning (for each roller runner block) | Sources of information |
|---|---|---|
| **Normal stroke or short stroke** | Normal stroke:<br>Stroke ≥ 2 · Roller runner block length $B_1$<br>800 mm ≥ 2 · 204 mm?<br>800 mm ≥ 408 mm!<br>i.e. normal stroke applies! | Normal stroke formula from catalog,<br>$B_1$ from catalog |
| **Initial lubrication amount** | Initial lubrication amount: 15.0 $cm^3$ (3×) | Initial lubrication amount from table |
| **Relubrication quantity** | Relubrication quantity: 15.0 $cm^3$ | Relubrication amount from table |
| **Installation position** | Installation position I – Normal stroke (horizontal) | Installation position from catalog |
| **Piston distributor size** | Permissible piston distributor size: 0.3 $cm^3$ | Piston distributor size from table with size 100, installation position I |
| **Number of pulses** | $\text{Number of pulses} = \frac{15.0\ cm^3}{0.3\ cm^3} = 50$ | $\text{Number of pulses} = \frac{\text{Relubrication quantity}}{\text{Permissible piston distributor size}}$ |
| **Load ratio** | $\text{Load ratio} = \frac{115250\ N}{461000\ N} = 0.25$ | $\text{Load ratio} = \frac{F}{C}$<br>F and C from specifications in catalog |
| **Relubrication interval** | Relubrication interval: 10 km | Relubrication interval from image<br>Curve size 100 with load ratio of 0.25 |
| **Lubrication cycle** | $\text{Lubrication cycle} = \frac{10\ km}{50} = 0.2$ | $\text{Lubrication cycle} = \frac{\text{Relubrication interval}}{\text{Number of pulses}}$ |

**Interim result (X-axis)**

For the X-axis, for each roller runner block, a minimum quantity of 0,3 $cm^3$ of Dynalub 520 is to be supplied every 0.2 km.

# Lubrication for heavy-duty roller rail system

**Dimensioning example of the lubrication of a typical 2-axes application using central lubrication (continued)**
**Y-axis**

| Component or characteristic value | Specifications |
|---|---|
| **Roller runner block** | Size 100, 4 pieces, C = 461000 N, material numbers: R1851 223 10 |
| **Roller guide rail** | Size 100, 2 pieces, L = 1500 mm; material numbers: R1835 263 61 |
| **Dynamic equivalent load on bearing** | F = 115250 N (for each roller runner block), taking into consideration the preload (8% C) |
| **Stroke** | 300 mm |
| **Average linear speed** | $v_m$ = 1 m/s |
| **Temperature** | 20 to 30 °C |
| **Installation position** | Vertical |
| **Lubrication** | Single-line distributor system for all axes with liquid grease Dynalub 520 |
| **Exposure to contaminants** | No exposure to media, chips, dust |

| Dimensioning sizes | Dimensioning (for each roller runner block) | Sources of information |
|---|---|---|
| **Normal stroke or short stroke** | Short stroke:<br>Stroke ≥ 2 · Roller runner block length $B_1$<br>300 mm < 2 · 204 mm?<br>300 mm < 408 mm!<br>i.e. short stroke applies! | Normal stroke formula from catalog,<br>$B_1$ from catalog |
| **Initial lubrication amount** | Initial lubrication quantity: 15.0 $cm^3$ (3×) | Initial lubrication amount from table |
| **Relubrication quantity** | Relubrication quantity: 15.0 $cm^3$ | Relubrication amount from table |
| **Installation position** | Installation position V – short stroke (vertical) | Installation position from catalog |
| **Piston distributor size** | Permissible piston distributor size: 0.3 $cm^3$ | Piston distributor size according to table<br>for size 65/100, installation position V |
| **Number of pulses** | $\text{Number of pulses} = \frac{15\ cm^3}{0.3\ cm^3} = 50$ | $\text{Number of pulses} = \frac{\text{Relubrication quantity}}{\text{Permissible piston distributor size}}$ |
| **Load ratio** | $\text{Load ratio} = \frac{115250\ N}{461000\ N} = 0.25$ | $\text{Load ratio} = \frac{F}{C}$<br>F and C from specifications in catalog |
| **Relubrication interval** | Relubrication interval: 10 km | Relubrication interval from image<br>Curve size 100 with load ratio of 0.25 |
| **Lubrication cycle** | $\text{Lubrication cycle} = \frac{10\ km}{50} = 0.2\ km$ | $\text{Lubrication cycle} = \frac{\text{Relubrication interval}}{\text{Number of pulses}}$ |

**Interim result (Y-axis)**

For the Y-axis, for each roller runner block, a minimum quantity of 0.3 $cm^3$ of Dynalub 520 is to be supplied every 0.2 km.

