Rexroth
Bosch Group

Ball Rail Systems

RE 82 202/2002-12

The Drive & Control Company

Rexroth Linear Motion Technology

Ball Rail Systems	Standard Ball Rail Systems Super Ball Rail Systems Ball Rail Systems with aluminum Runner Block High-speed Ball Rail Systems Corrosion-resistant Ball Rail Systems Wide Ball Rail Systems	
	Ball Rail Systems with Integrated Measuring System Clamp and Brake Units for Ball Rail Systems Racks for Ball Rail Systems Miniature Ball Rail Systems Cam Roller Guides	
Roller Rail Systems	Standard Roller Rail Systems Wide Roller Rail Systems High-load Roller Rail Systems Roller Rail Systems with Integrated Measuring System Clamp and Brake Units for Roller Rail Systems Racks for Roller Rail Systems	
Linear Bushings and Shafts	Linear Bushings, Linear Sets Shafts, Shaft Support Rails, Shaft Support Blocks	
	Ball Transfer Units Traditional Technical Parts	
Ball Screw Assemblies		
Linear Motion Systems	Linear Motion Slides	– Ball Screw – Toothed Belt
	Linear Modules	– Ball Screw – Toothed Belt – Gear Rack – Pneumatic Drive – Linear Motor
	Compact Modules	– Ball Screw – Toothed Belt – Linear Motor
	Precision Modules	– Ball Screw
	Ball Rail Tables	– Ball Screw – Linear Motor
	Controllers, Motors, Electrical Accessories Electric Cylinders	

Ball Rail Systems

General Product Description

Runner Blocks, Steel Version

Super Runner Blocks S Steel Version

Runner Blocks, Aluminum Version

High-speed Runner Blocks

Standard Guide Rails

Ball Rail Systems Made of Corrosion-resistant Steel

Accessories for Standard Runner Blocks

Accessories for Standard Guide Rails

Wide Ball Rail Systems

Accessories in General

Mounting Instructions

Maintenance and Lubrication

Other Information Material

Rexroth Ball Rail Systems
Product Description

Make up your own compact linear motion guideways from interchangeable standard stock elements...

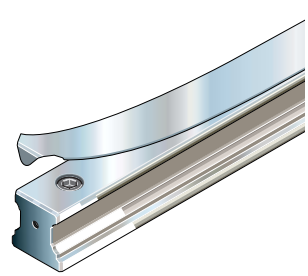
Rexroth manufactures its guide rails and runner blocks with such high precision, especially in the ball track zone, that each individual component element can be replaced by another at any time. This makes infinite combinations possible within each accuracy class.
This enables a high standards of logistics that are unique worldwide. Each element can be individually ordered and separately stocked.
Both sides of the guide rail can be used as reference edges.

Highlights:

- Top load capacities in all load directions
- Lowest possible noise level and best running characteristics
- Excellent dynamic characteristics: v up to 5 m/s; a_{max} up to 500 m/s^2
- New: high-speed version v_{max} = 10 m/s; a_{max} = 500 m/s^2
- Long-term lubrication, up to several years
- Minimum quantity lubrication system with integrated tank for oil lubrication
- Lube ports with metal threads on all sides
- Limitless interchangeability due to standardized guide rails, with or without rail seal cover strip, for all runner block versions
- Optimum system rigidity through preloaded O-arrangement
- Optimum installation error compensation with super runner block
- 60 % weight saving with aluminum runner block compared to the steel version
- Interchangeability with Rexroth roller rail system
- Integrated, inductive and wear-free measuring system as an option
- Comprehensive range of accessories
- Runner block can be screw fitted from above or below *
- Improved rigidity under lift-off and side loading conditions when additional mounting screws are used in holes provided at the center of the runner block *
- Guide rails and runner blocks also available with surface protection as an option
- Front face securing threads for all attachments
- High rigidity in all load directions – can therefore be used as an individual block
- Integral, all-round sealing
- High torque load capacity
- Optimized entry-zone geometry and the high number of balls per track greatly reduce fluctuation in elastic deflection
- Smooth, light running due to optimized ball recirculation and ideal ball/ball retainer track geometry
- Various preload classes
- New: corrosion-resistant steel version of runner block and guide rail complying with DIN EN 10088

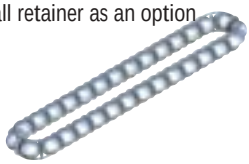
Proven rail seal cover strip for guide rail mounting holes:

- One cover for all holes, saves time and costs
- Made of corrosion-resistant spring steel DIN EN 10088
- Easy, secure mounting
- Clip-on and fasten

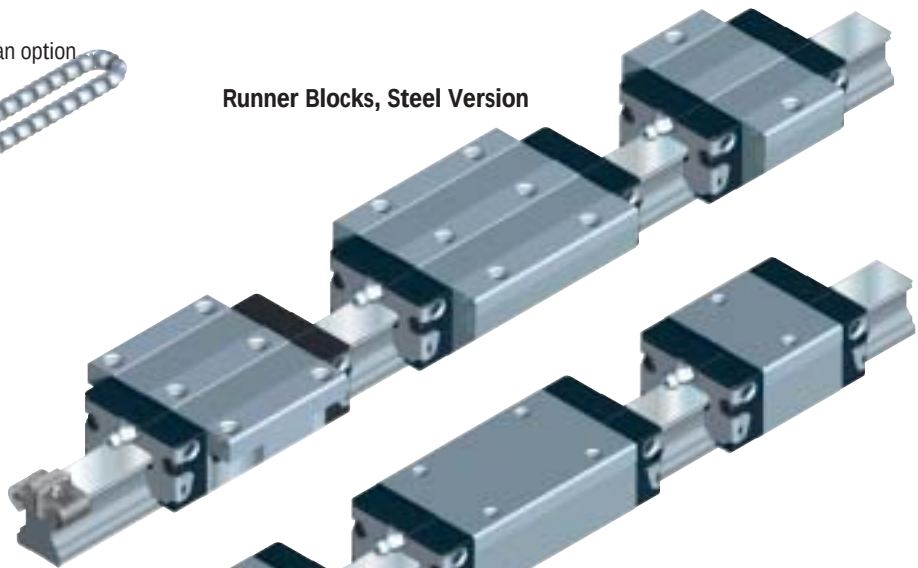


* depends on type

Ball retainer as an option



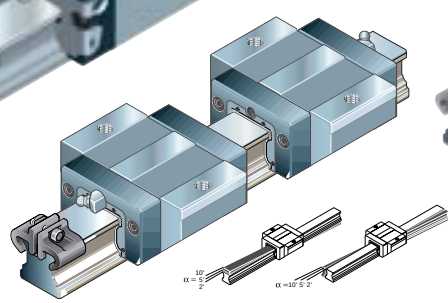
Runner Blocks, Steel Version



Standard Width

Slimline Runner Block

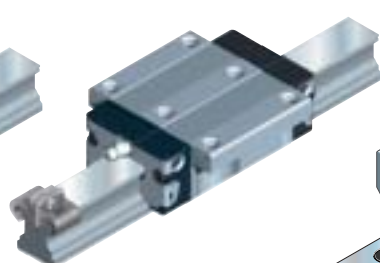
Super Runner Blocks S



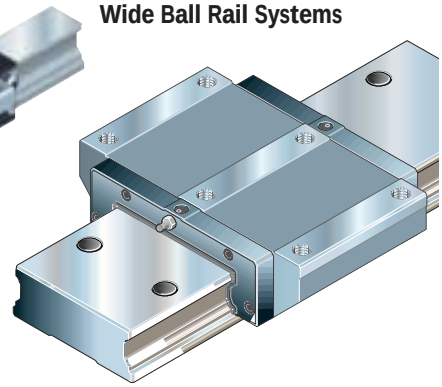
Runner Blocks, Aluminum Version

Ball Rail Systems Made of Corrosion-resistant Steel

High-speed Runner Block, Steel Version



Wide Ball Rail Systems



Rexroth Ball Rail Systems
Overview of Load Capacities

Runner Blocks, Steel Version

Size	15	20	25	30	35	45	55	65
Version								
Without chain C (N)	**7 800**	**18 800**	**22 800**	**31 700**	**41 900**	**68 100**	**98 200**	**123 000**
With chain C (N)	7 280	17 400	21 300	29 300	41 900	63 300	–	–
Without chain C_0 (N)	**13 500**	**24 400**	**30 400**	**41 300**	**54 000**	**85 700**	**121 400**	**192 700**
With chain C_0 (N)	12 100	21 700	27 300	37 200	54 000	77 100	–	–
Without chain C (N)	**10 000**	**24 400**	**30 400**	**40 000**	**55 600**	**90 400**	**124 200**	**163 000**
With chain C (N)	9 000	23 100	27 500	38 000	53 000	81 900	–	–
Without chain C_0 (N)	**20 200**	**35 200**	**45 500**	**57 800**	**81 000**	**128 500**	**170 000**	**289 000**
With chain C_0 (N)	17 500	32 500	39 500	53 700	75 600	111 400	–	–
Without chain C (N)	**6 800**	**12 400**	**15 800**	**22 100**	**29 300**	**–**	**–**	**–**
With chain C (N)	5 900	12 400	14 000	22 100	29 300	–	–	–
Without chain C_0 (N)	**8 100**	**13 600**	**18 200**	**24 800**	**32 400**	**–**	**–**	**–**
With chain C_0 (N)	6 700	13 600	15 200	24 800	32 400	–	–	–
Without chain C (N)	**7 800**	**18 800**	**22 800**	**31 700**	**41 900**	**68 100**	**98 200**	**123 000**
With chain C (N)	7 280	17 400	21 300	29 300	41 900	63 300	–	–
Without chain C_0 (N)	**13 500**	**24 400**	**30 400**	**41 300**	**54 000**	**85 700**	**121 400**	**192 700**
With chain C_0 (N)	12 100	21 700	27 300	37 200	54 000	77 100	–	–
Without chain C (N)	**10 000**	**24 400**	**30 400**	**40 000**	**55 600**	**90 400**	**124 200**	**211 900**
With chain C (N)	9 000	23 100	27 500	38 000	53 000	81 900	–	–
Without chain C_0 (N)	**20 200**	**35 200**	**45 500**	**57 800**	**81 000**	**128 500**	**170 000**	**289 000**
With chain C_0 (N)	17 500	32 500	39 500	53 700	75 600	111 400	–	–
Without chain C (N)	**6 800**	**12 400**	**15 800**	**22 100**	**29 300**	**–**	**–**	**–**
With chain C (N)	5 900	12 400	14 000	22 100	29 300	–	–	–
Without chain C_0 (N)	**8 100**	**13 600**	**18 200**	**24 800**	**32 400**	**–**	**–**	**–**
With chain C_0 (N)	6 700	13 600	15 200	24 800	32 400	–	–	–
Without chain C (N)	**7 800**	**–**	**22 800**	**31 700**	**41 900**	**68 100**	**98 200**	**–**
With chain C (N)	7 280	–	21 300	29 300	41 900	63 300	–	–
Without chain C_0 (N)	**13 500**	**–**	**30 400**	**41 300**	**54 000**	**85 700**	**121 400**	**–**
With chain C_0 (N)	12 100	–	27 300	37 200	54 000	77 100	–	–
Without chain C (N)	**–**	**–**	**30 400**	**40 000**	**55 600**	**90 400**	**124 200**	**–**
With chain C (N)	–	–	27 500	38 000	53 000	81 900	–	
Without chain C_0 (N)	**–**	**–**	**45 500**	**57 800**	**81 000**	**128 500**	**170 000**	**–**
With chain C_0 (N)	–	–	39 500	53 700	75 600	111 400	–	–

Basis for load capacities:

Determination of dynamic load capacity C is based on a travel life of 100 000 m to DIN 636.
However, frequently this is determined on the basis of only 50 000 m. The specified values C are then to be multiplied by 1.26.

Rexroth Ball Rail Systems
Overview of Load Capacities

Runner Blocks, Aluminum Version and Steel Version

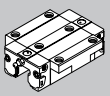
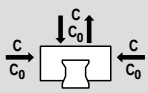
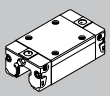
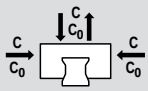
Size	15	20	25	30	35	45	55	65
Version								
Without chain C (N)	**–**	**14 500**	**22 800**	**–**	**–**	**–**	**–**	**–**
Without chain C_0 (N)	**–**	**24 400**	**30 400**	**–**	**–**	**–**	**–**	**–**
Without chain C (N)	**–**	**9 600**	**15 900**	**–**	**–**	**–**	**–**	**–**
Without chain C_0 (N)	**–**	**13 600**	**18 200**	**–**	**–**	**–**	**–**	**–**
Without chain C (N)	**–**	**14 500**	**22 800**	**–**	**–**	**–**	**–**	**–**
Without chain C_0 (N)	**–**	**24 400**	**30 400**	**–**	**–**	**–**	**–**	**–**
Without chain C (N)	**–**	**9 600**	**15 900**	**–**	**–**	**–**	**–**	**–**
Without chain C_0 (N)	**–**	**13 600**	**18 200**	**–**	**–**	**–**	**–**	**–**
Without chain C (N)	**3 900**	**10 100**	**11 400**	**15 800**	**21 100**	**–**	**–**	**–**
Without chain C (N)	**3 900**	**10 100**	**11 400**	**15 800**	**21 100**	**–**	**–**	**–**
Without chain C (N) With chain C (N)	**7 800** 7 280	**–** –	**22 800** 21 300	**31 700** 29 300	**41 900** 41 900	**–** –	**–** –	**–** –
Without chain C (N) With chain C (N)	**7 800** 7 280	**–** –	**22 800** 21 300	**31 700** 29 300	**41 900** 41 900	**–** –	**–** –	**–** –

Basis for load capacities:

Determination of dynamic load capacity C is based on a travel life of 100 000 m to DIN 636.
However, frequently this is determined on the basis of only 50 000 m. The specified values C are then to be multiplied by 1.26.

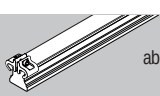
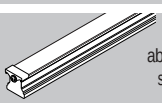
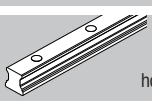
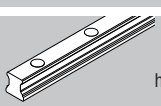
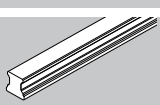
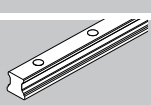
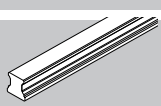
Rexroth Ball Rail Systems
Overview of Load Capacities

Runner Blocks, Steel Version

			Page	
High-speed Runner Block, Steel Version		Standard Width **2001-**	**74**	
		Slimline **2011-**	**76**	

Overview of Rail Lengths

Standard Guide Rails

			Page	
Standard Guide Rails, Steel Version		For mounting from above, with rail seal cover strip and strip holder **1605-.3.-***	**80**	
		For mounting from above, with rail seal cover strip and protective caps **1605-.6.-***	**82**	
		For mounting from above, with mounting hole plugs, plastic version **1605-.0.-***	**84**	
		For mounting from above, with mounting hole plugs, steel version **1606-.5.-***	**86**	
		For mounting from below **1607-***	**88**	
Standard Guide Rails, Thin Dense Chrome Plated		For mounting from above – thin dense chrome plated **1645-**	**90**	
		For mounting from below – thin dense chrome plated **1647-**	**92**	

Size	15	20	25	30	35	45	55	65
Version								
Without chain C (N)	5 300	12 700	15 500	21 500	28 500	–	–	–
Without chain C_0 (N)	9 100	16 500	20 600	28 000	36 700	–	–	–
Without chain C (N)	5 300	12 700	15 500	21 500	28 500	–	–	–
Without chain C_0 (N)	9 100	16 500	20 600	28 000	36 700	–	–	–

Basis for load capacities:
Determination of dynamic load capacity C is based on a travel life of 100 000 m to DIN 636.
However, frequently this is determined on the basis of only 50 000 m. The specified values C are then to be multiplied by 1.26.

Size	15	20	25	30	35	45	55	65
	Maximum unit length (mm)							
	4 000	6 000	6 000	6 000	6 000	6 000	4 000	4 000
	4 000	6 000	6 000	6 000	6 000	6 000	4 000	4 000
	4 000	6 000	6 000	6 000	6 000	6 000	4 000	4 000
	–	–	6 000	6 000	6 000	6 000	4 000	4 000
	4 000	6 000	6 000	6 000	6 000	6 000	4 000	4 000
	4 000	4 000	4 000	4 000	4 000	4 000	4 000	4 000
	4 000	4 000	4 000	4 000	4 000	4 000	4 000	4 000

Rexroth Ball Rail Systems
Overview of Load Capacities

Ball Rail Systems Made of Corrosion-resistant Steel

Size		15	20	25	30	35	45
Version		**Load capacities**					
Without chain	**C (N)**	**5 100**	**12 300**	**15 000**	**20 800**	**27 600**	**–**
With chain	C (N)	4 700	11 400	14 000	19 300	27 600	–
Without chain	**C_0 (N)**	**9 300**	**16 900**	**21 000**	**28 700**	**37 500**	**–**
With chain	C_0 (N)	8 400	15 000	18 900	25 800	37 500	–
Without chain	**C (N)**	**5 100**	**12 300**	**15 000**	**20 800**	**27 600**	**–**
With chain	C (N)	4 700	11 400	14 000	19 300	27 600	–
Without chain	**C_0 (N)**	**9 300**	**16 900**	**21 000**	**28 700**	**37 500**	**–**
With chain	C_0 (N)	8 400	15 000	18 900	25 800	37 500	–

Basis for load capacities:

Determination of dynamic load capacity C is based on a travel life of 100 000 m to DIN 636.
However, frequently this is determined on the basis of only 50 000 m. The specified values C are then to be multiplied by 1.26.

Size	15	20	25	30	35	45
	Maximum unit length (mm)					
	4 000	4 000	4 000	4 000	4 000	–
	4 000	4 000	4 000	4 000	4 000	–
	4 000	4 000	4 000	4 000	4 000	–

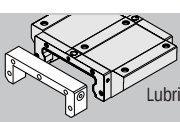
Rexroth Ball Rail Systems
Overview of Load Capacities and Rail Lengths
Wide Ball Rail Systems

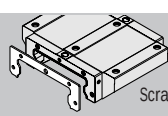
Size	20/40	25/70	35/90
Version	Load capacities		
Without chain C (N)	15 600	30 400	58 200
Without chain C_0 (N)	24 100	45 500	86 300

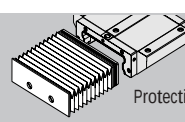
Basis for load capacities:

Determination of dynamic load capacity C is based on a travel life of 100 000 m to DIN 636.
However, frequently this is determined on the basis of only 50 000 m. The specified values C are then to be multiplied by 1.26.

	Maximum unit length (mm)		
	4 000	4 000	4 000
	4 000	4 000	4 000


Lubrication plate


Scraper plates


Protective bellows

Rexroth Ball Rail Systems
General Technical Data and Calculations

General Notes

The general technical data and calculations apply to all ball rail systems (all runner blocks and rails).

Specific technical data referring to the individual types is given separately.

Preload classes

With the various application requirements in mind, Rexroth Ball Rail Systems are available in four different preload classes.

So as not to reduce the service life, the preload should not exceed 1/3 of the load on bearing F.

In general, the rigidity of the runner block rises with increasing preload.

Guide Systems with Parallel Rails

– for the selected preload class, also comply with the permitted parallelism deviation of the rails (see tables for each version).

– When fitting ball rail systems of accuracy class N, we recommend the version with clearance or preload class 0.02C to avoid incorrect preloads due to the tolerances.

Speed

v_{max} : 3 to 10 m/s

For exact values, refer to the individual runner block.

Acceleration

a_{max} : 250 to 500 m/s^2

For exact values, refer to the individual runner block.

Only in the case of preloaded systems.

In the case of non-preloaded systems.

a_{max} = 50 m/s^2

Temperature resistance

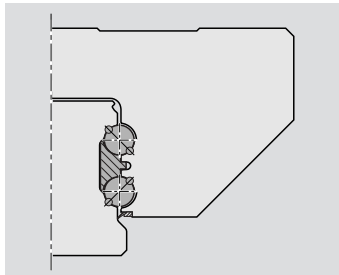
t_{max} = 100 °C

Maximum value, only permitted for brief period.

In continuous operation, do not exceed the maximum temperature of 80 °C.

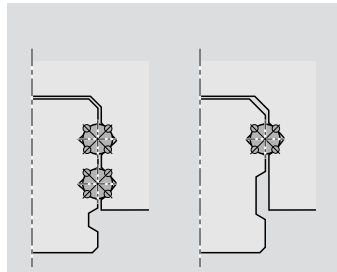
Friction

The friction coefficient μ of Rexroth Ball Rail Systems is approx. 0.002 to 0.003 (without friction of the seals).



Rexroth's special design with 4 ball circuits ensures that the balls make contact at **two points** regardless of the direction of loading.

This reduces the friction to a minimum.



Other ball rail systems with 2 or 4 ball circuits with **4-point contact** have multiple friction: the differential slip at side loading of the Gothic track zone profile shape as well as with comparable preload without load causes higher friction (depending on osculation and load up to approx. 5 times the frictional value).

This high friction leads to correspondingly greater heat.

Seals

The purpose of seals is to prevent dirt, swarf etc. from penetrating inside the runner block and thus shortening its service life.

Universal Seals

Universal seals are incorporated as standard in Rexroth Runner Blocks.

They provide equal sealing performance on guide rails with and without rail seal cover strips.

Suitable for applications requiring good sealing.

Low friction combined with a good sealing effect was an important factor during design.

Special low-friction seals are available on request.

Front Seal

Front seals can be ordered separately as accessories for mounting by the customer.

For use in environments with fine dirt or metal particles and cooling or cutting fluids.

Viton and NBR seals can be ordered separately for mounting by the customer.

For extreme use in environments with coarse dirt or metal particles or where cooling or cutting fluids are used intensively.

Scraper plate

Scraper plates can be ordered separately as accessories for mounting by the customer.

For use in environments subject to coarse dirt or swarf.

Rexroth Ball Rail Systems
General Technical Data and Calculations

Definition of dynamic load capacity C

The radial loading of constant magnitude and direction which a linear rolling bearing can theoretically endure for a nominal life of 10^5 meters distance traveled (to DIN 636 Part 2).

The dynamic load capacities given in the tables are mostly 30% above DIN values. They have been proven in tests.

Definition of dynamic load capacity 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 track zone (guide rail) with an osculation of 0.52, 4200 MPa.

Note:
With this load on the contact point, a permanent overall deformation of the rolling element and track zone occurs, orresponding to around 0.0001 times the roller body diameter (complying with DIN 636 part 2).

Definition and calculation of the nominal life

The calculated life for an individual roller bearing or a group of obviously identical rolling element that can be achieved with 90% probability under equal conditions using generally used material of normal manufacturer quality and under the usual operating conditions (complying with DIN 636 part 2).

Calculate the nominal life L or L_h according to the formulas (1), (2) or (3):

Nominal life at constant speed

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

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

L	= nominal life	(m)
L_h	= nominal life	(h)
C	= dynamic load capacity	(N)
F	= equivalent load	(N)
s	= travel length	(m)
n	= travel frequency (double travel)	(rpm)

Nominal life at varying speed

(3) $$L_h = \frac{L}{60 \cdot v_m}$$

(4) $$v_m = \frac{t_1 \cdot v_1 + t_2 \cdot v_2 + \ldots + t_n \cdot v_n}{100}$$

L	= nominal life	(m)
L_h	= nominal life	(h)
v_m	= medium speed	(m/min)
$v_1, v_2 \ldots v_n$	= travel speeds	(m/min)
$t_1, t_2 \ldots t_n$	= time proportions for $v_1, v_2 \ldots v_n$	(%)

Dynamic equivalent load on bearing for calculation of life

– with variable load on bearing

With variable load on bearing, calculate the dynamic equivalent load F according to the formula (5):

(5) $$F_1 = \sqrt[3]{F_1^3 \cdot \frac{q_1}{100} + F_2^3 \cdot \frac{q_2}{100} + \ldots + F_n^3 \cdot \frac{q_n}{100}}$$

F	= equivalent load	(N)
$F_1, F_2 \ldots F_n$	= stepped single load	(N)
$q_1, q_2 \ldots q_n$	= path proportion for $F_1, F_2 \ldots F_n$	(%)

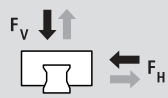
– with combined load on bearing

The equivalent dynamic load – F resulting from combined vertical and horizontal – loads is calculated according to the formula (6):

Note:
the structure of the ball rail system permits this simplified calculation.

(6) $$F = |F_V| + |F_H|$$

F	=	dyn. equivalent load	(N)
F_V	=	dynamic external load, vertical	(N)
F_H	=	dynamic external load, horizontal	(N)



Note

If F_V and F_H involve several different load levels, they have to be calculated separately using formula (5).

An external load acting at an angle on the runner block is to be broken down into its F_V and F_H components and these values are then used in formula (6).

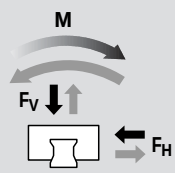
– with combined load on bearing in conjunction with a torsion moment

With combined external load – vertical and horizontal – in conjunction with a torsion moment, calculate the dynamic equivalent load F according to formula (7):

Formula (7) only applies if a single guide rail is used.

(7) $$F = |F_V| + |F_H| + C \cdot \frac{|M|}{M_t}$$

F	=	dyn. equivalent load	(N)
F_V, F_H	=	dyn. external loads	(N)
M	=	load through dyn. torsion moment	(Nm)
C	=	dynamic load capacity *	(N)
M_t	=	dyn. permitted moment *	(Nm)
		* see tables	



Note

If F_V and F_H involve several different load levels, they have to be calculated separately using formula (5).

An external load acting at an angle on the runner block is to be broken down into its F_V and F_H components and these values then used in formula (7).

Static equivalent load on bearing

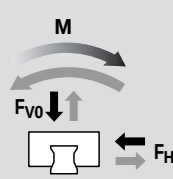
With combined external static load – vertical and horizontal – in conjunction with a static torsion moment, calculate the static equivalent load F_0 according to formula (8).

The static equivalent load F_0 must not exceed the static load capacity C_0.

Formula (8) only applies if a single guide rail is used.

(8) $$F_0 = |F_{V0}| + |F_{H0}| + C_0 \cdot \frac{|M_0|}{M_{t0}}$$

F_0	=	equivalent static load	(N)
F_{V0}, F_{H0},	=	external static loads	(N)
M_0	=	load through stat. torsion moment	(Nm)
C_0	=	static load capacity *	(N)
M_{t0}	=	permissible static moment *	(Nm)
		* see tables	



Note

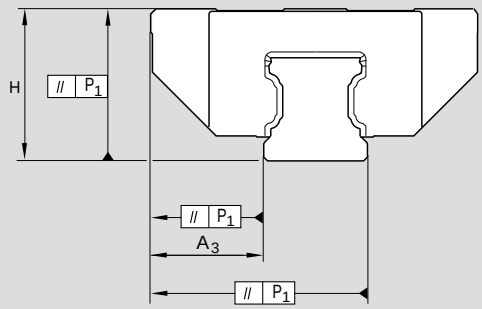
An external load acting at any angle on the runner block is to be broken down into its F_{V0} and F_{H0} components and these values are then used in formula (8).

Rexroth Ball Rail Systems
Selection Criterion Accuracy Class

Accuracy classes and their tolerances (µm)

Rexroth Ball Rail Systems are offered in up to five different accuracy classes.

For available versions see table "Part Numbers".

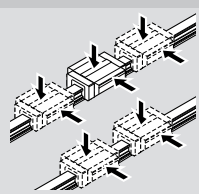
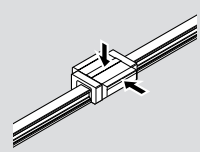


Built-in interchangeability through precision machining

Rexroth manufactures its guide rails and runner blocks with such high precision, especially in the ball track zone, that each individual component element can be replaced by another at any time.

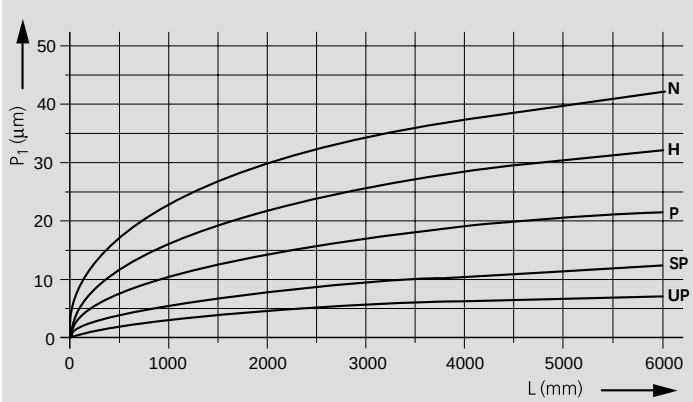
A runner block can be used without problems on various guide rails of the same size, for example.
This applies equally to the use of different runner blocks on one and the same guide rail.

* Tolerances for the combination of different accuracy classes for runner blocks and guide rails are available on request

Accuracy classes	Tolerances* dimensions H and A_3 (µm) H	A_3	Max. difference in dimension H and A_3 on one guide rail ΔH, ΔA_3 (µm)
UP	± 5	± 5	3
SP	± 10	± 7	5
P	± 20	± 10	7
H	± 40	± 20	15
N	± 100	± 40	30
Measured at middle of runner block:	 For any runner block/rail combination at any position on rail		 For different runner blocks at same position on rail

Parallelism offset P_1 of the ball rail system in service

Measured at middle of runner block



Key to Illustration

P_1 = parallelism offset
L = rail length

Selection Criterion System Preload

Definition of the Preload Class

Preload force in relation to the dynamic load capacity C_{dyn} of each runner block.

Example:

Runner Block 1651-314-20
C_{dyn} = 41 900 N
Preload 0.02 C = 838 N
This runner block is preloaded with approx. 838 N base load.

Selection of the Preload Class

On the versions with clearance, no preload is achieved. It is more the case that there is clearance between the runner block and guide rail of between 1 and 10 µm. With two rails and use of more than one runner block per guide rail, this clearance is usually equalized by parallelism tolerances.

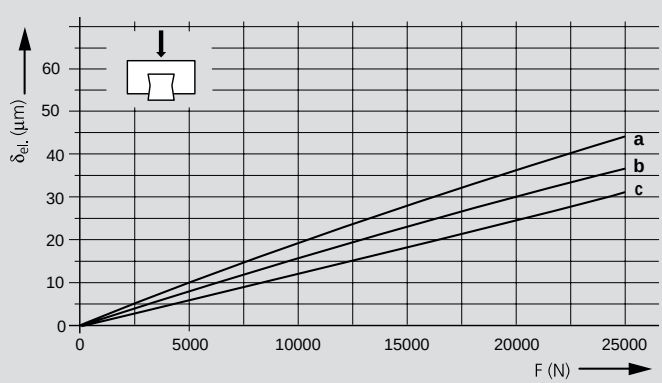
Version	Area of Application
up to 10 µm clearance	For particularly smooth guide systems with the lowest possible friction and a minimum of external influences. Clearance versions are only available in accuracy classes N and H.
Preload 0.02 C	For exact guide systems with low external load and high requirements as regards overall rigidity.
Preload 0.08 C	For exact guide systems with simultaneous high external load and high requirements as regards overall rigidity; also recommended for one-rail systems. Above-average moment loads are absorbed without significant elastic deformation. With only medium moment loads, further improved overall rigidity.
Preload 0.13 C	For highly rigid guide systems, e.g. precision machine tools or injection molding closing devices. Above-average loads and moments are absorbed with the lowest possible deformation. Version with preload of 0.13 C is only available in accuracy classes P, SP and UP.

Elastic deflection depending on preload class

Example:

Runner Block 1651-3..-20, Size 35

a) Runner Block 1651-31.-20 with preload 0.02 C
b) Runner Block 1651-32.-20 with preload 0.08 C
c) Runner Block 1651-33.-20 with preload 0.13 C



Rexroth Ball Rail Systems
Standard Runner Blocks, Steel Version

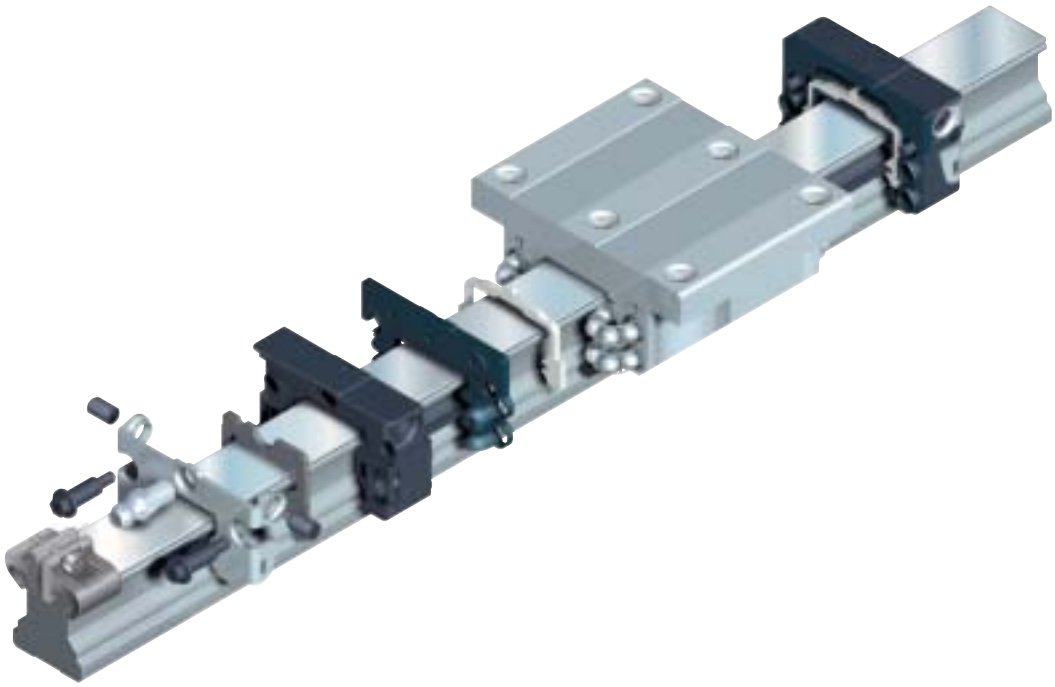
Excellent properties:

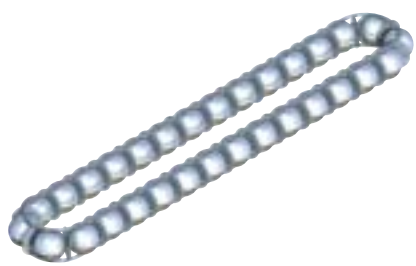
– Top load capacities in all 4 main load directions
– Low noise level and outstanding running characteristics
– Excellent dynamic characteristics v = 5 m/s; a_{max} = 500 m/s^2
– Long-term lubrication, up to several years possible
– Minimum quantity lubrication system with integrated tank for oil lubrication
– Lube ports with metal threads on all sides
– Limitless interchangeability due to standardized guide rails, with or without rail seal cover strip, for all runner block versions
– Optimum system rigidity through preloaded O-arrangement
– Integrated, inductive and wear-free measuring system as an option
– Existing range of accessories fully utilizable
– Top logistics that are unique worldwide due to interchangeability of components within one accuracy class

Further highlights:

– Runner block can be screw fitted from above or below
– Improved rigidity under lift-off and side loading conditions when additional mounting screws are used in holes provided at the center of the runner block
– Front face securing threads for all attachments
– High rigidity in all load directions – can therefore be used as an individual block
– Integral, all-round sealing
– High torque load capacity
– Optimized entry-zone geometry and the high number of balls per track greatly reduce fluctuation in elastic deflection
– Smooth, light running due to optimized ball recirculation and ideal ball/ball retainer track geometry
– Various preload classes
– Available with surface protection as an option
– New: corrosion-resistant version of runner block complying with DIN EN 10088
– With ball retainer as an option *

* depends on type





Ball retainer

– Optimized noise level and running characteristics

Rexroth Ball Rail Systems
Standard Runner Blocks, Steel Version

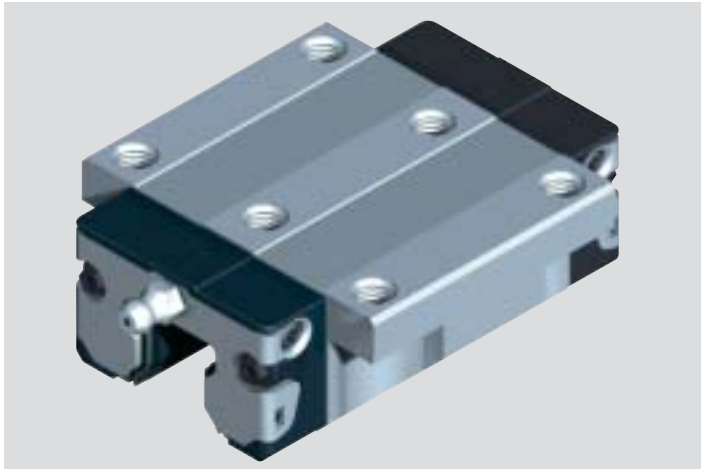
Runner Block 1651-

Standard Width

With ball retainer as an option

Versions:

– Runner block without ball retainer: for part numbers, see table
– Runner block with ball retainer: part numbers 1651-...-22



Dynamic characteristics

Speed v_{max} = 5 m/s

Acceleration a_{max} = 500 m/s^2

Other technical data, see chapter "General Technical Data and Calculations".

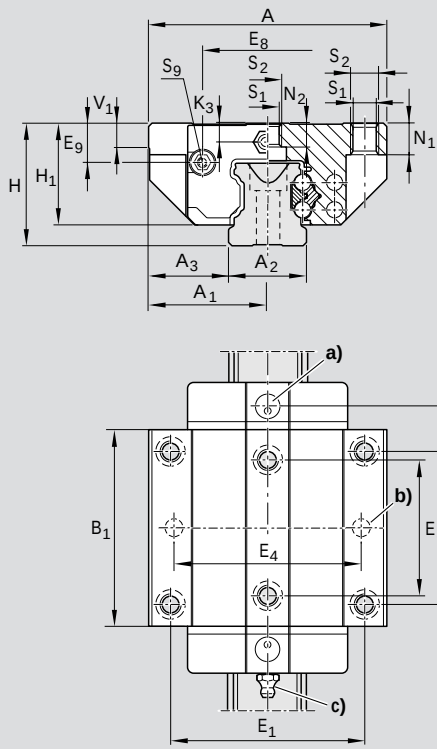
Part numbers

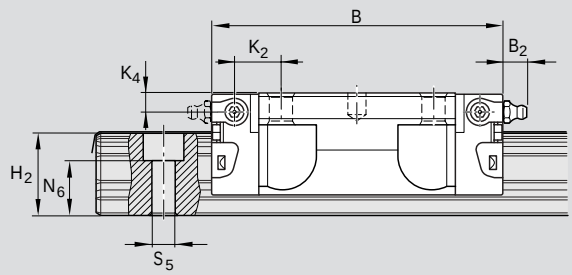
Size	Accuracy class	Part numbers for runner blocks for preload class			
		up to approx. 10 µm clearance	Preload 0.02 C	Preload 0.08 C	Preload 0.13 C
15	UP		1651-119-20	1651-129-20	1651-139-20
	SP		1651-111-20	1651-121-20	1651-131-20
	P		1651-112-20	1651-122-20	1651-132-20
	H	1651-193-20	1651-113-20	1651-123-20	
	N	1651-194-20	1651-114-20	1651-124-20	
20	UP		1651-819-20	1651-829-20	1651-839-20
	SP		1651-811-20	1651-821-20	1651-831-20
	P		1651-812-20	1651-822-20	1651-832-20
	H	1651-893-20	1651-813-20	1651-823-20	
	N	1651-894-20	1651-814-20	1651-824-20	
25	UP		1651-219-20	1651-229-20	1651-239-20
	SP		1651-211-20	1651-221-20	1651-231-20
	P		1651-212-20	1651-222-20	1651-232-20
	H	1651-293-20	1651-213-20	1651-223-20	
	N	1651-294-20	1651-214-20	1651-224-20	
30	UP		1651-719-20	1651-729-20	1651-739-20
	SP		1651-711-20	1651-721-20	1651-731-20
	P		1651-712-20	1651-722-20	1651-732-20
	H	1651-793-20	1651-713-20	1651-723-20	
	N	1651-794-20	1651-714-20	1651-724-20	
35	UP		1651-319-20	1651-329-20	1651-339-20
	SP		1651-311-20	1651-321-20	1651-331-20
	P		1651-312-20	1651-322-20	1651-332-20
	H	1651-393-20	1651-313-20	1651-323-20	
	N	1651-394-20	1651-314-20	1651-324-20	
45*	UP		1651-419-20	1651-429-20	1651-439-20
	SP		1651-411-20	1651-421-20	1651-431-20
	P		1651-412-20	1651-422-20	1651-432-20
	H	1651-493-20	1651-413-20	1651-423-20	
	N	1651-494-20	1651-414-20	1651-424-20	

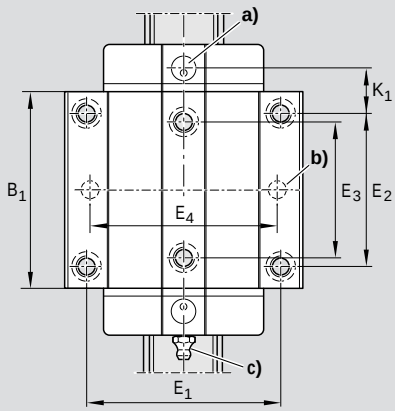
* Under preparation

Note on dynamic load capacities and moments (see table)

Determination of dynamic load capacities and moments is based on a travel life of 100 000 m.
However, frequently this is determined on the basis of only 50 000 m.
In this case for comparison:
multiply values **C, M_t** and **M_L** by 1.26 in accordance with Rexroth table.







a) For O-ring
Size 15: dia. 4 · 1.0 (mm)
Size 20-45: dia. 5 · 1.0 (mm)
Open lube bore as required.
See Accessories:
Mounting lubrication adapter.

b) Recommended position for pin holes (dimensions E_4 see "Mounting Instructions", Section "Locating pins".

Note
Ready-drilled holes made for production purposes may already exist at this position. These may be extended and bored open to accommodate the locating pins.

c) Lube nipple sizes 15 and 20:
funnel-type nipple
Type A – M3 x 5, DIN 3405
B_2 = 1.6 mm

If another lube nipple is used: observe the screw-in depth of 5 mm!

Size 25 to 45: M6 x 8,
DIN 71412
B_2 = 9.5 mm

If another lube nipple is used: observe the screw-in depth of 8 mm!

Connection possible at all sides.

	Dimensions (mm)																			
Size	**A**	**A_1**	**A_2**	**A_3**	**B**	**B_1**	**H**	**H_1**	**H_2[1)]**	**H_2[2)]**	**V_1**	**E_1**	**E_2**	**E_3**	**E_8**	**E_9**	**K_1**	**K_2**	**K_3**	**K_4**
15	47	23.5	15	16.0	58.2	39.2	24	19.90	16.30	16.20	5.0	38	30	26	24.55	6.70	8.00	9.6	3.20	3.20
20	63	31.5	20	21.5	75.0	49.6	30	25.35	20.75	20.55	6.0	53	40	35	32.50	7.30	11.80	11.8	3.35	3.35
25	70	35.0	23	23.5	86.2	57.8	36	29.90	24.45	24.25	7.5	57	45	40	38.30	11.50	12.45	13.6	5.50	5.50
30	90	45.0	28	31.0	97.7	67.4	42	35.35	28.55	28.35	7.0	72	52	44	48.40	14.60	14.00	15.7	6.05	6.05
35	100	50.0	34	33.0	110.5	77.0	48	40.40	32.15	31.85	8.0	82	62	52	58.00	17.35	14.50	16.0	6.90	6.90
45	120	60.0	45	37.5	137.6	97.0	60	50.30	40.15	39.85	10.0	100	80	60	69.80	20.90	17.30	19.3	8.20	8.20

[1)] Dimension H_2 with rail seal cover strip

[2)] Dimension H_2 without rail seal cover strip

	Dimensions (mm)							Mass	Load capacities (N)[3)]		Moments (Nm)			
Size	**N_1**	**N_2**	**$N_6^{\pm 0.5}$**	**S_1**	**S_2**	**S_5**	**S_9**	(kg)	**C dyn.**	**C_0 stat.**	**M_t dyn.**	**M_{t0} stat.**	**M_L dyn.**	**M_{L0} stat.**
15	5.2	4.4	10.3	4.3	M5	4.4	M2.5-3.5 deep	0.20	7 800	13 500	130	74	40	71
20	7.7	5.2	13.2	5.3	M6	6.0	M3-5 deep	0.45	18 800	24 400	240	310	130	165
25	9.3	7.0	15.2	6.7	M8	7.0	M3-5 deep	0.65	22 800	30 400	320	430	180	240
30	11.0	7.9	17.0	8.5	M10	9.0	M3-5 deep	1.10	31 700	41 300	540	720	290	380
35	12.0	10.2	20.5	8.5	M10	9.0	M3-5 deep	1.60	41 900	54 000	890	1160	440	565
45	15.0	14.4	23.5	10.4	M12	14.0	M4-7 deep	3.00	68 100	85 700	1830	2310	890	1130

[3)] Load capacities for version without ball retainer. Load capacities for version without ball retainer, see Product Overview with Load Capacities.

Rexroth Ball Rail Systems
Standard Runner Blocks, Steel Version

Runner Block 1651-

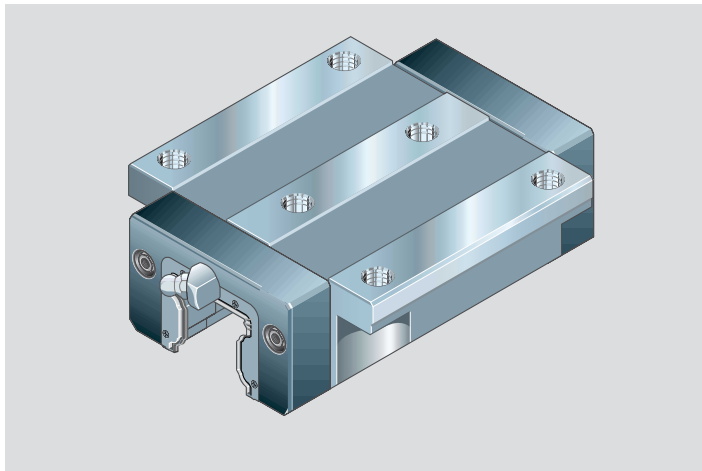
Standard Width

Dynamic characteristics

Speed v_{max} = 3 m/s

Acceleration a_{max} = 250 m/s^2

Other technical data, see chapter "General Technical Data and Calculations".



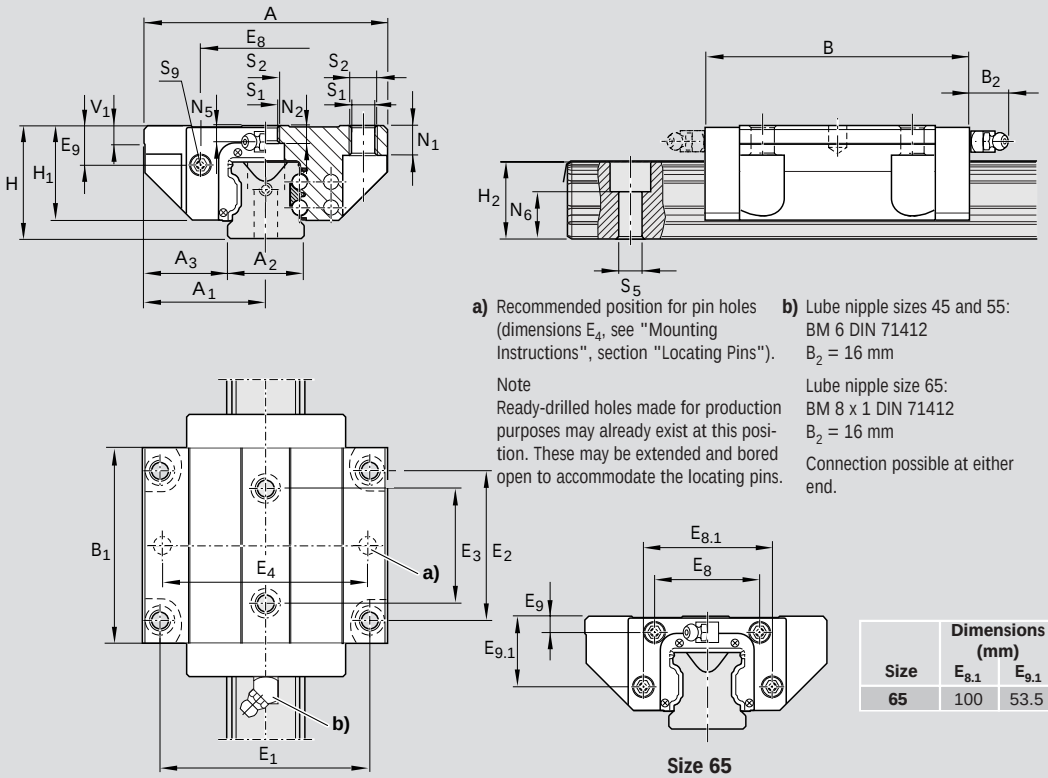
Part numbers

Size	Accuracy class	Part numbers for runner blocks for preload class			
		up to approx. 10 µm clearance	Preload 0.02 C	Preload 0.08 C	Preload 0.13 C
45*	UP		1651-419-10	1651-429-10	1651-439-10
	SP		1651-411-10	1651-421-10	1651-431-10
	P		1651-412-10	1651-422-10	1651-432-10
	H	1651-493-10	1651-413-10	1651-423-10	
	N	1651-494-10	1651-414-10	1651-424-10	
55	UP		1651-519-10	1651-529-10	1651-539-10
	SP		1651-511-10	1651-521-10	1651-531-10
	P		1651-512-10	1651-522-10	1651-532-10
	H	1651-593-10	1651-513-10	1651-523-10	
	N	1651-594-10	1651-514-10	1651-524-10	
65	UP		1651-619-10	1651-629-10	1651-639-10
	SP		1651-611-10	1651-621-10	1651-631-10
	P		1651-612-10	1651-622-10	1651-632-10
	H	1651-693-10	1651-613-10	1651-623-10	
	N	1651-694-10	1651-614-10	1651-624-10	

* Phased-out model

Note on dynamic load capacities and moments (see table)

Determination of dynamic load capacities and moments is based on a travel life of 100 000 m.
However, frequently this is determined on the basis of only 50 000 m.
In this case for comparison:
multiply values **C, M_t** and **M_L** by 1.26 in accordance with Rexroth table.



a) Recommended position for pin holes (dimensions E_4, see "Mounting Instructions", section "Locating Pins").

Note
Ready-drilled holes made for production purposes may already exist at this position. These may be extended and bored open to accommodate the locating pins.

b) Lube nipple sizes 45 and 55:
BM 6 DIN 71412
B_2 = 16 mm

Lube nipple size 65:
BM 8 x 1 DIN 71412
B_2 = 16 mm

Connection possible at either end.

Size 65

Size	Dimensions (mm) $E_{8.1}$	$E_{9.1}$
65	100	53.5

Size	Dimensions (mm) A	A_1	A_2	A_3	B	B_1	H	H_1	H_2[1)]	H_2[2)]	V_1	E_1	E_2	E_3	E_8	E_9	N_1	N_2
45*	120	60.0	45	37.5	133	97.0	60	50.0	40.15	39.85	10.0	100	80	60	69.8	20.9	15.0	12.4
55	140	70.0	53	43.5	159	115.5	70	57.0	48.15	47.85	12.0	116	95	70	80.0	22.3	18.0	13.5
65	170	85.0	63	53.5	188	139.6	90	76.0	60.15	59.85	15.0	142	110	82	76.0	11.0	23.0	14.0

[1)] Dimension H_2 with rail seal cover strip

[2)] Dimension H_2 without rail seal cover strip

Size	Dimensions (mm) N_5	$N_6^{\pm 0.5}$	S_1	S_2	S_5	S_9	Mass (kg)	Load capacities (N) C dyn.	C_0 stat.	Moments (Nm) M_t dyn.	M_{t0} stat.	M_L dyn.	M_{L0} stat.
45*	8.0	23.5	10.5	M12	14.0	M4-7 deep	2.90	68 100	85 700	1 830	2 310	890	1 130
55	9.0	29.0	12.5	M14	16.0	M5-8 deep	5.20	98 200	121 400	3 100	3 860	1 540	1 905
65	16.0	38.5	14.5	M16	18.0	M4-7 deep	10.25	123 000	192 700	4 850	7 610	2 430	3 815

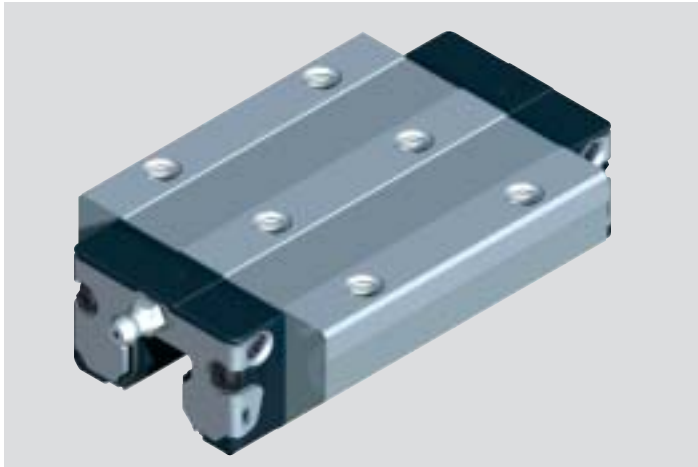
Rexroth Ball Rail Systems
Standard Runner Blocks, Steel Version

Runner Block 1653-

Standard Width, long

Versions:

– Runner block without ball retainer: for part numbers, see table
– Runner block with ball retainer: part numbers 1653-...-22



Dynamic characteristics

Speed v_{max} = 5 m/s

Acceleration a_{max} = 500 m/s^2

Other technical data, see chapter "General Technical Data and Calculations".

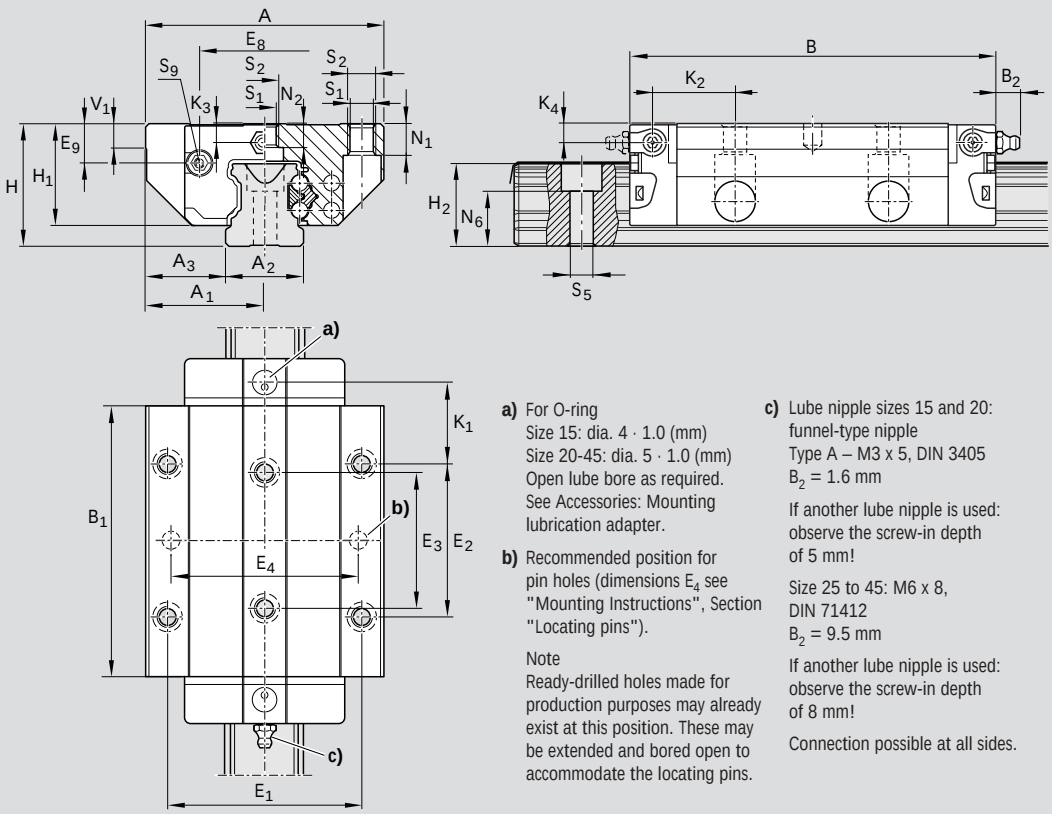
Part numbers

Size	Accuracy class	Part numbers for runner blocks for preload class			
		up to approx. 10 µm clearance	Preload 0.02 C	Preload 0.08 C	Preload 0.13 C
15	N	1653-194-20	1653-114-20		
20	UP		1653-819-20	1653-829-20	1653-839-20
	SP		1653-811-20	1653-821-20	1653-831-20
	P		1653-812-20	1653-822-20	1653-832-20
	H	1653-893-20	1653-813-20	1653-823-20	
	N	1653-894-20	1653-814-20	1653-824-20	
25	UP		1653-219-20	1653-229-20	1653-239-20
	SP		1653-211-20	1653-221-20	1653-231-20
	P		1653-212-20	1653-222-20	1653-232-20
	H	1653-293-20	1653-213-20	1653-223-20	
	N	1653-294-20	1653-214-20	1653-224-20	
30	UP		1653-719-20	1653-729-20	1653-739-20
	SP		1653-711-20	1653-721-20	1653-731-20
	P		1653-712-20	1653-722-20	1653-732-20
	H	1653-793-20	1653-713-20	1653-723-20	
	N	1653-794-20	1653-714-20	1653-724-20	
35	UP		1653-319-20	1653-329-20	1653-339-20
	SP		1653-311-20	1653-321-20	1653-331-20
	P		1653-312-20	1653-322-20	1653-332-20
	H	1653-393-20	1653-313-20	1653-323-20	
	N	1653-394-20	1653-314-20	1653-324-20	
45*	UP		1653-419-20	1653-429-20	1653-439-20
	SP		1653-411-20	1653-421-20	1653-431-20
	P		1653-412-20	1653-422-20	1653-432-20
	H	1653-493-20	1653-413-20	1653-423-20	
	N	1653-494-20	1653-414-20	1653-424-20	

* Under preparation

Note on dynamic load capacities and moments (see table)

Determination of dynamic load capacities and moments is based on a travel life of 100 000 m.
However, frequently this is determined on the basis of only 50 000 m.
In this case for comparison:
multiply values **C, M_t** and **M_L** by 1.26
in accordance with Rexroth table.



a) For O-ring
Size 15: dia. 4 · 1.0 (mm)
Size 20-45: dia. 5 · 1.0 (mm)
Open lube bore as required.
See Accessories: Mounting lubrication adapter.

b) Recommended position for pin holes (dimensions E_4 see "Mounting Instructions", Section "Locating pins").

Note
Ready-drilled holes made for production purposes may already exist at this position. These may be extended and bored open to accommodate the locating pins.

c) Lube nipple sizes 15 and 20:
funnel-type nipple
Type A – M3 x 5, DIN 3405
B_2 = 1.6 mm

If another lube nipple is used: observe the screw-in depth of 5 mm!

Size 25 to 45: M6 x 8, DIN 71412
B_2 = 9.5 mm

If another lube nipple is used: observe the screw-in depth of 8 mm!

Connection possible at all sides.

Size	Dimensions (mm)																		
	A	A_1	A_2	A_3	B	B_1	H	H_1	H_2[1]	H_2[2]	V_1	E_1	E_2	E_3	E_8	E_9	K_1	K_2	K_3	K_4
15	47	23.5	15	16.0	72.6	53.6	24	19.90	16.30	16.20	5.0	38	30	26	24.55	6.70	15.20	16.80	3.20	3.20
20	63	31.5	20	21.5	91.0	65.6	30	25.35	20.75	20.55	6.0	53	40	35	32.50	7.30	19.80	19.80	3.35	3.35
25	70	35.0	23	23.5	107.9	79.5	36	29.90	24.45	24.25	7.5	57	45	40	38.30	11.50	23.30	24.45	5.50	5.50
30	90	45.0	28	31.0	119.7	89.4	42	35.35	28.55	28.35	7.0	72	52	44	48.40	14.60	25.00	26.70	6.05	6.05
35	100	50.0	34	33.0	139.0	105.5	48	40.40	32.15	31.85	8.0	82	62	52	58.00	17.35	28.75	30.25	6.90	6.90
45	120	60	45	37.5	174.1	133.5	60	50.30	40.15	39.85	10.0	100	80	60	69.8	20.9	35.5	37.5	8.20	8.20

[1] Dimension H_2 with rail seal cover strip

[2] Dimension H_2 without rail seal cover strip

Size	Dimensions (mm)							Mass	Load capacities (N)[3]		Moments (Nm)			
	N_1	N_2	$N_6^{\pm 0.5}$	S_1	S_2	S_5	S_9	(kg)	C dyn.	C_0 stat.	M_t dyn.	M_{t0} stat.	M_L dyn.	M_{L0} stat.
15	5.2	4.4	10.3	4.3	M5	4.4	M2.5-3.5 deep	0.30	10 000	20 200	130	190	98	150
20	7.7	5.2	13.2	5.3	M6	6.0	M3-5 deep	0.55	24 400	35 200	310	450	225	330
25	9.3	7.0	15.2	6.7	M8	7.0	M3-5 deep	0.90	30 400	45 500	430	650	345	510
30	11.0	7.9	17.0	8.5	M10	9.0	M3-5 deep	1.50	40 000	57 800	690	1 000	495	715
35	12.0	10.2	20.5	8.5	M10	9.0	M3-5 deep	2.25	55 600	81 000	1 200	1 740	830	1215
45	15.0	12.4	23.5	10.4	M12	14.0	M4-7 deep	4.30	90 400	128 500	2 440	3 470	1700	2425

[3] Load capacities for version without ball retainer. Load capacities for version without ball retainer, see Product Overview with Load Capacities.

Rexroth Ball Rail Systems
Standard Runner Blocks, Steel Version

Runner Block 1653-

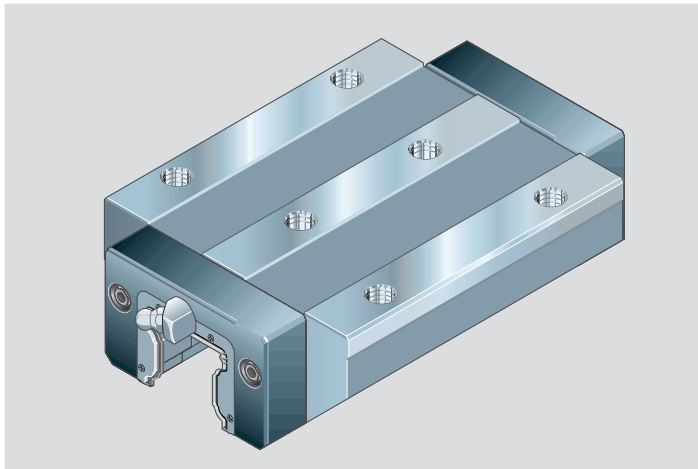
Standard Width, long

Dynamic characteristics

Speed v_{max} = 3 m/s

Acceleration a_{max} = 250 m/s^2

Other technical data, see chapter "General Technical Data and Calculations".



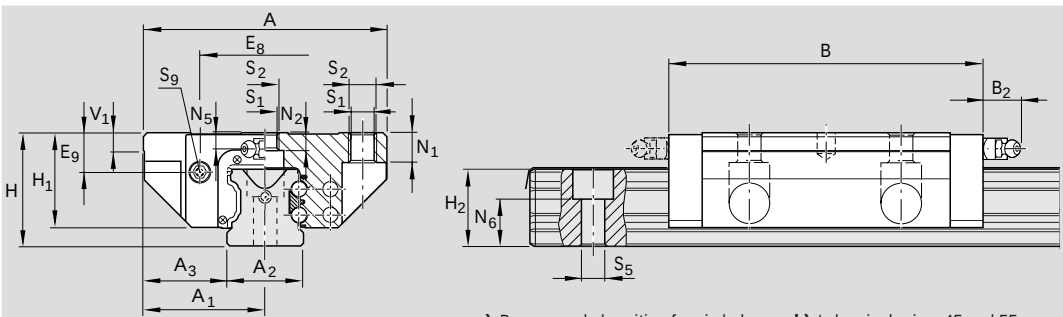
Part numbers

Size	Accuracy class	up to approx. 10 µm clearance	Part numbers for runner blocks for preload class Preload 0.02 C	Preload 0.08 C	Preload 0.13 C
45*	UP		1653-419-10	1653-429-10	1653-439-10
	SP		1653-411-10	1653-421-10	1653-431-10
	P		1653-412-10	1653-422-10	1653-432-10
	H	1653-493-10	1653-413-10	1653-423-10	
	N	1653-494-10	1653-414-10	1653-424-10	
55	UP		1653-519-10	1653-529-10	1653-539-10
	SP		1653-511-10	1653-521-10	1653-531-10
	P		1653-512-10	1653-522-10	1653-532-10
	H	1653-593-10	1653-513-10	1653-523-10	
	N	1653-594-10	1653-514-10	1653-524-10	
65	UP		1653-619-10	1653-629-10	1653-639-10
	SP		1653-611-10	1653-621-10	1653-631-10
	P		1653-612-10	1653-622-10	1653-632-10
	H	1653-693-10	1653-613-10	1653-623-10	
	N	1653-694-10	1653-614-10	1653-624-10	

* Phased-out model

Note on dynamic load capacities and moments (see table)

Determination of dynamic load capacities and moments is based on a travel life of 100 000 m.
However, frequently this is determined on the basis of only 50 000 m.
In this case for comparison:
multiply values **C, M_t** and **M_L** by 1.26 in accordance with Rexroth table.



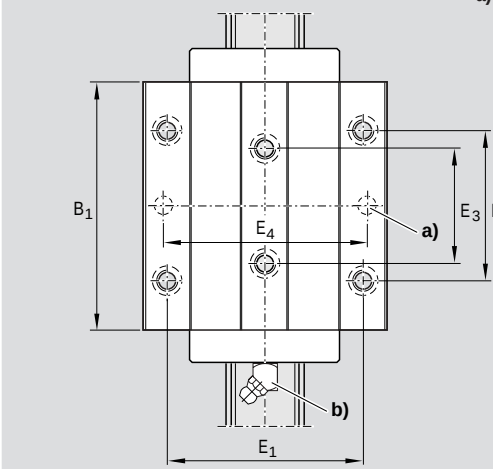
a) Recommended position for pin holes (dimensions E_4, see "Mounting Instructions", section "Locating Pins").

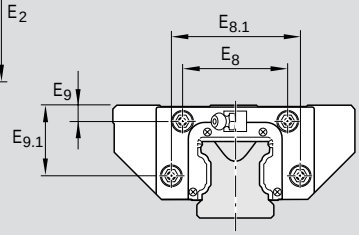
Note
Ready-drilled holes made for production purposes may already exist at this position. These may be extended and bored open to accommodate the locating pins.

b) Lube nipple sizes 45 and 55:
BM 6 DIN 71412
B_2 = 16 mm

Lube nipple size 65:
BM 8 x 1 DIN 71412
B_2 = 16 mm

Connection possible at either end.





Size 65

Size	Dimensions (mm) $E_{8.1}$	$E_{9.1}$
65	100	53.5

Size	Dimensions (mm) A	A_1	A_2	A_3	B	B_1	H	H_1	H_2[1)]	H_2[2)]	V_1	E_1	E_2	E_3	E_8	E_9	N_1	N_2
45	120	60.0	45	37.5	170.0	133.5	60	50.0	40.15	39.85	10.0	100	80	60	69.8	20.9	15.0	12.4
55	140	70.0	53	43.5	200.0	155.5	70	57.0	48.15	47.85	12.0	116	95	70	80.0	22.3	18.0	13.5
65	170	85.0	63	53.5	243.0	194.6	90	76.0	60.15	59.85	15.0	142	110	82	76.0	11.0	23.0	14.0

[1)] Dimension H_2 with rail seal cover strip

[2)] Dimension H_2 without rail seal cover strip

Size	Dimensions (mm) N_5	$N_6^{\pm 0.5}$	S_1	S_2	S_5	S_9	Mass (kg)	Load capacities (N) C dyn.	C_0 stat.	Moments (Nm) M_t dyn.	M_{t0} stat.	M_L dyn.	M_{L0} stat.
45	8.0	23.5	10.5	M12	14	M4-7 deep	4.20	90 400	128 500	2 440	3 470	1 700	2 425
55	9.0	29.0	12.5	M14	16	M5-8 deep	7.50	124 200	170 000	3 950	5 400	2 630	3 600
65	16.0	38.5	14.5	M16	18	M4-7 deep	14.15	163 000	289 000	6 440	11 420	4 620	8 190

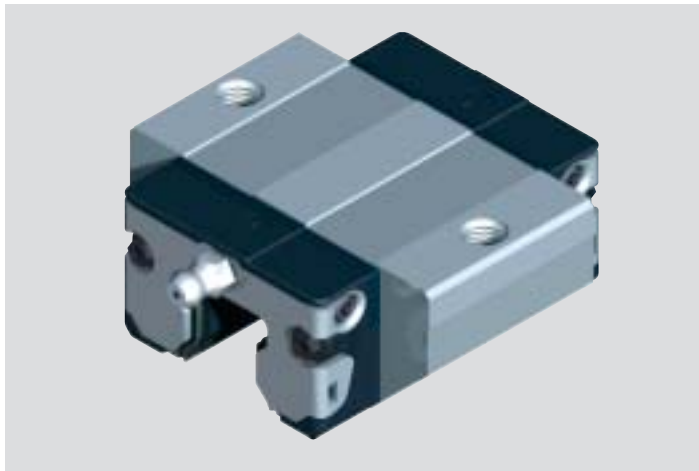
Rexroth Ball Rail Systems
Standard Runner Blocks, Steel Version

Runner Block 1665-

Standard Width, short

Versions:

– Runner block without ball retainer: for part numbers, see table
– Runner block with ball retainer: part numbers 1665-...-22



Dynamic characteristics

Speed v_{max} = 5 m/s

Acceleration a_{max} = 500 m/s^2

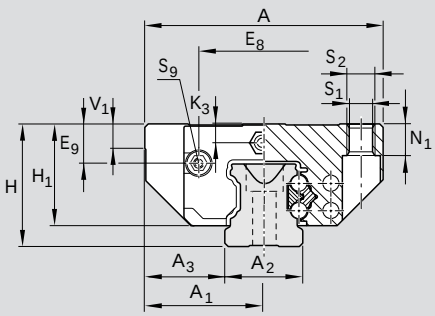
Other technical data, see chapter "General Technical Data and Calculations".

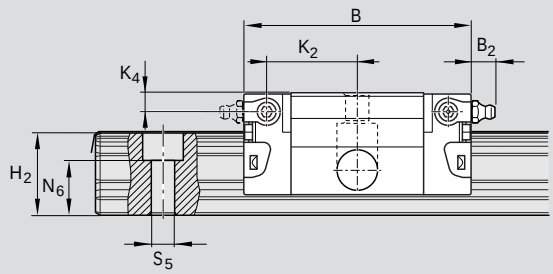
Part numbers

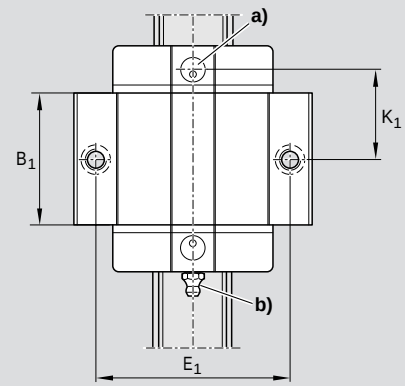
Size	Accuracy class	Part numbers for runner blocks for preload class	
		up to approx. 10 µm clearance	Preload 0.02 C
15	H	1665-193-20	1665-113-20
	N	1665-194-20	1665-114-20
20	H	1665-893-20	1665-813-20
	N	1665-894-20	1665-814-20
25	H	1665-293-20	1665-213-20
	N	1665-294-20	1665-214-20
30	H	1665-793-20	1665-713-20
	N	1665-794-20	1665-714-20
35	H	1665-393-20	1665-313-20
	N	1665-394-20	1665-314-20

Note on dynamic load capacities and moments (see table)

Determination of dynamic load capacities and moments is based on a travel life of 100 000 m.
However, frequently this is determined on the basis of only 50 000 m.
In this case for comparison:
multiply values **C, M_t** and **M_L** by 1.26 in accordance with Rexroth table.







a) For O-ring
Size 15: dia. 4 · 1.0 (mm)
Size 20-35: dia. 5 · 1.0 (mm)
Open lube bore as required.
See Accessories:
Mounting lubrication adapter.

b) Lube nipple sizes 15 and 20:
funnel-type nipple
Type A – M3 x 5, DIN 3405
B_2 = 1.6 mm. If other lubrication connections are used: observe the screw-in depth of 8 mm!

Size 25 to 35: M6 x 8, DIN 71412
B_2 = 9.5 mm. If other lubrication connections are used: observe the screw-in depth of 8 mm!

Connection possible at all sides.

	Dimensions (mm)																			
Size	**A**	**A_1**	**A_2**	**A_3**	**B**	**B_1**	**H**	**H_1**	**H_2 1)**	**H_2 2)**	**V_1**	**E_1**			**E_8**	**E_9**	**K_1**	**K_2**	**K_3**	**K_4**
15	47	23.5	15	16.0	44.7	25.7	24	19.90	16.30	16.20	5.0	38			24.55	6.70	16.25	17.85	3.20	3.20
20	63	31.5	20	21.5	57.3	31.9	30	25.35	20.75	20.55	6.0	53			32.50	7.30	22.95	22.95	3.35	3.35
25	70	35.0	23	23.5	67.0	38.6	36	29.90	24.45	24.25	7.5	57			38.30	11.50	25.35	26.50	5.50	5.50
30	90	45.0	28	31.0	75.3	45.0	42	35.35	28.55	28.35	7.0	72			48.40	14.60	28.80	30.50	6.05	6.05
35	100	50.0	34	33.0	84.9	51.4	48	40.40	32.15	31.85	8.0	82			58.00	17.35	32.70	34.20	6.90	6.90

1) Dimension H_2 with rail seal cover strip

2) Dimension H_2 without rail seal cover strip

								Load capacities (N)3)		Moments (Nm)			
	Dimensions (mm)							Mass	C	C_0	M_t	M_{t0}	M_L	M_{L0}
Size	**N_1**		**$N_6^{\pm 0.5}$**	**S_1**	**S_2**	**S_5**	**S_9**	**(kg)**	**dyn.**	**stat.**	**dyn.**	**stat.**	**dyn.**	**stat.**
15	5.2		10.3	4.3	M5	4.4	M2.5-3.5 deep	0.15	6 800	8 100	52	80	19	28
20	7.7		13.2	5.3	M6	6.0	M3-5 deep	0.30	12 400	13 600	150	170	52	58
25	9.3		15.2	6.7	M8	7.0	M3-5 deep	0.50	15 800	18 200	230	260	82	94
30	11.0		17.0	8.5	M10	9.0	M3-5 deep	0.80	22 100	24 800	380	430	133	150
35	12.0		20.5	8.5	M10	9.0	M3-5 deep	1.20	29 300	32 400	640	700	200	220

3) Load capacities for version without ball retainer. Load capacities for version without ball retainer, see Product Overview with Load Capacities.

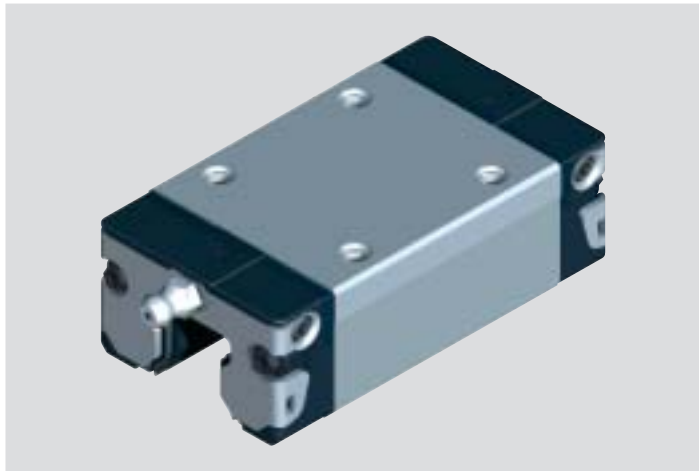
Rexroth Ball Rail Systems
Standard Runner Blocks, Steel Version

Runner Block 1622-

Slimline

Versions:

– Runner block without ball retainer: for part numbers, see table
– Runner block with ball retainer: part numbers 1622-...-22



Dynamic characteristics

Speed v_{max} = 5 m/s

Acceleration a_{max} = 500 m/s^2

Other technical data, see chapter "General Technical Data and Calculations".

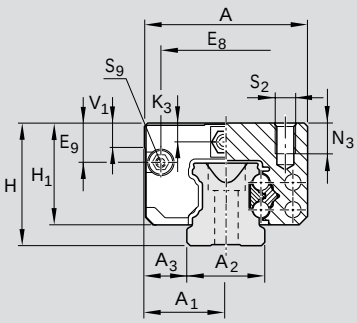
Part numbers

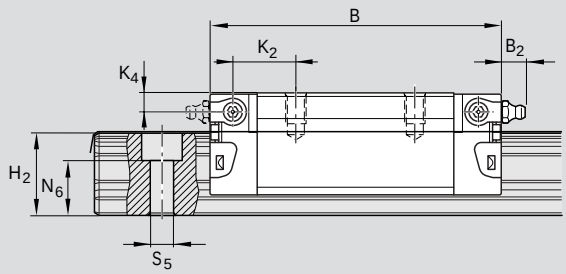
Size	Accuracy class	Part numbers for runner blocks for preload class			
		up to approx. 10 µm clearance	Preload 0.02 C	Preload 0.08 C	Preload 0.13 C
15	P		1622-112-20	1622-122-20	1622-132-20
	H	1622-193-20	1622-113-20	1622-123-20	
	N	1622-194-20	1622-114-20	1622-124-20	
20	P		1622-812-20	1622-822-20	1622-832-20
	H	1622-893-20	1622-813-20	1622-823-20	
	N	1622-894-20	1622-814-20	1622-824-20	
25	P		1622-212-20	1622-222-20	1622-232-20
	H	1622-293-20	1622-213-20	1622-223-20	
	N	1622-294-20	1622-214-20	1622-224-20	
30	P		1622-712-20	1622-722-20	1622-732-20
	H	1622-793-20	1622-713-20	1622-723-20	
	N	1622-794-20	1622-714-20	1622-724-20	
35	P		1622-312-20	1622-322-20	1622-332-20
	H	1622-393-20	1622-313-20	1622-323-20	
	N	1622-394-20	1622-314-20	1622-324-20	
45*	P	1622-412-20	1622-422-20	1622-432-20	1622-432-20
	H	1622-493-20	1622-413-20	1622-423-20	
	N	1622-494-20	1622-414-20	1622-424-20	

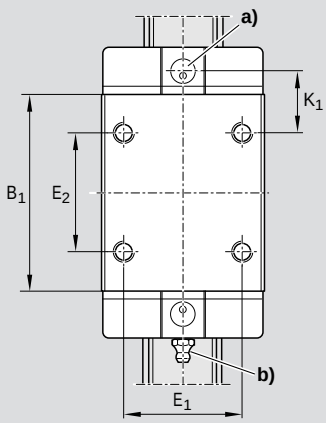
* Under preparation

Note on dynamic load capacities and moments (see table)

Determination of dynamic load capacities and moments is based on a travel life of 100 000 m.
However, frequently this is determined on the basis of only 50 000 m.
In this case for comparison:
multiply values **C, M_t** and **M_L** by 1.26 in accordance with Rexroth table.







a) For O-ring
Size 15: dia. 4 · 1.0 (mm)
Size 20-45: dia. 5 · 1.0 (mm)
Open lube bore as required.
See Accessories:
Mounting lubrication adapter.

b) Lube nipple sizes 15 and 20:
funnel-type nipple
Type A – M3 x 5, DIN 3405
B_2 = 1.6 mm

If another lube nipple is used:
observe the screw-in depth of 5 mm!

Size 25 to 45: M6 x 8,
DIN 71412
B_2 = 9.5 mm

If another lube nipple is used:
observe the screw-in depth of 8 mm!

Connection possible at all sides.

	Dimensions (mm)																		
Size	**A**	**A_1**	**A_2**	**A_3**	**B**	**B_1**	**H**	**H_1**	**H_2[1)]**	**H_2[2)]**	**V_1**	**E_1**	**E_2**	**E_8**	**E_9**	**K_1**	**K_2**	**K_3**	**K_4**
15	34	17	15	9.5	58.2	39.2	24	19.90	16.30	16.20	5.0	26	26	24.55	6.70	10.00	11.60	3.20	3.20
20	44	22	20	12.0	75.0	49.6	30	25.35	20.75	20.55	6.0	32	36	32.50	7.30	13.80	13.80	3.35	3.35
25	48	24	23	12.5	86.2	57.8	36	29.90	24.45	24.25	7.5	35	35	38.30	11.50	17.45	18.60	5.50	5.50
30	60	30	28	16.0	97.7	67.4	42	35.35	28.55	28.35	7.0	40	40	48.40	14.60	20.00	21.70	6.05	6.05
35	70	35	34	18.0	110.5	77.0	48	40.40	32.15	31.85	8.0	50	50	58.00	17.35	20.50	22.00	6.90	6.90
45	86	43	45	20.5	137.6	97.0	60	50.30	40.15	39.85	10.0	60	60	69.80	20.90	27.30	29.30	8.20	8.20

[1)] Dimension H_2 with rail seal cover strip

[2)] Dimension H_2 without rail seal cover strip

			Dimensions (mm)				Mass	Load capacities (N)[3)]		Moments (Nm)			
								C	C_0	M_t	M_{t0}	M_L	M_{L0}
Size	**N_3**		**$N_6^{\pm 0.5}$**	**S_2**	**S_5**	**S_9**	**(kg)**	**dyn.**	**stat.**	**dyn.**	**stat.**	**dyn.**	**stat.**
15	6.0		10.3	M4	4.4	M2.5-3.5 deep	0.15	7 800	13 500	74	130	40	71
20	7.5		13.2	M5	6.0	M3-5 deep	0.35	18 800	24 400	240	310	130	165
25	9.0		15.2	M6	7.0	M3-5 deep	0.50	22 800	30 400	320	430	180	240
30	12.0		17.0	M8	9.0	M3-5 deep	0.85	31 700	41 300	540	720	290	380
35	13.0		20.5	M8	9.0	M3-5 deep	1.25	41 900	54 000	890	1160	440	565
45	18.0		23.5	M10	14.0	M4-7 deep	2.40	68 100	85 700	1830	2310	890	1130

[3)] Load capacities for version without ball retainer. Load capacities for version without ball retainer, see Product Overview with Load Capacities.

Rexroth Ball Rail Systems
Standard Runner Blocks, Steel Version

Runner Block 1622-

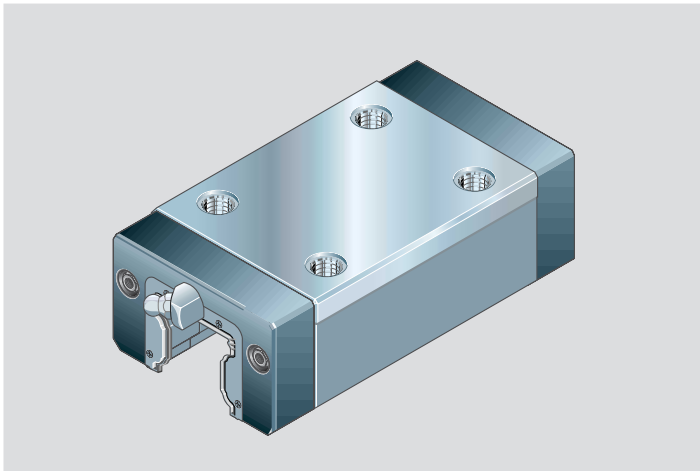
Slimline

Dynamic characteristics

Speed v_{max} = 3 m/s

Acceleration a_{max} = 250 m/s^2

Other technical data, see chapter "General Technical Data and Calculations".



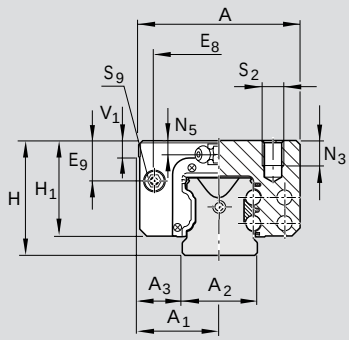
Part numbers

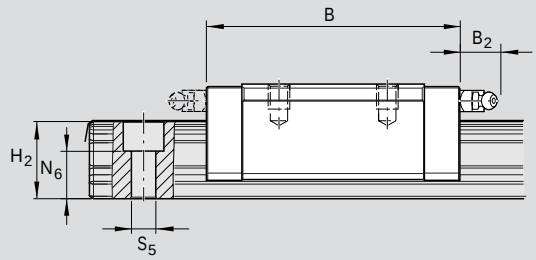
Size	Accuracy class	Part numbers for runner blocks for preload class			
		up to approx. 10 µm clearance	Preload 0.02 C	Preload 0.08 C	Preload 0.13 C
45*	P		1622-412-10	1622-422-10	1622-432-10
	H	1622-493-10	1622-413-10	1622-423-10	
	N	1622-494-10	1622-414-10	1622-424-10	
55	P		1622-512-10	1622-522-10	1622-532-10
	H	1622-593-10	1622-513-10	1622-523-10	
	N	1622-594-10	1622-514-10	1622-524-10	
65	P		1622-612-10	1622-622-10	1622-632-10
	H	1622-693-10	1622-613-10	1622-623-10	
	N	1622-694-10	1622-614-10	1622-624-10	

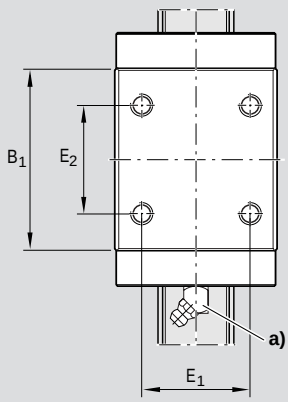
* Phased-out model

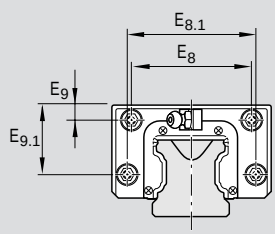
Note on dynamic load capacities and moments (see table)

Determination of dynamic load capacities and moments is based on a travel life of 100 000 m.
However, frequently this is determined on the basis of only 50 000 m.
In this case for comparison:
multiply values **C, M_t** and **M_L** by 1.26 in accordance with Rexroth table.









Size 65

a) Lube nipple sizes 45 and 55:
BM 6 DIN 71412
B_2 = 16 mm

Lube nipple size 65:
BM 8 x 1 DIN 71412
B_2 = 16 mm

Connection possible at either end.

	Dimensions (mm)																	
Size	**A**	**A_1**	**A_2**	**A_3**	**B**	**B_1**	**H**	**H_1**	**H_2[1)]**	**H_2[2)]**	**V_1**	**E_1**	**E_2**	**E_8**	**$E_{8.1}$**	**E_9**	**$E_{9.1}$**	**N_3**
45	86	43	45	20.5	133	97.0	60	50.0	40.15	39.85	10.0	60	60	69.8		20.9		18.0
55	100	50	53	23.5	159	115.5	70	57.0	48.15	47.85	12.0	75	75	80.0		22.3		19.0
65	126	63	63	31.5	188	139.6	90	76.0	60.15	59.85	15.0	76	70	76.0	100	11.0	53.5	21.0

[1)] Dimension H_2 with rail seal cover strip

[2)] Dimension H_2 without rail seal cover strip

								Load capacities (N)				Moments (Nm)			
	Dimensions (mm)						Mass	C	C_0	M_t	M_{t0}	M_L	M_{L0}		
Size	**N_5**	**$N_6^{\pm 0.5}$**		**S_2**	**S_5**	**S_9**	**(kg)**	**dyn.**	**stat.**	**dyn.**	**stat.**	**dyn.**	**stat.**		
45	8.0	23.5		M10	14.0	M4-7 deep	2.30	68 100	85 700	1 830	2 310	890	1 130		
55	9.0	29.0		M12	16.0	M5-8 deep	3.80	98 200	121 400	3 100	3 860	1 540	1 905		
65	16.0	38.5		M16	18.0	M4-7 deep	6.90	123 000	192 700	6 300	7 610	3 160	3 815		

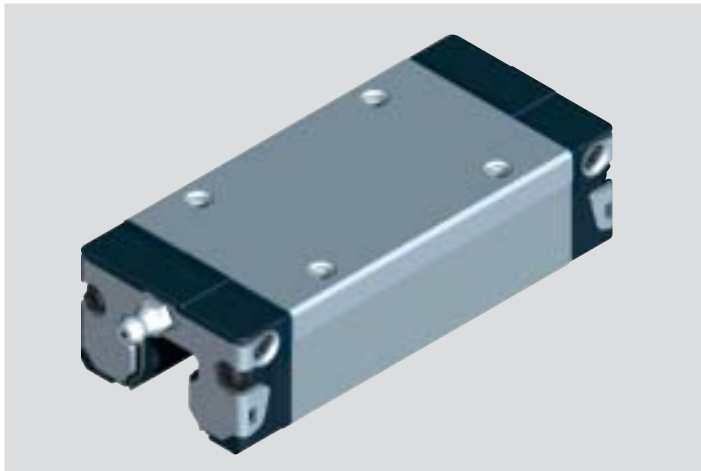
Rexroth Ball Rail Systems
Standard Runner Blocks, Steel Version

Runner Block 1623-

Slimline, long

Versions:

– Runner block without ball retainer: for part numbers, see table
– Runner block with ball retainer: part numbers 1623-...-22



Dynamic Characteristics

Speed v_{max} = 5 m/s

Acceleration a_{max} = 500 m/s^2

Other technical data, see chapter "General Technical Data and Calculations".