**Final result (Two-axes lubrication)**

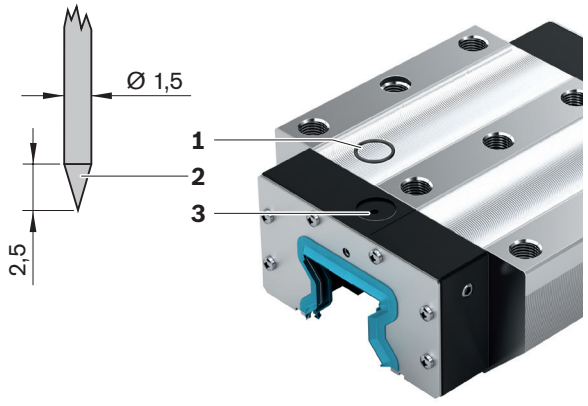
**The number of connections and minimum quantities determined for each individual axis remain valid.**

**Retrospective lube ports from above for heavy-duty roller runner blocks of size 100 and 65 FXS**

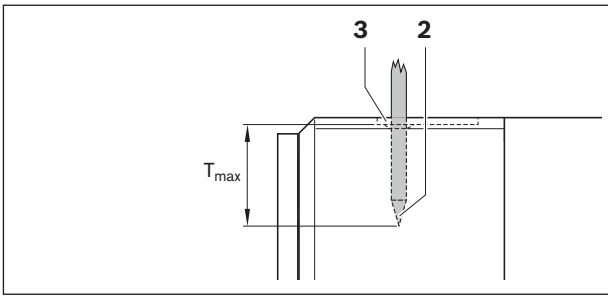
If heavy-duty roller runner blocks are to be fitted with a lube port from above retrospectively, the following is to be observed:

⚠ In the groove for the O-ring, another small groove (3) is pre-fitted. Do not open this with a drill. Risk of contamination!

- Heat up a metal tip (2) with a diameter of 1.5 mm.
- Carefully open and pierce the groove (3) with the metal tip.
  Observe the maximum permissible depth $T_{max}$ according to the table!
- Insert the O-ring (1) into the groove (the O-ring is not included in the scope of delivery of the roller runner block).




**Roller runner block FNS**
**R186. ... 10 or ... 60**
**Flange, normal, standard height**
**(example)**




| Size | Lubrication opening, top:<br>Maximum permissible depth for piercing<br><br>$T_{max}$ (mm) |
|---|---|
| **65 FXS, 100** | 5 |

# Maintenance

**Cleaning cycle**

Dirt can settle and encrust on roller guide rails, especially when these are not enclosed.
To ensure that seals and cover strips retain their functionality, this dirt must be removed at regular intervals.
It is advisable to perform at least one full cleaning cycle over the total installed rail length every 8 hours.
Depending on the degree of contamination and the use of a coolant/lubricant, a shorter interval is recommended.

Before shutting down the machine, always perform 3 lubricating pulses or lubricating strokes one after another. The lubrication pulses should take place over the maximum possible travel distance (cleaning cycle) while the axis is motion.