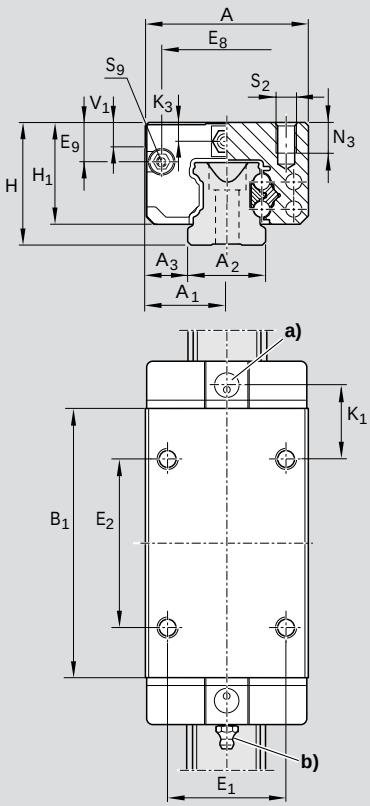
Part numbers

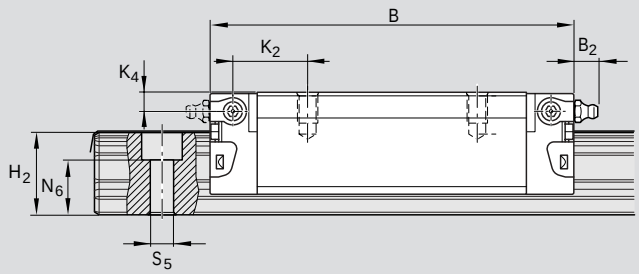
Size	Accuracy class	Part numbers for runner blocks for preload class			
		up to approx. 10 µm clearance	Preload 0.02 C	Preload 0.08 C	Preload 0.13 C
15	N	1623-194-20	1623-114-20		
20	P		1623-812-20	1623-822-20	1623-832-20
	H	1623-893-20	1623-813-20	1623-823-20	
	N	1623-894-20	1623-814-20	1623-824-20	
25	P		1623-212-20	1623-222-20	1623-232-20
	H	1623-293-20	1623-213-20	1623-223-20	
	N	1623-294-20	1623-214-20	1623-224-20	
30	P		1623-712-20	1623-722-20	1623-732-20
	H	1623-793-20	1623-713-20	1623-723-20	
	N	1623-794-20	1623-714-20	1623-724-20	
35	P		1623-312-20	1623-322-20	1623-332-20
	H	1623-393-20	1623-313-20	1623-323-20	
	N	1623-394-20	1623-314-20	1623-324-20	
45*	P		1623-412-20	1623-422-20	1623-432-20
	H	1623-493-20	1623-413-20	1623-423-20	
	N	1623-494-20	1623-414-20	1623-424-20	

* Under preparation

Note on dynamic load capacities and moments (see table)

Determination of dynamic load capacities and moments is based on a travel life of 100 000 m.
However, frequently this is determined on the basis of only 50 000 m.
In this case for comparison:
multiply values **C, M_t** and **M_L** by 1.26 in accordance with Rexroth table.





a) For O-ring
Size 15: dia. 4 · 1.0 (mm)
Size 20-45: dia. 5 · 1.0 (mm)
Open lube bore as required.
See Accessories:
Mounting lubrication adapter.

b) Lube nipple sizes 15 and 20:
funnel-type nipple
Type A – M3 x 5, DIN 3405
B_2 = 1.6 mm

If another lube nipple is used:
observe the screw-in depth of 5 mm!

Size 25 to 45: M6 x 8,
DIN 71412
B_2 = 9.5 mm

If another lube nipple is used:
observe the screw-in depth of 8 mm!

Connection possible at all sides.

	Dimensions (mm)																		
Size	**A**	**A_1**	**A_2**	**A_3**	**B**	**B_1**	**H**	**H_1**	**H_2[1)]**	**H_2[2)]**	**V_1**	**E_1**	**E_2**	**E_8**	**E_9**	**K_1**	**K_2**	**K_3**	**K_4**
15	34	17	15	9.5	72.6	53.6	24	19.90	16.30	16.20	5.0	26	26	24.55	6.70	17.20	18.80	3.20	3.20
20	44	22	20	12.0	91.0	65.6	30	25.35	20.75	20.55	6.0	32	50	32.50	7.30	14.80	14.80	3.35	3.35
25	48	24	23	12.5	107.9	79.5	36	29.90	24.45	24.25	7.5	35	50	38.30	11.50	20.80	21.95	5.50	5.50
30	60	30	28	16.0	119.7	89.4	42	35.35	28.55	28.35	7.0	40	60	48.40	14.60	21.00	22.70	6.05	6.05
35	70	35	34	18.0	139.0	105.5	48	40.40	32.15	31.85	8.0	50	72	58.00	17.35	23.75	25.25	6.90	6.90
45	86	43	45	20.5	174.1	133.5	60	50.3	40.15	39.85	10.0	60	80	69.8	20.90	35.50	37.50	8.20	8.20

[1)] Dimension H_2 with rail seal cover strip

[2)] Dimension H_2 without rail seal cover strip

								Load capacities (N)[3)]		Moments (Nm)			
	Dimensions (mm)						Mass	C	C_0	M_t	M_{t0}	M_L	M_{L0}
Size	**N_3**		**$N_6^{\pm 0.5}$**	**S_2**	**S_5**	**S_9**	**(kg)**	**dyn.**	**stat.**	**dyn.**	**stat.**	**dyn.**	**stat.**
15	6.0		10.3	M4	4.4	M2.5-3.5 deep	0.20	10 000	20 200	130	190	98	150
20	7.5		13.2	M5	6.0	M3-5 deep	0.45	24 400	35 200	310	450	225	330
25	9.0		15.2	M6	7.0	M3-5 deep	0.65	30 400	45 500	430	650	345	510
30	12.0		17.0	M8	9.0	M3-5 deep	1.10	40 000	57 800	690	1 000	495	715
35	13.0		20.5	M8	9.0	M3-5 deep	1.70	55 600	81 000	1 200	1 740	830	1 215
45	18.0		23.5	M10	14.0	M4-7 deep	3.20	90 400	128 500	2 440	3 470	1 700	2 425

[3)] Load capacities for version without ball retainer. Load capacities for version without ball retainer, see Product Overview with Load Capacities.

Rexroth Ball Rail Systems
Standard Runner Blocks, Steel Version

Runner Block 1623-

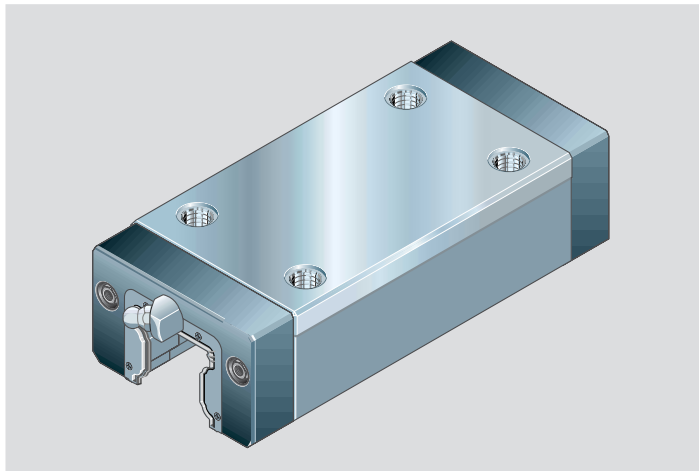
Slimline, long

Dynamic Characteristics

Speed v_{max} = 3 m/s

Acceleration a_{max} = 250 m/s²

Other technical data, see chapter "General Technical Data and Calculations".



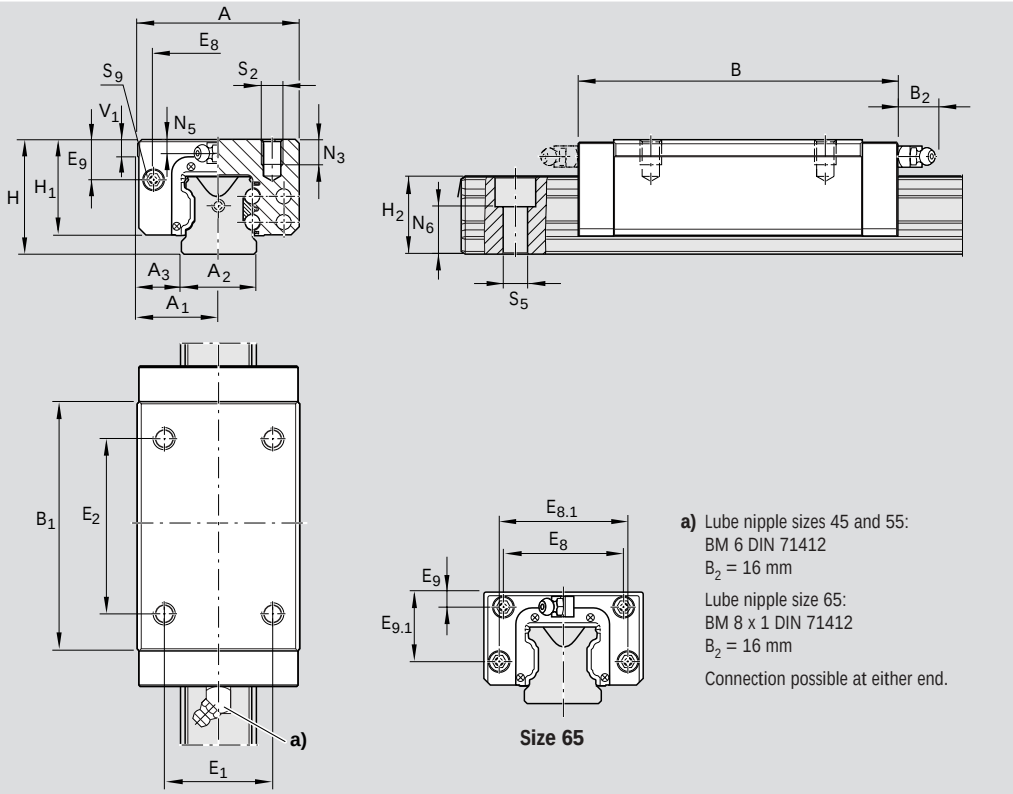
Part numbers

Size	Accuracy class	Part numbers for runner blocks for preload class			
		up to approx. 10 µm clearance	Preload 0.02 C	Preload 0.08 C	Preload 0.13 C
45*	P		1623-412-10	1623-422-10	1623-432-10
	H	1623-493-10	1623-413-10	1623-423-10	
	N	1623-494-10	1623-414-10	1623-424-10	
55	P		1623-512-10	1623-522-10	1623-532-10
	H	1623-593-10	1623-513-10	1623-523-10	
	N	1623-594-10	1623-514-10	1623-524-10	
65	P		1623-612-10	1623-622-10	1623-632-10
	H	1623-693-10	1623-613-10	1623-623-10	
	N	1623-694-10	1623-614-10	1623-624-10	

* Phased-out model

Note on dynamic load capacities and moments (see table)

Determination of dynamic load capacities and moments is based on a travel life of 100 000 m.
However, frequently this is determined on the basis of only 50 000 m.
In this case for comparison:
multiply values **C**, $\mathbf{M_t}$ and $\mathbf{M_L}$ by 1.26 in accordance with Rexroth table.



a) Lube nipple sizes 45 and 55:
BM 6 DIN 71412
B_2 = 16 mm

Lube nipple size 65:
BM 8 x 1 DIN 71412
B_2 = 16 mm

Connection possible at either end.

	Dimensions (mm)																	
Size	**A**	**A_1**	**A_2**	**A_3**	**B**	**B_1**	**H**	**H_1**	**H_2[1)]**	**H_2[2)]**	**V_1**	**E_1**	**E_2**	**E_8**	**$E_{8.1}$**	**E_9**	**$E_{9.1}$**	**N_3**
45	86	43	45	20.5	170.0	133.5	60	50.0	40.15	39.85	10.0	60	80	69.8		20.9		18.0
55	100	50	53	23.5	200.0	155.5	70	57.0	48.15	47.85	12.0	75	95	80.0		22.3		19.0
65	126	63	63	31.5	243.0	194.6	90	76.0	60.15	59.85	15.0	76	120	76.0	100	11.0	53.5	21.0

[1)] Dimension H_2 with rail seal cover strip

[2)] Dimension H_2 without rail seal cover strip

								Load capacities (N)		Moments (Nm)			
	Dimensions (mm)						Mass	C	C_0	M_t	M_{t0}	M_L	M_{L0}
Size	**N_5**	**$N_6^{\pm 0.5}$**		**S_2**	**S_5**	**S_9**	**(kg)**	**dyn.**	**stat.**	**dyn.**	**stat.**	**dyn.**	**stat.**
45	8.0	23.5		M10	14.0	M4-7 deep	3.1	90 400	128 500	2 440	3 470	1 700	2 425
55	9.0	29.2		M12	16.0	M5-8 deep	4.8	124 200	170 000	3 950	5 400	2 630	3 600
65	16.0	38.5		M16	18.0	M4-7 deep	9.8	163 000	289 000	6 440	11 420	4 620	8 190

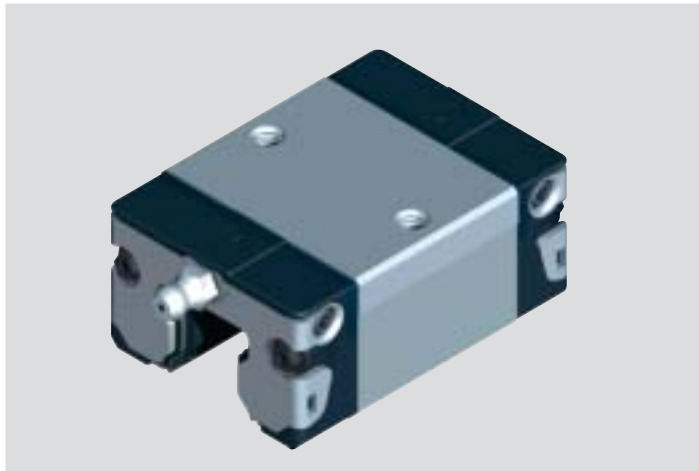
Rexroth Ball Rail Systems
Standard Runner Blocks, Steel Version

Runner Block 1666-

Slimline, short

Versions:

– Runner block without ball retainer: for part numbers, see table
– Runner block with ball retainer: part numbers 1666-...-22



Dynamic Characteristics

Speed v_{max} = 5 m/s

Acceleration a_{max} = 500 m/s^2

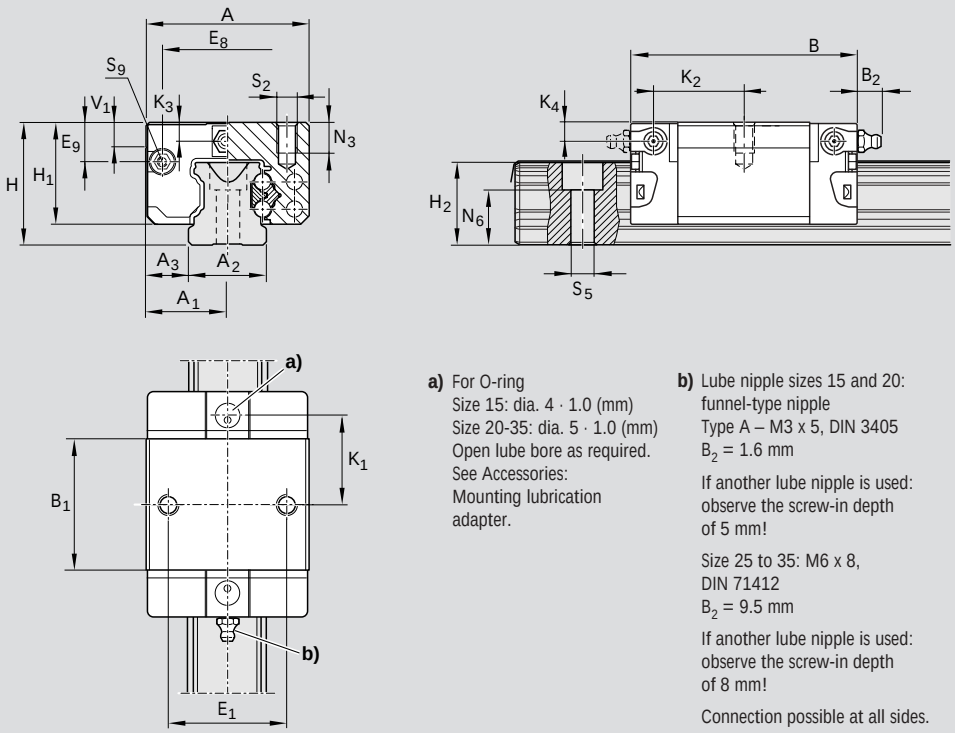
Other technical data, see chapter "General Technical Data and Calculations".

Part numbers

Size	Accuracy class	Part numbers for runner blocks for preload class	
		up to approx. 10 µm clearance	Preload 0.02 C
15	H	1666-193-20	1666-113-20
	N	1666-194-20	1666-114-20
20	H	1666-893-20	1666-813-20
	N	1666-894-20	1666-814-20
25	H	1666-293-20	1666-213-20
	N	1666-294-20	1666-214-20
30	H	1666-793-20	1666-713-20
	N	1666-794-20	1666-714-20
35	H	1666-393-20	1666-313-20
	N	1666-394-20	1666-314-20

Note on dynamic load capacities and moments (see table)

Determination of dynamic load capacities and moments is based on a travel life of 100 000 m.
However, frequently this is determined on the basis of only 50 000 m.
In this case for comparison:
multiply values **C, M_t** and **M_L** by 1.26 in accordance with Rexroth table.



a) For O-ring
Size 15: dia. 4 · 1.0 (mm)
Size 20-35: dia. 5 · 1.0 (mm)
Open lube bore as required.
See Accessories:
Mounting lubrication adapter.

b) Lube nipple sizes 15 and 20:
funnel-type nipple
Type A – M3 x 5, DIN 3405
B_2 = 1.6 mm

If another lube nipple is used:
observe the screw-in depth
of 5 mm!

Size 25 to 35: M6 x 8,
DIN 71412
B_2 = 9.5 mm

If another lube nipple is used:
observe the screw-in depth
of 8 mm!

Connection possible at all sides.

	Dimensions (mm)																		
Size	**A**	**A_1**	**A_2**	**A_3**	**B**	**B_1**	**H**	**H_1**	**H_2[1)]**	**H_2[2)]**	**V_1**	**E_1**		**E_8**	**E_9**	**K_1**	**K_2**	**K_3**	**K_4**
15	34	17	15	9.5	44.7	25.7	24	19.90	16.30	16.20	5.0	26		24.55	6.70	16.25	17.85	3.20	3.20
20	44	22	20	12.0	57.3	31.9	30	25.35	20.75	20.55	6.0	32		32.50	7.30	22.95	22.95	3.35	3.35
25	48	24	23	12.5	67.0	38.6	36	29.90	24.45	24.25	7.5	35		38.30	11.50	25.35	26.50	5.50	5.50
30	60	30	28	16.0	75.3	45.0	42	35.35	28.55	28.35	7.0	40		48.40	14.60	28.80	30.50	6.05	6.05
35	70	35	34	18.0	84.9	51.4	48	40.40	32.15	31.85	8.0	50		58.00	17.35	32.70	34.20	6.90	6.90

[1)] Dimension H_2 with rail seal cover strip

[2)] Dimension H_2 without rail seal cover strip

							Load capacities (N)[3)]		Moments (Nm)			
	Dimensions (mm)					Mass	C	C_0	M_t	M_{t0}	M_L	M_{L0}
Size	**N_3**	**$N_6^{\pm 0.5}$**	**S_2**	**S_5**	**S_9**	**(kg)**	**dyn.**	**stat.**	**dyn.**	**stat.**	**dyn.**	**stat.**
15	6.0	10.3	M4	4.4	M2.5-3.5 deep	0.10	6 800	8 100	52	80	19	28
20	7.5	13.2	M5	6.0	M3-5 deep	0.25	12 400	13 600	150	170	52	58
25	9.0	15.2	M6	7.0	M3-5 deep	0.35	15 800	18 200	230	260	82	94
30	12.0	17.0	M8	9.0	M3-5 deep	0.60	22 100	24 800	380	430	133	150
35	13.0	20.5	M8	9.0	M3-5 deep	0.90	29 300	32 400	640	700	200	220

[3)] Load capacities for version without ball retainer. Load capacities for version without ball retainer, see Product Overview with Load Capacities.

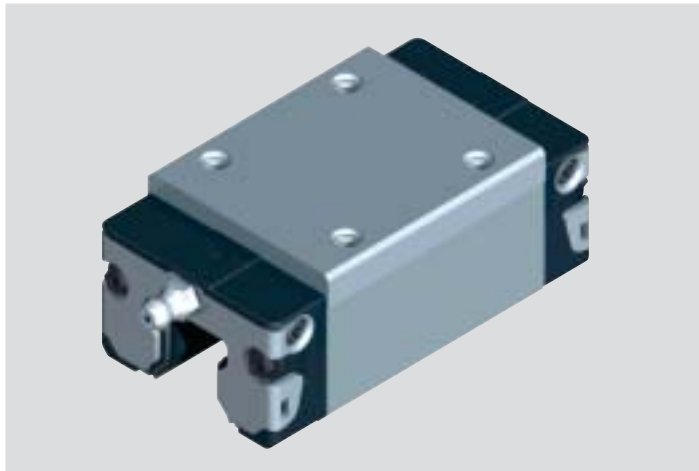
Rexroth Ball Rail Systems
Standard Runner Blocks, Steel Version

Runner Block 1621-

Slimline, high

Versions:

– Runner block without ball retainer: for part numbers, see table
– Runner block with ball retainer: part numbers 1621-...-22



Dynamic characteristics

Speed v_{max} = 5 m/s

Acceleration a_{max} = 500 m/s^2

Other technical data, see chapter "General Technical Data and Calculations".

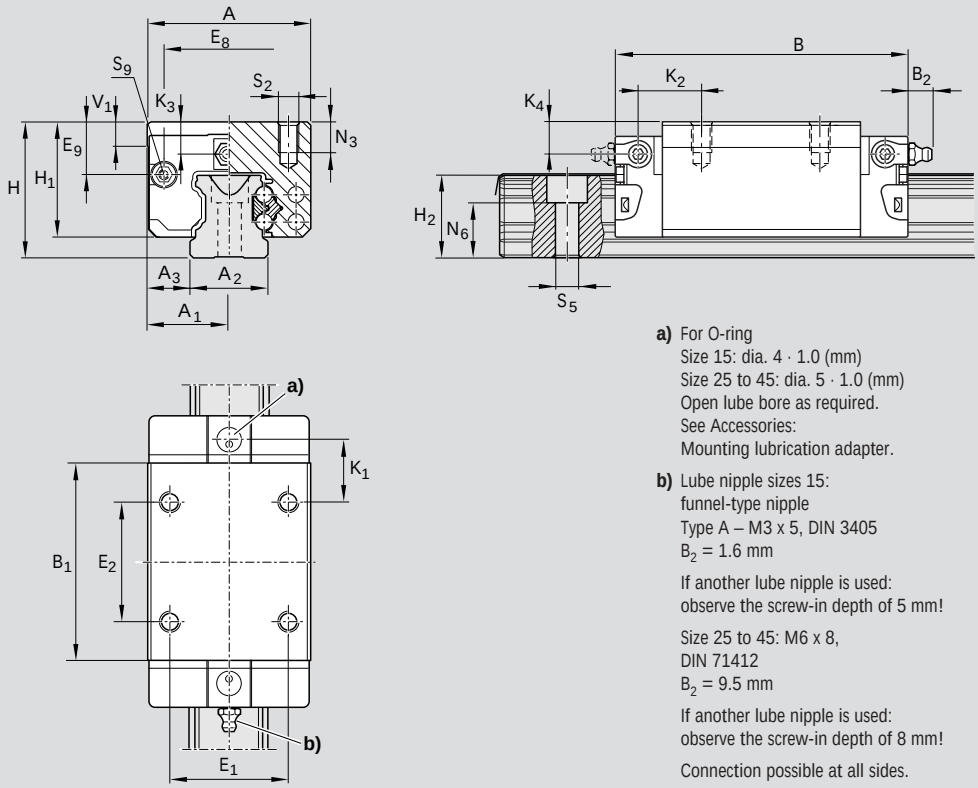
Part numbers

Size	Accuracy class	Part numbers for runner blocks for preload class			
		up to approx. 10 µm clearance	Preload 0.02 C	Preload 0.08 C	Preload 0.13 C
15	P		1621-112-20	1621-122-20	1621-132-20
	H	1621-193-20	1621-113-20	1621-123-20	
	N	1621-194-20	1621-114-20	1621-124-20	
25	P		1621-212-20	1621-222-20	1621-232-20
	H	1621-293-20	1621-213-20	1621-223-20	
	N	1621-294-20	1621-214-20	1621-224-20	
30	P		1621-712-20	1621-722-20	1621-732-20
	H	1621-793-20	1621-713-20	1621-723-20	
	N	1621-794-20	1621-714-20	1621-724-20	
35	P		1621-312-20	1621-322-20	1621-332-20
	H	1621-393-20	1621-313-20	1621-323-20	
	N	1621-394-20	1621-314-20	1621-324-20	
45*	P	1621-412-20	1621-422-20	1621-432-20	1621-432-20
	H	1621-493-20	1621-413-20	1621-423-20	
	N	1621-494-20	1621-414-20	1621-424-20	

* Under preparation

Note on dynamic load capacities and moments (see table)

Determination of dynamic load capacities and moments is based on a travel life of 100 000 m.
However, frequently this is determined on the basis of only 50 000 m.
In this case for comparison:
multiply values **C, M_t** and **M_L** by 1.26 in accordance with Rexroth table.



a) For O-ring
Size 15: dia. 4 · 1.0 (mm)
Size 25 to 45: dia. 5 · 1.0 (mm)
Open lube bore as required.
See Accessories:
Mounting lubrication adapter.

b) Lube nipple sizes 15:
funnel-type nipple
Type A – M3 x 5, DIN 3405
B_2 = 1.6 mm

If another lube nipple is used:
observe the screw-in depth of 5 mm!

Size 25 to 45: M6 x 8,
DIN 71412
B_2 = 9.5 mm

If another lube nipple is used:
observe the screw-in depth of 8 mm!

Connection possible at all sides.

Size	Dimensions (mm)																		
	A	A_1	A_2	A_3	B	B_1	H	H_1	H_2[1]	H_2[2]	V_1	E_1	E_2	E_8	E_9	K_1	K_2	K_3	K_4
15	34	17	15	9.5	58.2	39.2	28	23.90	16.30	16.20	5.0	26	26	24.55	10.70	10.00	11.60	7.20	7.20
25	48	24	23	12.5	86.2	57.8	40	33.90	24.45	24.25	7.5	35	35	38.30	15.50	17.45	18.60	9.50	9.50
30	60	30	28	16.0	97.7	67.4	45	38.35	28.55	28.35	7.0	40	40	48.40	17.60	20.00	21.70	9.05	9.05
35	70	35	34	18.0	110.5	77.0	55	47.40	32.15	31.85	8.0	50	50	58.00	24.35	20.50	22.00	13.90	13.90
45	86	43	45	20.5	137.6	97.0	70	60.30	40.15	39.85	10.0	60	60	69.8	30.9	27.3	29.3	18.20	18.20

[1] Dimension H_2 with rail seal cover strip

[2] Dimension H_2 without rail seal cover strip

Size	Dimensions (mm)						Mass	Load capacities (N)[3]		Moments (Nm)			
	N_3		$N_6^{\pm 0.5}$	S_2	S_5	S_9	(kg)	C dyn.	C_0 stat.	M_t dyn.	M_{t0} stat.	M_L dyn.	M_{L0} stat.
15	6.0		10.3	M4	4.4	M2.5-3.5 deep	0.20	7 800	13 500	74	130	40	71
25	9.0		15.2	M6	7.0	M3-5 deep	0.60	22 800	30 400	320	430	180	240
30	12.0		17.0	M8	9.0	M3-5 deep	0.95	31 700	41 300	540	720	290	380
35	13.0		20.5	M8	9.0	M3-5 deep	1.55	41 900	54 000	890	1 160	440	565
45	18.0		23.5	M10	14.0	M4-7 deep	3.00	68 100	85 700	1 830	2 310	890	1130

[3] Load capacities for version without ball retainer. Load capacities for version without ball retainer, see Product Overview with Load Capacities.

Rexroth Ball Rail Systems
Standard Runner Blocks, Steel Version

Runner Block 1621-

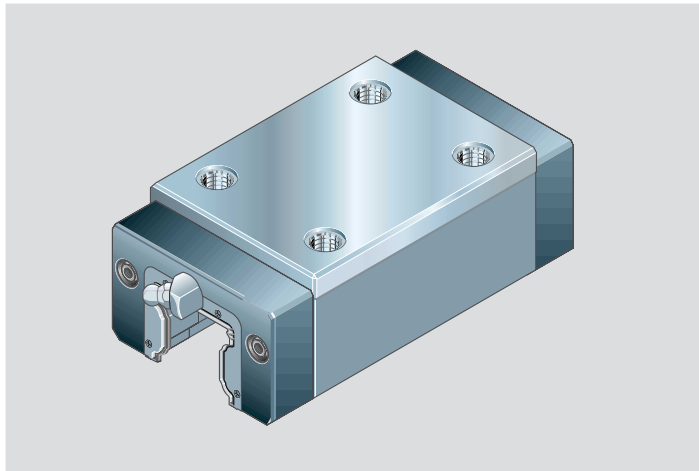
Slimline, high

Dynamic characteristics

Speed v_{max} = 3 m/s

Acceleration a_{max} = 250 m/s^2

Other technical data, see chapter "General Technical Data and Calculations".



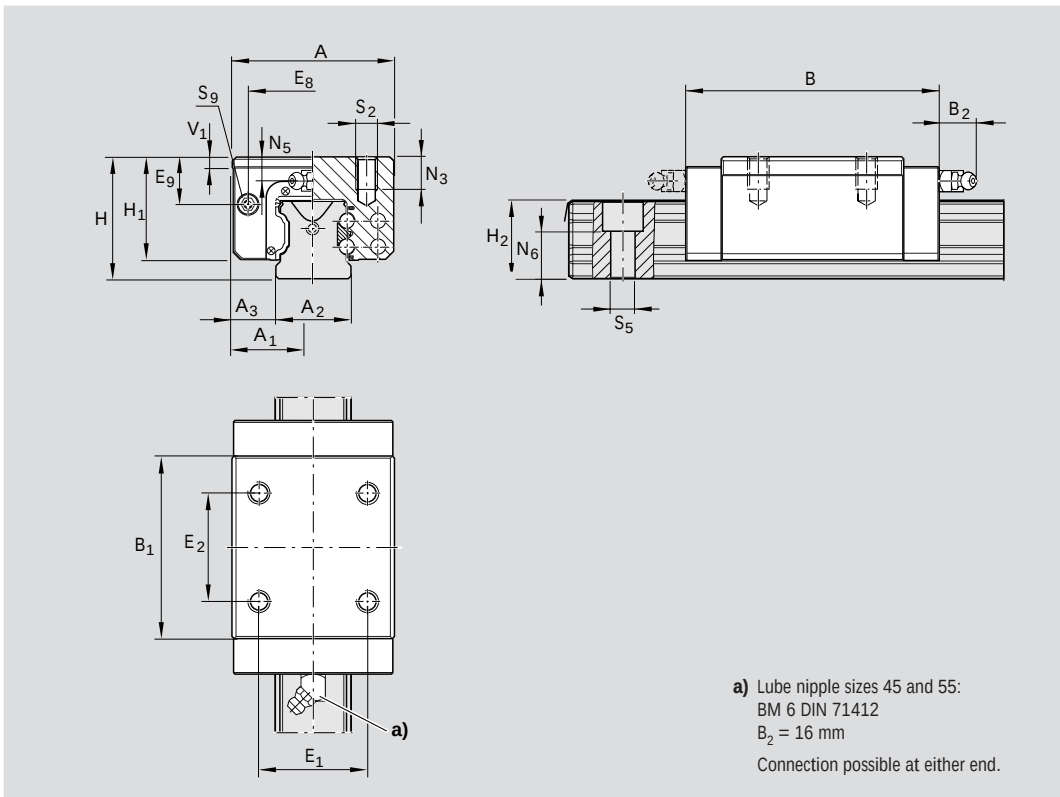
Part numbers

Size	Accuracy class	Part numbers for runner block for preload class			
		up to approx. 10 µm clearance	Preload 0.02 C	Preload 0.08 C	Preload 0.13 C
45*	P		1621-412-10	1621-422-10	1621-432-10
	H	1621-493-10	1621-413-10	1621-423-10	
	N	1621-494-10	1621-414-10	1621-424-10	
55	P		1621-512-10	1621-522-10	1621-532-10
	H	1621-593-10	1621-513-10	1621-523-10	
	N	1621-594-10	1621-514-10	1621-524-10	

* Phased-out model

Note on dynamic load capacities and moments (see table)

Determination of dynamic load capacities and moments is based on a travel life of 100 000 m.
However, frequently this is determined on the basis of only 50 000 m.
In this case for comparison:
multiply values **C, M_t** and **M_L** by 1.26 in accordance with Rexroth table.



a) Lube nipple sizes 45 and 55:
BM 6 DIN 71412
B_2 = 16 mm
Connection possible at either end.

Size	Dimensions (mm)																	
	A	A_1	A_2	A_3	B	B_1	H	H_1	H_2[1]	H_2[2]	V_1	E_1	E_2	E_8	E_9			N_3
45	86	43	45	20.5	133.0	97.0	70	60.0	40.15	39.85	10.0	60	60	69.8	30.9			18
55	100	50	53	23.5	159.0	115.5	80	67.0	48.15	47.85	12.0	75	75	80.0	32.3			19

[1] Dimension H_2 with rail seal cover strip

[2] Dimension H_2 without rail seal cover strip

Size	Dimensions (mm)						Mass	Load capacities (N)		Moments (Nm)			
	N_5	$N_6^{\pm 0.5}$		S_2	S_5	S_9	(kg)	C dyn.	C_0 stat.	M_t dyn.	M_{t0} stat.	M_L dyn.	M_{L0} stat.
45	18.0	23.5		M10	14.0	M4-7 deep	2.90	68 100	85 700	1 830	2 310	890	1 130
55	19.0	29.0		M12	16.0	M5-8 deep	4.70	98 200	121 400	3 100	3 860	1 540	1 905

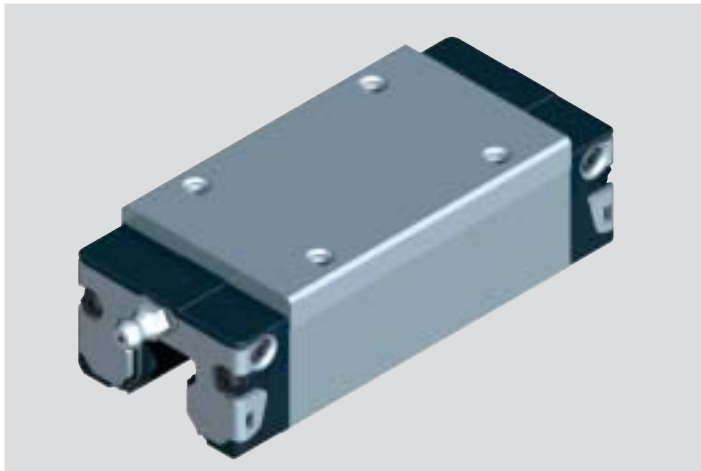
Rexroth Ball Rail Systems
Standard Runner Blocks, Steel Version

Runner Block 1624-

Slimline, high, long

Versions:

– Runner block without ball retainer: for part numbers, see table
– Runner block with ball retainer: part numbers 1624-...-22



Dynamic characteristics

Speed v_{max} = 5 m/s

Acceleration a_{max} = 500 m/s^2

Other technical data, see chapter "General Technical Data and Calculations".

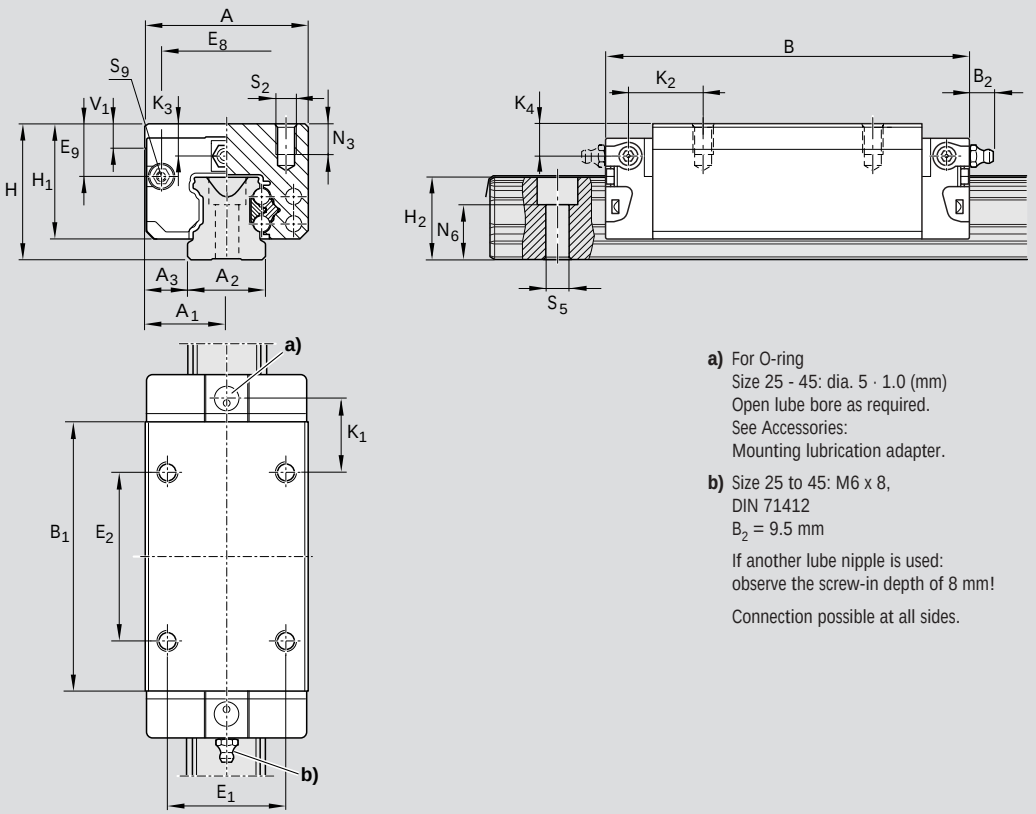
Part numbers

Size	Accuracy class	Part numbers for runner blocks for preload class			
		up to approx. 10 µm clearance	Preload 0.02 C	Preload 0.08 C	Preload 0.13 C
25	P		1624-212-20	1624-222-20	1624-232-20
	H	1624-293-20	1624-213-20	1624-223-20	
	N	1624-294-20	1624-214-20	1624-224-20	
30	P		1624-712-20	1624-722-20	1624-732-20
	H	1624-793-20	1624-713-20	1624-723-20	
	N	1624-794-20	1624-714-20	1624-724-20	
35	P		1624-312-20	1624-322-20	1624-332-20
	H	1624-393-20	1624-313-20	1624-323-20	
	N	1624-394-20	1624-314-20	1624-324-20	
45*	P		1624-412-20	1624-422-20	1624-432-20
	H	1624-493-20	1624-413-20	1624-423-20	
	N	1624-494-20	1624-414-20	1624-424-20	

* Under preparation

Note on dynamic load capacities and moments (see table)

Determination of dynamic load capacities and moments is based on a travel life of 100 000 m.
However, frequently this is determined on the basis of only 50 000 m.
In this case for comparison:
multiply values **C, M_t** and **M_L** by 1.26 in accordance with Rexroth table.



a) For O-ring
Size 25 - 45: dia. 5 · 1.0 (mm)
Open lube bore as required.
See Accessories:
Mounting lubrication adapter.

b) Size 25 to 45: M6 x 8,
DIN 71412
B_2 = 9.5 mm

If another lube nipple is used:
observe the screw-in depth of 8 mm!

Connection possible at all sides.

	Dimensions (mm)																		
Size	**A**	**A_1**	**A_2**	**A_3**	**B**	**B_1**	**H**	**H_1**	**H_2[1)]**	**H_2[2)]**	**V_1**	**E_1**	**E_2**	**E_8**	**E_9**	**K_1**	**K_2**	**K_3**	**K_4**
25	48	24	23	12.5	107.9	79.5	40	33.90	24.45	24.25	7.5	35	50	38.30	15.50	20.80	21.95	9.50	9.50
30	60	30	28	16.0	119.7	89.4	45	38.35	28.55	28.35	7.0	40	60	48.40	17.60	21.00	22.70	9.05	9.05
35	70	35	34	18.0	139.0	105.5	55	47.40	32.15	31.85	8.0	50	72	58.00	24.35	23.75	25.25	13.90	13.90
45	86	43	45	20.5	174.1	133.5	70	60.30	40.15	39.85	10.0	60	80	69.80	30.90	35.50	37.50	18.20	18.20

[1)] Dimension H_2 with rail seal cover strip

[2)] Dimension H_2 without rail seal cover strip

							Load capacities (N)[3)]		Moments (Nm)			
		Dimensions (mm)				Mass	C	C_0	M_t	M_{t0}	M_L	M_{L0}
Size	**N_3**	**$N_6^{\pm 0.5}$**	**S_2**	**S_5**	**S_9**	**(kg)**	**dyn.**	**stat.**	**dyn.**	**stat.**	**dyn.**	**stat.**
25	9.0	15.2	M6	7.0	M3-5 deep	0.80	30 400	45 500	430	650	345	510
30	12.0	17.0	M8	9.0	M3-5 deep	1.20	40 000	57 800	690	1 000	495	715
35	13.0	20.5	M8	9.0	M3-5 deep	2.10	55 600	81 000	1 200	1 740	830	1 215
45	18.0	23.5	M10	14.0	M4-7 deep	4.10	90 400	128 500	2 440	3 470	1 700	2 425

[3)] Load capacities for version without ball retainer. Load capacities for version without ball retainer, see Product Overview with Load Capacities.

Rexroth Ball Rail Systems
Standard Runner Blocks, Steel Version

Runner Block 1624-

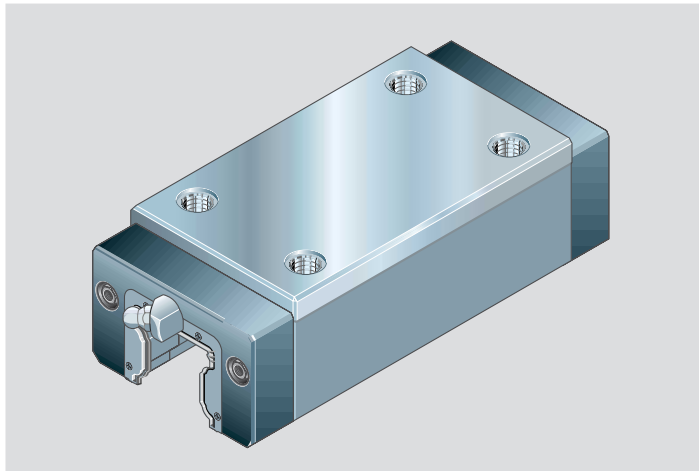
Slimline, high, long

Dynamic characteristics

Speed v_{max} = 3 m/s

Acceleration a_{max} = 250 m/s^2

Other technical data, see chapter "General Technical Data and Calculations".