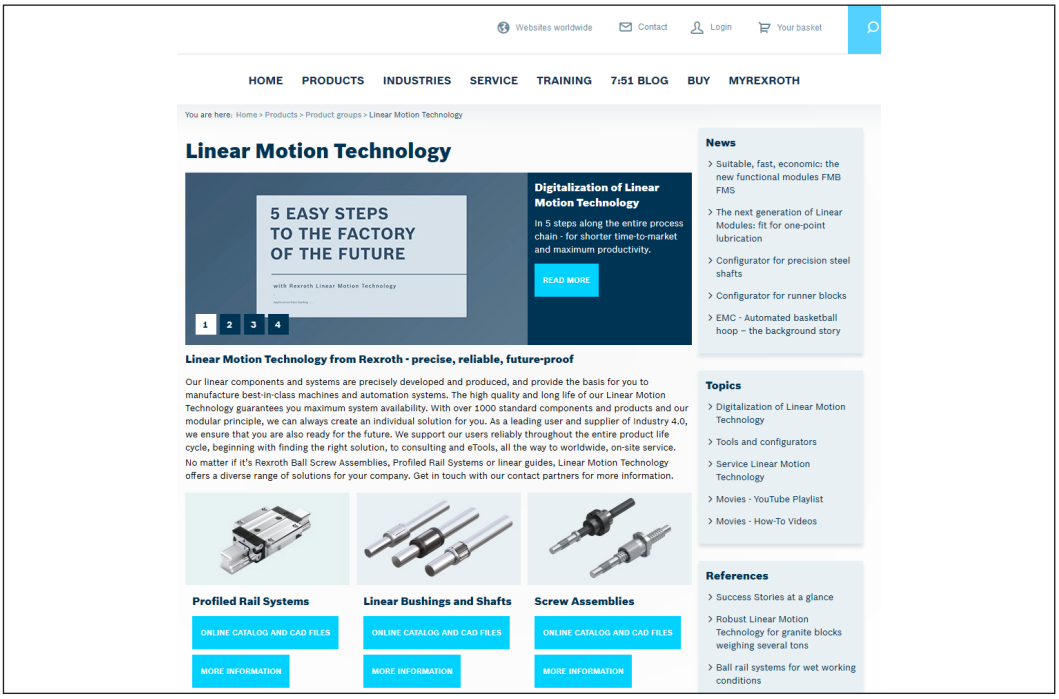
**Maintenance of accessories**

All accessories used for scraping the roller guide rail, shall be subject to regular maintenance.
In environments with heavy contamination, it is advisable to replace all the parts directly exposed to such contamination.
We recommend annual maintenance.

# Further information

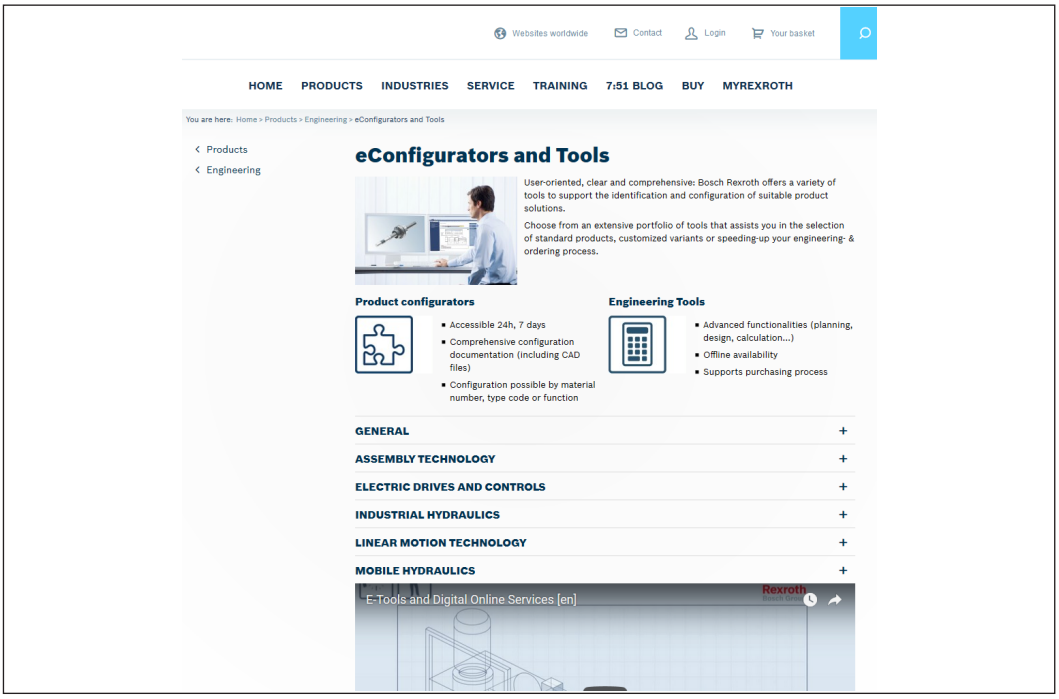
### Bosch Rexroth Linear Motion Technology homepage

https://www.boschrexroth.com/en/xc/products/product-groups/linear-motion-technology/index