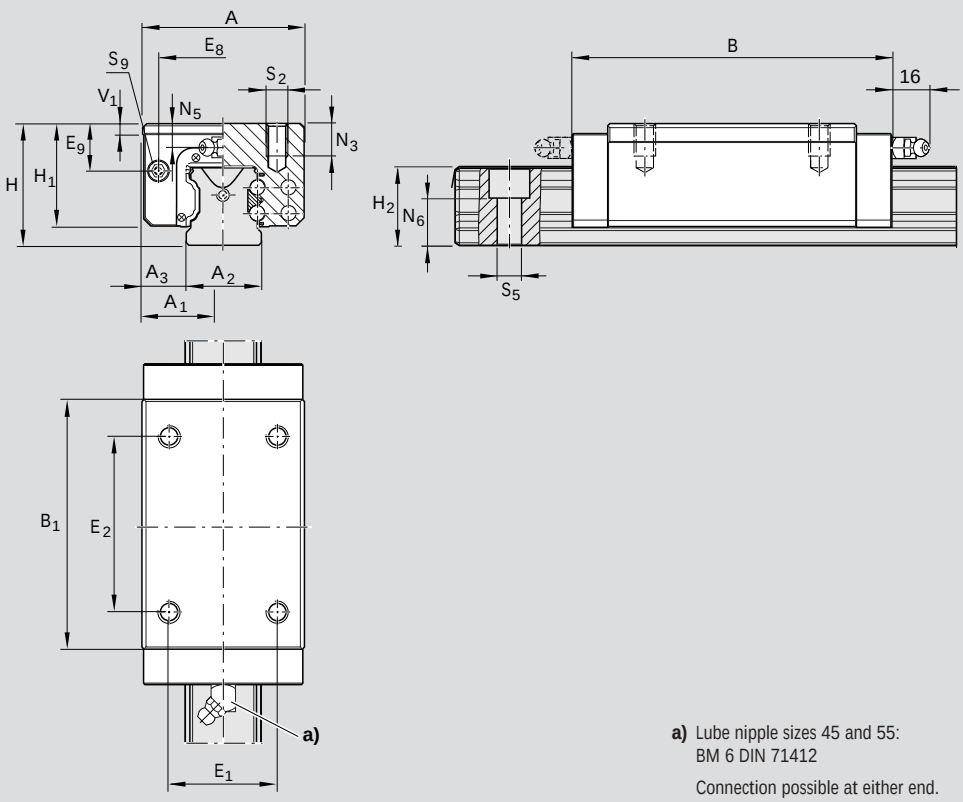
Part numbers

Size	Accuracy class	Part numbers for runner block for preload class			
		up to approx. 10 µm clearance	Preload 0.02 C	Preload 0.08 C	Preload 0.13 C
45*	P		1624-412-10	1624-422-10	1624-432-10
	H	1624-493-10	1624-413-10	1624-423-10	
	N	1624-494-10	1624-414-10	1624-424-10	
55	P		1624-512-10	1624-522-10	1624-532-10
	H	1624-593-10	1624-513-10	1624-523-10	
	N	1624-594-10	1624-514-10	1624-524-10	

* Phased-out model

Note on dynamic load capacities and moments (see table)

Determination of dynamic load capacities and moments is based on a travel life of 100 000 m.
However, frequently this is determined on the basis of only 50 000 m.
In this case for comparison:
multiply values **C**, $\mathbf{M_t}$ and $\mathbf{M_L}$ by 1.26 in accordance with Rexroth table.



a) Lube nipple sizes 45 and 55:
BM 6 DIN 71412

Connection possible at either end.

Size	Dimensions (mm)																	
	A	A_1	A_2	A_3	B	B_1	H	H_1	H_2[1)]	H_2[2)]	V_1	E_1	E_2	E_8	E_9			N_3
45	86	43	45	20.5	170	133.5	70	60.0	40.15	39.85	10.0	60	80	69.8	20.9			18
55	100	50	53	23.5	200	155.5	80	67.0	48.15	47.85	12.0	75	95	80.0	32.3			19

[1)] Dimension H_2 with rail seal cover strip

[2)] Dimension H_2 without rail seal cover strip

Size	Dimensions (mm)						Mass	Load capacities (N)		Moments (Nm)			
	N_5	$N_6^{\pm 0.5}$		S_2	S_5	S_9	(kg)	C dyn.	C_0 stat.	M_t dyn.	M_{t0} stat.	M_L dyn.	M_{L0} stat.
45	18.0	23.5		M10	14.0	M4-7 deep	4.00	90 400	128 500	2 440	3 470	1 700	2 425
55	19.0	29.0		M12	16.0	M5-8 deep	6.00	124 200	170 000	3 950	5 400	2 630	3 600

Rexroth Ball Rail Systems
Low Profile Runner Blocks, Steel Version

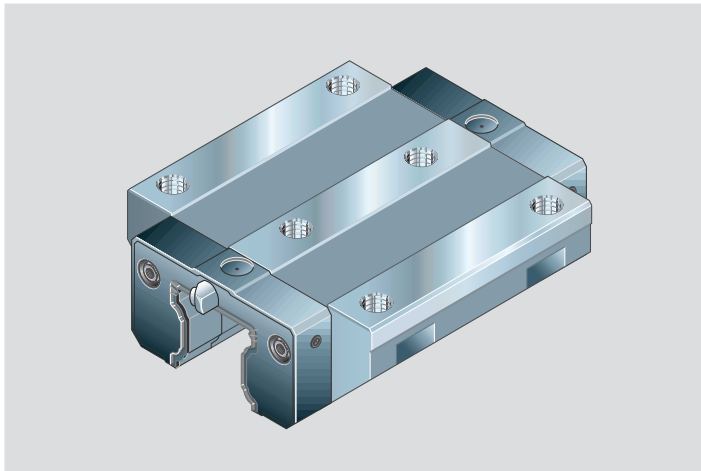
Runner Block 1693-

Standard Width, low profile

Special versions:

Runner blocks in accuracy class N (clearance and preload 0.02 C) are also available:

– with low friction seals (part numbers 16..-..4-11).



Dynamic characteristics

Speed v_{max} = 3 m/s

Acceleration a_{max} = 250 m/s^2

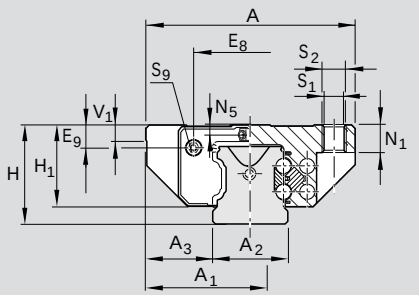
Other technical data, see chapter "General Technical Data and Calculations".

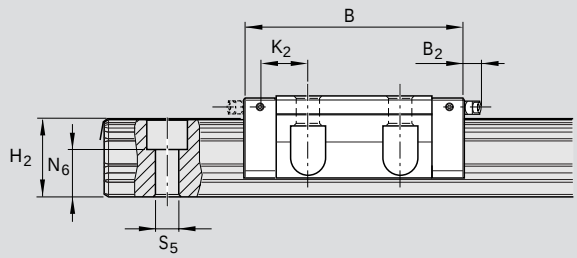
Part numbers

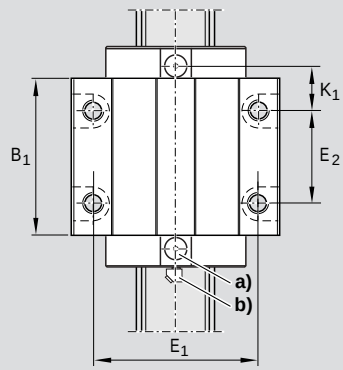
Size	Accuracy class	Part numbers for runner blocks for preload class	
		up to approx. 10 µm clearance	Preload 0.02 C
20	H	1693-893-10	1693-813-10
	N	1693-894-10	1693-814-10
25	H	1693-293-10	1693-213-10
	N	1693-294-10	1693-214-10

Note on dynamic load capacities and moments (see table)

Determination of dynamic load capacities and moments is based on a travel life of 100 000 m.
However, frequently this is determined on the basis of only 50 000 m.
In this case for comparison:
multiply values **C**, $\mathbf{M_t}$ and $\mathbf{M_L}$ by 1.26 in accordance with Rexroth table.







a) For O-ring dia. 5 · 1 mm
Open lube bore as required.
Send for instructions.

b) Lube nipple
Funnel-type nipple
Type B – Thread size M3
B_2 = 8 mm

Lube port with additional anti-twist feature.
Connection possible at either end.

Lube nipple size 25:
side connections present

	Dimensions (mm)																	
Size	**A**	**A_1**	**A_2**	**A_3**	**B**	**B_1**	**H**	**H_1**	**H_2[1)]**	**H_2[2)]**	**V_1**	**E_1**	**E_2**	**E_8**	**E_9**	**K_1**	**K_2**	**N_1**
20	59	29.5	20	19.5	72.5	49.6	28	23.0	20.7	20.55	6.0	49	32	30.5	5.6	13.0	–	7.7
25	73	36.5	23	25.0	81.0	57.8	33	26.5	24.4	24.25	7.5	60	35	38.3	8.5	16.6	17.0	9.3

[1)] Dimension H_2 with rail seal cover strip [2)] Dimension H_2 without rail seal cover strip.

								Load capacities (N)		Moments (Nm)			
	Dimensions (mm)						Mass	C	C_0	M_t	M_{t0}	M_L	M_{L0}
Size	**N_5**	**$N_6^{\pm 0.5}$**	**S_1**	**S_2**	**S_5**	**S_9**	**(kg)**	**dyn.**	**stat.**	**dyn.**	**stat.**	**dyn.**	**stat.**
20	3.6	13.2	5.4	M6	6.0	M3-5 deep	0.40	14 500	24 400	190	310	100	165
25	4.1	15.2	6.8	M8	7.0	M3-5 deep	0.60	22 800	30 400	320	430	180	240

Rexroth Ball Rail Systems
Low Profile Runner Blocks, Steel Version

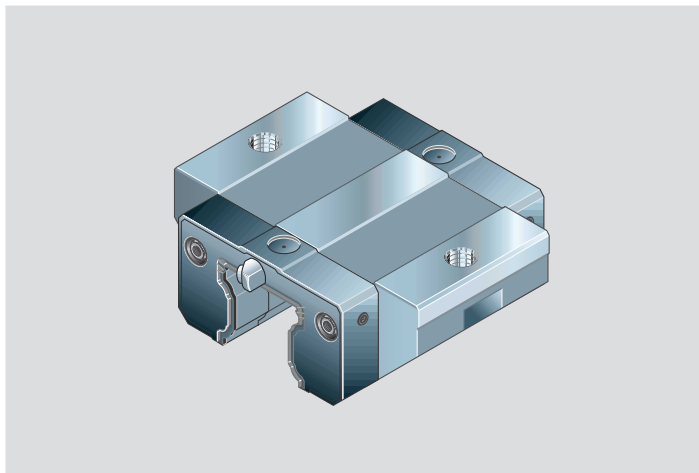
Runner Block 1663-

Standard Width, short, low profile

Special versions:

Runner blocks in accuracy class N (clearance and preload 0.02 C) are also available:

– with low friction seals (part numbers 16..-..4-11).



Dynamic characteristics

Speed v_{max} = 3 m/s

Acceleration a_{max} = 250 m/s^2

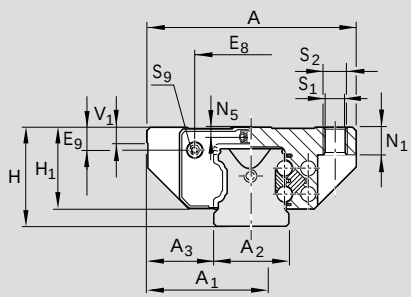
Other technical data, see chapter "General Technical Data and Calculations".

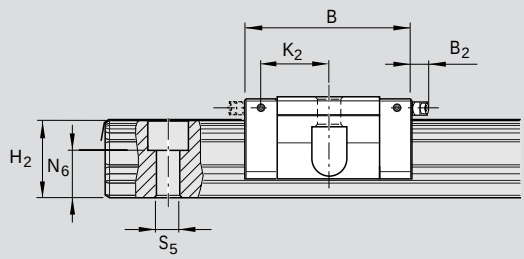
Part numbers

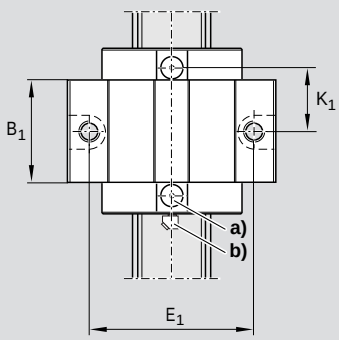
Size	Accuracy class	Part numbers for runner blocks for preload class	
		up to approx. 10 µm clearance	Preload 0.02 C
20	H	1663-893-10	1663-813-10
	N	1663-894-10	1663-814-10
25	H	1663-293-10	1663-213-10
	N	1663-294-10	1663-214-10

Note on dynamic load capacities and moments (see table)

Determination of dynamic load capacities and moments is based on a travel life of 100 000 m.
However, frequently this is determined on the basis of only 50 000 m.
In this case for comparison:
multiply values **C** , $\mathbf{M_t}$ and $\mathbf{M_L}$ by 1.26 in accordance with Rexroth table.







a) For O-ring dia. 5 · 1 mm
Open lube bore as required.
Send for instructions.

b) Lube nipple
Funnel-type nipple
Type B – Thread size M3
B_2 = 8 mm

Lube port with additional anti-twist feature.
Connection possible at either end.

Lube nipple size 25:
side connections present

	Dimensions (mm)																	
Size	**A**	**A_1**	**A_2**	**A_3**	**B**	**B_1**	**H**	**H_1**	**H_2[1)]**	**H_2[2)]**	**V_1**	**E_1**	**E_8**	**E_9**	**K_1**	**K_2**	**N_1**	**N_5**
20	59	29.5	20	19.5	55	31.9	28	23.0	20.7	20.55	6.0	49	30.5	5.6	20.1	–	7.7	3.6
25	73	36.5	23	25.0	62	38.6	33	26.5	24.4	24.25	7.5	60	38.3	8.5	24.5	25.0	9.3	4.1

[1)] Dimension H_2 with rail seal cover strip

[2)] Dimension H_2 without rail seal cover strip.

								Load capacities (N)		Moments (Nm)			
			Dimensions (mm)				Mass	C	C_0	M_t	M_{t0}	M_L	M_{L0}
Size	**$N_6^{\pm 0.5}$**		**S_1**	**S_2**	**S_5**	**S_9**	**(kg)**	**dyn.**	**stat.**	**dyn.**	**stat.**	**dyn.**	**stat.**
20	13.2		5.4	M6	6.0	M3-5 deep	0.25	9 600	13 600	120	170	40	58
25	15.2		6.8	M8	7.0	M3-5 deep	0.45	15 900	18 200	235	260	82	94

Rexroth Ball Rail Systems
Low Profile Runner Blocks, Steel Version

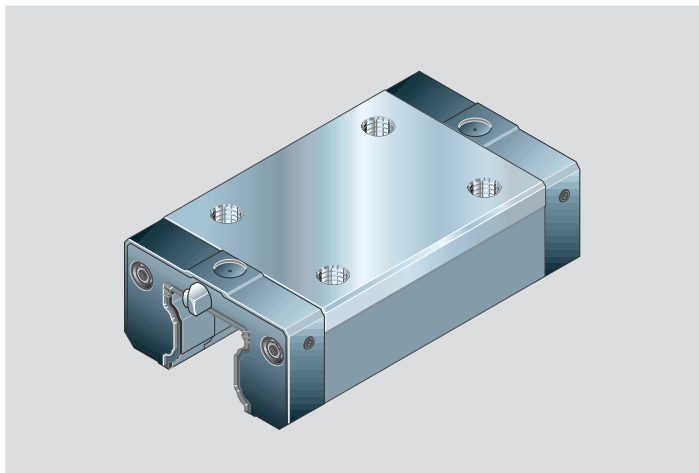
Runner Block 1694-

Slimline, low profile

Special versions:

Runner blocks in accuracy class N (clearance and preload 0.02 C) are also available:

– with low friction seals (part numbers 16..-..4-11).



Dynamic characteristics

Speed v_{max} = 3 m/s

Acceleration a_{max} = 250 m/s^2

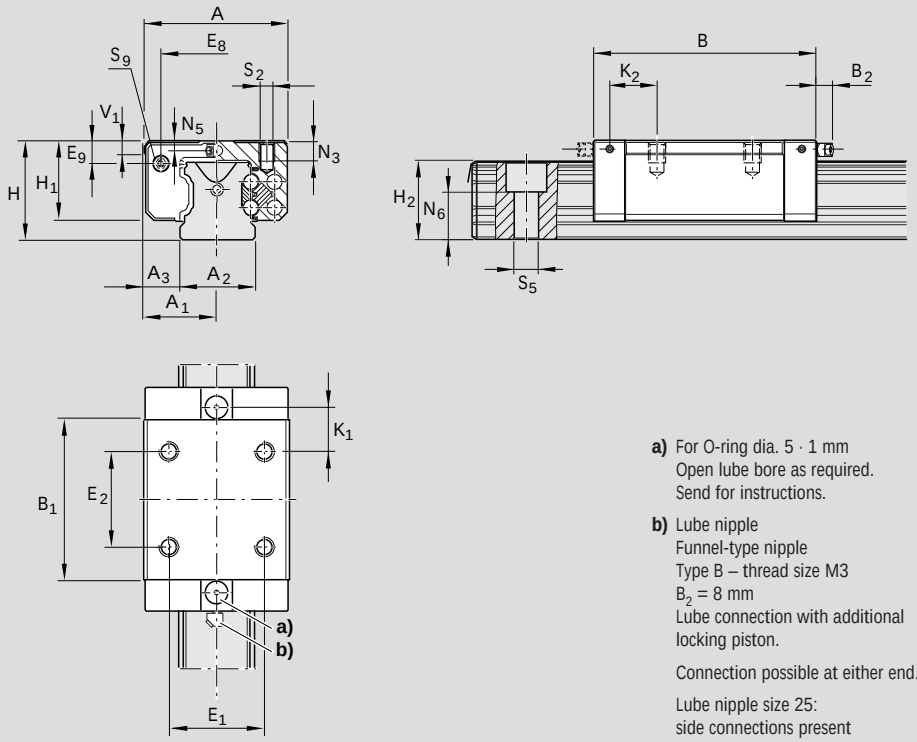
Other technical data, see chapter "General Technical Data and Calculations".

Part numbers

Size	Accuracy class	Part numbers for runner blocks for preload class	
		up to approx. 10 µm clearance	Preload 0.02 C
20	H	1694-893-10	1694-813-10
	N	1694-894-10	1694-814-10
25	H	1694-293-10	1694-213-10
	N	1694-294-10	1694-214-10

Note on dynamic load capacities and moments (see table)

Determination of dynamic load capacities and moments is based on a travel life of 100 000 m.
However, frequently this is determined on the basis of only 50 000 m.
In this case for comparison:
multiply values **C, M_t** and **M_L** by 1.26 in accordance with Rexroth table.



a) For O-ring dia. 5 · 1 mm
Open lube bore as required.
Send for instructions.

b) Lube nipple
Funnel-type nipple
Type B – thread size M3
B_2 = 8 mm
Lube connection with additional locking piston.

Connection possible at either end.

Lube nipple size 25:
side connections present

	Dimensions (mm)																	
Size	**A**	**A_1**	**A_2**	**A_3**	**B**	**B_1**	**H**	**H_1**	**H_2[1)]**	**H_2[2)]**	**V_1**	**E_1**	**E_2**	**E_8**	**E_9**	**K_1**	**K_2**	**N_3**
20	42	21	20	11.0	72.5	49.6	28	23.0	20.7	20.55	6.0	32	32	30.5	5.6	13.0	–	6.3
25	48	24	23	12.5	81.0	57.8	33	26.5	24.4	24.25	7.5	35	35	38.3	8.5	16.6	17.0	7.0

[1)] Dimension H_2 with rail seal cover strip

[2)] Dimension H_2 without rail seal cover strip.

								Load capacities (N)		Moments (Nm)			
	Dimensions (mm)						Mass	C	C_0	M_t	M_{t0}	M_L	M_{L0}
Size	**N_5**	**$N_6^{\pm 0.5}$**		**S_2**	**S_5**	**S_9**	**(kg)**	**dyn.**	**stat.**	**dyn.**	**stat.**	**dyn.**	**stat.**
20	3.6	13.2		M5	6.0	M3-5 deep	0.30	14 500	24 400	190	310	100	165
25	4.1	15.2		M6	7.0	M3-5 deep	0.45	22 800	30 400	320	430	180	240

Rexroth Ball Rail Systems
Low Profile Runner Blocks, Steel Version

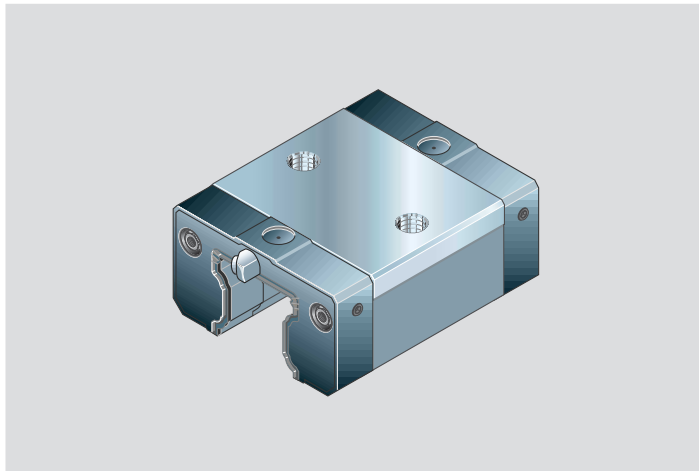
Runner Block 1664-

Slimline, short, low profile

Special versions:

Runner blocks in accuracy class N (clearance and preload 0.02 C) are also available:

– with low friction seals (part numbers 16..-..4-11).



Dynamic characteristics

Speed v_{max} = 3 m/s

Acceleration a_{max} = 250 m/s^2

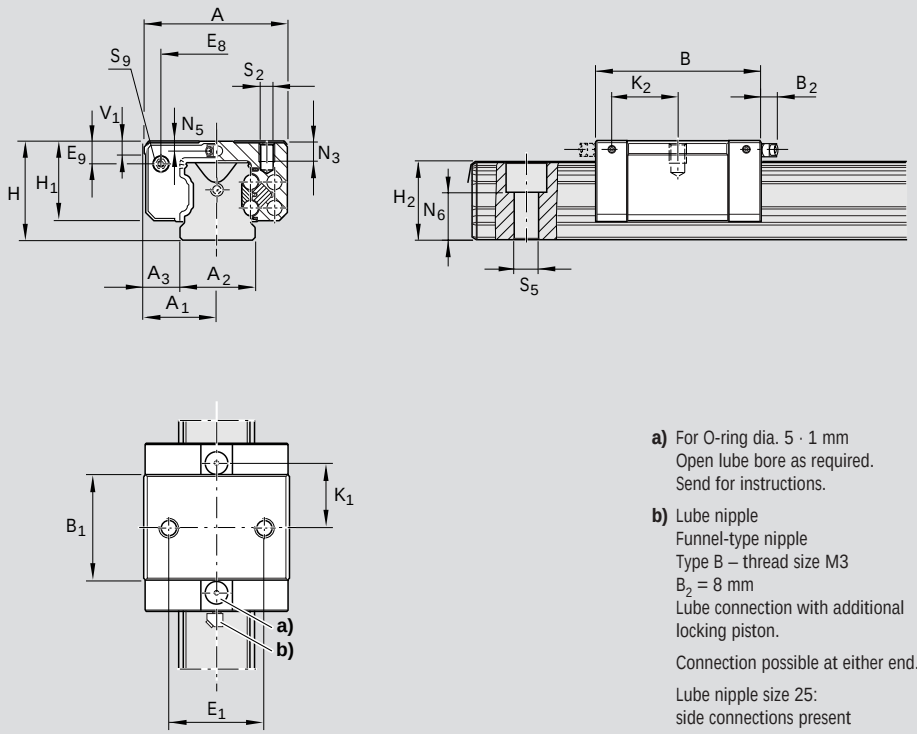
Other technical data, see chapter "General Technical Data and Calculations".

Part numbers

Size	Accuracy class	Part numbers for runner blocks for preload class	
		up to approx. 10 µm clearance	Preload 0.02 C
20	H	1664-893-10	1664-813-10
	N	1664-894-10	1664-814-10
25	H	1664-293-10	1664-213-10
	N	1664-294-10	1664-214-10

Note on dynamic load capacities and moments (see table)

Determination of dynamic load capacities and moments is based on a travel life of 100 000 m.
However, frequently this is determined on the basis of only 50 000 m.
In this case for comparison:
multiply values **C**, $\mathbf{M_t}$ and $\mathbf{M_L}$ by 1.26 in accordance with Rexroth table.



a) For O-ring dia. 5 · 1 mm
Open lube bore as required.
Send for instructions.

b) Lube nipple
Funnel-type nipple
Type B – thread size M3
B_2 = 8 mm
Lube connection with additional locking piston.

Connection possible at either end.

Lube nipple size 25:
side connections present

	Dimensions (mm)																	
Size	**A**	**A_1**	**A_2**	**A_3**	**B**	**B_1**	**H**	**H_1**	**H_2[1)]**	**H_2[2)]**	**V_1**	**E_1**		**E_8**	**E_9**	**K_1**	**K_2**	**N_3**
20	42	21	20	11.0	55	31.9	28	23.0	20.7	20.55	6.0	32		30.5	5.6	20.1	–	6.3
25	48	24	23	12.5	62	38.6	33	26.5	24.4	24.25	7.5	35		38.3	8.5	24.5	25.0	7.0

[1)] Dimension H_2 with rail seal cover strip

[2)] Dimension H_2 without rail seal cover strip

								Load capacities (N)		Moments (Nm)			
	Dimensions (mm)						Mass	C	C_0	M_t	M_{t0}	M_L	M_{L0}
Size	**N_5**	**$N_6^{\pm 0.5}$**		**S_2**	**S_5**	**S_9**	**(kg)**	**dyn.**	**stat.**	**dyn.**	**stat.**	**dyn.**	**stat.**
20	3.6	13.2		M5	6.0	M3-5 deep	0.20	9 600	13 600	120	170	40	58
25	4.1	15.2		M6	7.0	M3-5 deep	0.30	15 900	18 200	235	260	82	94

Rexroth Ball Rail Systems
Product Overview Super Runner Blocks S Steel Version

Excellent properties

– Automatically compensates for errors in alignment of up to 10' arc about two axes
– Extra-compact design
– Identical load capacities in all four main directions
– Wider permissible tolerances for parallelism and height of mounting surfaces
– Accuracy classes H and N
– Preload class: clearance and 2% preload
– Smooth running due to optimized ball recirculation and entry-zone geometry

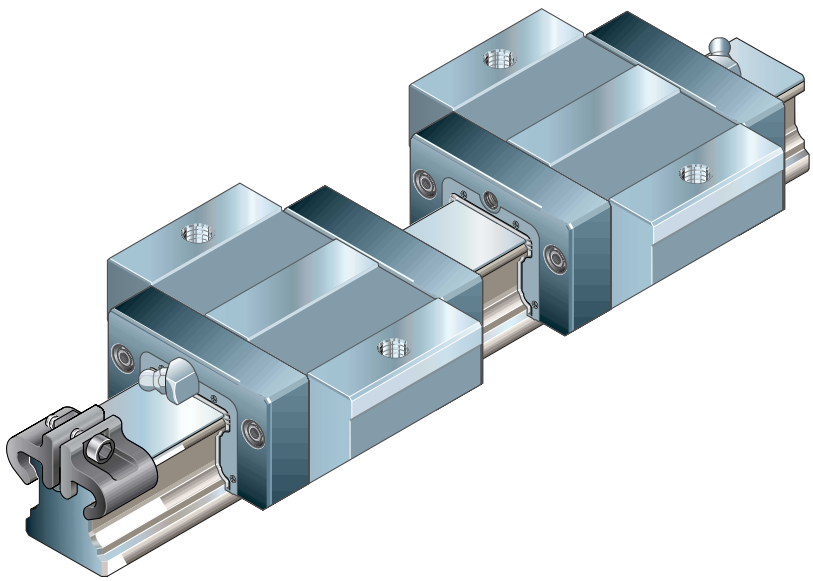
Make up your own compact linear motion guideways from interchangeable standard stock elements...

Rexroth manufactures its guide rails and runner blocks with such high precision, especially in the ball track zone, that each individual component element can be replaced by another at any time. This makes infinite combinations possible within each accuracy class.

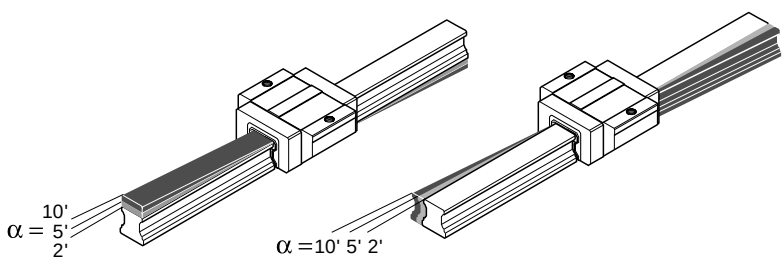
Self-alignment

The Rexroth Super Runner Block with self-aligning feature automatically compensates for errors in alignment to 10' of arc. There is no load capacity reduction through compression across the edges.
The center of the mating surfaces supporting the steel load bearing plates serve as a rocking fulcrum. Therefore slight errors in alignment between runner block and guide rail do not cause problems.
Also, inaccuracies in machining, mounting errors or guide rail bending will automatically be corrected.
The self-aligning feature assures smooth entry and exit of the balls into and out of the load-carrying area and uniform load distribution over the entire row of balls.

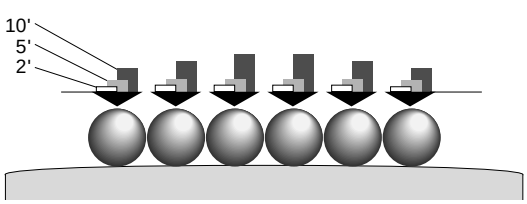
The result is extra-smooth running and considerably longer service life.
With two runner blocks on one guide rail, it is also possible to produce tilt-free linear rolling motion guides with a high load capacity, particularly for handling applications.



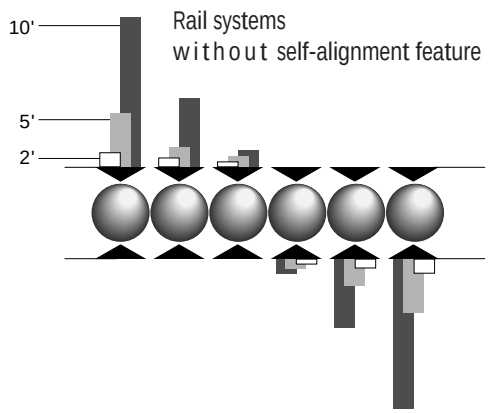
Internal ball load distribution
in the case of angle errors α



Internal ball load distribution
Rexroth rail system
with self-aligning feature s



Internal load distribution
Rail systems
without self-alignment feature



Rexroth Ball Rail Systems
Super Runner Blocks S Steel Version

Super Runner Block S with self-aligning feature 1661-

Standard Width, short

Special versions:

Runner blocks in accuracy class N (clearance and preload 0.02 C) are also available:

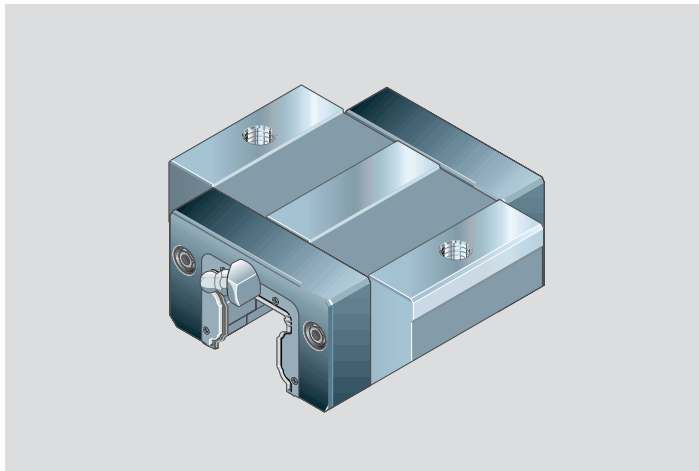
– with low friction seals (part numbers 16..-..4-11).

Dynamic characteristics

Speed v_{max} = 3 m/s

Acceleration a_{max} = 250 m/s^2

Other technical data, see chapter "General Technical Data and Calculations".



Part numbers

Size	Accuracy class	Part numbers for runner block for preload class	
		up to approx. 10 µm clearance	Preload 0.02 C
15	H	1661-193-10	1661-113-10
	N	1661-194-10	1661-114-10
20	H	1661-893-10	1661-813-10
	N	1661-894-10	1661-814-10
25	H	1661-293-10	1661-213-10
	N	1661-294-10	1661-214-10
30	H	1661-793-10	1661-713-10
	N	1661-794-10	1661-714-10
35	H	1661-393-10	1661-313-10
	N	1661-394-10	1661-314-10

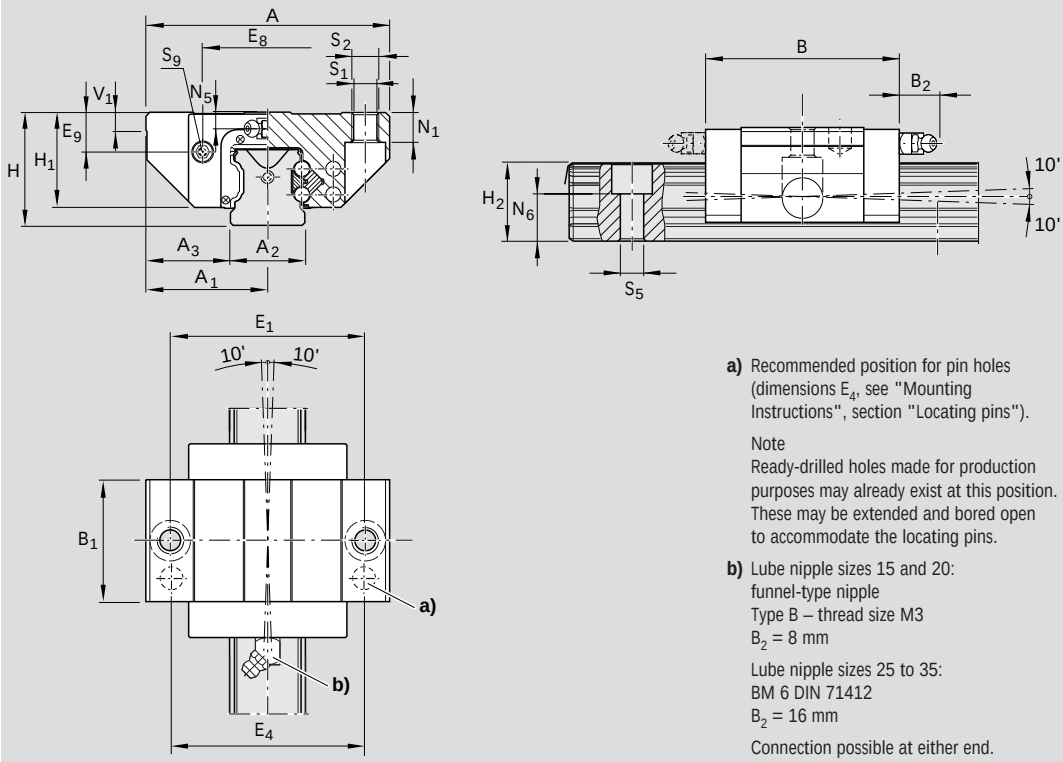
Permissible load

When calculating the service life, use the maximum load capacity figure.

The permissible load is only limited for statistical purposes (see table).

Note on dynamic load capacities and moments (see table)

Determination of dynamic load capacities and moments is based on a travel life of 100 000 m.
However, frequently this is determined on the basis of only 50,000 m.
In this case for comparison:
multiply values **C** and $\mathbf{M_t}$ by 1.26 in accordance with Rexroth table.



a) Recommended position for pin holes (dimensions E_4, see "Mounting Instructions", section "Locating pins").

Note
Ready-drilled holes made for production purposes may already exist at this position. These may be extended and bored open to accommodate the locating pins.

b) Lube nipple sizes 15 and 20:
funnel-type nipple
Type B – thread size M3
B_2 = 8 mm

Lube nipple sizes 25 to 35:
BM 6 DIN 71412
B_2 = 16 mm

Connection possible at either end.

	Dimensions (mm)																
Size	**A**	**A_1**	**A_2**	**A_3**	**B**	**B_1**	**H**	**H_1**	**H_2[1)]**	**H_2[2)]**	**V_1**	**E_1**		**E_8**	**E_9**		**N_1**
15	47	23.5	15	16.0	40.5	25.7	24	19.8	16.3	16.20	5.0	38		24.55	6.7		5.0
20	63	31.5	20	21.5	52.5	31.9	30	25.4	20.7	20.55	6.0	53		32.4	7.3		7.5
25	70	35.0	23	23.5	61.5	38.6	36	29.5	24.4	24.25	7.5	57		38.3	11.5		9.0
30	90	45.0	28	31.0	71.5	45.0	42	35.0	28.5	28.35	7.0	72		48.4	14.6		11.0
35	100	50.0	34	33.0	79.0	51.4	48	40.0	32.15	31.85	8.0	82		58.0	17.5		12.0

1) Dimension H_2 with rail seal cover strip

2) Dimension H_2 without rail seal cover strip

								Load capacities (N)	Permissible load (N)	Moments (Nm)	
	Dimensions (mm)						Weight	C	F_{max}	M_t	M_t
Size	**N_5**	**$N_6^{\pm 0.5}$**	**S_1**	**S_2**	**S_5**	**S_9**	**(kg)**	**dyn.**		**dyn.**	**max.**
15	4.0	10.3	4.4	M5	4.4	M2.5-3.5 deep	0.19	3 900	1 500	39	15
20	4.7	13.2	5.4	M6	6.0	M3-5 deep	0.30	10 100	3 900	130	50
25	5.5	15.2	6.8	M8	7.0	M3-5 deep	0.50	11 400	4 400	170	65
30	6.0	17.0	8.6	M10	9.0	M3 5 deep	0.90	15 800	6 100	270	105
35	7.0	20.5	8.6	M10	9.0	M3-5 deep	1.35	21 100	8 100	450	175

Rexroth Ball Rail Systems
Super Runner Blocks S Steel Version

Super Runner Block S with self-aligning feature 1662-

Slimline, short

Special versions:

Runner blocks in accuracy class N (clearance and preload 0.02 C) are also available:

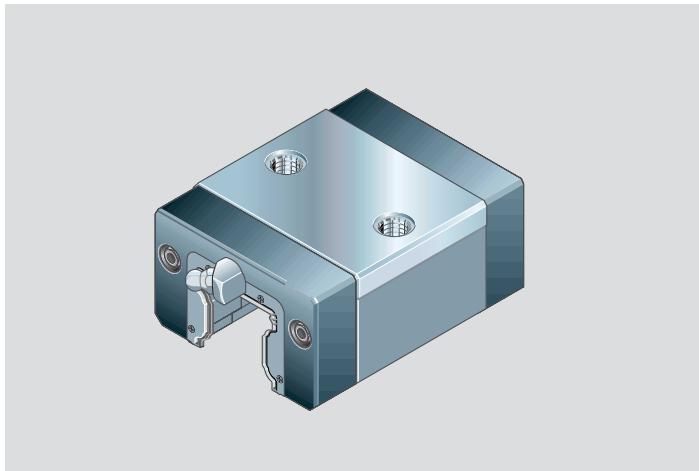
– with low friction seals (part numbers 16..-..4-11).

Dynamic characteristics

Speed v_{max} = 3 m/s

Acceleration a_{max} = 250 m/s^2

Other technical data, see chapter "General Technical Data and Calculations".



Part numbers

Size	Accuracy class	Part numbers for runner blocks for preload class	
		up to approx. 10 µm clearance	Preload 0.02 C
15	H	1662-193-10	1662-113-10
	N	1662-194-10	1662-114-10
20	H	1662-893-10	1662-813-10
	N	1662-894-10	1662-814-10
25	H	1662-293-10	1662-213-10
	N	1662-294-10	1662-214-10
30	H	1662-793-10	1662-713-10
	N	1662-794-10	1662-714-10
35	H	1662-393-10	1662-313-10
	N	1662-394-10	1662-314-10

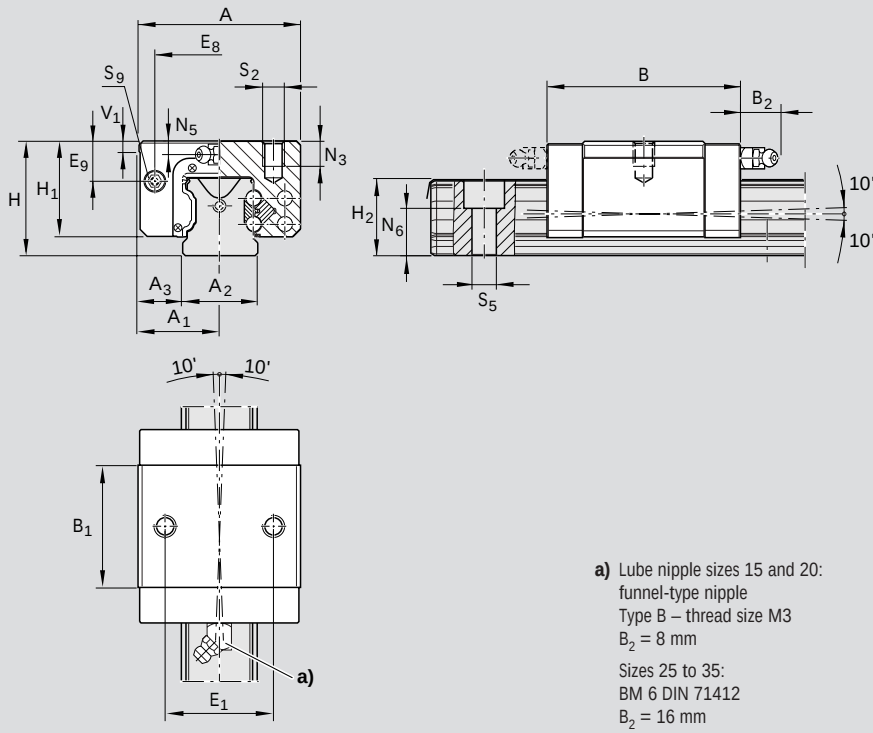
Permissible load

When calculating the service life, use the maximum load capacity figure.

The permissible load is only limited for statistical purposes (see table).

Note on dynamic load capacities and moments (see table)

Determination of dynamic load capacities and moments is based on a travel life of 100 000 m.
However, frequently this is determined on the basis of only 50,000 m.
In this case for comparison:
multiply values **C** and $\mathbf{M_t}$ by 1.26 in accordance with Rexroth table.



a) Lube nipple sizes 15 and 20:
funnel-type nipple
Type B – thread size M3
B_2 = 8 mm

Sizes 25 to 35:
BM 6 DIN 71412
B_2 = 16 mm

Connection possible at either end.

Size	Dimensions (mm)																	
	A	A_1	A_2	A_3	B	B_1	H	H_1	H_2 [1]	H_2 [2]	V_1	E_1	E_8	E_9				N_3
15	34	17	15	9.5	40.5	25.7	24	19.8	16.3	16.20	5.0	26	24.55	6.7				6.0
20	44	22	20	12.0	52.5	31.9	30	25.4	20.7	20.55	6.0	32	32.4	7.3				7.5
25	48	24	23	12.5	61.5	38.6	36	29.5	24.4	24.25	7.5	35	38.3	11.5				9.0
30	60	30	28	16.0	71.5	45.0	42	35.0	28.5	28.35	7.0	40	48.4	14.6				12.0
35	70	35	34	18.0	79.0	51.4	48	40.0	32.15	31.85	8.0	50	58.0	17.5				

[1] Dimension H_2 with rail seal cover strip

[2] Dimension H_2 without rail seal cover strip

Size	Dimensions (mm)					Weight	Load capacities (N)	Permissible load (N)	Moments (Nm)	
	N_5	$N_6^{\pm 0.5}$	S_2	S_5	S_9	(kg)	C dyn.	F_{max}	M_t dyn.	M_t max.
15	4.0	10.3	M4	4.4	M2.5-3.5 deep	0.12	3 900	1 500	39	15
20	4.7	13.2	M5	6.0	M3-5 deep	0.25	10 100	3 900	130	50
25	5.5	15.2	M6	7.0	M3-5 deep	0.40	11 400	4 400	170	65
30	6.0	17.0	M8	9.0	M3-5 deep	0.65	15 800	6 100	270	105
35	7.0	20.5	M8	9.0	M3-5 deep	0.95	21 100	8 100	450	175

Rexroth Ball Rail Systems
Product Overview Runner Blocks, Aluminum Version

Excellent Properties

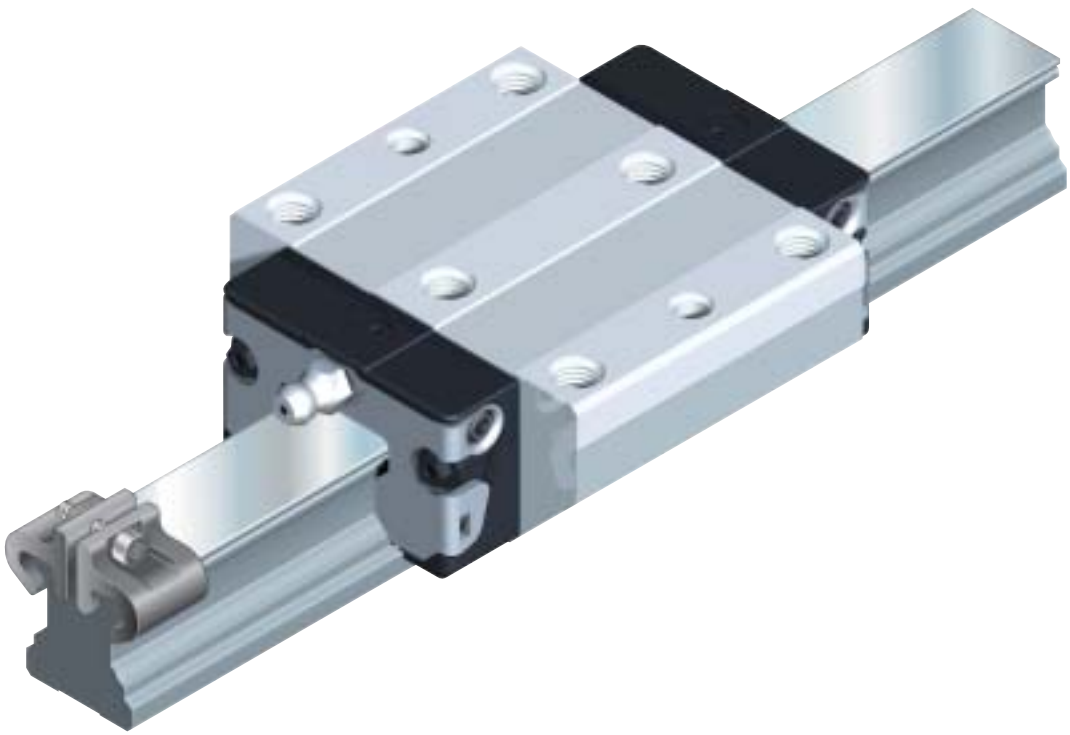
Rexroth Ball Rail Systems with aluminum runner blocks were specifically developed for use in industrial robots and general purpose machines calling for compact, rolling-element linear motion guideways and are available in different accuracy classes, each with high load capacity and high rigidity.