### Configurators and tools

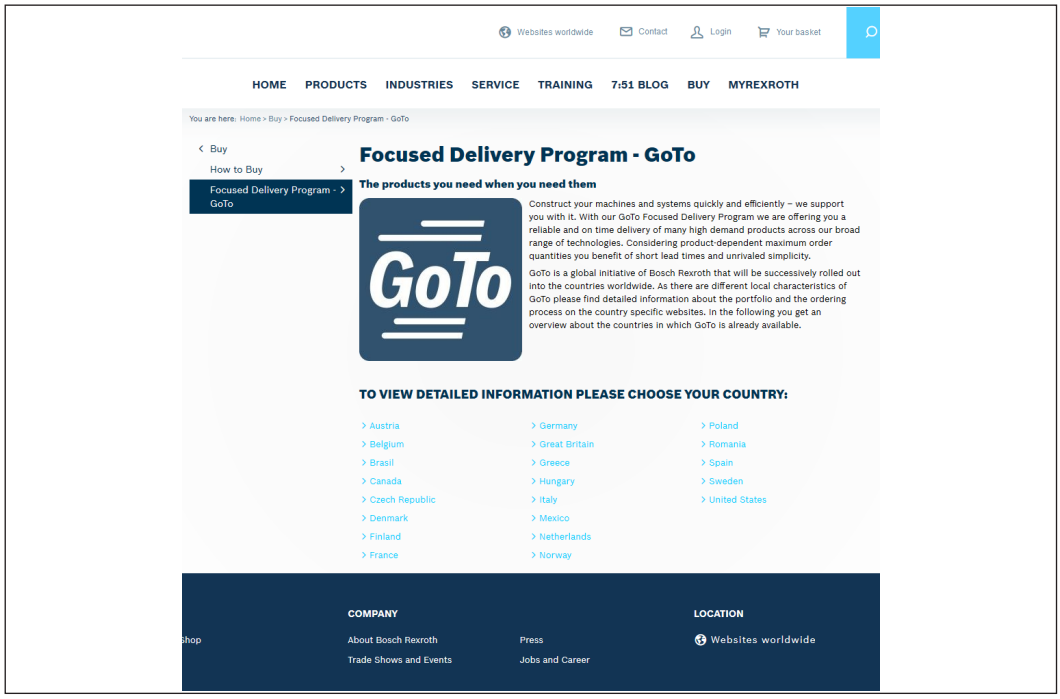
https://www.boschrexroth.com/en/xc/products/engineering/econfigurators-and-tools/econfigurators