These compact and weight-saving assemblies are available in 4 common sizes and offer the same high dynamic load capacities in all four main load directions.

– High torque load capacity
– Optimized entry-zone geometry and the high number of balls per track greatly reduce fluctuation in elastic deflection
– Very low weight: 60% lighter than the equivalent steel version

Further Highlights

– Wider permissible tolerances for parallelism and height of mounting surfaces
– Accuracy classes H and N can be combined with any of the rails in each accuracy class
– Lube bore at either end for added ease of maintenance
– End face mounting holes for attachment of bellows or scraper plates
– Guide rails in accuracy class N also available with surface protection
– Smooth, light running due to optimized ball recirculation and ideal ball/track geometry
– Improved rigidity under lift-off and side loading conditions when additional mounting screws are used in holes provided at the center of the runner block
– Attachments can be mounted to runner block from above or below
– Pre-drilled locating pin holes in runner blocks



Make up your own compact linear motion guideways from interchangeable standard stock elements...

Rexroth manufactures its guide rails and runner blocks with such high precision, especially in the ball track zone, that each individual component element can be replaced by another at any time. This makes infinite combinations possible within each accuracy class. Each element can be individually ordered and separately stocked.

Both sides of the guide rail can be used as reference edges. The runner block is simply pushed onto the rail.

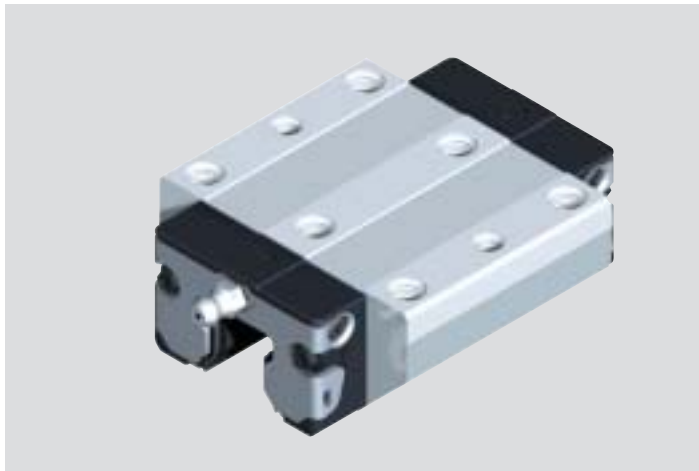
Rexroth Ball Rail Systems
Runner Blocks, Aluminum Version

Runner Block 1631-

Standard Width

Versions:

– Runner block without ball retainer: for part numbers, see table
– Runner block with ball retainer: part numbers 1631-...-22



Dynamic characteristics

Speed v_{max} = 5 m/s

Acceleration a_{max} = 500 m/s^2

Other technical data, see chapter "General Technical Data and Calculations".

Part numbers

Size	Accuracy class	Part numbers for runner blocks for preload class	
		up to approx. 10 µm clearance	Preload 0.02 C
15*	H	1631-193-20	1631-113-20
	N	1631-194-20	1631-114-20
25*	H	1631-293-20	1631-213-20
	N	1631-294-20	1631-214-20
30*	H	1631-793-20	1631-713-20
	N	1631-794-20	1631-714-20
35*	H	1631-393-20	1631-313-20
	N	1631-394-20	1631-314-20

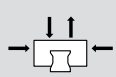
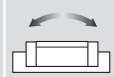
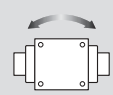
* Under preparation

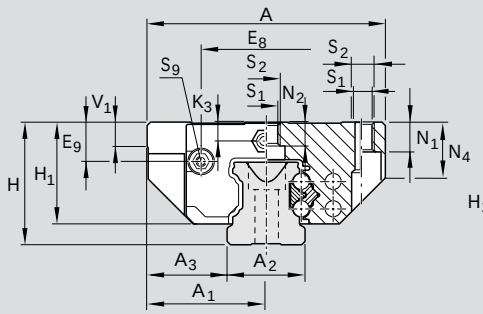
Permissible load

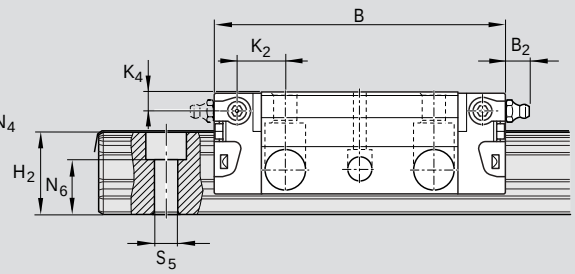
When calculating the service life, use the maximum load capacity figure. The permissible load is limited only for reasons of statics (see table).

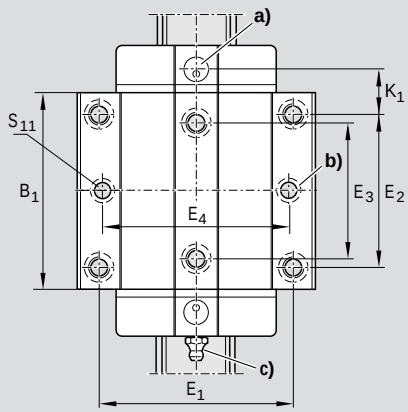
Note on dynamic load capacities and moments (see table)

Determination of dynamic load capacities and moments is based on a travel life of 100 000 m.
However, frequently this is determined on the basis of only 50 000 m.
In this case for comparison:
multiply values **C, M_t** and **M_L** by 1.26 in accordance with Rexroth table.

Size	Load capacities (N)	Permissible load (N)	Moments (Nm)			
						
	C dyn.	F_{max}	M_t dyn.	M_t max.	M_L dyn.	M_L max.
15	7 800	3 000	74	29	40	16
25	22 800	8 800	320	125	180	70
30	31 700	12 200	540	210	290	110
35	41 900	16 200	890	345	440	170







a) For O-ring
Size 15: dia. 4 · 1.0 (mm)
Size 25-35: dia. 5 · 1.0 (mm)
Open lube bore as required.
See Accessories:
Mounting lubrication adapter.

b) Pin holes are already predrilled as illustrated.
(Dimensions E_4 see "Mounting Instructions", Section "Locating pins" in the main catalog 82 201).

c) Lube nipple size 15:
funnel-type nipple
Type A – M3 x 5, DIN 3405
B_2 = 1.6 mm

If another lube nipple is used: observe the screw-in depth of 5 mm!

Size 25 to 35: M6 x 8, DIN 71412
B_2 = 9.5 mm

If another lube nipple is used: observe the screw-in depth of 8 mm!

Connection possible at all sides.

Size	Dimensions (mm)																			
	A	A_1	A_2	A_3	B	B_1	H	H_1	H_2 [1)]	H_2 [2)]	V_1	E_1	E_2	E_3	E_8	E_9	K_1	K_2	K_3	K_4
15	47	23.5	15	16.0	58.2	39.2	24	19.90	16.30	16.20	5.0	38	30	26	24.55	6.70	8.00	9.6	3.20	3.20
25	70	35.0	23	23.5	86.2	57.8	36	29.90	24.45	24.25	7.5	57	45	40	38.30	11.50	12.45	13.6	5.50	5.50
30	90	45.0	28	31.0	97.7	67.4	42	35.35	28.55	28.35	7.0	72	52	44	48.40	14.60	14.00	15.7	6.05	6.05
35	100	50.0	34	33.0	110.5	77.0	48	40.40	32.15	31.85	8.0	82	62	52	58.00	17.35	14.50	16.0	6.90	6.90

[1)] Dimension H_2 with rail seal cover strip

[2)] Dimension H_2 without rail seal cover strip

Size	Dimension (mm)									Mass
	N_1	N_2	N_4	$N_6^{\pm 0.5}$	S_1	S_2	S_{11}	S_5	S_9	(kg)
15	5.2	4.4	10.3	10.65	4.3	M5	3.7	4.4	M2.5-3.5 deep	0.10
25	9.3	7.0	17.8	15.55	6.7	M8	5.7	7.0	M3-5 deep	0.30
30	11.0	7.9	20.5	17.35	8.5	M10	7.7	9.0	M3-5 deep	0.55
35	12.0	10.2	24.0	20.85	8.5	M10	7.7	9.0	M3-5 deep	0.75

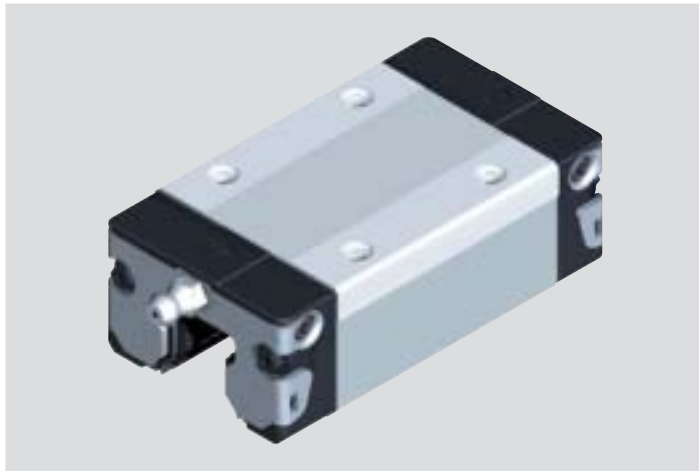
Rexroth Ball Rail Systems
Runner Blocks, Aluminum Version

Runner Block 1632-

Slimline

Versions:

– Runner block without ball retainer: for part numbers, see table
– Runner block with ball retainer: part numbers 1632-...-22



Dynamic characteristics

Speed v_{max} = 5 m/s

Acceleration a_{max} = 500 m/s^2

Other technical data, see chapter "General Technical Data and Calculations".

Part numbers

Size	Accuracy class	Part numbers for runner block for preload class	
		up to approx. 10 µm clearance	Preload 0.02 C
15*	H	1632-193-20	1632-113-20
	N	1632-194-20	1632-114-20
25*	H	1632-293-20	1632-213-20
	N	1632-294-20	1632-214-20
30*	H	1632-793-20	1632-713-20
	N	1632-794-20	1632-714-20
35*	H	1632-393-20	1632-313-20
	N	1632-394-20	1632-314-20

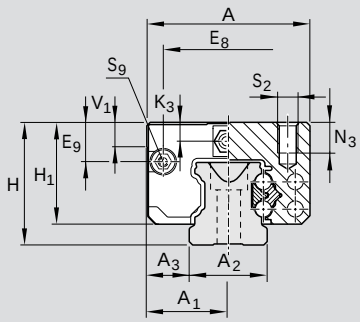
* Under preparation

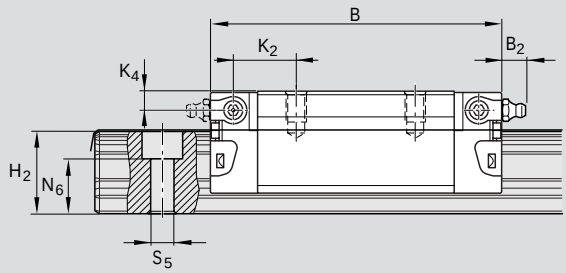
Permissible load

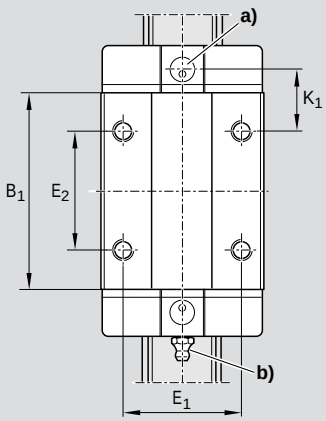
When calculating the service life, use the maximum load capacity figure. The permissible load is limited only for reasons of statics (see table).

Note on dynamic load capacities and moments (see table)

Determination of dynamic load capacities and moments is based on a travel life of 100 000 m.
However, frequently this is determined on the basis of only 50 000 m.
In this case for comparison:
multiply values **C, M_t** and **M_L** by 1.26 in accordance with Rexroth table.







a) For O-ring
Size 15: dia. 4 · 1.0 (mm)
Size 25-35: dia. 5 · 1.0 (mm)
Open lube bore as required.
See Accessories:
Mounting lubrication adapter.

b) Lube nipple size 15:
funnel-type nipple
Type A – M3 x 5, DIN 3405
B_2 = 1.6 mm

If another lube nipple is used:
observe the screw-in depth of 5 mm!

Size 25 to 35: M6 x 8,
DIN 71412
B_2 = 9.5 mm

If another lube nipple is used:
observe the screw-in depth of 8 mm!

Connection possible at all sides.

	Dimensions (mm)																		
Size	**A**	**A_1**	**A_2**	**A_3**	**B**	**B_1**	**H**	**H_1**	**H_2[1)]**	**H_2[2)]**	**V_1**	**E_1**	**E_2**	**E_8**	**E_9**	**K_1**	**K_2**	**K_3**	**K_4**
15	34	17	15	9.5	58.2	39.2	24	19.90	16.30	16.20	5.0	26	26	24.55	6.70	10.00	11.60	3.20	3.20
25	48	24	23	12.5	86.2	57.8	36	29.90	24.45	24.25	7.5	35	35	38.30	11.50	17.45	18.60	5.50	5.50
30	60	30	28	16.0	97.7	67.4	42	35.35	28.55	28.35	7.0	40	40	48.40	14.60	20.00	21.70	6.05	6.05
35	70	35	34	18.0	110.5	77.0	48	40.40	32.15	31.85	8.0	50	50	58.00	17.35	20.50	22.00	6.90	6.90

[1)] Dimension H_2 with rail seal cover strip

[2)] Dimension H_2 without rail seal cover strip

							Load capacities (N)	Permissible load (N)	Moments (Nm)			
	Dimensions (mm)					Mass	C					
Size	**N_3**	**$N_6^{\pm 0.5}$**	**S_2**	**S_5**	**S_9**	**(kg)**	**C dyn.**	**F_{max}**	**M_t dyn.**	**M_t max.**	**M_L dyn.**	**M_L max.**
15	6.0	10.65	M4	4.4	2.5-3.5 deep	0.10	7 800	3 000	74	29	40	16
25	9.0	15.55	M6	7.0	M3-5 deep	0.25	22 800	8 800	320	125	180	70
30	12.0	17.35	M8	9.0	M3-5 deep	0.45	31 700	12 200	540	210	290	110
35	13.0	20.65	M8	9.0	M3-5 deep	0.65	41 900	16 200	890	345	440	170

Rexroth Ball Rail Systems
Product Overview High-speed Runner Blocks

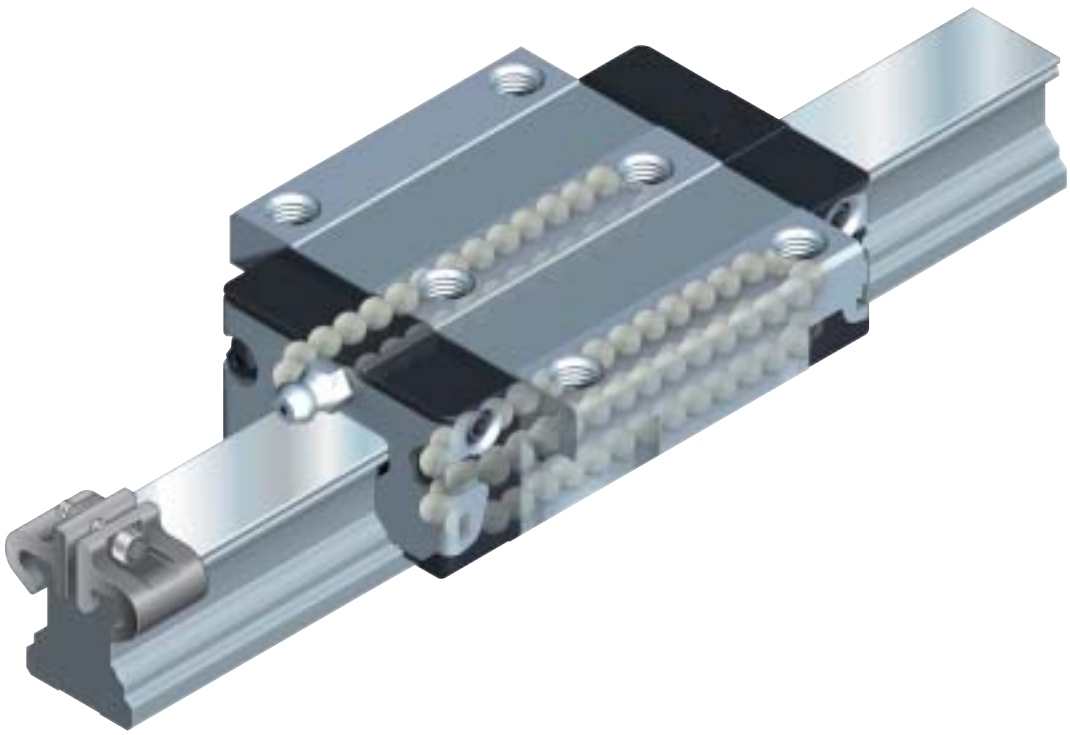
Excellent properties of the new runner blocks:

– Excellent dynamic characteristics v = 10 m/s; a_{max} = 500 m/s^2
– High load capacities in all 4 main load directions
– Long-term lubrication, up to several years
– Minimum quantity lubrication system with integrated tank for oil lubrication
– Lube ports with metal threads on all sides
– Limitless interchangeability due to standardized guide rails, with or without rail seal cover strip, for all runner block versions
– Optimum system rigidity through preloaded O-arrangement
– Electrically insulating with the deployment of ceramic balls
– Existing range of accessories fully utilizable
– Worldwide unique top logistics

Further highlights:

– High speed due to low mass of the ceramic balls
– Runner block can be screw fitted from above or below
– Improved rigidity under lift-off and side loading conditions when additional mounting screws are used in holes provided at the center of the runner block
– Front face securing threads for all attachments
– High rigidity in all load directions – can therefore be used as an individual block
– Integral, all-round sealing
– High torque load capacity
– Optimized entry-zone geometry and the high number of balls per track greatly reduce fluctuation in elastic deflection
– Smooth, light running due to optimized ball recirculation and ideal ball/track geometry
– Various preload classes
– Available in 5 common sizes

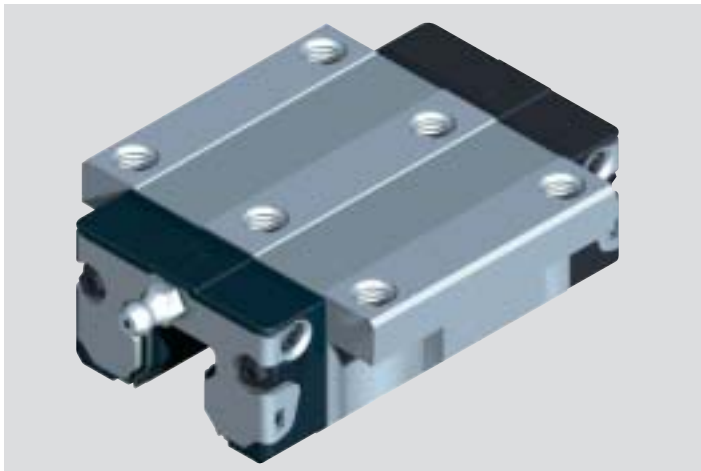
For speeds
up to 10 m/s



Rexroth Ball Rail Systems
High-speed Runner Block, Steel Version

Runner Block 2001-

**Standard Width,
high-speed version**



Dynamic characteristics

Speed v_{max} = 10 m/s

Acceleration a_{max} = 500 m/s^2

Other technical data, see chapter "General Technical Data and Calculations".

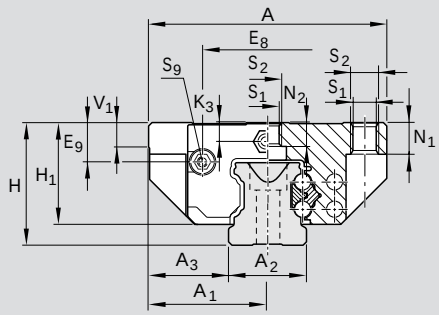
Part numbers

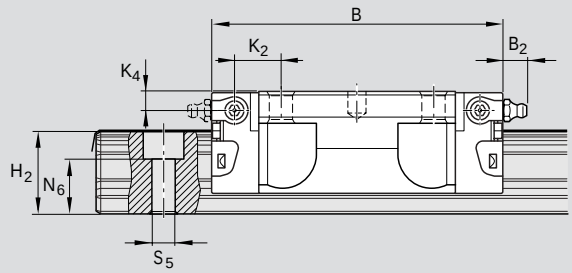
Size	Accuracy class	Part numbers for runner blocks for preload class Preload 0.08 C
15*	P	2001-122-90
	H	2001-123-90
20*	P	2001-822-90
	H	2001-823-90
25	P	2001-222-90
	H	2001-223-90
30	P	2001-722-90
	H	2001-723-90
35	P	2001-322-90
	H	2001-323-90

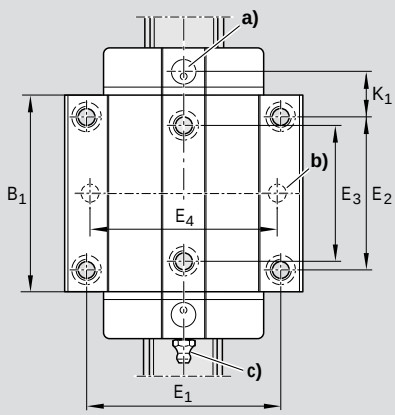
* Under preparation

Note on dynamic load capacities and moments (see table)

Determination of dynamic load capacities and moments is based on a travel life of 100 000 m.
However, frequently this is determined on the basis of only 50 000 m.
In this case for comparison:
multiply values **C, M_t** and **M_L** by 1.26 in accordance with Rexroth table.







a) For O-ring
Size 15: dia. 4 · 1.0 (mm)
Size 20-35: dia. 5 · 1.0 (mm)
Open lube bore as required.
See Accessories:
Mounting lubrication adapter.

b) Recommended position for pin holes (dimensions E_4 see "Mounting Instructions", Section "Locating pins" in main catalog 82 201).

Note
Ready-drilled holes made for production purposes may already exist at this position. These may be extended and bored open to accommodate the locating pins.

c) Lube nipple sizes 15 and 20: funnel-type nipple
Type A – M3 x 5, DIN 3405
B_2 = 1.6 mm

If another lube nipple is used: observe the screw-in depth of 5 mm!

Size 25 to 35: M6 x 8, DIN 71412
B_2 = 9.5 mm

If another lube nipple is used: observe the screw-in depth of 8 mm!

Connection possible at all sides.

	Dimensions (mm)																			
Size	**A**	**A_1**	**A_2**	**A_3**	**B**	**B_1**	**H**	**H_1**	**H_2[1)]**	**H_2[2)]**	**V_1**	**E_1**	**E_2**	**E_3**	**E_8**	**E_9**	**K_1**	**K_2**	**K_3**	**K_4**
15	47	23.5	15	16.0	58.2	39.2	24	19.90	16.30	16.20	5.0	38	30	26	24.55	6.70	8.00	9.6	3.20	3.20
20	63	31.5	20	21.5	75.0	49.6	30	25.35	20.75	20.55	6.0	53	40	35	32.50	7.30	11.80	11.8	3.35	3.35
25	70	35.0	23	23.5	86.2	57.8	36	29.90	24.45	24.25	7.5	57	45	40	38.30	11.50	12.45	13.6	5.50	5.50
30	90	45.0	28	31.0	97.7	67.4	42	35.35	28.55	28.35	7.0	72	52	44	48.40	14.60	14.00	15.7	6.05	6.05
35	100	50.0	34	33.0	110.5	77.0	48	40.40	32.15	31.85	8.0	82	62	52	58.00	17.35	14.50	16.0	6.90	6.90

[1)] Dimension H_2 with rail seal cover strip

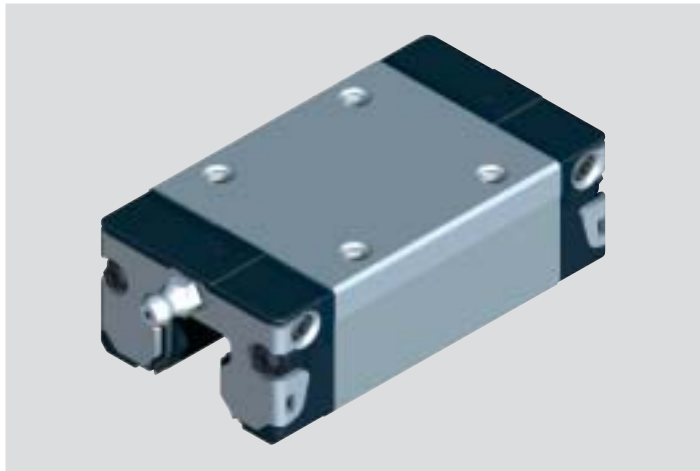
[2)] Dimension H_2 without rail seal cover strip

									Load capacities (N)		Moments (Nm)			
	Dimensions (mm)							Mass	C	C_0	M_t	M_{t0}	M_L	M_{L0}
Size	**N_1**	**N_2**	**N_6 ±0.5**	**S_1**	**S_2**	**S_5**	**S_9**	**(kg)**	**dyn.**	**stat.**	**dyn.**	**stat.**	**dyn.**	**stat.**
15	5.2	4.4	10.65	4.3	M5	4.4	M2.5-3.5 deep	0.20	5 300	9 100	50	88	27	48
20	7.7	5.2	13.35	5.3	M6	6.0	M3-5 deep	0.45	12 700	16 500	160	210	88	110
25	9.3	7.0	15.55	6.7	M8	7.0	M3-5 deep	0.60	15 500	20 600	210	290	120	160
30	11.0	7.9	17.35	8.5	M10	9.0	M3-5 deep	1.05	21 500	28 000	360	490	190	250
35	12.0	10.2	20.85	8.5	M10	9.0	M3-5 deep	1.50	28 500	36 700	600	780	300	380

Rexroth Ball Rail Systems
High-speed Runner Block, Steel Version

Runner Block 2011-

Slimline,
high-speed version



Dynamic characteristics

Speed v_{max} = 10 m/s

Acceleration a_{max} = 500 m/s^2

Other technical data, see chapter "General Technical Data and Calculations".

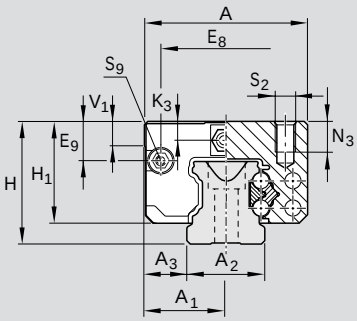
Part numbers

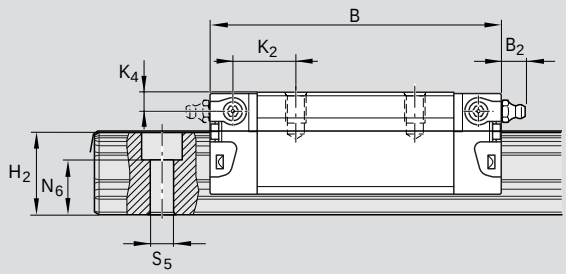
Size	Accuracy class	Part numbers for runner blocks for preload class Preload 0.08 C
15*	P	2011-122-90
	H	2011-123-90
20*	P	2011-822-90
	H	2011-823-90
25	P	2011-222-90
	H	2011-223-90
30	P	2011-722-90
	H	2011-723-90
35	P	2011-322-90
	H	2011-323-90

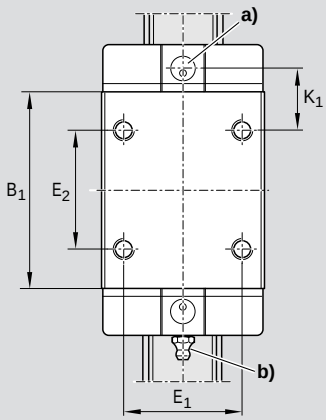
* Under preparation

Note on dynamic load capacities and moments (see table)

Determination of dynamic load capacities and moments is based on a travel life of 100 000 m.
However, frequently this is determined on the basis of only 50 000 m.
In this case for comparison:
multiply values **C, M_t** and **M_L** by 1.26
in accordance with Rexroth table.







a) For O-ring
Size 15: dia. 4 · 1.0 (mm)
Size 20-35: dia. 5 · 1.0 (mm)
Open lube bore as required.
See Accessories:
Mounting lubrication adapter.

b) Lube nipple sizes 15 and 20:
funnel-type nipple
Type A – M3 x 5, DIN 3405
B_2 = 1.6 mm

If another lube nipple is used:
observe the screw-in depth of 5 mm!

Size 25 to 35: M6 x 8,
DIN 71412
B_2 = 9.5 mm

If another lube nipple is used:
observe the screw-in depth of 8 mm!

Connection possible at all sides.

Dimensions (mm)																			
Size	**A**	**A_1**	**A_2**	**A_3**	**B**	**B_1**	**H**	**H_1**	**H_2[1)]**	**H_2[2)]**	**V_1**	**E_1**	**E_2**	**E_8**	**E_9**	**K_1**	**K_2**	**K_3**	**K_4**
15	34	17	15	9.5	58.2	39.2	24	19.90	16.30	16.20	5.0	26	26	24.55	6.70	10.00	11.60	3.20	3.20
20	44	22	20	12.0	75.0	49.6	30	25.35	20.75	20.55	6.0	32	36	32.50	7.30	13.80	13.80	3.35	3.35
25	48	24	23	12.5	86.2	57.8	36	29.90	24.45	24.25	7.5	35	35	38.30	11.50	17.45	18.60	5.50	5.50
30	60	30	28	16.0	97.7	67.4	42	35.35	28.55	28.35	7.0	40	40	48.40	14.60	20.00	21.70	6.05	6.05
35	70	35	34	18.0	110.5	77.0	48	40.40	32.15	31.85	8.0	50	50	58.00	17.35	20.50	22.00	6.90	6.90

[1)] Dimension H_2 with rail seal cover strip

[2)] Dimension H_2 without rail seal cover strip

							Load capacities (N)				Moments (Nm)			
		Dimensions (mm)				Mass	C	C_0	M_t	M_{t0}	M_L	M_{L0}		
Size	**N_3**	**$N_6^{\pm 0.5}$**	**S_2**	**S_5**	**S_9**	**(kg)**	**dyn.**	**stat.**	**dyn.**	**stat.**	**dyn.**	**stat.**		
15	6.0	10.65	M4	4.4	M2.5-3.5 deep	0.15	5 300	9 100	50	88	27	48		
20	7.5	13.55	M5	6.0	M3-5 deep	0.35	12 700	16 500	160	210	88	110		
25	9.0	15.55	M6	7.0	M3-5 deep	0.45	15 500	20 600	210	290	120	160		
30	12.0	17.35	M8	9.0	M3-5 deep	1.80	21 500	28 000	360	490	190	250		
35	13.0	20.85	M8	9.0	M3-5 deep	1.15	28 500	36 700	600	780	300	380		

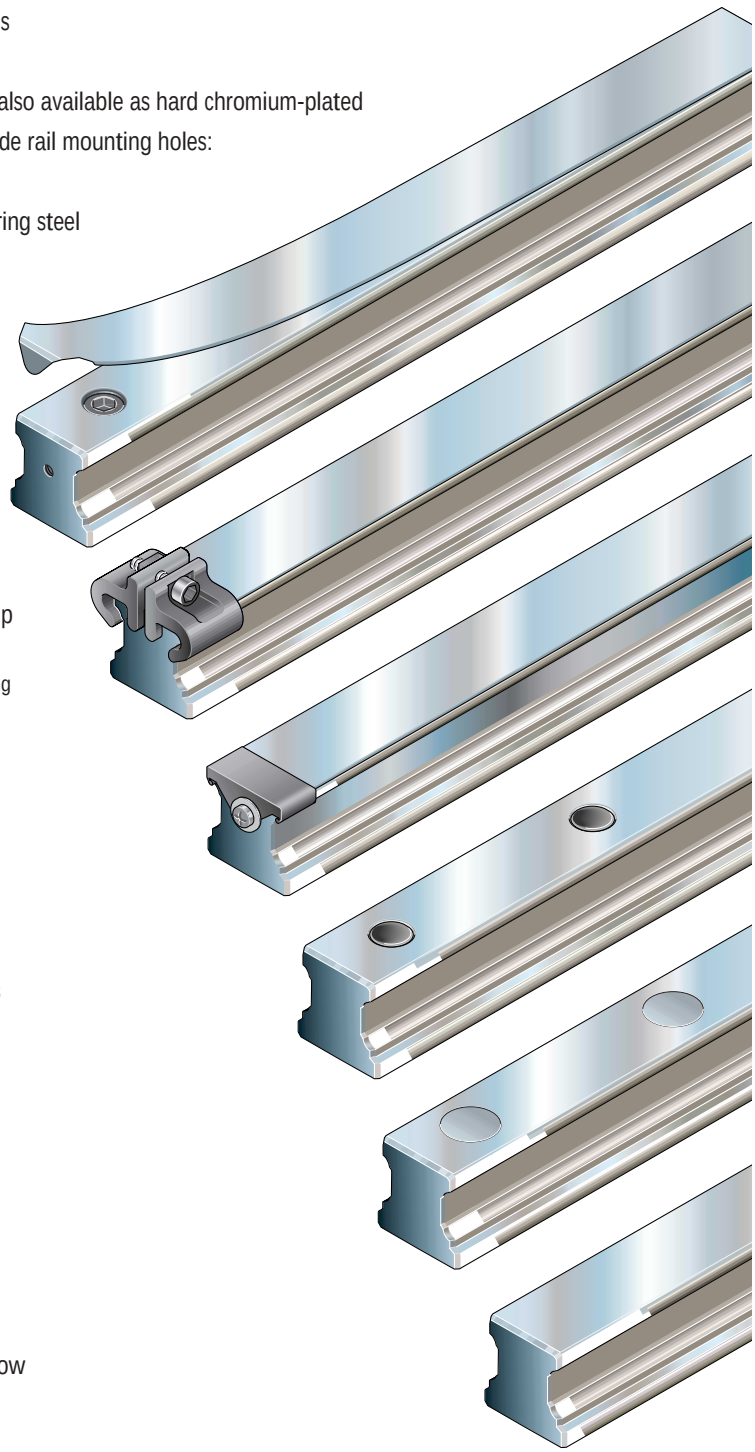
Rexroth Ball Rail Systems

Product Overview Standard Guide Rails

– Top rigidity in all load directions
– High torque load capacity
– Guide rails in accuracy class H also available as hard chromium-plated

Proven rail seal cover strip for guide rail mounting holes:

– *One* cover for all holes
– Made of corrosion-resistant spring steel DIN EN 10088
– Easy, secure mounting
– Clip on and fasten



Guide rails with rail seal cover strip and aluminum strip holder

– Without front face threaded mounting holes (not required)

Guide rail seal cover strip and plastic protective caps

– With front face threaded mounting holes

Guide rails with plastic hole plugs

Guide rails with steel hole plugs

Guide rails for mounting from below

Ordering Example, Standard Guide Rails

Ordering guide rails with recommended rail length

The following examples apply to all guide rails.

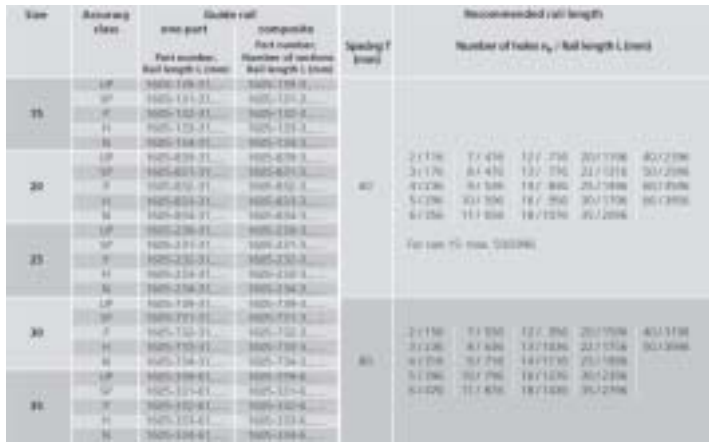
Use the part numbers and dimensions from the corresponding tables.

- Wherever possible, the recommended rail lengths according to the tables should be used.

Ordering Example 1

Guide rail size 35 with rail seal cover strip and strip holder,
accuracy class H,
rail length 1756 mm according to table,
(21 · T, number of holes n_B = 22)

Ordering information: **1605-333-61, 1756 mm**



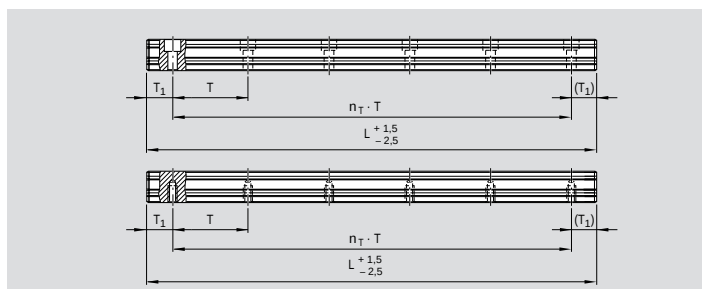
Ordering guide rails with intermediate rail length

Calculation of rail length L and ordering examples:

- The preferred dimension is T_{1S}
- If preferred dimension T_{1S} is cannot be used:
  - Select an end space T_1 between T_{1S} and $T_{1\ min}$
  - Do not go below the minimum spacing $T_{1\ min}$!

Note

– T_1, $T_{1\ min}$, T_{1S} are the same at either end of the rail.



$$L = n_B \cdot T - 4$$
or
$$L = n_T \cdot T + 2 \cdot T_{1S}$$

L	= rail length	(mm)
T	= spacing*)	(mm)
T_{1S}	= preferred dimension*)	(mm)
n_B	= number of holes per row	
n_T	= number of spaces	
	*) values, see table	

Ordering example 2 (up to L_{max}):

Guide rail size 35 with rail seal cover strip and strip holder,
accuracy class H,
rail length 1676 mm,

(20 · T, preferred dimension T_{1S} = 38 mm; number of holes n_B = 21)

Ordering data:

Part number, length (mm)

T_1 / $n_T \cdot T$ / T_1 (mm)

1605-333-61, 1676 mm

38 / 20 · 80 / 38 mm

Ordering example 3 (over L_{max}):

Guide rail size 35 with rail seal cover strip and strip holder,
accuracy class H,
rail length 5036 mm, 2 sections

(62 · T, preferred dimension T_{1S} = 38 mm; number of holes n_B = 63)

Ordering data:

Part number and number of sections, length (mm)

T_1 / $n_T \cdot T$ / T_1 (mm)

1605-333-62, 5036 mm

38 / 62 · 80 / 38 mm

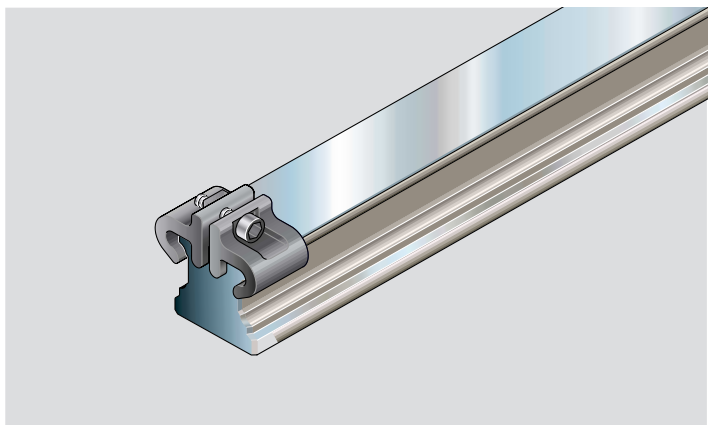
Rail lengths above L_{max} are made up of fitted rail sections mounted end to end.

Rexroth Ball Rail Systems
Standard Guide Rails

Guide rails 1605-.3.-

For mounting from above, with rail seal and strip holder

– Sturdy aluminum strip holder
– Guide rail without front face threaded mounting holes
(threaded mounting holes not required for strip holder)



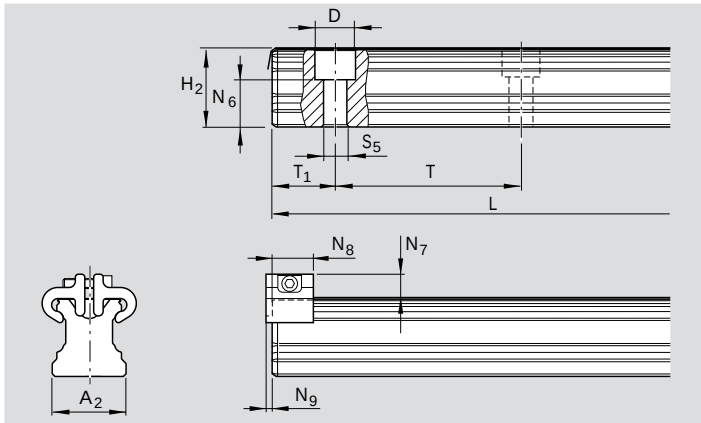
Note

The guide rails are also available as composite rails, see Ordering Example 3.

Part numbers and rail lengths

Size	Accuracy class	Guide rail one-part Part number, Rail length L (mm)	Guide rail composite Part number, Number of sections Rail length L (mm)	Spacing T (mm)	Recommended rail length Number of holes n_B / Rail length L (mm)				
15	UP	1605-139-31,....	1605-139-3.,.....	60					
	SP	1605-131-31,....	1605-131-3.,.....						
	P	1605-132-31,....	1605-132-3.,.....						
	H	1605-133-31,....	1605-133-3.,.....						
	N	1605-134-31,....	1605-134-3.,.....						
20	UP	1605-839-31,....	1605-839-3.,.....		2 / 116	7 / 416	12 / 716	20 / 1196	40 / 2396
	SP	1605-831-31,....	1605-831-3.,.....		3 / 176	8 / 476	13 / 776	22 / 1316	50 / 2996
	P	1605-832-31,....	1605-832-3.,.....		4 / 236	9 / 536	14 / 836	25 / 1496	60 / 3596
	H	1605-833-31,....	1605-833-3.,.....		5 / 296	10 / 596	16 / 956	30 / 1796	66 / 3956
	N	1605-834-31,....	1605-834-3.,.....		6 / 356	11 / 656	18 / 1076	35 / 2096	
25	UP	1605-239-31,....	1605-239-3.,.....		For size 15: max. 50/2996				
	SP	1605-231-31,....	1605-231-3.,.....						
	P	1605-232-31,....	1605-232-3.,.....						
	H	1605-233-31,....	1605-233-3.,.....						
	N	1605-234-31,....	1605-234-3.,.....						
30	UP	1605-739-31,....	1605-739-3.,.....	80					
	SP	1605-731-31,....	1605-731-3.,.....						
	P	1605-732-31,....	1605-732-3.,.....		2 / 156	7 / 556	12 / 956	20 / 1596	40 / 3196
	H	1605-733-31,....	1605-733-3.,.....		3 / 236	8 / 636	13 / 1036	22 / 1756	50 / 3996
	N	1605-734-31,....	1605-734-3.,.....		4 / 316	9 / 716	14 / 1116	25 / 1996	
35	UP	1605-339-61,....	1605-339-6.,.....		5 / 396	10 / 796	16 / 1276	30 / 2396	
	SP	1605-331-61,....	1605-331-6.,.....		6 / 476	11 / 876	18 / 1436	35 / 2796	
	P	1605-332-61,....	1605-332-6.,.....						
	H	1605-333-61,....	1605-333-6.,.....						
	N	1605-334-61,....	1605-334-6.,.....						
45	UP	1605-439-61,....	1605-439-6.,.....	105	2 / 204	7 / 729	12 / 1254	20 / 2094	38 / 3984
	SP	1605-431-61,....	1605-431-6.,.....		3 / 309	8 / 834	13 / 1359	22 / 2304	
	P	1605-432-61,....	1605-432-6.,.....		4 / 414	9 / 939	14 / 1464	25 / 2619	
	H	1605-433-61,....	1605-433-6.,.....		5 / 519	10 / 1044	16 / 1674	30 / 3144	
	N	1605-434-61,....	1605-434-6.,.....		6 / 624	11 / 1149	18 / 1884	35 / 3669	
55	UP	1605-539-61,....	1605-539-6.,.....	120	2 / 234	7 / 834	12 / 1434	20 / 2394	
	SP	1605-531-61,....	1605-531-6.,.....		3 / 354	8 / 954	13 / 1554	22 / 2634	
	P	1605-532-61,....	1605-532-6.,.....		4 / 474	9 / 1074	14 / 1674	25 / 2994	
	H	1605-533-61,....	1605-533-6.,.....		5 / 594	10 / 1194	16 / 1914	30 / 3594	
	N	1605-534-61,....	1605-534-6.,.....		6 / 714	11 / 1314	18 / 2154	33 / 3954	
65	UP	1605-639-61,....	1605-639-6.,.....	150	2 / 294	7 / 1044	12 / 1794	20 / 2994	
	SP	1605-631-61,....	1605-631-6.,.....		3 / 444	8 / 1194	13 / 1944	22 / 3294	
	P	1605-632-61,....	1605-632-6.,.....		4 / 594	9 / 1344	14 / 2094	25 / 3744	
	H	1605-633-61,....	1605-633-6.,.....		5 / 744	10 / 1494	16 / 2394	26 / 3894	
	N	1605-634-61,....	1605-634-6.,.....		6 / 894	11 / 1644	18 / 2694		

Dimensions and masses



Size	Dimension (mm)												Mass
	A_2	H_2[1]	$N_6^{\pm 0.5}$	N_7[2]	N_8	N_9	D	S_5	$T_{1S-1}^{+0.5}$	$T_{1\,min}$	T	L_{max}[3]	(kg/m)
15	15	16.3	10.3	7.3	12.0	2.0	7.4	4.4	28.0	12	60	4000	1.4
20	20	20.7	13.2	7.1	12.0	2.0	9.4	6.0	28.0	13	60	4000	2.4
25	23	24.4	15.2	8.2	13.0	2.0	11.0	7.0	28.0	13	60	4000	3.2
30	28	28.5	17.0	8.7	13.0	2.0	15.0	9.0	38.0	16	80	4000	5.0
35	34	32.15	20.5	11.7	16.0	2.2	15.0	9.0	38.0	16	80	4000	6.8
45	45	40.15	23.5	12.5	18.0	2.2	20.0	14.0	50.5	18	105	4000	10.5
55	53	48.15	29.0	14.0	17.0	3.2	24.0	16.0	58.0	20	120	4000	16.2
65	63	60.15	38.5	15.0	17.0	3.2	26.0	18.0	73.0	21	150	4000	22.4

[1] Dimension H_2 with rail seal cover strip

[2] Dimension H_7 with rail seal cover strip

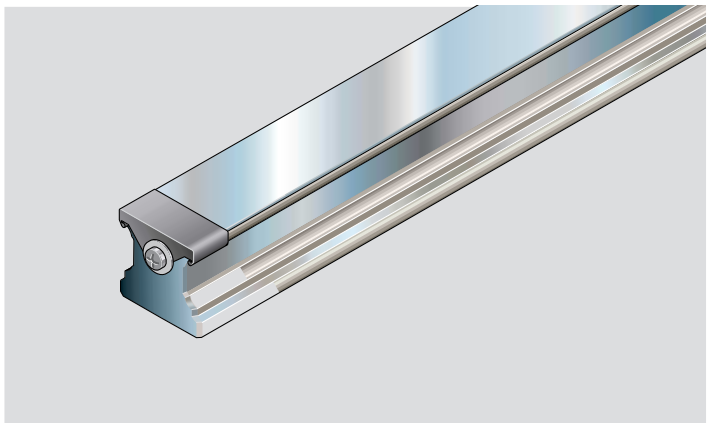
[3] For sizes 20 – 45, one-piece guide rails up to approx. 6000 mm in length can be supplied in special cases.

Rexroth Ball Rail Systems
Standard Guide Rails

Guide rails 1605-.6. -

For mounting from above, with rail seal and screw-down protective caps

– Plastic protective caps
– Guide rail with front face threaded mounting holes



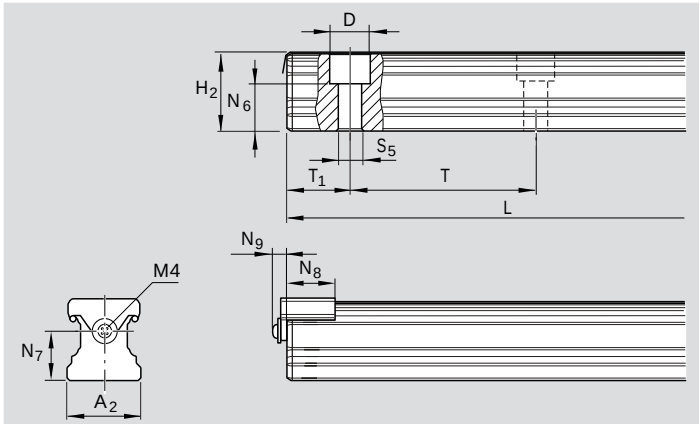
Note

The guide rails are also available as composite rails, see Ordering Example 3.

Part numbers and rail lengths

Size	Accuracy class	Guide rail one-part Part number, Rail length L (mm)	Guide rail composite Part number, Number of sections Rail length L (mm)	Spacing T (mm)	Recommended rail length Number of holes n_B / Rail length L (mm)				
15	UP	1605-169-31,....	1605-169-3,.....	60	2 / 116	7 / 416	12 / 716	20 / 1196	40 / 2396
	SP	1605-161-31,....	1605-161-3,.....		3 / 176	8 / 476	13 / 776	22 / 1316	50 / 2996
	P	1605-162-31,....	1605-162-3,.....		4 / 236	9 / 536	14 / 836	25 / 1496	60 / 3596
	H	1605-163-31,....	1605-163-3,.....		5 / 296	10 / 596	16 / 956	30 / 1796	66 / 3956
	N	1605-164-31,....	1605-164-3,.....		6 / 356	11 / 656	18 / 1076	35 / 2096	
20	UP	1605-869-31,....	1605-869-3,.....						
	SP	1605-861-31,....	1605-861-3,.....						
	P	1605-862-31,....	1605-862-3,.....						
	H	1605-863-31,....	1605-863-3,.....						
	N	1605-864-31,....	1605-864-3,.....						
25	UP	1605-269-31,....	1605-269-3,.....		For size 15: max. 50/2996				
	SP	1605-261-31,....	1605-261-3,.....						
	P	1605-262-31,....	1605-262-3,.....						
	H	1605-263-31,....	1605-263-3,.....						
	N	1605-264-31,....	1605-264-3,.....						
30	UP	1605-769-31,....	1605-769-3,.....	80	2 / 156	7 / 556	12 / 956	20 / 1596	40 / 3196
	SP	1605-761-31,....	1605-761-3,.....		3 / 236	8 / 636	13 / 1036	22 / 1756	50 / 3996
	P	1605-762-31,....	1605-762-3,.....		4 / 316	9 / 716	14 / 1116	25 / 1996	
	H	1605-763-31,....	1605-763-3,.....		5 / 396	10 / 796	16 / 1276	30 / 2396	
	N	1605-764-31,....	1605-764-3,.....		6 / 476	11 / 876	18 / 1436	35 / 2796	
35	UP	1605-369-61,....	1605-369-6,.....						
	SP	1605-361-61,....	1605-361-6,.....						
	P	1605-362-61,....	1605-362-6,.....						
	H	1605-363-61,....	1605-363-6,.....						
	N	1605-364-61,....	1605-364-6,.....						
45	UP	1605-469-61,....	1605-469-6,.....	105	2 / 204	7 / 729	12 / 1254	20 / 2094	38 / 3984
	SP	1605-461-61,....	1605-461-6,.....		3 / 309	8 / 834	13 / 1359	22 / 2304	
	P	1605-462-61,....	1605-462-6,.....		4 / 414	9 / 939	14 / 1464	25 / 2619	
	H	1605-463-61,....	1605-463-6,.....		5 / 519	10 / 1044	16 / 1674	30 / 3144	
	N	1605-464-61,....	1605-464-6,.....		6 / 624	11 / 1149	18 / 1884	35 / 3669	
55	UP	1605-569-61,....	1605-569-6,.....	120	2 / 234	7 / 834	12 / 1434	20 / 2394	
	SP	1605-561-61,....	1605-561-6,.....		3 / 354	8 / 954	13 / 1554	22 / 2634	
	P	1605-562-61,....	1605-562-6,.....		4 / 474	9 / 1074	14 / 1674	25 / 2994	
	H	1605-563-61,....	1605-563-6,.....		5 / 594	10 / 1194	16 / 1914	30 / 3594	
	N	1605-564-61,....	1605-564-6,.....		6 / 714	11 / 1314	18 / 2154	33 / 3954	
65	UP	1605-669-61,....	1605-669-6,.....	150	2 / 294	7 / 1044	12 / 1794	20 / 2994	
	SP	1605-661-61,....	1605-661-6,.....		3 / 444	8 / 1194	13 / 1944	22 / 3294	
	P	1605-662-61,....	1605-662-6,.....		4 / 594	9 / 1344	14 / 2094	25 / 3744	
	H	1605-663-61,....	1605-663-6,.....		5 / 744	10 / 1494	16 / 2394	26 / 3894	
	N	1605-664-61,....	1605-664-6,.....		6 / 894	11 / 1644	18 / 2694		

Dimensions and masses



Size	Dimension (mm)												Mass
	A_2	H_2[1]	$N_6^{\pm 0.5}$	N_7[2]	N_8	N_9	D	S_5	$T_{1S\text{-}1}^{+0.5}$	$T_{1\ min}$	T	L_{max}[3]	(kg/m)
15	15	16.3	10.3	9.8	14.0	6.5	7.4	4.4	28.0	12	60	4000	1.4
20	20	20.7	13.2	13.0	14.0	6.5	9.4	6.0	28.0	13	60	4000	2.4
25	23	24.4	15.2	15.0	15.2	6.5	11.0	7.0	28.0	13	60	4000	3.2
30	28	28.5	17.0	18.0	15.2	7.0	15.0	9.0	38.0	16	80	4000	5.0
35	34	32.15	20.5	22.0	18.0	7.0	15.0	9.0	38.0	16	80	4000	6.8
45	45	40.15	23.5	30.0	20.0	7.0	20.0	14.0	50.5	18	105	4000	10.5
55	53	48.15	29.0	30.0	20.0	7.0	24.0	16.0	58.0	20	120	4000	16.2
65	63	60.15	38.5	40.0	20.0	7.0	26.0	18.0	73.0	21	150	4000	22.4

[1] Dimension H_2 with rail seal cover strip

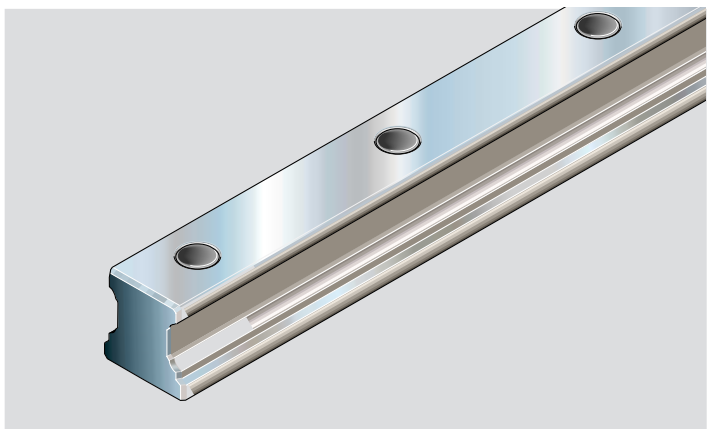
[2] Dimension H_7 with rail seal cover strip

[3] For sizes 20 – 45, one-piece guide rails up to approx. 6000 mm in length can be supplied in special cases.

Rexroth Ball Rail Systems
Standard Guide Rails

Guide rails 1605-.0.-

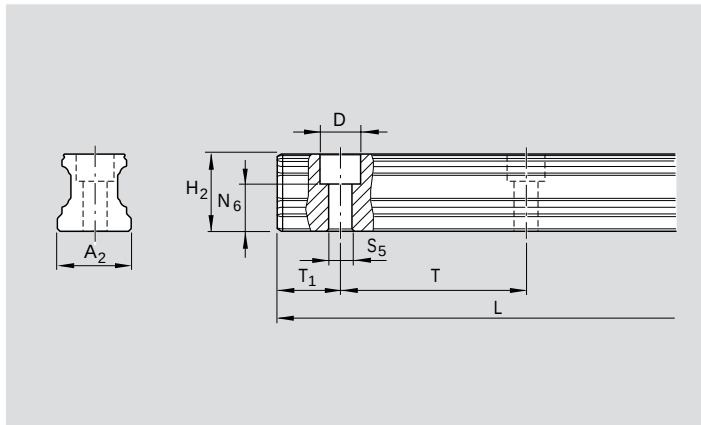
**For mounting from above,
with plastic mounting hole plugs
(supplied)**



Part numbers and rail lengths

Size	Accuracy class	Guide rail		Spacing T (mm)	Recommended rail length				
		one-part	composite		Number of holes n_B / Rail length L (mm)				
		Part number, Rail length L (mm)	Part number, Number of sections Rail length L (mm)						
15	UP	1605-109-31,....	1605-109-3.,....	60	2 / 116	7 / 416	12 / 716	20 / 1196	40 / 2396
	SP	1605-101-31,....	1605-101-3.,....		3 / 176	8 / 476	13 / 776	22 / 1316	50 / 2996
	P	1605-102-31,....	1605-102-3.,....		4 / 236	9 / 536	14 / 836	25 / 1496	60 / 3596
	H	1605-103-31,....	1605-103-3.,....		5 / 296	10 / 596	16 / 956	30 / 1796	66 / 3956
	N	1605-104-31,....	1605-104-3.,....		6 / 356	11 / 656	18 / 1076	35 / 2096	
20	UP	1605-809-31,....	1605-809-3.,....						
	SP	1605-801-31,....	1605-801-3.,....						
	P	1605-802-31,....	1605-802-3.,....						
	H	1605-803-31,....	1605-803-3.,....						
	N	1605-804-31,....	1605-804-3.,....						
25	UP	1605-209-31,....	1605-209-3.,....		For size 15: max. 50/2996				
	SP	1605-201-31,....	1605-201-3.,....						
	P	1605-202-31,....	1605-202-3.,....						
	H	1605-203-31,....	1605-203-3.,....						
	N	1605-204-31,....	1605-204-3.,....						
30	UP	1605-709-31,....	1605-709-3.,....	80	2 / 156	7 / 556	12 / 956	20 / 1596	40 / 3196
	SP	1605-701-31,....	1605-701-3.,....		3 / 236	8 / 636	13 / 1036	22 / 1756	50 / 3996
	P	1605-702-31,....	1605-702-3.,....		4 / 316	9 / 716	14 / 1116	25 / 1996	
	H	1605-703-31,....	1605-703-3.,....		5 / 396	10 / 796	16 / 1276	30 / 2396	
	N	1605-704-31,....	1605-704-3.,....		6 / 476	11 / 876	18 / 1436	35 / 2796	
35	UP	1605-309-31,....	1605-309-3.,....						
	SP	1605-301-31,....	1605-301-3.,....						
	P	1605-302-31,....	1605-302-3.,....						
	H	1605-303-31,....	1605-303-3.,....						
	N	1605-304-31,....	1605-304-3.,....						
45	UP	1605-409-31,....	1605-409-3.,....	105	2 / 204	7 / 729	12 / 1254	20 / 2094	38 / 3984
	SP	1605-401-31,....	1605-401-3.,....		3 / 309	8 / 834	13 / 1359	22 / 2304	
	P	1605-402-31,....	1605-402-3.,....		4 / 414	9 / 939	14 / 1464	25 / 2619	
	H	1605-403-31,....	1605-403-3.,....		5 / 519	10 / 1044	16 / 1674	30 / 3144	
	N	1605-404-31,....	1605-404-3.,....		6 / 624	11 / 1149	18 / 1884	35 / 3669	
55	UP	1605-509-31,....	1605-509-3.,....	120	2 / 234	7 / 834	12 / 1434	20 / 2394	
	SP	1605-501-31,....	1605-501-3.,....		3 / 354	8 / 954	13 / 1554	22 / 2634	
	P	1605-502-31,....	1605-502-3.,....		4 / 474	9 / 1074	14 / 1674	25 / 2994	
	H	1605-503-31,....	1605-503-3.,....		5 / 594	10 / 1194	16 / 1914	30 / 3594	
	N	1605-504-31,....	1605-504-3.,....		6 / 714	11 / 1314	18 / 2154	33 / 3954	
65	UP	1605-609-31,....	1605-609-3.,....	150	2 / 294	7 / 1044	12 / 1794	20 / 2994	
	SP	1605-601-31,....	1605-601-3.,....		3 / 444	8 / 1194	13 / 1944	22 / 3294	
	P	1605-602-31,....	1605-602-3.,....		4 / 594	9 / 1344	14 / 2094	25 / 3744	
	H	1605-603-31,....	1605-603-3.,....		5 / 744	10 / 1494	16 / 2394	26 / 3894	
	N	1605-604-31,....	1605-604-3.,....		6 / 894	11 / 1644	18 / 2694		

Dimensions and masses



Size	Dimension (mm)									Mass
	A_2	H_2[1]	$N_6^{\pm 0.5}$	D	S_5	$T_{1S-1}^{+0.5}$	$T_{1\ min}$	T	L_{max}[2]	(kg/m)
15	15	16.20	10.3	7.4	4.4	28.0	10	60	4000	1.4
20	20	20.55	13.2	9.4	6.0	28.0	10	60	4000	2.4
25	23	24.25	15.2	11.0	7.0	28.0	10	60	4000	3.2
30	28	28.35	17.0	15.0	9.0	38.0	12	80	4000	5.0
35	34	31.85	20.5	15.0	9.0	38.0	12	80	4000	6.8
45	45	39.85	23.5	20.0	14.0	50.5	16	105	4000	10.5
55	53	47.85	29.0	24.0	16.0	58.0	18	120	4000	16.2
65	63	59.85	38.5	26.0	18.0	73.0	20	150	4000	22.4

[1] Dimension H_2 without rail seal cover strip

[2] For sizes 20 – 45, one-piece guide rails up to approx. 6000 mm in length can be supplied in special cases.

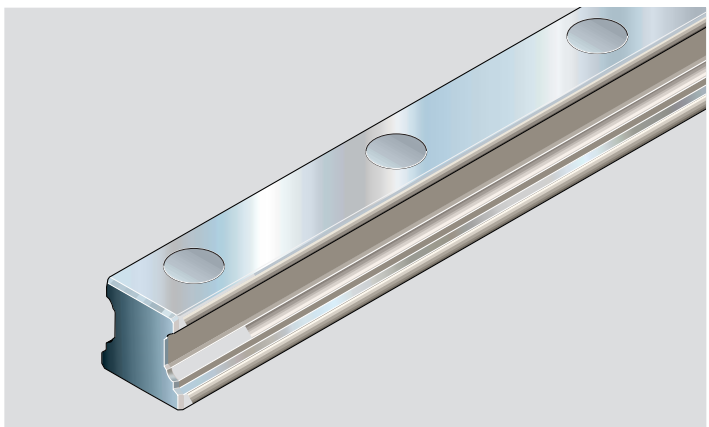
Rexroth Ball Rail Systems
Standard Guide Rails

Guide rails 1606-.5.-

For mounting from above, with steel mounting hole plugs (not supplied)

Order steel mounting hole plugs and mounting tool separately.

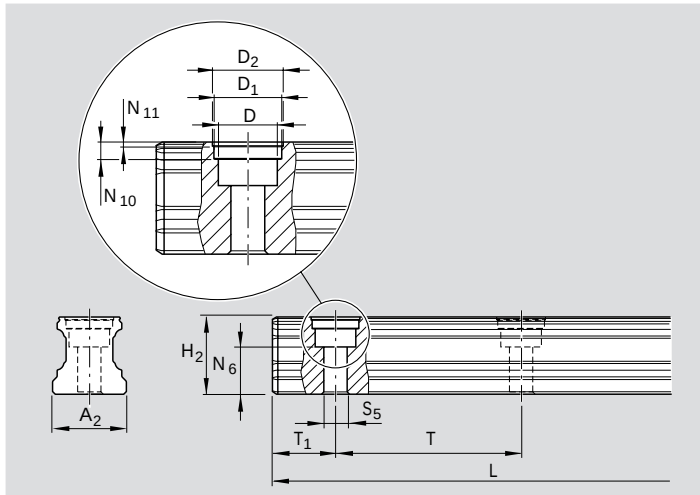
Observe the mounting instructions for steel mounting hole plugs.



Part numbers and rail lengths

Size	Accuracy class	Guide rail one-part Part number, Rail length L (mm)	Guide rail composite Part number, Number of sections Rail length L (mm)	Spacing T (mm)	Recommended rail length Number of holes n_B / Rail length L (mm)				
25	SP	1606-251-31,....	1606-251-3.,....	60	2 / 116 3 / 176 4 / 236 5 / 296 6 / 356	7 / 416 8 / 476 9 / 536 10 / 596 11 / 656	12 / 716 13 / 776 14 / 836 16 / 956 18 / 1076	20 / 1196 22 / 1316 25 / 1496 30 / 1796 35 / 2096	40 / 2396 50 / 2996 60 / 3596 66 / 3956
	P	1606-252-31,....	1606-252-3.,....						
	H	1606-253-31,....	1606-253-3.,....						
	N	1606-254-31,....	1606-254-3.,....						
30	SP	1606-751-31,....	1606-751-3.,....	80	2 / 156 3 / 236 4 / 316 5 / 396	7 / 556 8 / 636 9 / 716 10 / 796	12 / 956 13 / 1036 14 / 1116 16 / 1276	20 / 1596 22 / 1756 25 / 1996 30 / 2396	40 / 3196 50 / 3996
	P	1606-752-31,....	1606-752-3.,....						
	H	1606-753-31,....	1606-753-3.,....						
	N	1606-754-31,....	1606-754-3.,....						
35	SP	1606-351-31,....	1606-351-3.,....						
	P	1606-352-31,....	1606-352-3.,....						
	H	1606-353-31,....	1606-353-3.,....						
	N	1606-354-31,....	1606-354-3.,....						
45	SP	1606-451-31,....	1606-451-3.,....	105	2 / 204 3 / 309 4 / 414 5 / 519 6 / 624	7 / 729 8 / 834 9 / 939 10 / 1044 11 / 1149	12 / 1254 13 / 1359 14 / 1464 16 / 1674 18 / 1884	20 / 2094 22 / 2304 25 / 2619 30 / 3144 35 / 3669	38 / 3984
	P	1606-452-31,....	1606-452-3.,....						
	H	1606-453-31,....	1606-453-3.,....						
	N	1606-454-31,....	1606-454-3.,....						
55	SP	1606-551-31,....	1606-551-3.,....	120	2 / 234 3 / 354 4 / 474 5 / 594 6 / 714	7 / 834 8 / 954 9 / 1074 10 / 1194 11 / 1314	12 / 1434 13 / 1554 14 / 1674 16 / 1914 18 / 2154	20 / 2394 22 / 2634 25 / 2994 30 / 3594 33 / 3954	
	P	1606-552-31,....	1606-552-3.,....						
	H	1606-553-31,....	1606-553-3.,....						
	N	1606-554-31,....	1606-554-3.,....						
65	SP	1606-651-31,....	1606-651-3.,....	150	2 / 294 3 / 444 4 / 594 5 / 744 6 / 894	7 / 1044 8 / 1194 9 / 1344 10 / 1494 11 / 1644	12 / 1794 13 / 1944 14 / 2094 16 / 2394 18 / 2694	20 / 2994 22 / 3294 25 / 3744 26 / 3894	
	P	1606-652-31,....	1606-652-3.,....						
	H	1606-653-31,....	1606-653-3.,....						
	N	1606-654-31,....	1606-654-3.,....						

Dimensions and masses



Size	Dimensions (mm)							
	A_2	H_2	$N_6^{\pm 0.5}$	D	N_{10}	D_1	N_{11}	D_2
25	23	24.25	15.2	11.0	3.7	12.55	0.9	13.0
30	28	28.35	17.0	15.0	3.6	17.55	0.9	18.0
35	34	31.85	20.5	15.0	3.6	17.55	0.9	18.0
45	45	39.85	23.5	20.0	8.0	22.55	1.45	23.0
55	53	47.85	29.0	24.0	8.0	27.55	1.45	28.0
65	63	59.85	38.5	26.0	8.0	29.55	1.45	30.0

Size	Dimension (mm)							Mass
	S_5	$T_{1S_{-1}}^{+0.5}$	$T_{1\ min}$	T	L_{max}			(kg/m)
25	7.0	28.0	13	60	4000			3.2
30	9.0	38.0	16	80	4000			5.0
35	9.0	38.0	16	80	4000			6.8
45	14.0	50.5	18	105	4000			10.5
55	16.0	58.0	20	120	4000			16.2
65	18.0	73.0	21	150	4000			22.4

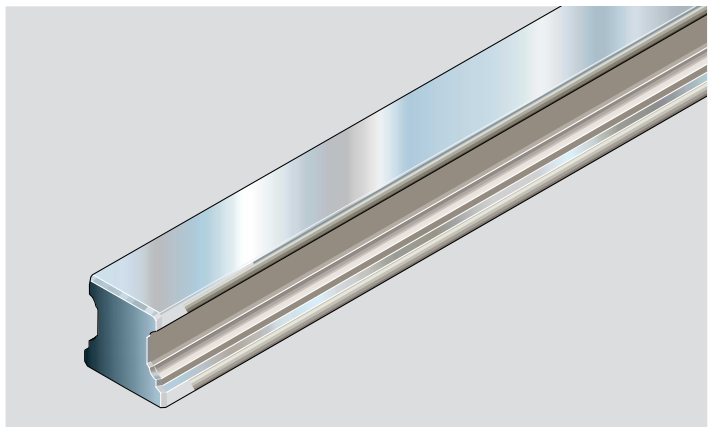
Steel mounting hole plugs

Steel mounting hole plugs	
Size	Part numbers
25	1606-200-75
30	1606-300-75
35	1606-300-75
45	1606-400-75
55	1606-500-75
65	1606-600-75

Rexroth Ball Rail Systems
Standard Guide Rails

Guide rail 1607-

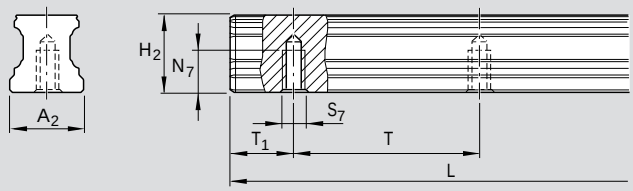
For mounting from below



Part numbers and rail lengths

Size	Accuracy class	Guide rail one-part: Part number, Rail length L (mm)	Guide rail composite: Part number, Number of sections Rail length L (mm)	Spacing T (mm)	Recommended rail length: Number of holes n_B / Rail length L (mm)				
15	UP	1607-109-31,....	1607-109-3.,....	60					
	SP	1607-101-31,....	1607-101-3.,....						
	P	1607-102-31,....	1607-102-3.,....						
	H	1607-103-31,....	1607-103-3.,....						
	N	1607-104-31,....	1607-104-3.,....						
20	UP	1607-809-31,....	1607-809-3.,....		2 / 116	7 / 416	12 / 716	20 / 1196	40 / 2396
	SP	1607-801-31,....	1607-801-3.,....		3 / 176	8 / 476	13 / 776	22 / 1316	50 / 2996
	P	1607-802-31,....	1607-802-3.,....		4 / 236	9 / 536	14 / 836	25 / 1496	60 / 3596
	H	1607-803-31,....	1607-803-3.,....		5 / 296	10 / 596	16 / 956	30 / 1796	66 / 3956
	N	1607-804-31,....	1607-804-3.,....		6 / 356	11 / 656	18 / 1076	35 / 2096	
25	UP	1607-209-31,....	1607-209-3.,....		For size 15: max. 50/2996				
	SP	1607-201-31,....	1607-201-3.,....						
	P	1607-202-31,....	1607-202-3.,....						
	H	1607-203-31,....	1607-203-3.,....						
	N	1607-204-31,....	1607-204-3.,....						
30	UP	1607-709-31,....	1607-709-3.,....	80					
	SP	1607-701-31,....	1607-701-3.,....						
	P	1607-702-31,....	1607-702-3.,....		2 / 156	7 / 556	12 / 956	20 / 1596	40 / 3196
	H	1607-703-31,....	1607-703-3.,....		3 / 236	8 / 636	13 / 1036	22 / 1756	50 / 3996
	N	1607-704-31,....	1607-704-3.,....		4 / 316	9 / 716	14 / 1116	25 / 1996	
35	UP	1607-309-31,....	1607-309-3.,....		5 / 396	10 / 796	16 / 1276	30 / 2396	
	SP	1607-301-31,....	1607-301-3.,....		6 / 476	11 / 876	18 / 1436	35 / 2796	
	P	1607-302-31,....	1607-302-3.,....						
	H	1607-303-31,....	1607-303-3.,....						
	N	1607-304-31,....	1607-304-3.,....						
45	UP	1607-409-31,....	1607-409-3.,....	105	2 / 204	7 / 729	12 / 1254	20 / 2094	38 / 3984
	SP	1607-401-31,....	1607-401-3.,....		3 / 309	8 / 834	13 / 1359	22 / 2304	
	P	1607-402-31,....	1607-402-3.,....		4 / 414	9 / 939	14 / 1464	25 / 2619	
	H	1607-403-31,....	1607-403-3.,....		5 / 519	10 / 1044	16 / 1674	30 / 3144	
	N	1607-404-31,....	1607-404-3.,....		6 / 624	11 / 1149	18 / 1884	35 / 3669	
55	UP	1607-509-31,....	1607-509-3.,....	120	2 / 234	7 / 834	12 / 1434	20 / 2394	
	SP	1607-501-31,....	1607-501-3.,....		3 / 354	8 / 954	13 / 1554	22 / 2634	
	P	1607-502-31,....	1607-502-3.,....		4 / 474	9 / 1074	14 / 1674	25 / 2994	
	H	1607-503-31,....	1607-503-3.,....		5 / 594	10 / 1194	16 / 1914	30 / 3594	
	N	1607-504-31,....	1607-504-3.,....		6 / 714	11 / 1314	18 / 2154	33 / 3954	
65	UP	1607-609-31,....	1607-609-3.,....	150	2 / 294	7 / 1044	12 / 1794	20 / 2994	
	SP	1607-601-31,....	1607-601-3.,....		3 / 444	8 / 1194	13 / 1944	22 / 3294	
	P	1607-602-31,....	1607-602-3.,....		4 / 594	9 / 1344	14 / 2094	25 / 3744	
	H	1607-603-31,....	1607-603-3.,....		5 / 744	10 / 1494	16 / 2394	26 / 3894	
	N	1607-604-31,....	1607-604-3.,....		6 / 894	11 / 1644	18 / 2694		

Dimensions and masses



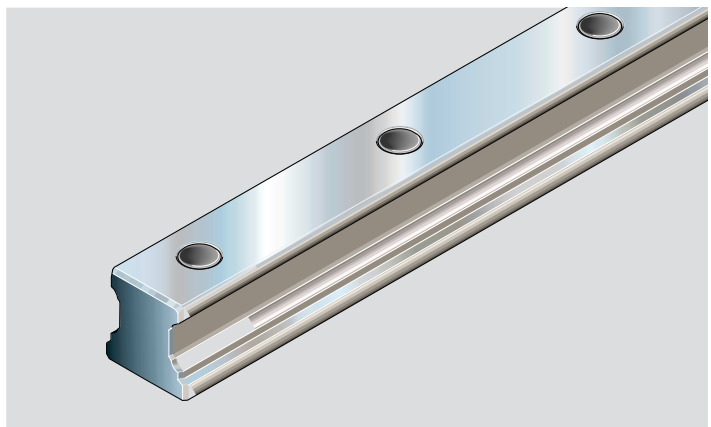
Size	Dimension (mm)								Mass
	A_2	H_2	N_7	S_7	$T_{1S-1}^{+0.5}$	T_{1min}	T	L_{max}	(kg/m)
15	15	16.20	7.5	M5	28.0	10	60	4000	1.4
20	20	20.55	9.0	M6	28.0	10	60	4000	2.4
25	23	24.25	12.0	M6	28.0	10	60	4000	3.2
30	28	28.35	15.0	M8	38.0	12	80	4000	5.0
35	34	31.85	15.0	M8	38.0	12	80	4000	6.8
45	45	39.85	19.0	M12	50.5	16	105	4000	10.5
55	53	47.85	22.0	M14	58.0	18	120	4000	16.2
65	63	59.85	25.0	M16	73.0	20	150	4000	22.4

Rexroth Ball Rail Systems
Standard Guide Rails, Hard Chromium-Plated

Guide rail
Black hard chromium-plated
1645-

for mounting from above,

complete with plastic mounting hole plugs



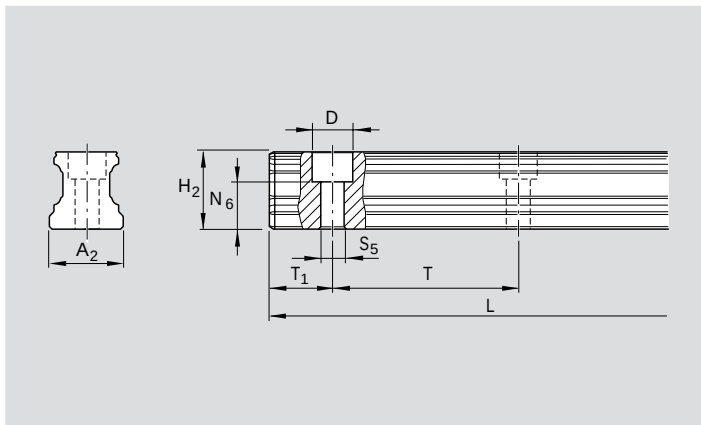
– The holes have a chrome coating.
– The end faces of composite rails are chromium-plated.

Versions:
– End faces not chromium-plated (except composite rails):
  Part numbers, see table
– End faces chromium-plated:
  Part numbers 1645-..3-41
– Guide rails also chromium-plated matt silver, available with slightly reduced corrosion protection and resistance to wear:
  Part numbers 1645-.03-..
– Guide rails with rail seal cover strip (new) available on request.

Part numbers and rail lengths

Size	Accuracy class	Guide rail one-part: Part number, Rail length L (mm)	Guide rail composite: Part number, Number of sections Rail length L (mm)	Recommended rail length: Spacing T (mm)	Number of holes n_B / Rail length L (mm)				
15	H	1645-113-31,....	1645-113-4.,....	60	2 / 116 3 / 176 4 / 236 5 / 296 6 / 356	7 / 416 8 / 476 9 / 536 10 / 596 11 / 656	12 / 716 13 / 776 14 / 836 16 / 956 18 / 1076	20 / 1196 22 / 1316 25 / 1496 30 / 1796 35 / 2096	40 / 2396 50 / 2996 60 / 3596[1)] 66 / 3956[1)]
20	H	1645-813-31,....	1645-813-4.,....						
25	H	1645-213-31,....	1645-213-4.,....						
30	H	1645-713-31,....	1645-713-4.,....	80	2 / 156 3 / 236 4 / 316 5 / 396 6 / 476	7 / 556 8 / 636 9 / 716 10 / 796 11 / 876	12 / 956 13 / 1036 14 / 1116 16 / 1276 18 / 1436	20 / 1596 22 / 1756 25 / 1996 30 / 2396 35 / 2796	40 / 3196 50 / 3996
35	H	1645-313-31,....	1645-313-4.,....						
45	H	1645-413-31,....	1645-413-4.,....	105	2 / 204 3 / 309 4 / 414 5 / 519 6 / 624	7 / 729 8 / 834 9 / 939 10 / 1044 11 / 1149	12 / 1254 13 / 1359 14 / 1464 16 / 1674 18 / 1884	20 / 2094 22 / 2304 25 / 2619 30 / 3144 35 / 3669	38 / 3984
55	H	1645-513-31,....	1645-513-4.,....	120	2 / 234 3 / 354 4 / 474 5 / 594 6 / 714	7 / 834 8 / 954 9 / 1074 10 / 1194 11 / 1314	12 / 1434 13 / 1554 14 / 1674 16 / 1914 18 / 2154	20 / 2394 22 / 2634 25 / 2994 30 / 3594 33 / 3954	
65	H	1645-613-31,....	1645-613-4.,....	150	2 / 294 3 / 444 4 / 594 5 / 744 6 / 894	7 / 1044 8 / 1194 9 / 1344 10 / 1494 11 / 1644	12 / 1794 13 / 1944 14 / 2094 16 / 2394 18 / 2694	20 / 2994 22 / 3294 25 / 3744 26 / 3894	

Dimensions and masses



Size	Dimension (mm)									Mass
	A_2	H_2	$N_6^{\pm 0.5}$	D	S_5	$T_{1S\text{-}1}^{+0.5}$	$T_{1\ min}$	T	L_{max}	(kg/m)
15	15	16.20	10.3	7.4	4.4	28.0	10	60	4000	1.4
20	20	20.55	13.2	9.4	6.0	28.0	10	60	4000	2.4
25	23	24.25	15.2	11.0	7.0	28.0	10	60	4000	3.2
30	28	28.35	17.0	15.0	9.0	38.0	12	80	4000	5.0
35	34	31.85	20.5	15.0	9.0	38.0	12	80	4000	6.8
45	45	39.85	23.5	20.0	14.0	50.5	16	105	4000	10.5
55	53	47.85	29.0	24.0	16.0	58.0	18	120	4000	16.2
65	63	59.85	38.5	26.0	18.0	73.0	20	150	4000	22.4

Recommended runner blocks

Recommended runner block:

Size 15 to 30:
– Runner blocks of accuracy class H to 10 µm clearance

Size 35 to 65:
– Runner blocks of accuracy class H to 0.02 C preload

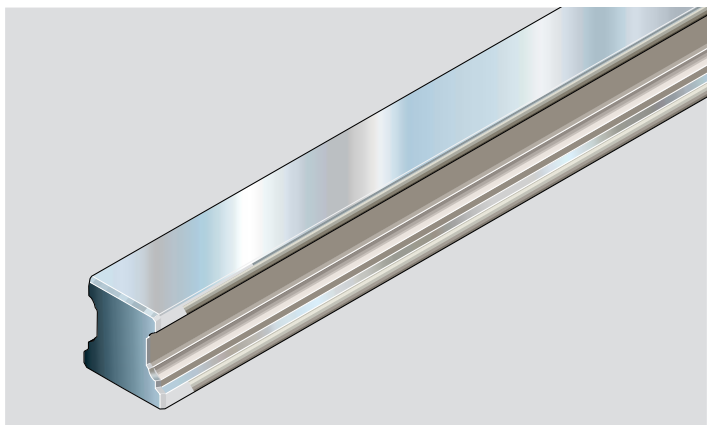
Accuracy class H:
– Runner block optionally available as black hard chromium-plated; part numbers available on request.

When using a combination of guide rails and runners block of different accuracy classes, the tolerances for dimensions H and A_3 change.
(Dimensions H and A_3, see sections "Accuracy classes and their tolerances" at the technical data for runner blocks.)
Exact values for the desired combinations are available on request.

Rexroth Ball Rail Systems
Standard Guide Rails, Thin Dense Chrome Plated

Guide rail
Black hard chromium-plated
1647-

For mounting from below



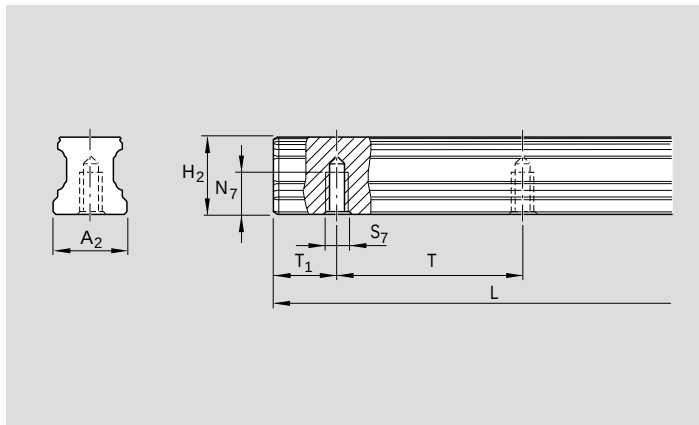
– The holes have a chrome coating.
– The end faces of composite rails are chromium-plated.

Versions:
– End faces not chromium-plated (except composite rails): Part numbers, see table
– End faces chromium-plated: Part numbers 1647-..3-41
– Guide rails also chromium-plated matt silver, available with slightly reduced corrosion protection and resistance to wear: Part numbers 1647-.03-..

Part numbers and rail lengths

Size	Accuracy class	Guide rail one-part	Guide rail composite	Recommended rail length					
		Part number, Rail length L (mm)	Part number, Number of sections Rail length L (mm)	Spacing T (mm)	Number of holes n_B / Rail length L (mm)				
15	H	1647-113-31,....	1647-113-4.,....	60	2 / 116 3 / 176 4 / 236 5 / 296 6 / 356	7 / 416 8 / 476 9 / 536 10 / 596 11 / 656	12 / 716 13 / 776 14 / 836 16 / 956 18 / 1076	20 / 1196 22 / 1316 25 / 1496 30 / 1796 35 / 2096	40 / 2396 50 / 2996 60 / 3596[1)] 66 / 3956[1)]
20	H	1647-813-31,....	1647-813-4.,....						
25	H	1647-213-31,....	1647-213-4.,....						
30	H	1647-713-31,....	1647-713-4.,....	80	2 / 156 3 / 236 4 / 316 5 / 396 6 / 476	7 / 556 8 / 636 9 / 716 10 / 796 11 / 876	12 / 956 13 / 1036 14 / 1116 16 / 1276 18 / 1436	20 / 1596 22 / 1756 25 / 1996 30 / 2396 35 / 2796	40 / 3196 50 / 3996
35	H	1647-313-31,....	1647-313-4.,....						
45	H	1647-413-31,....	1647-413-4.,....	105	2 / 204 3 / 309 4 / 414 5 / 519 6 / 624	7 / 729 8 / 834 9 / 939 10 / 1044 11 / 1149	12 / 1254 13 / 1359 14 / 1464 16 / 1674 18 / 1884	20 / 2094 22 / 2304 25 / 2619 30 / 3144 35 / 3669	38 / 3984
55	H	1647-513-31,....	1647-513-4.,....	120	2 / 234 3 / 354 4 / 474 5 / 594 6 / 714	7 / 834 8 / 954 9 / 1074 10 / 1194 11 / 1314	12 / 1434 13 / 1554 14 / 1674 16 / 1914 18 / 2154	20 / 2394 22 / 2634 25 / 2994 30 / 3594 33 / 3954	
65	H	1647-613-31,....	1647-613-4.,....	150	2 / 294 3 / 444 4 / 594 5 / 744 6 / 894	7 / 1044 8 / 1194 9 / 1344 10 / 1494 11 / 1644	12 / 1794 13 / 1944 14 / 2094 16 / 2394 18 / 2694	20 / 2994 22 / 3294 25 / 3744 26 / 3894	

Dimensions and masses



Size	Dimension (mm)								Mass
	A_2	H_2	N_7	S_7	$T_{1S}{}_{-1}^{+0.5}$	T_{1min}	T	L_{max}	(kg/m)
15	15	16.20	7.5	M5	28.0	10	60	4000	1.4
20	20	20.55	9.0	M6	28.0	10	60	4000	2.4
25	23	24.25	12.0	M6	28.0	10	60	4000	3.2
30	28	28.35	15.0	M8	38.0	12	80	4000	5.0
35	34	31.85	15.0	M8	38.0	12	80	4000	6.8
45	45	39.85	19.0	M12	50.5	16	105	4000	10.5
55	53	47.85	22.0	M14	58.0	18	120	4000	16.2
65	63	59.85	25.0	M16	73.0	20	150	4000	22.4

Recommended runner blocks

Recommended runner block:

Size 15 to 30:
– Runner blocks of accuracy class H to 10 µm clearance

Size 35 to 65:
Runner blocks of accuracy class H to 0.02 C preload

Accuracy class H:
– Runner block optionally available as black hard chromium-plated; part numbers available on request.

When using a combination of guide rails and runner blocks of different accuracy classes, the tolerances for dimensions H and A_3 change.
(Dimensions H and A_3, see sections "Accuracy classes and their tolerances" at the technical data for runner blocks.)
Exact values for the desired combinations are available on request.