# Further information

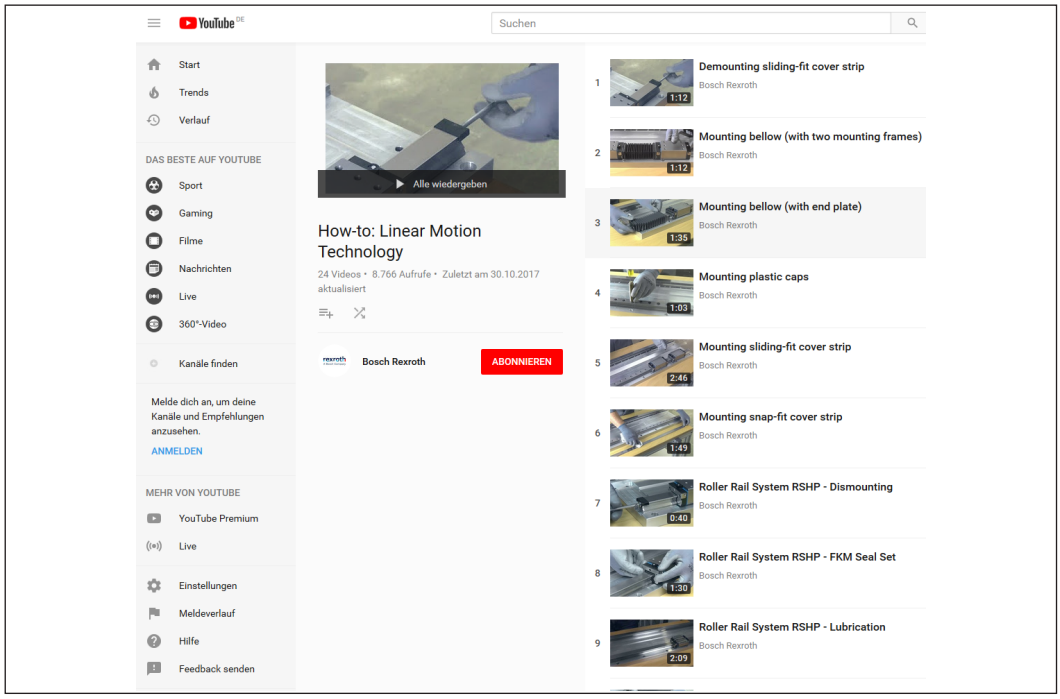
### GoTo Europe

http://www.boschrexroth.com/goto



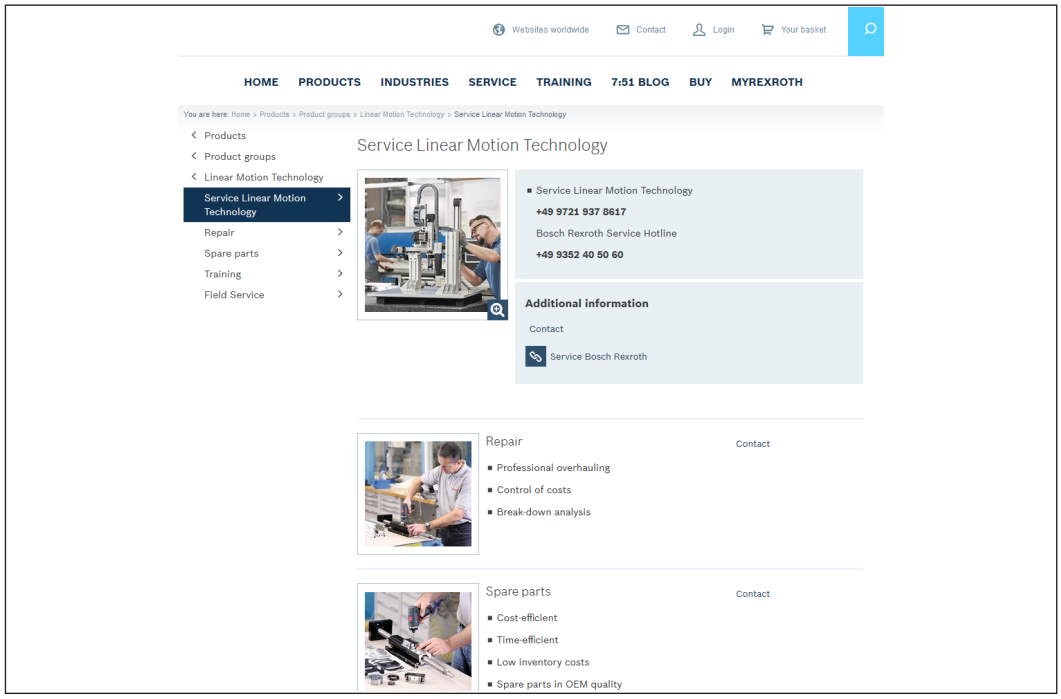

### How-to: Linear Motion Technology

https://www.youtube.com/playlist?list=PLRO3LeFQeLyMF6evW4E7kR93JHzpJlV4r



## Service

https://www.boschrexroth.com/en/xc/products/product-groups/linear-motion-technology/service-linear-motion-technology



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