Rexroth Ball Rail Systems
Product Overview Ball Rail Systems Made of Corrosion-Resistant Steel

Ball rail systems made of corrosion-resistant steel* are used especially in conjunction with watery media, diluted acids, alkalis or salt solutions. These rail systems are extremely well suited for deployment at relative air humidity above 70% and temperatures above 30 °C.

Conditions like this are found above all in cleaning systems, galvanization and pickling systems, steam degreasing systems and also cooling machines.

As no additional corrosion protection is required, ball rail systems made of corrosion-resistant steel are very well suited for deployment in clean rooms and general printed circuit board production. Other possibilities for deployment are in the pharmaceuticals and food industries.

Excellent properties

- All metal parts are made of corrosion-resistant steel
- Available in 5 common sizes
- Excellent dynamic characteristics v = 5 m/s; a_{max} = 500 m/s^2
- Same load capacities in all 4 main load directions
- Available in accuracy classes N, H and P, up to preload class 0.08 C
- Long-term lubrication, up to several years possible
- Minimum quantity lubrication system with integrated tank for oil lubrication
- Lube ports with metal threads on all sides
- Unrestricted interchangeable design: can be combined with standard steel guide rails or standard and high-speed runner blocks made of steel or aluminim
- Optimum system rigidity through preloaded O-arrangement
- Existing range of accessories fully utilizable
- Runner block can be screw fitted from above or below
- Improved rigidity under lift-off and side loading conditions when additional mounting screws are used in holes provided at the center of the runner block
- Front face securing threads for all attachments
- High rigidity in all load directions – can therefore be used as an individual block
- Integral, all-round sealing
- Optimized entry-zone geometry reduces fluctuation in elastic deflection
- Smooth and gentle running

Further Highlights

- Guide rails available with or without rail seal cover strip
- Guide rails available for mounting from above or below
- Runner blocks also available with chromium-plated guide rails

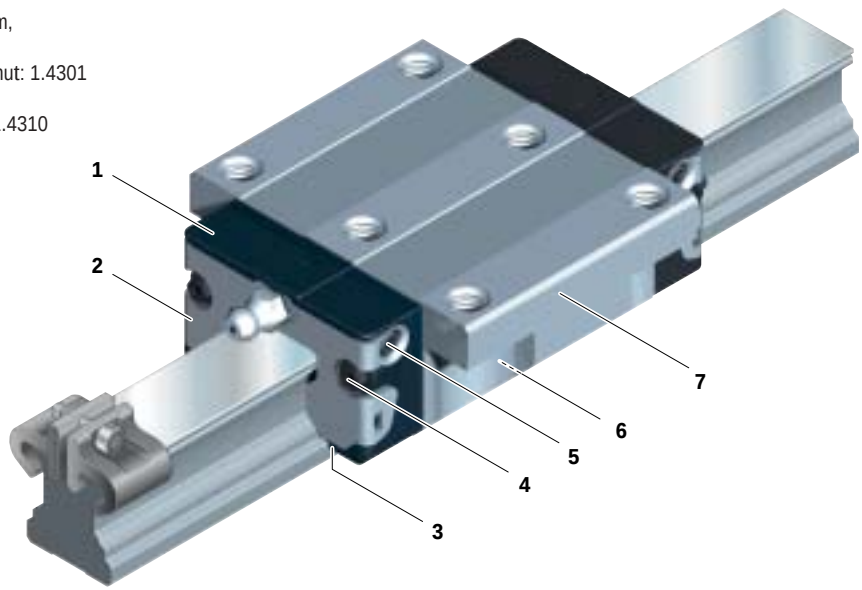
Optional

The same load capacities as standard runner blocks because of design with balls made of rolling bearing steel in conjunction with hard chromium-plated guide rail

* for roller bearing applications complying with DIN EN 10088

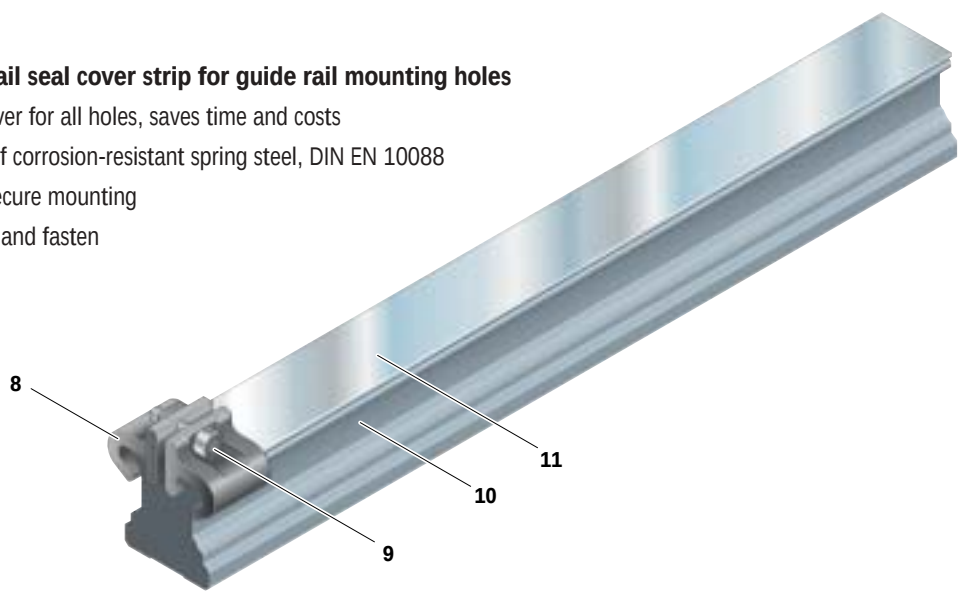
Material Specifications

1 Recirculation elements: POM
2 Thread plates: 1.4303
3 Seals: TEE-E
4 Flange screws: 1.4303
5 Set screws: 1.4301
6 Balls: 1.4112
7 Housing: 1.4122
8 Strip holder: aluminum, black anodized
9 Clamping screw and nut: 1.4301
10 Guide rail: 1.4116
11 Rail seal cover strip: 1.4310



Proven rail seal cover strip for guide rail mounting holes

– One cover for all holes, saves time and costs
– Made of corrosion-resistant spring steel, DIN EN 10088
– Easy, secure mounting
– Clip on and fasten



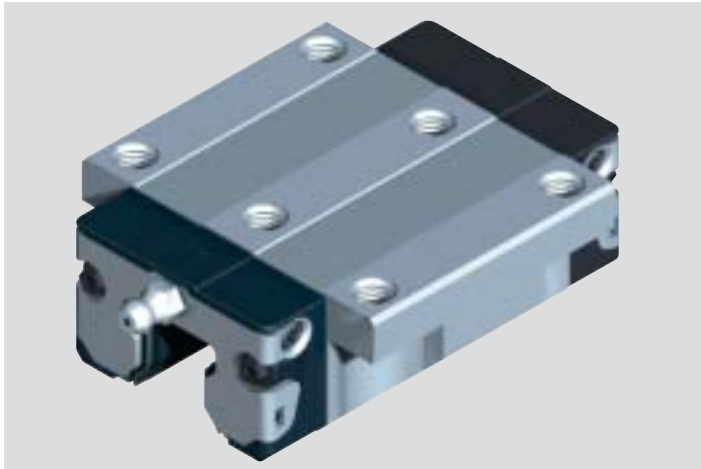
Rexroth Ball Rail Systems
Standard Runner Blocks Made of Corrosion-Resistant Steel*

Runner Block 2001-

Standard Width
With ball retainer as an option

Versions:

– Runner block without ball retainer: for part numbers, see table
– Runner block with ball retainer: part numbers 2001-...-06



Dynamic Characteristics

Speed v_{max} = 5 m/s

Acceleration a_{max} = 500 m/s^2

Other technical data, see chapter "General Technical Data and Calculations".

Part numbers

Note:

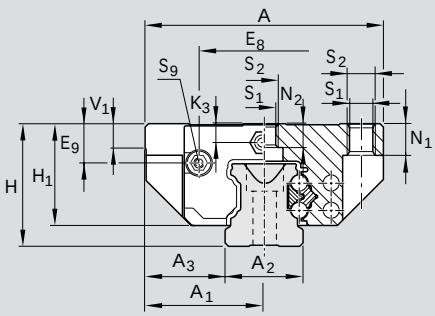
The runner blocks made of corrosion-resistant steel are delivered without grease or oil preservation.

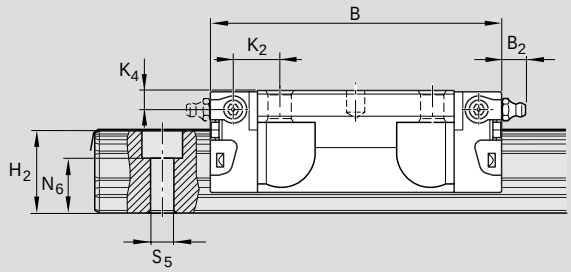
Size	Accuracy class	Part numbers for runner blocks for preload class		
		up to approx. 10 µm Clearance	Preload 0.02 C	Preload 0.08 C
15	P		2001-112-04	2001-122-04
	H	2001-193-04	2001-113-04	2001-123-04
	N	2001-194-04	2001-114-04	2001-124-04
20	P		2001-812-04	2001-822-04
	H	2001-893-04	2001-813-04	2001-823-04
	N	2001-894-04	2001-814-04	2001-824-04
25	P		2001-212-04	2001-222-04
	H	2001-293-04	2001-213-04	2001-223-04
	N	2001-294-04	2001-214-04	2001-224-04
30	P		2001-712-04	2001-722-04
	H	2001-793-04	2001-713-04	2001-723-04
	N	2001-794-04	2001-714-04	2001-724-04
35	P		2001-312-04	2001-322-04
	H	2001-393-04	2001-313-04	2001-323-04
	N	2001-394-04	2001-314-04	2001-324-04

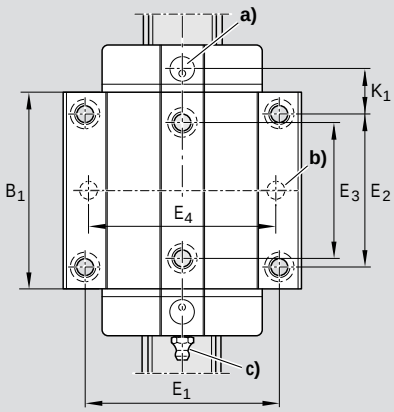
Note on dynamic load capacities and moments (see table)

Determination of dynamic load capacities and moments is based on a travel life of 100 000 m.
However, frequently this is determined on the basis of only 50 000 m.
In this case for comparison:
multiply values **C, M_t** and **M_L** by 1.26 in accordance with Rexroth table.

* for roller bearing applications complying with DIN EN 10088







a) For O-ring
Size 15: dia. 4 · 1.0 (mm)
Size 20-35: dia. 5 · 1.0 (mm)
Open lube bore as required.
See Accessories:
Mounting lubrication adapter.

b) Recommended position for pin holes (dimensions E_4 see "Mounting Instructions", Section "Locating pins" in main catalog 82 201).

Note
Ready-drilled holes made for production purposes may already exist at this position. These may be extended and bored open to accommodate the locating pins.

c) Lube nipple sizes 15 and 20:
funnel-type nipple
Type A – M3 x 5, DIN 3405
B_2 = 1.6 mm

If another lube nipple is used: observe the screw-in depth of 5 mm!

Size 25 to 35: M6 x 8, DIN 71412
B_2 = 9.5 mm

If another lube nipple is used: observe the screw-in depth of 8 mm!

Connection possible at all sides.

	Dimensions (mm)																			
Size	**A**	**A_1**	**A_2**	**A_3**	**B**	**B_1**	**H**	**H_1**	**H_2[1)]**	**H_2[2)]**	**V_1**	**E_1**	**E_2**	**E_3**	**E_8**	**E_9**	**K_1**	**K_2**	**K_3**	**K_4**
15	47	23.5	15	16.0	58.2	39.2	24	19.90	16.30	16.20	5.0	38	30	26	24.55	6.70	8.00	9.6	3.20	3.20
20	63	31.5	20	21.5	75.0	49.6	30	25.35	20.75	20.55	6.0	53	40	35	32.50	7.30	11.80	11.8	3.35	3.35
25	70	35.0	23	23.5	86.2	57.8	36	29.90	24.45	24.25	7.5	57	45	40	38.30	11.50	12.45	13.6	5.50	5.50
30	90	45.0	28	31.0	97.7	67.4	42	35.35	28.55	28.35	7.0	72	52	44	48.40	14.60	14.00	15.7	6.05	6.05
35	100	50.0	34	33.0	110.5	77.0	48	40.40	32.15	31.85	8.0	82	62	52	58.00	17.35	14.50	16.0	6.90	6.90

[1)] Dimension H_2 with rail seal cover strip

[2)] Dimension H_2 without rail seal cover strip

	Dimensions (mm)							Mass	Load capacities (N)[3)]		Moments (Nm)			
Size	**N_1**	**N_2**	**$N_6^{\pm 0.5}$**	**S_1**	**S_2**	**S_5**	**S_9**		**C dyn.**	**C_0 stat.**	**M_t dyn.**	**M_{t0} stat.**	**M_L dyn.**	**M_{L0} stat.**
15	5.2	4.4	10.30	4.3	M5	4.4	M2.5-3.5 deep	0.20	5 100	9 300	63	90	34	49
20	7.7	5.2	13.20	5.3	M6	6.0	M3-5 deep	0.45	12 300	16 900	205	215	110	115
25	9.3	7.0	15.20	6.7	M8	7.0	M3-5 deep	0.65	15 000	21 000	270	295	150	165
30	11.0	7.9	17.00	8.5	M10	9.0	M3-5 deep	1.10	20 800	28 700	460	500	245	265
35	12.0	10.2	20.50	8.5	M10	9.0	M3-5 deep	1.60	27 600	37 500	760	805	375	390

[3)] Load capacities for version without ball retainer. Load capacities for version without ball retainer, see Product Overview with Load Capacities.

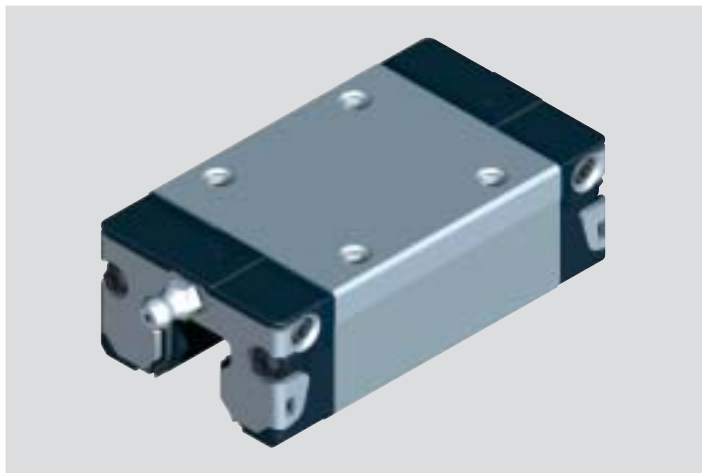
Rexroth Ball Rail Systems
Standard Runner Blocks Made of Corrosion-Resistant Steel*

Runner Block 2011-

Slimline

Versions:

– Runner block without ball retainer: for part numbers, see table
– Runner block with ball retainer: part numbers 2011-...-06



Dynamic characteristics

Speed v_{max} = 5 m/s

Acceleration a_{max} = 500 m/s^2

Other technical data, see chapter "General Technical Data and Calculations".

Part numbers

Note:

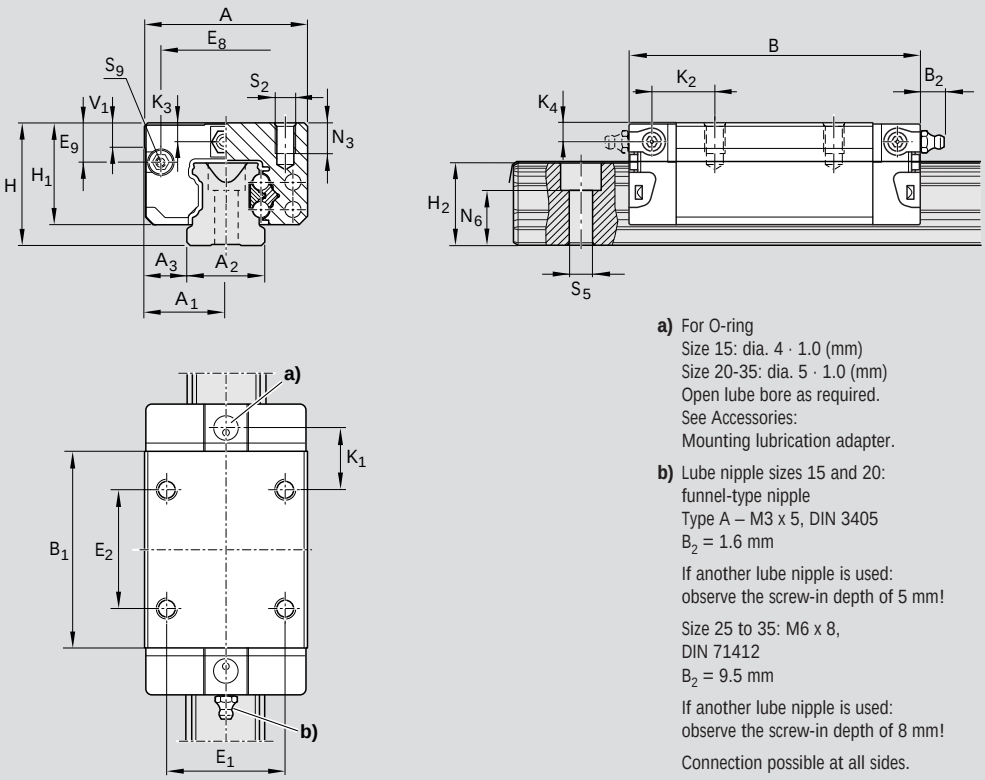
The runner blocks made of corrosion-resistant steel are delivered without grease or oil preservation.

Size	Accuracy class	Part numbers for runner blocks for preload class		
		up to approx. 10 µm Clearance	Preload 0.02 C	Preload 0.08 C
15	P		2011-112-04	2011-122-04
	H	2011-193-04	2011-113-04	2011-123-04
	N	2011-194-04	2011-114-04	2011-124-04
20	P		2011-812-04	2011-822-04
	H	2011-893-04	2011-813-04	2011-823-04
	N	2011-894-04	2011-814-04	2011-824-04
25	P		2011-212-04	2011-222-04
	H	2011-293-04	2011-213-04	2011-223-04
	N	2011-294-04	2011-214-04	2011-224-04
30	P		2011-712-04	2011-722-04
	H	2011-793-04	2011-713-04	2011-723-04
	N	2011-794-04	2011-714-04	2011-724-04
35	P		2011-312-04	2011-322-04
	H	2011-393-04	2011-313-04	2011-323-04
	N	2011-394-04	2011-314-04	2011-324-04

Note on dynamic load capacities and moments (see table)

Determination of dynamic load capacities and moments is based on a travel life of 100 000 m.
However, frequently this is determined on the basis of only 50 000 m.
In this case for comparison:
multiply values **C, M_t** and **M_L** by 1.26 in accordance with Rexroth table.

* for roller bearing applications complying with DIN EN 10088



a) For O-ring
Size 15: dia. 4 · 1.0 (mm)
Size 20-35: dia. 5 · 1.0 (mm)
Open lube bore as required.
See Accessories:
Mounting lubrication adapter.

b) Lube nipple sizes 15 and 20:
funnel-type nipple
Type A – M3 x 5, DIN 3405
B_2 = 1.6 mm

If another lube nipple is used:
observe the screw-in depth of 5 mm!

Size 25 to 35: M6 x 8,
DIN 71412
B_2 = 9.5 mm

If another lube nipple is used:
observe the screw-in depth of 8 mm!

Connection possible at all sides.

	Dimensions (mm)																		
Size	**A**	**A_1**	**A_2**	**A_3**	**B**	**B_1**	**H**	**H_1**	**H_2[1)]**	**H_2[2)]**	**V_1**	**E_1**	**E_2**	**E_8**	**E_9**	**K_1**	**K_2**	**K_3**	**K_4**
15	34	17	15	9.5	58.2	39.2	24	19.90	16.30	16.20	5.0	26	26	24.55	6.70	10.00	11.60	3.20	3.20
20	44	22	20	12.0	75.0	49.6	30	25.35	20.75	20.55	6.0	32	36	32.50	7.30	13.80	13.80	3.35	3.35
25	48	24	23	12.5	85.2	57.8	36	29.90	24.45	24.25	7.5	35	35	38.30	11.50	17.45	18.60	5.50	5.50
30	60	30	28	16.0	97.7	67.4	42	35.35	28.55	28.35	7.0	40	40	48.40	14.60	20.00	21.70	6.05	6.05
35	70	35	34	18.0	110.5	77.0	48	40.40	32.15	31.85	8.0	50	50	58.00	17.35	20.50	22.00	6.90	6.90

[1)] Dimension H_2 with rail seal cover strip

[2)] Dimension H_2 without rail seal cover strip

							Load capacities (N)[3)]		Moments (Nm)			
	Dimensions (mm)					Mass	C	C_0	M_t	M_{t0}	M_L	M_{L0}
Size	**N_3**	**$N_6^{\pm 0.5}$**	**S_2**	**S_5**	**S_9**	**(kg)**	**dyn.**	**stat.**	**dyn.**	**stat.**	**dyn.**	**stat.**
15	6.0	10.30	M4	4.4	M2.5-3.5 deep	0.15	5 100	9 300	63	90	34	49
20	7.5	13.20	M5	6.0	M3-5 deep	0.35	12 300	16 900	205	215	110	115
25	9.0	15.20	M6	7.0	M3-5 deep	0.50	15 000	21 000	270	295	150	165
30	12.0	17.00	M8	9.0	M3-5 deep	0.85	20 800	28 700	460	500	245	265
35	13.0	20.50	M8	9.0	M3-5 deep	1.25	27 600	37 500	760	305	375	390

[3)] Load capacities for version without ball retainer. Load capacities for version without ball retainer, see Product Overview with Load Capacities.

Rexroth Ball Rail Systems

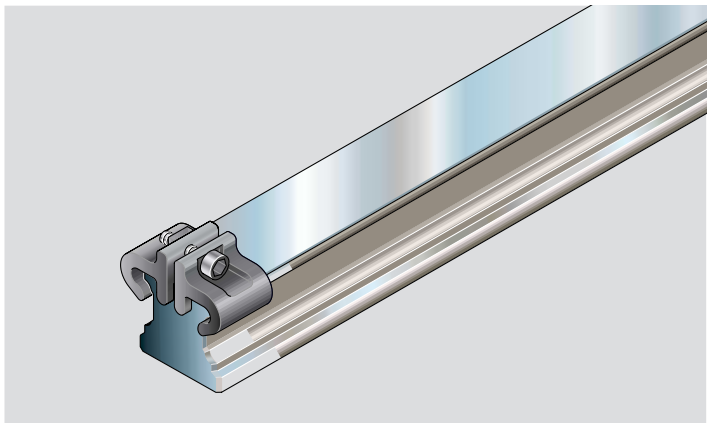
Standard Guide Rails Made of Corrosion-resistant Steel

Guide rails 2045-.3.-

For mounting from above, with rail seal and strip holder

Note

The guide rails are also available as composite rails.

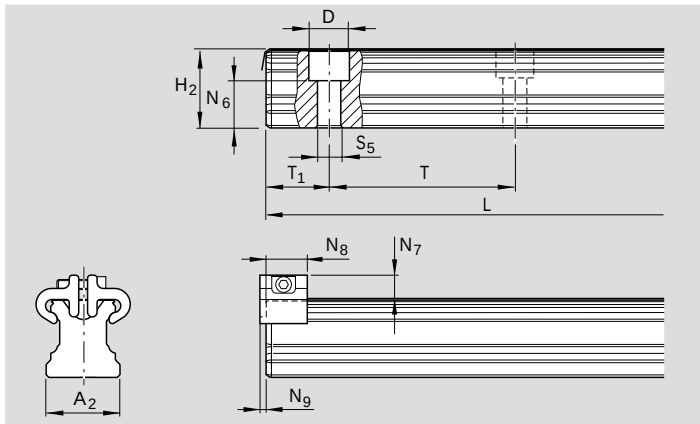


Part numbers and rail lengths

Size	Accuracy class	Guide rail		Spacing T (mm)	Recommended rail length				
		One-part	Composite		Number of holes n_B / Rail length L (mm)				
		Part number, Rail length L (mm)	Part number, Number of sections Rail length L (mm)						
15*	P	2045-132-31,....	2045-132-3.,.....	60	2 / 116	7 / 416	12 / 716	20 / 1196	40 / 2396
	H	2045-133-31,....	2045-133-3.,.....		3 / 176	8 / 476	13 / 776	22 / 1316	50 / 2996
	N	2045-134-31,....	2045-134-3.,.....		4 / 236	9 / 536	14 / 836	25 / 1496	60 / 3596
20*	P	2045-832-31,....	2045-832-3.,.....		5 / 296	10 / 596	16 / 956	30 / 1796	66 / 3956
	H	2045-833-31,....	2045-833-3.,.....		6 / 356	11 / 656	18 / 1076	35 / 2096	
	N	2045-834-31,....	2045-834-3.,.....						
25	P	2045-232-31,....	2045-232-3.,.....		For size 15: max. 50/2996				
	H	2045-233-31,....	2045-233-3.,.....						
	N	2045-234-31,....	2045-234-3.,.....						
30	P	2045-732-31,....	2045-732-3.,.....	80	2 / 156	7 / 556	12 / 956	20 / 1596	40 / 3196
	H	2045-733-31,....	2045-733-3.,.....		3 / 236	8 / 636	13 / 1036	22 / 1756	50 / 3996
	N	2045-734-31,....	2045-734-3.,.....		4 / 316	9 / 716	14 / 1116	25 / 1996	
35	P	2045-332-61,....	2045-332-6.,.....		5 / 396	10 / 796	16 / 1276	30 / 2396	
	H	2045-333-61,....	2045-333-6.,.....		6 / 476	11 / 876	18 / 1436	35 / 2796	
	N	2045-334-61,....	2045-334-6.,.....						

* Under preparation

Dimensions and masses



Size	Dimension (mm)												Mass
	A_2	H_2 [1)]	$N_6^{\pm 0.5}$	N_7 [2)]	N_8	N_9	D	S_5	$T_{1S_{-1}}^{+0.5}$	$T_{1\,min}$	T	L_{max}	kg/m
15	15	16.3	10.3	7.3	12	2.0	7.4	4.4	28.0	12	60	4000	1.4
20	20	20.7	13.2	7.1	12	2.0	9.4	6.0	28.0	13	60	4000	2.4
25	23	24.4	15.2	8.2	13	2.0	11.0	7.0	28.0	13	60	4000	3.2
30	28	28.5	17.0	8.7	13	2.0	15.0	9.0	38.0	16	80	4000	5.0
35	34	32.15	20.5	11.7	16	2.2	15.0	9.0	38.0	16	80	4000	6.8

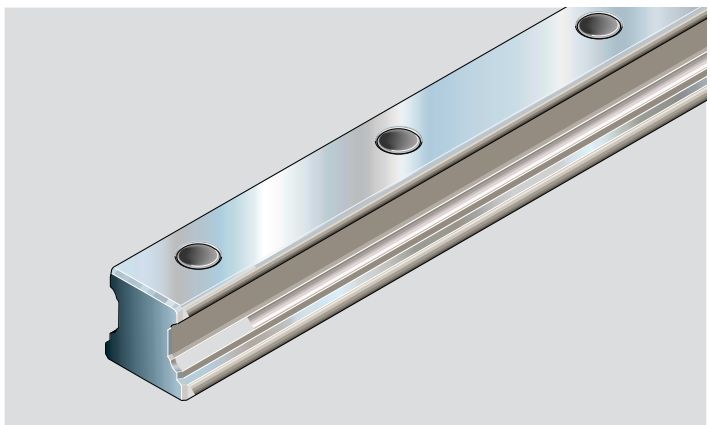
[1)] Dimension H_2 with rail seal cover strip

[2)] Dimension H_7 with rail seal cover strip

Rexroth Ball Rail Systems
Standard Guide Rails Made of Corrosion-Resistant Steel

Guide rails 2045-.0.-

**For mounting from above,
with plastic mounting hole plugs
(supplied)**

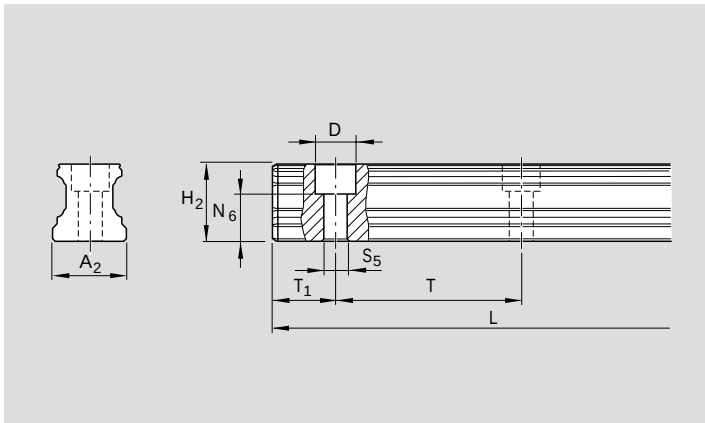


Part numbers and rail lengths

Size	Accuracy class	Guide rail		Spacing T (mm)	Recommended rail length				
		One-part	Composite		Number of holes n_B / Rail length L (mm)				
		Part number, Rail length L (mm)	Part number, Number of sections Rail length L (mm)						
15*	P	2045-102-31,....	2045-102-3.,.....	60	2 / 116 3 / 176 4 / 236 5 / 296 6 / 356	7 / 416 8 / 476 9 / 536 10 / 596 11 / 656	12 / 716 13 / 776 14 / 836 16 / 956 18 / 1076	20 / 1196 22 / 1316 25 / 1496 30 / 1796 35 / 2096	40 / 2396 50 / 2996 60 / 3596 66 / 3956
	H	2045-103-31,....	2045-103-3.,.....						
	N	2045-104-31,....	2045-104-3.,.....						
20*	P	2045-802-31,....	2045-802-3.,.....						
	H	2045-803-31,....	2045-803-3.,.....						
	N	2045-804-31,....	2045-804-3.,.....						
25	P	2045-202-31,....	2045-202-3.,.....		For size 15: max. 50/2996				
	H	2045-203-31,....	2045-203-3.,.....						
	N	2045-204-31,....	2045-204-3.,.....						
30	P	2045-702-31,....	2045-702-3.,.....	80	2 / 156 3 / 236 4 / 316 5 / 396 6 / 476	7 / 556 8 / 636 9 / 716 10 / 796 11 / 876	12 / 956 13 / 1036 14 / 1116 16 / 1276 18 / 1436	20 / 1596 22 / 1756 25 / 1996 30 / 2396 35 / 2796	40 / 3196 50 / 3996
	H	2045-703-31,....	2045-703-3.,.....						
	N	2045-704-31,....	2045-704-3.,.....						
35	P	2045-302-31,....	2045-302-3.,.....						
	H	2045-303-31,....	2045-303-3.,.....						
	N	2045-304-31,....	2045-304-3.,.....						

* Under preparation

Dimensions and masses



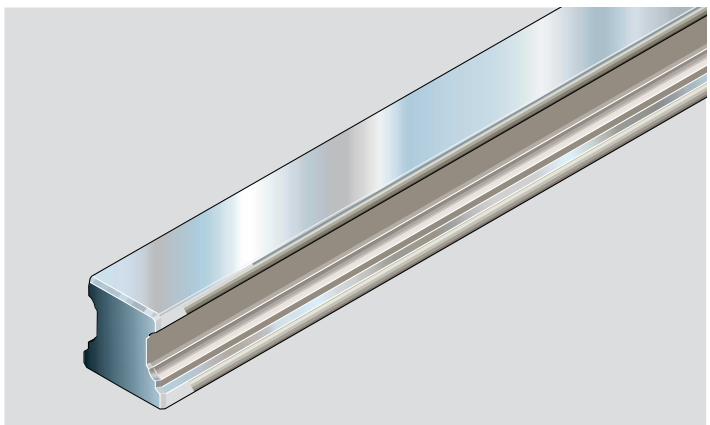
Size	Dimension (mm)									Mass
	A_2	H_2 [1)]	$N_6^{\pm 0.5}$	D	S_5	$T_{1S-1}^{+0.5}$	$T_{1\ min}$	T	L_{max}	kg/m
15	15	16.20	10.3	7.4	4.4	28.0	12	60	4000	1.4
20	20	20.55	13.2	9.4	6.0	28.0	13	60	4000	2.4
25	23	24.25	15.2	11.0	7.0	28.0	13	60	4000	3.2
30	28	28.35	17.0	15.0	9.0	38.0	16	80	4000	5.0
35	34	31.85	20.5	15.0	9.0	38.0	16	80	4000	6.8

[1)] Dimension H_2 without rail seal cover strip

Rexroth Ball Rail Systems
Standard Guide Rails Made of Corrosion-Resistant Steel

Guide Rail 2047-

For mounting from below

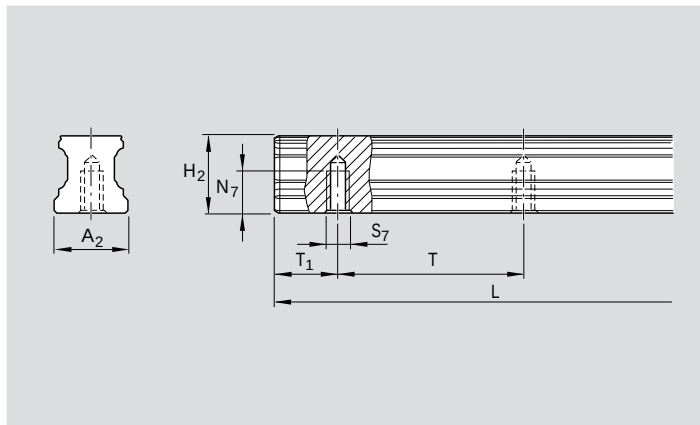


Part numbers and rail lengths

Size	Accuracy class	Guide rail		Spacing T (mm)	Recommended rail length				
		One-part	Composite		Number of holes n_B / Rail length L (mm)				
		Part number, Rail length L (mm)	Part number, Number of sections Rail length L (mm)						
15*	P	2047-102-31,....	2047-102-3.,....	60	2 / 116	7 / 416	12 / 716	20 / 1196	40 / 2396
	H	2047-103-31,....	2047-103-3.,....		3 / 176	8 / 476	13 / 776	22 / 1316	50 / 2996
	N	2047-104-31,....	2047-104-3.,....		4 / 236	9 / 536	14 / 836	25 / 1496	60 / 3596
20*	P	2047-802-31,....	2047-802-3.,....		5 / 296	10 / 596	16 / 956	30 / 1796	66 / 3956
	H	2047-803-31,....	2047-803-3.,....		6 / 356	11 / 656	18 / 1076	35 / 2096	
	N	2047-804-31,....	2047-804-3.,....						
25	P	2047-202-31,....	2047-202-3.,....		For size 15: max. 50/2996				
	H	2047-203-31,....	2047-203-3.,....						
	N	2047-204-31,....	2047-204-3.,....						
30	P	2047-702-31,....	2047-702-3.,....	80	2 / 156	7 / 556	12 / 956	20 / 1596	40 / 3196
	H	2047-703-31,....	2047-703-3.,....		3 / 236	8 / 636	13 / 1036	22 / 1756	50 / 3996
	N	2047-704-31,....	2047-704-3.,....		4 / 316	9 / 716	14 / 1116	25 / 1996	
35	P	2047-302-31,....	2047-302-3.,....		5 / 396	10 / 796	16 / 1276	30 / 2396	
	H	2047-303-31,....	2047-303-3.,....		6 / 476	11 / 876	18 / 1436	35 / 2796	
	N	2047-304-31,....	2047-304-3.,....						

* Under preparation

Dimensions and masses

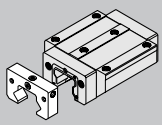


Size	Dimension (mm)								Mass
	A_2	H_2	N_7	S_7	$T_{1S_{-1}}^{+0.5}$	T_{1min}	T	L_{max}	kg/m
15	15	16.20	7.5	M5	28.0	10	60	4000	1.4
20	20	20.55	9.0	M6	28.0	10	60	4000	2.4
25	23	24.25	12.0	M6	28.0	10	60	4000	3.2
30	28	28.35	15.0	M8	38.0	12	80	4000	5.0
35	34	31.85	15.0	M8	38.0	12	80	4000	6.8

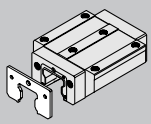
Rexroth Ball Rail Systems
Accessories for Standard Runner Blocks

Rexroth offers suitable accessories for virtually all special requirements. The complete program at one stop. Perfectly geared for excellent performance.

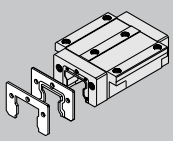
Lubrication plate



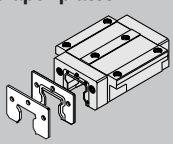
Scraper Plates



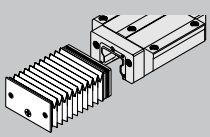
Two-piece front seal



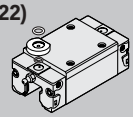
Viton scraper plates



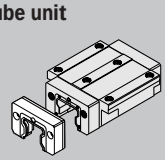
Protective bellows



Lubrication Adapter (only for high runner block 1621-...-20/-22 1624-...-20/-22)



Front lube unit



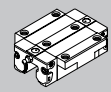
suitable for

Mounting Accessories

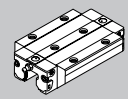
Mounting accessories, see Mounting Instructions for Ball Rail Systems RDEFI 82 270

Standard Runner Blocks

Runner block standard width **1651-/ 2001-/ 1631-**

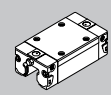


Runner block standard width, long **1653-**

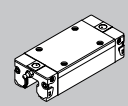


Runner block standard width, short **1665-/ S 1661-**

Runner block Slimline **1622-/ 2011-/ 1632-**

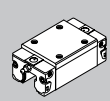


Runner block Slimline , long **1623-**

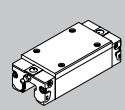


Runner block Slimline, short **1666-/ S 1662-**

Runner block Slimline, high **1621-**



Runner block Slimline, high, long **1624-**



Accessories for Standard Runner Blocks

Lubrication plate

– Material: aluminum
Versions:
– Standard (for standard lube nipple)
– G 1/8 connection

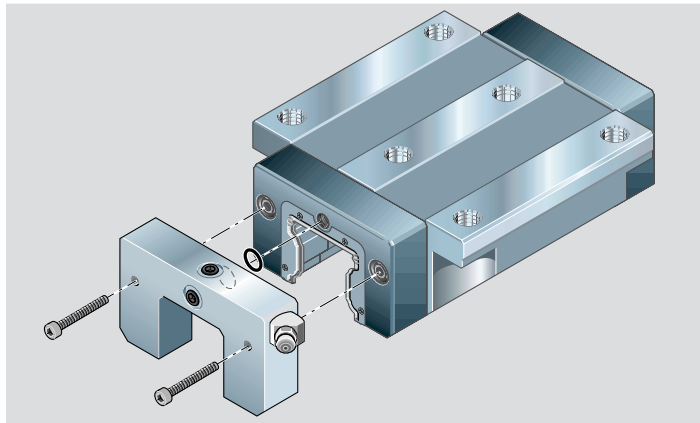
Mounting instructions:

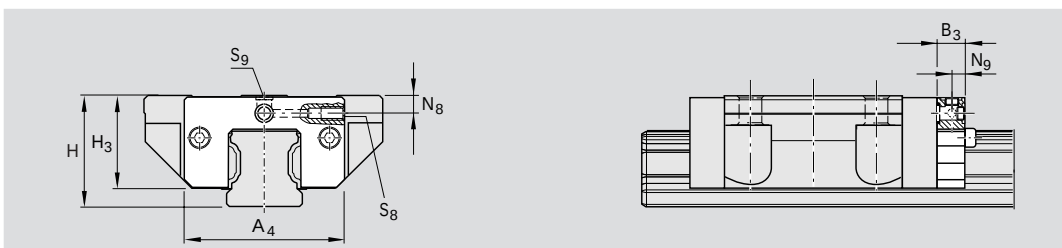
The parts required to mount the optional attachments on the runner block are supplied together with the standard parts.

Size 25 - 65:
The runner block lube nipple can be used.

Size 15 and 20:
A funnel-type lube nipple with a knock-in spigot is supplied ready for insertion.

For mounting details, see "Mounting Instructions for Ball Rail Systems".

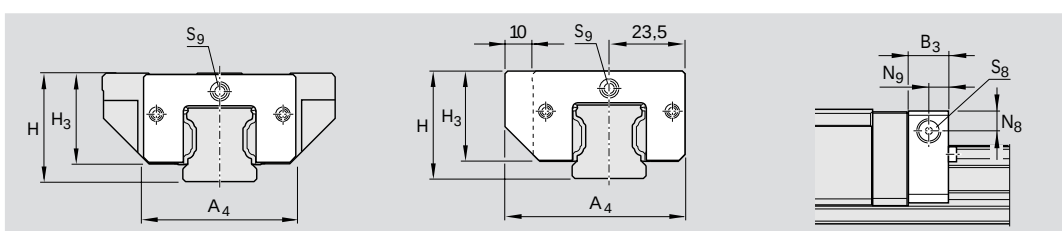




Standard lubrication plate

Part numbers, dimensions and masses.

Size	Part numbers	Dimensions (mm)								Mass (g)
		A_4	B_3	H	H_3	N_8	N_9	S_8	S_9	
15	1620-111-20	32	11	24	19.0	3.4	5.5	dia.3	M3	15
20	1620-811-20	42	12	30	24.8	3.5	6.0	dia.3	M3	25
25	1620-211-20	47	12	36	28.3	6.0	6.0	M6	M3	30
30	1620-711-20	59	12	42	33.8	8.0	6.0	M6	M6	45
35	1620-311-20	69	12	48	39.1	8.0	6.0	M6	M6	60
45	1620-411-20	85	12	60	48.5	8.0	6.0	M6	M6	85
55	1620-511-20	98	12	70	56.0	9.0	6.0	M6	M6	115
65	1620-611-20	124	14	90	75.7	18.0	7.0	M8x1	M8x1	250



Size 25 (slimline runner block)

Lubrication plate G 1/8

Part numbers, dimensions and masses.

With slimline runner block size 25, remember that the lubrication plate will project at the side.

Size	Part numbers	Dimensions (mm)							Mass (g)
		A_4	B_3	H	H_3	N_8	N_9	S_8	
25	1620-211-30	57	16	36	28.3	7.0	8	G 1/8 - 8 deep	40
30	1620-711-30	59	16	42	33.8	7.0	8	G 1/8 - 8 deep	59
35	1620-311-30	69	16	48	39.1	8.0	8	G 1/8 - 8 deep	79
45	1620-411-30	85	16	60	48.5	8.0	8	G 1/8 - 8 deep	112
55	1620-511-30	98	16	70	56.0	9.0	8	G 1/8 - 8 deep	152
65	1620-611-30	124	16	90	75.7	18.0	8	G 1/8 - 8 deep	285

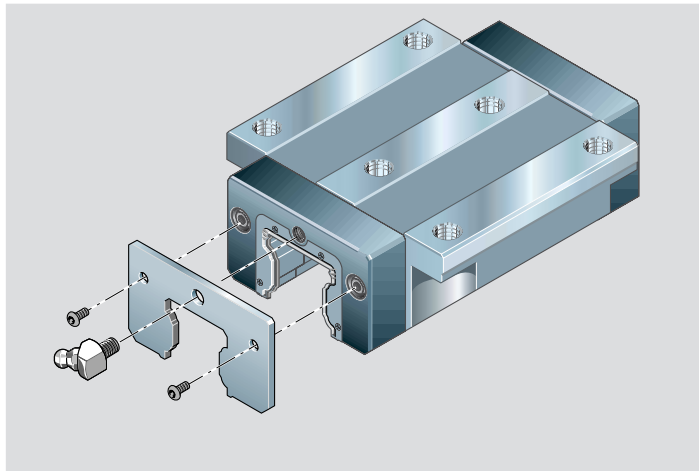
Rexroth Ball Rail Systems
Accessories for Standard Runner Blocks

Scraper plate

- Material: corrosion-resistant spring steel complying with DIN EN 10088
- Finish: bright
- Precision version with 0.2 to 0.3 mm maximum gap dimension

Mounting:

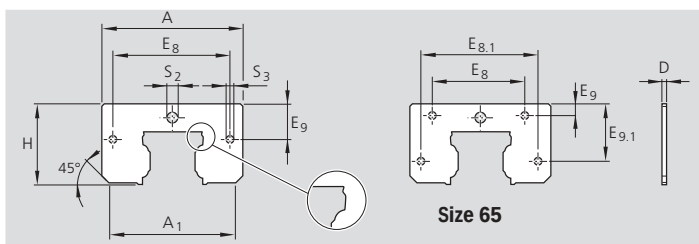
The mounting screws are supplied with the scraper plate.
When mounting, ensure that there is a uniform gap between runner block and scraper plate.



Scraper plates for guide rails with and without rail seal cover strips

Note:

For combination with two-part front seal, use set of seals 1619-.20-40/50.

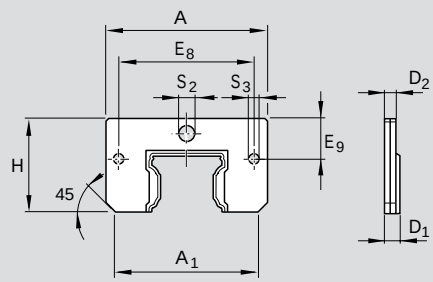


Size	Part numbers	Dimensions (mm)										Mass
		A	A_1	H	E_8	$E_{8.1}$	E_9	$E_{9.1}$	S_2	S_3	D	(g)
15	1620-110-**30**	33	26.4	19.2	24.55	–	6.3	–	dia.4.6	dia.3.5	1.0	4
20	1620-810-**30**	42	40.0	24.8	32.4	–	6.8	–	dia.5.1	dia.4	1.0	6
20	1620-810-**35**[1)]	41	38.0	22.8	30.5	–	5.1	–	dia.4	dia.4	1.0	5
25	1620-210-**30**	47	41.6	29.5	38.3	–	11.0	–	dia.7	dia.4	1.0	8
25	1620-210-**35**[1)]	47	41.6	26.5	38.3	–	8.0	–	dia.4	dia.4	1.0	7
30	1620-710-**30**	59	52.8	34.7	48.4	–	14.1	–	dia.7	dia.4	1.0	12
35*	1620-310-**40**	69	60.9	40.1	58.0	–	17.0	–	dia.7	dia.4	1.0	16
45*	1620-410-**40**	85	76.7	50.0	69.8	–	20.5	–	dia.7	dia.5	2.0	50
55*	1620-510-**40**	98	89.8	56.4	80.0	–	21.8	–	dia.7	dia.6	2.0	65
65*	1620-610-**40**	124	113.2	74.7	76.0	100	10.0	52.5	dia.9	dia.5	2.5	140

*) Scraper plates for guide rails without rail seal cover from size 35, Part numbers: 1620-.10—30

Accessories for Standard Runner Blocks

Two-piece front seal

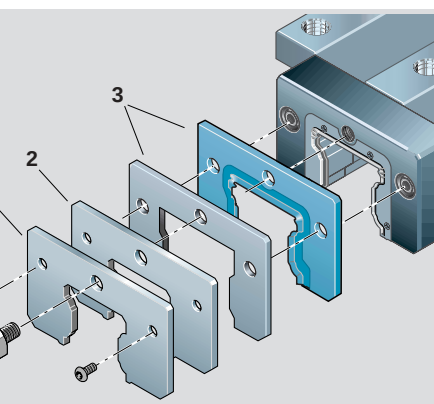


Size	Part numbers	Dimensions (mm)									Mass
		A	A_1	H	E_8	E_9	S_2	S_3	D_1	D_2	(g)
15	1619-121-20	32	27	19.0	24.55	6.3	dia.4.3	dia.3.5	3.0	2.2	6
20	1619-821-20	42	39	24.3	32.4	6.8	dia.5.1	dia.4	3.3	2.5	8
25	1619-221-30	47	42	29.0	38.3	11.0	dia.7	dia.4	3.3	2.5	10
30	1619-721-30	59	53	34.5	48.4	14.1	dia.7	dia.4	4.5	3.3	18
35	1619-321-30	69	61	39.5	58.0	17.0	dia.7	dia.4	4.5	3.3	25
45	1619-421-30	85	77	49.5	69.8	20.5	dia.7	dia.5	5.5	4.0	55
55	1619-521-30	98	90	56.0	80.0	21.5	dia.7	dia.6	5.5	4.0	65

Set of seals

The set of seals consists of the following components:

1 Scraper plate
2 Supporting plate
3 Two-piece front seal



Size	Part numbers, set of seals	
	For guide rail Without rail seal cover strip	For guide rail With rail seal cover strip
15	1619-120-50	
20	1619-820-50	
25	1619-220-50	
30	1619-720-50	
35	1619-320-40	1619-320-50
45	1619-420-40	1619-420-50
55	1619-520-40	1619-520-50

Rexroth Ball Rail Systems
Accessories for Standard Runner Blocks

Two-piece Viton seal

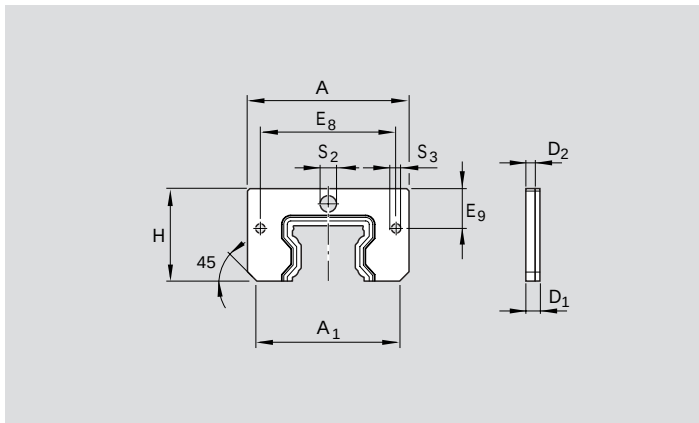
– Material:
corrosion-resistant steel plus Viton seal

Mounting:

The mounting screws as well as the longer lube nipple are supplied.

Simple mounting and removal if guide rail secured.

Observe the mounting instructions.



Size	Part numbers	Dimensions (mm)									Mass
		A	A_1	H	E_8	E_9	S_2	S_3	D_1	D_2	(g)
35	1619-320-30	69	61	39.5	58.0	17.0	dia.7	dia.4	4.5	3.3	25
45	1619-420-30	85	77	49.5	69.8	20.5	dia.7	dia.5	5.5	4.0	55
55	1619-520-30	85	77	49.5	70.0	20.5	dia.7	dia.5	5.5	4.0	55

One-piece Viton seal

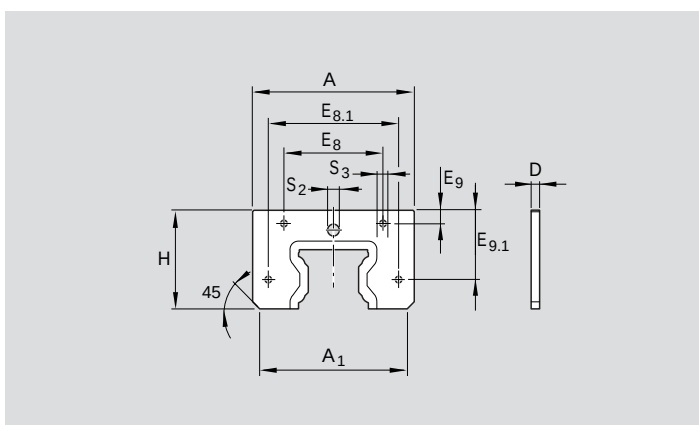
for mounting on the runner block

– Material:
corrosion-resistant steel in fixed combination with Viton seal

Mounting:

The mounting screws as well as the longer lube nipple are supplied.

Observe the mounting instructions.



Size	Part numbers	Dimensions (mm)									Mass
		A	A_1	H	E_8	E_9	S_2	S_3	D_1	D_2	(g)
65	1619-620-30	32	27	19.0	24.55	6.3	dia.3.5	dia.3.5	3.0	2.2	65

Accessories for Standard Runner Blocks

Protective bellows

– Material: bellows-type protective cover of polyurethane-coated polyester fabric
– Aluminum lubrication plates

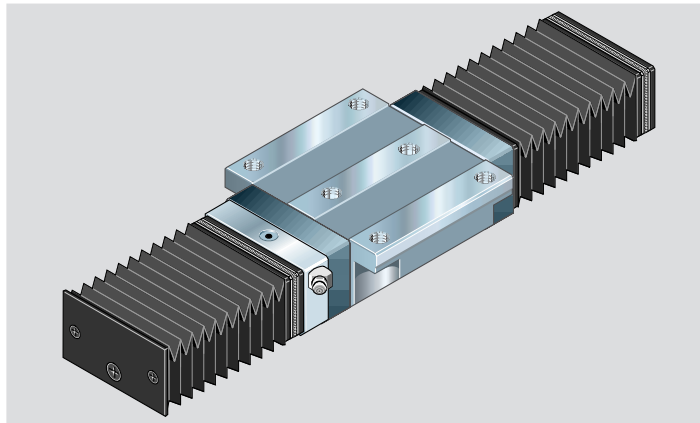
The runner block lube nipple can be used.

Heat resistant bellows

– Material: bellows made of Nomex fabric, metallized on both sides.
– Non combustible, non flammable
– Resistant to sparks, welding splashes and hot chips
– Temperature resistance:
Temperatures of up to 200°C near the protective metal coat possible.
Operating temperature for the entire bellows: 100°C.

Available in sizes 25-55.

The runner block lube nipple can be used.



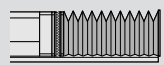
Part numbers, Bellows

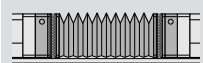
Example: 1620-306-00, 36 folds

Standard	= 0
Fire resistant	= 5
Type 1 to 9	

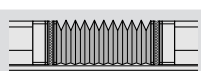
Bellows size 35, standard version, type 6 (with FLU* and end plate), number of folds: 36

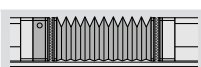
* FLU = front lube unit

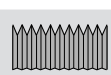




Size	Type 1 with lubrication plate and end plate Type 6 with FLU* and end plate	Number of folds	Type 2 with mounting frame and end plate	Number of folds	Type 3 with 2 lubrication plates Type 7 with 2 FLU*	Number of folds
15	1620-10.-00	...	1620-102-00	...	1620-10.-00	...
20	1620-80.-00	...	1620-802-00	...	1620-80.-00	...
25	1620-20.-00	...	1620-202-00	...	1620-20.-00	...
30	1620-70.-00	...	1620-702-00	...	1620-70.-00	...
35	1620-30.-00	...	1620-302-00	...	1620-30.-00	...
45	1620-40.-00	...	1620-402-00	...	1620-40.-00	...
55	1620-50.-00	...	1620-502-00	...	1620-50.-00	...
65	1620-60.-00	...	1620-602-00	...	1620-60.-00	..
25	1620-25.-00	...	1620-252-00	...	1620-25.-00	...
30	1620-75.-00	...	1620-752-00	...	1620-75.-00	
35	1620-35.-00	...	1620-352-00	...	1620-35.-00	...
45	1620-45.-00	...	1620-452-00	...	1620-45.-00	...
55	1620-55.-00	...	1620-552-00	...	1620-55.-00	...







Size	Type 4 with 2 mounting frames	Number of folds	Type 5 with lubrication plate and mounting frame(MF) Type 8 with FLU* and MF	Number of folds	Type 9 Bellows, loose supply (spare part)	Number of folds
15	1620-104-00	...	1620-10.-00	...	1600-109-00	...
20	1620-804-00	...	1620-80.-00	...	1600-809-00	...
25	1620-204-00	...	1620-20.-00	...	1600-209-00	...
30	1620-704-00	...	1620-70.-00	...	1600-709-00	...
35	1620-304-00	...	1620-30.-00	...	1600-309-00	...
45	1620-404-00	...	1620-40.-00	...	1600-409-00	...
55	1620-504-00	...	1620-50.-00	...	1600-509-00	...
65	1620-604-00	...	1620-60.-00	...	1600-609-00	...
25	1620-254-00	...	1620-25.-00	...	1600-259-00	...
30	1620-754-00	...	1620-75.-00	...	1600-759-00	...
35	1620-354-00	...	1620-35.-00	...	1600-359-00	...
45	1620-454-00	...	1620-45.-00	...	1600-459-00	...
55	1620-554-00	...	1620-55.-00	...	1600-559-00	...

Rexroth Ball Rail Systems
Accessories for Standard Runner Blocks

Mounting Instructions

The bellows are delivered preassembled ready for installation, complete with the screws required for attachment to the guide rail.

In types 1 and 2, thread size M4 10 mm deep and countersunk 2 x 45° must be tapped in each end face of the rail.

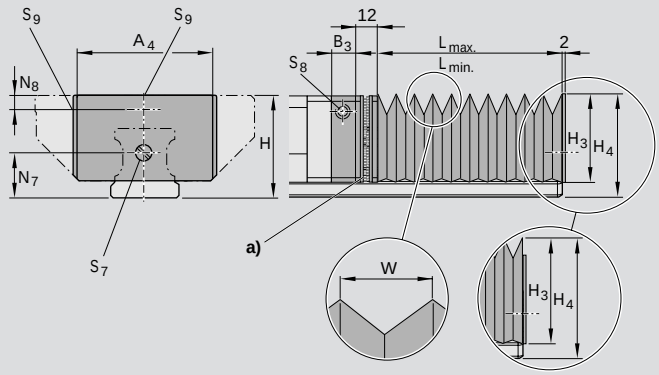
Size 25 - 65:

The runner block lube nipple can be used.

Size 15 and 20:

A funnel-type lube nipple with knock-in spigot is supplied.

For mounting details, see "Mounting Instructions for Lubrication Plates and Bellows".



a) Velcro-type fastener

Heat-resistant bellows

Dimensions: Bellows

	Dimensions (mm)											Factor
Size	A_4	B_3	H	H_3	H_4	N_7	N_8	S_7	S_8	S_9	W	U
15	45	11	24	26.5	31.5	11	3.4	M4	dia.3	M3	19.9	1.18
20	42	12	30	24.0	29.2	13	3.5	M4	dia.3	M3	10.3	1.33
25	45	12	36	28.5	35.0	15	6.0	M4	M6	M3	12.9	1.32
30	55	12	42	34.0	41.0	18	8.0	M4	M6	M6	15.4	1.25
35	64	12	48	39.0	47.0	22	8.0	M4	M6	M6	19.9	1.18
45	83	12	60	49.0	59.0	30	8.0	M4	M6	M6	26.9	1.13
55	96	12	70	56.0	69.0	30	9.0	M4	M6	M6	29.9	1.12
65	120	14	90	75.0	89.0	40	18.0	M4	M8x1	M8x1	40.4	1.08

Dimensions: Heat-resistant bellows

	Dimensions (mm)											Factor
Size	A_4	B_3	H	H_3	H_4	N_7	N_8	S_7	S_8	S_9	W	U
25	62	12	36	39.0	44.5	15	6.0	M4	M6	M3	25.9	1.25
30	67	12	42	42.0	47.5	18	8.0	M4	M6	M6	25.9	1.25
35	76	12	48	47.0	54.0	22	8.0	M4	M6	M6	29.9	1.21
45	90	12	60	55.0	64.0	30	8.0	M4	M6	M6	32.9	1.18
55	104	12	70	63.0	75.0	30	9.0	M4	M6	M6	37.9	1.16

Bellows design formulas

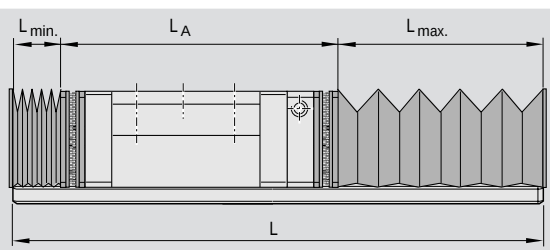
$$L_{max} = (\text{Stroke} + 30) \cdot U$$

$$L_{min} = L_{max} - \text{Stroke}$$

$$\text{No. of folds} = \frac{L_{max}}{W} + 2$$

L_{max} = Bellows extended
L_{min} = Bellows compressed
Stroke = Stroke (mm)
U = Calculation factor
W = Maximum extension (mm)

Rail length formula



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

L = Rail length (mm)

Accessories for Standard Runner Blocks

Lubrication adapter

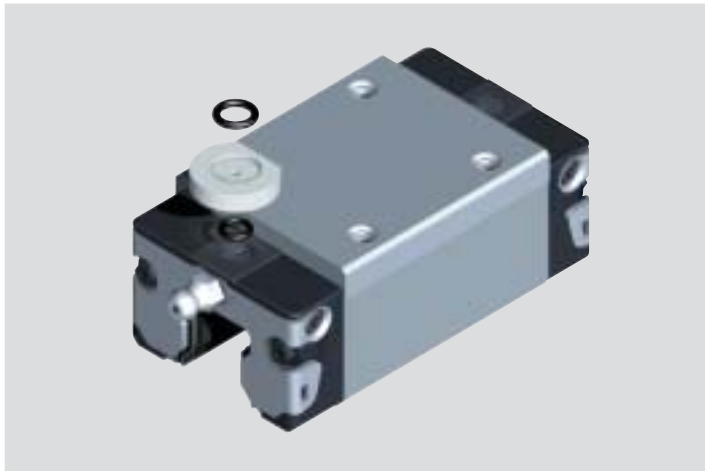
For high runner blocks:

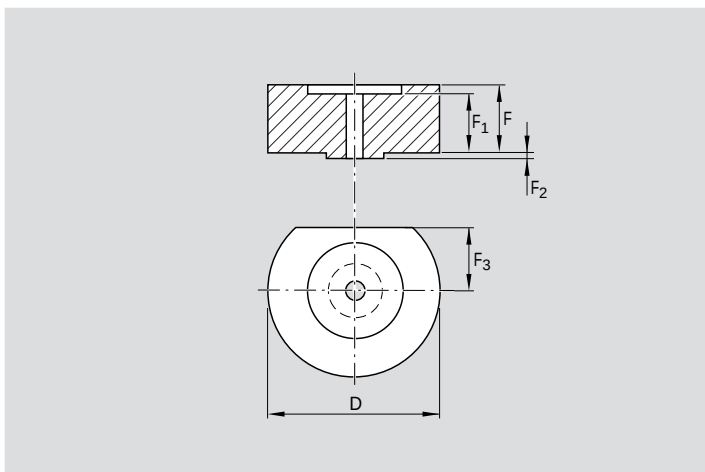
1621-...-2./ -7./ -8.
1624-...-2./ -7./ -8.

– Material: plastic
– Content: 1 unit

Mounting instructions:

The parts required to mount the optional attachments on the runner block are supplied together with the standard parts.





Part numbers and dimensions

Size	Part numbers	Dimensions (mm)				
		D	F	F_1	F_2	F_3
15	1621-100-05	12	3.70	3.10	0.50	3.20
25	1621-200-05	15	3.80	3.20	0.50	5.85
30	1621-700-05	16	2.80	2.20	0.50	6.10
35	1621-300-05	18	6.80	6.20	0.50	6.80
45	1621-400-05	20	9.80	9.20	0.50	8.30

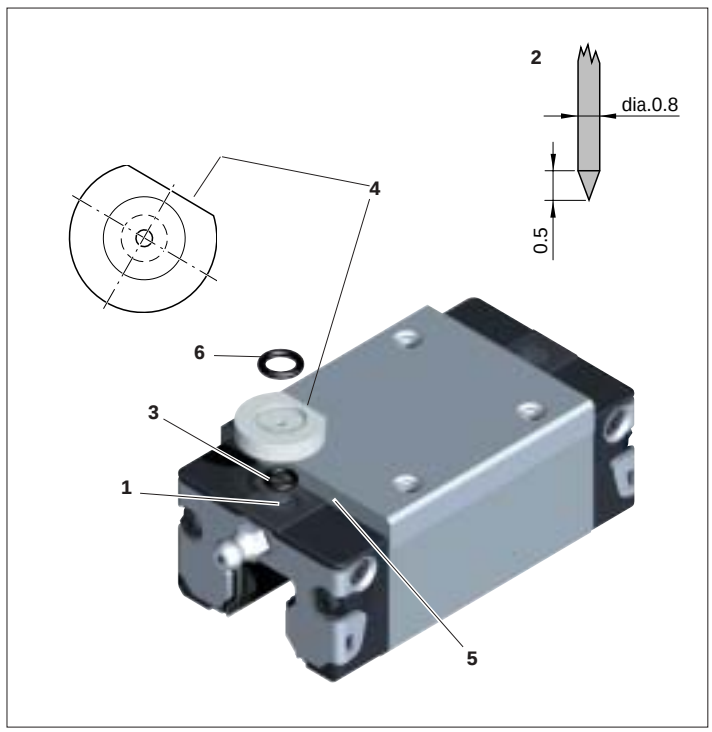
Rexroth Ball Rail Systems
Accessories for Standard Runner Blocks

Mounting lubrication adapter

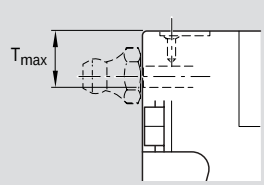
A lubrication adapter is required for high runner blocks if lubrication is to be carried out from the table section.

⚠ In the recess for the O-ring, a further small recess (1) has been pre-formed. Do not open this with a drill bit. Danger of contamination!

- Preheat the metal tip (2) with a diameter of 0.8 mm.
- Carefully open the recess (1) with the metal tip and pierce through it. Observe the maximum permissible depth T_{max} indicated in the table!
- Insert O-ring (3) in the recess.
- Insert lubrication adapter at an angle in the recess and press the flattened side (4) against the steel section (5). Use grease when locating.
- Insert O-ring (6) in the lubrication adapter.



Size	Lube hole at top: max. perm. depth for piercing T_{max} (mm)
15	3.6
20	3.9
25	3.3
30	6.6
35	7.5
45	8.8

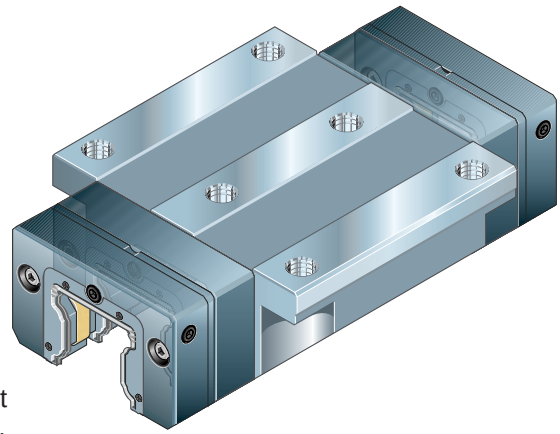


Accessories for Standard Runner Blocks

Front Lube Unit

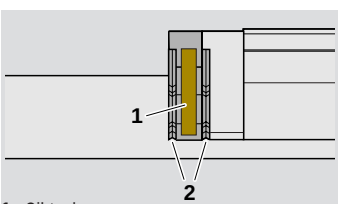
Advantages during mounting and in service:

– Only initial lubrication of the runner block necessary
– Up to 10 000 km travel life without in-service lubrication
– Front lube units at both runner block ends
– Minimal lubricant loss
– Reduced oil consumption
– No lubricant lines
– Max. operating temperature 60C°
– With lube nipple, side filling option of front lube unit
– Lube port on end face suitable for lubricating runner block with grease

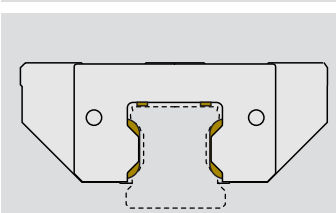


Runner block with two front lubrication units

Size	Travel under normal operating conditions Travel (km)
	Load ≤ 0.15 C
15	10 000
20	10 000
25	10 000
30	10 000
35	10 000
45	2 500
55	1 500
65	1 000



1 Oil tank
2 Front seals



Specially designed oil distribution channels ensure that lubricant is applied only where needed: directly to the ball tracks and the guide rail surfaces.

Oil consumption comparison (ball rail system size 25)

Front lubrication units	Lubricant quantity per lubrication cycle (cm^3)	Travel (m)	Consumption (cm^3/km)	
without	1.2	20 000	0.06	! 100 %
with	**5.2**	**5 000 000**	**0.00104**	! **1.73 %**

Rexroth Ball Rail Systems
Accessories for Standard Runner Blocks

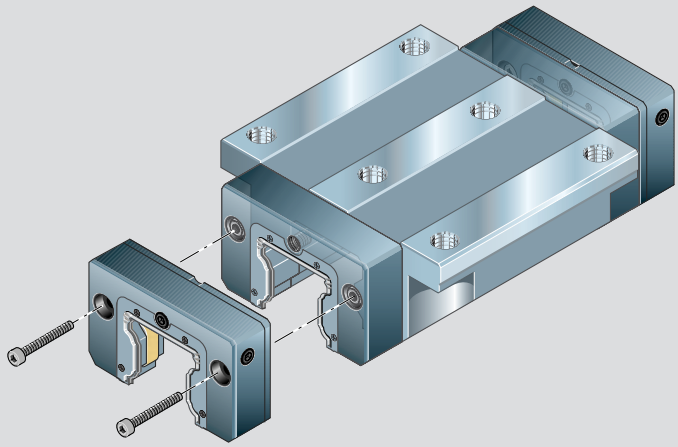
Front Lube Units for Ball Rail Systems

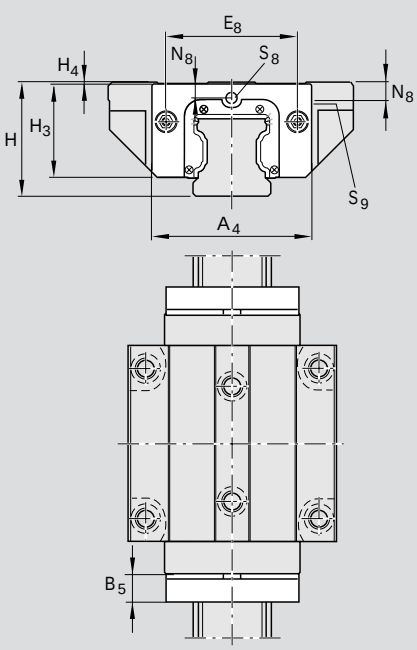
– Material: special plastic.

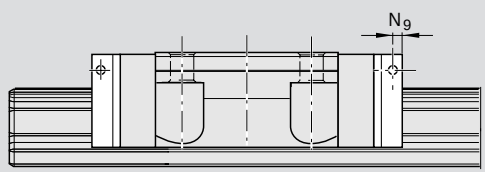
Mounting:

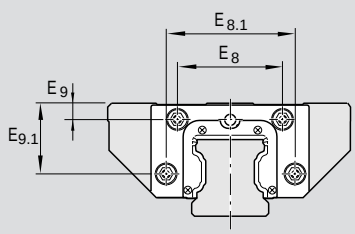
Comes complete with coated mounting screws and lubricating nipple.

Front lube units with the part numbers stated below: ...-00 are supplied ready-filled with oil and can be mounted immediately after greasing the runner block.









Size 65

Dimensions E_8, $E_{8.1}$, E_9, $E_{9.1}$ see chapter "Standard Steel Runner Blocks".

Part numbers, dimensions

Ball rail systems, low profile

Size	Part numbers	Dimensions (mm)									Oil
		A_4	B_5	H	H_3	H_4	N_8	N_9	S_8	S_9	(cm^3)
15	1619-125-00	31.8	11.5	24	19.2	0.20	3.4	5	M3	M3	1.00
20	1619-825-00	43.0	12.5	30	24.4	0.50	3.4	5	M3	M3	2.20
25	1619-225-00	47.0	13.0	36	28.8	0.50	5.2	5	M6	M6	2.60
30	1619-725-00	58.8	14.5	42	34.3	0.75	5.5	6	M6	M6	3.85
35	1619-325-00	69.0	16.0	48	39.3	0.55	6.6	6	M6	M6	5.70
45	1619-425-00	84.0	17.0	60	49.3	0.50	8.0	7	M6	M6	9.60
55	1619-525-00	99.0	18.0	70	56.3	0.75	8.5	8	M6	M6	14.50
65	1619-625-00	124.2	19.0	90	74.7	1.00	15.2	8	M8	M8	30.00
20	1619-826-00	41.0	12.5	28	22.4	0.50	2.4	–	M3	–	1.8
25	1619-226-00	47.0	13.0	33	25.8	0.50	3.8	5	M6	M3	2.5

Accessories for Standard Runner Blocks

Initial Lubrication of the Runner Blocks

⚠ Prior to mounting the front lube units, initial lubrication of the runner block **with lubrication grease** is required!

Recommended lubrication greases:

- Paragon EP 1, DEA, KP 1 N-30
- Optimol Longtime PD 1, [made by] Optimol Ölwerke, KP 1 N-40
- Optimol Longtime PD 2, [made by] Optimol Ölwerke, KP 2 N-40
- Klüber Isoflex NCA 15
- Klüber Polylub GLY 151
- Klüber Microlube GL 261

Lubrication of the runner blocks

☞ If there is already lubricant in the runner block, or if other lubrication greases other than those recommended have to be used: see "Compatibility of Lubricants".

1. Lubricate runner blocks according to table.
2. Slide runner block back and forth over at least three times the block length for three full cycles.
3. Repeat steps 1. and 2. two more times
4. Check whether a film of lubricant is visible on the guide rail.

Size	Partial lubricant quantity for initial lubrication of the runner block (cm^3)
15	0.4
20	0.7
25	1.4
30	2.2
35	2.2
45	4.7
55	9.4
65	15.4

Front Lube Unit

Shipped Condition

There are two versions of front lube units. The part numbers mean:
....-...-00: ready for mounting, filled with lubrication oil
....-...-10: without lubrication oil

Initial filling of a front lube unit without oil (part numbers ....-...-10)

Recommended lubrication oil:

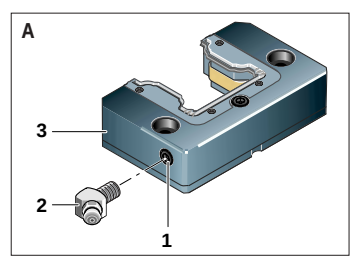
- Mobil SHC 639 (viscosity 1000 mm^2/s at 40 °C)

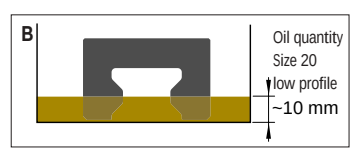
☞ If other lubricants have to be used: see "Compatibility of Lubricants".

- Remove the set screw from the lube bore (1) and keep in a safe place.
- Screw in the lube nipple (2).
- Lay the front lube units (3) out flat; fill the oil quantity listed in the table; leave to settle for approx. 36 hours.

Size	Oil quantity for initial filling of front lube unit (cm^3)
15	0.9
20	2.0
25	2.4
30	3.85
35	5.7
45	9.6
55	14.5
65	30.0

- For size 20 low profile: place the front lube units in 10 cm of oil for approx. 36 hours (! Fig. **B**).
- Check whether the lube insert is complete soaked in oil. If necessary, add oil.
- Remove the lube nipple. Tighten the set screw.





Compatibility of Lubricants

Synthetic lubricants are superior to those based on mineral oils, especially paraffin oils.

The standard oil filling in the front lube units is Mobil SHC 639.
This oil is a fully synthetic lubricant based on synthetic hydrocarbons (polyalphaolefine).

Mobil SHC 639 can be mixed with mineral oils in any ratio. Compatibility with Rexroth corrosion-protection oil is ensured.

Mobil SHC 639 is also chemically compatible with lubrication greases whose base oil is synthetic hydrocarbon oil, polyalphaolefin, mineral oil or ester oil.

⚠ If other lubricants are used, check the compatibility of lubrication oil and lubrication grease.

Minimum requirements for lubrication oils: oils of the ISO viscosity class 1000, in accordance with DIN 51519, without solid lubricant content, e.g.: lubrication oil CLP according to DIN 51517, part 3.
☞ The lubrication oils must be chemically and physically comparable with Mobil SHC 639.

⚠ Incompatibilities are to be expected in particular with lubrication greases whose base oil is silicone oil, polyglycol oil, polyphenylether oil or perfluoralkylether oil.

Rexroth Ball Rail Systems
Accessories for Standard Runner Blocks

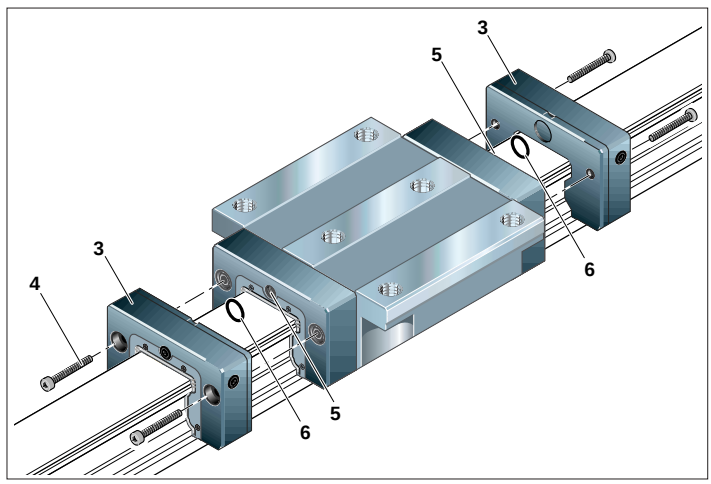
Mounting Front Lube Units

Comes complete with coated mounting screws, additional front seals, and lubricating nipple.

⚠ Mount one front lube unit (3) on each side of the runner block!

⚠ Do not take the runner block off the guide rail!

- Push on the front lube units (3).
- Remove set screws (5) and insert O-rings (6) between the runner block and front lube units.
- Tighten the screws (4) with tightening torque M_A.



		MA (Nm)
15	M2.5 x 12	0.3
20	M3 x 14	0.4
25	M3 x 14	0.7
30	M3 x 14	0.7
35	M3 x 16	0.7
45	M4 x 18	1.0
55	M5 x 18	1.3
65	M4 x 20	1.0

In-service lubrication intervals for runner blocks

- Check front lube units if travel life does not match that in table.

The travel life applies with:

– Normal operating conditions and load in accordance with table.

On reaching the travel life in the table or at the latest after 3 years, we recommend that you replace the front lube units and grease the runner block before mounting the new front lube unit. Under clean operating conditions, the runner block front faces can be lubricated by the front lube unit with grease. The front lube units can be filled with oil.

Lubrication quantities, see "Initial Lubrication of the Runner Block" and "Initial Filling of a Front Lube Unit Without Oil".

☞ In ongoing service life tests, longer travel lives have already been achieved. Please ask for information if required!

Size	Travel life under normal operating conditions Travel (km)
	Load ≤ **0.15 C**
15	10 000
20	10 000
25	10 000
30	10 000
35	10 000
45	2 500
55	1 500
65	1 000

⚠ The intervals of the in-service lubrication recommendation depend on the ambient influences, load and type of load.
Ambient influences are, for example, fine swarf, mineral and similar abrasion, solvents and temperature.
Load and the type of load are, for example, vibrations, bumps and tilts.

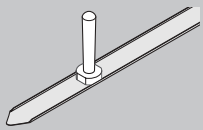
⚠ The manufacturer is unaware of the conditions of use. Security with regard to in-service lubrication intervals can only result from the user's own tests or precise observations.

⚠ Do not use diluted cooling lubricant on guide rails and runner blocks!

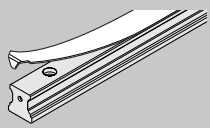
Accessories for Standard Guide Rails

Overview of Accessories and Allocation

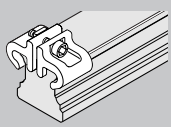
Arbor



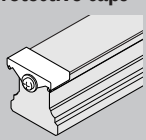
Rail seal cover strip separate



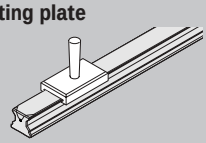
Aluminum strip holder



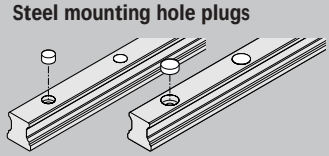
Plastic protective caps



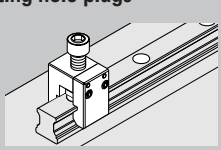
Mounting set with mounting tools and lifting plate



Plastic mounting hole plugs
Steel mounting hole plugs



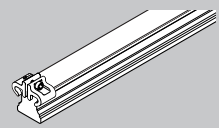
Two-part mounting tool for steel mounting hole plugs



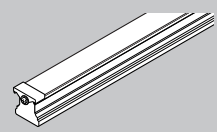
suitable for

Standard Guide Rails

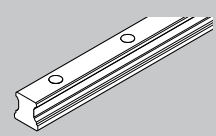
Guide Rail **1605-.3.-**
For mounting from above,
with rail seal and strip holder
Corrosion-resistant **2045-.3.-**



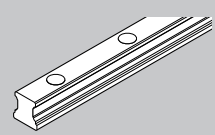
Guide Rail **1605-.6.-**
For mounting from above,
with rail seal cover strip and
screw-down protective caps



Guide Rail **1605-.0.-**
For mounting from above,
with plastic mounting hole plugs
Hard chromium-plated **1645-.03-**
Corrosion-resistant **2045-.0.-**



Guide Rail **1606-.5.-**
For mounting from above, with steel
mounting hole plugs



Mounting Accessories

Mounting accessories, see Mounting Instructions for Ball Rail Systems RDEFI 82 270

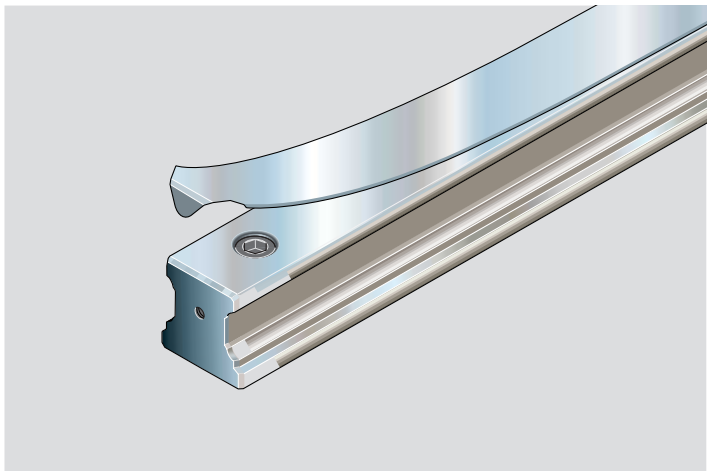
Rexroth Ball Rail Systems
Notes on rail seal cover strip

Advantages of the rail seal

The rail seal is easy to clip on and remove.

– This considerably facilitates and speeds up the mounting process:
  - no need to plug each single hole.
  - no time delay while waiting for adhesive to harden when using adhesive tape.
– The rail seal can be mounted and removed (up to 4 times)

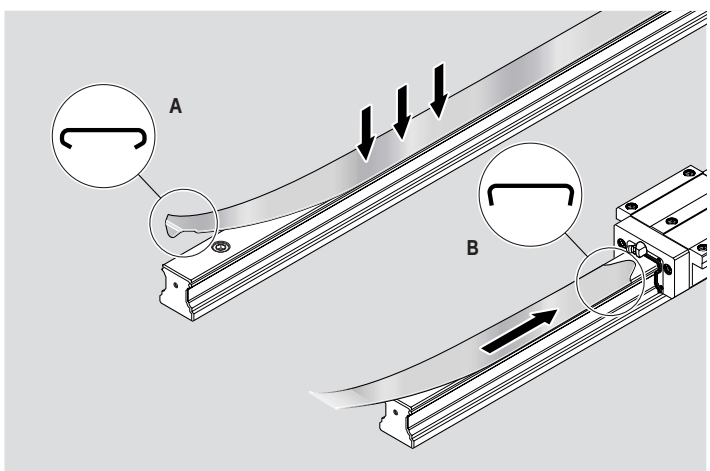
The rail seal is a precision-machined part that must be handled with great care. It must on no account be bent.



Versions/Functions

A Snap-fit rail seal (standard)
  - The rail seal is clipped on before the runner block is mounted and fits tightly.

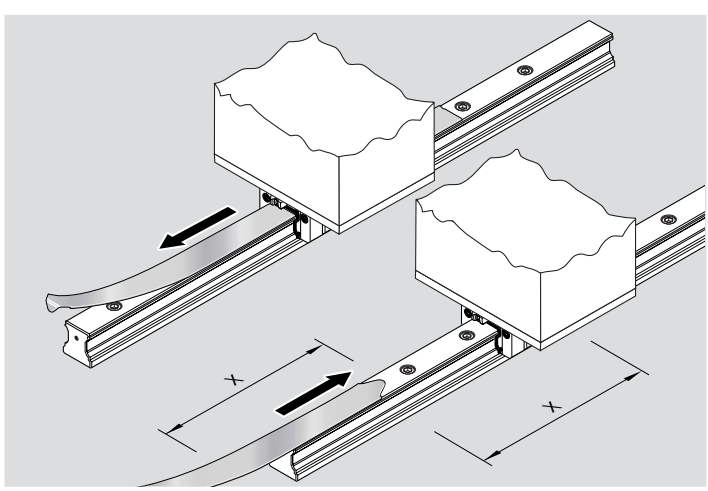
B Sliding-fit rail seal
  - For mounting or replacing a rail seal when the runner block or superstructure cannot be removed.
  - A section of the snap-fit rail seal is very slightly widened and can then be easily slid under the runner block.



An arbor (available as an option) for 0.15 mm rail seals or a special expanding tool for 0.3 mm rail seals can be used to create the sliding fit after installation in order to be able to remove a rail seal.

The main advantage is that the length **X** of the sliding fit can be optimized to suit the installation conditions.

Observe the detailed mounting instructions!



Part numbers, see chapter "Accessories for Standard Guide Rails".

Accessories for Guide Rails

Rail seal cover strip separate

for initial mounting/storage/ replacement

A suitable rail seal cover strip with firm seating or rail seal cover strip with sliding fit is available for every guide rail length.

Ordering a standard rail seal cover strip with firm seating

Ordering example:

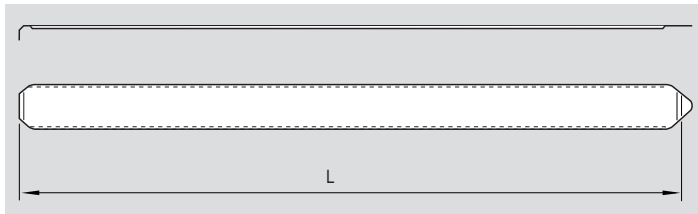
Guide rail, size 35,
Rail length L = 2696 mm

Ordering data:

Part number, length L (mm)

1619-330-20, 2696 mm

(part numbers, see product table)



Size	Standard rail seal Part numbers, length (mm)
15	1619-130-00, ...
20	1619-830-00, ...
25	1619-230-20, ...
30	1619-730-00, ...
35	1619-330-20, ...
45	1619-430-20, ...
55	1619-530-20, ...
65	1619-630-20, ...

Ordering a rail seal cover strip with firm seating and sliding fit

Ordering example:

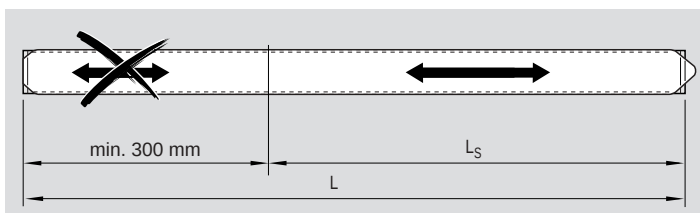
Guide rail, size 35,
Rail length L = 2696 mm
Length of the sliding fit L_S = 1200 mm

Ordering data:

Part number, length L (mm),
length of the sliding fit L_S (mm)

1619-330-30, 2696, 1200 mm

(part numbers, see product table)



L_S = length of the sliding fit
L = rail length

Size	Rail seals with sliding fit Part numbers, length (mm)
15	1619-130-10, ...
20	1619-830-10, ...
25	1619-230-30, ...
30	1619-730-10, ...
35	1619-330-30, ...
45	1619-430-30, ...
55	1619-530-30, ...
65	1619-630-30, ...

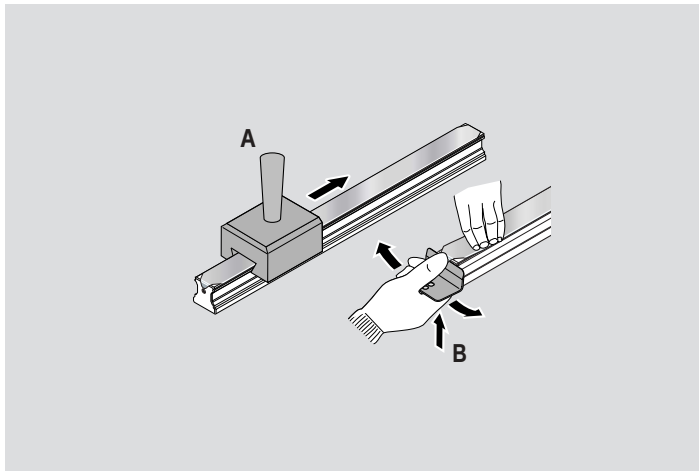
Rexroth Ball Rail Systems
Accessories for Guide Rails

Mounting Rail Seals

Mounting Tool Set for rail seal cover strip 0.3 mm

For clipping on the rail seal cover strip, there is a mounting tool (A); for removal, there is a lifting plate (B).

For more detailed information on how to mount cover strips, see "Mounting instructions for rail seal cover strip" RDEFI 82 070.

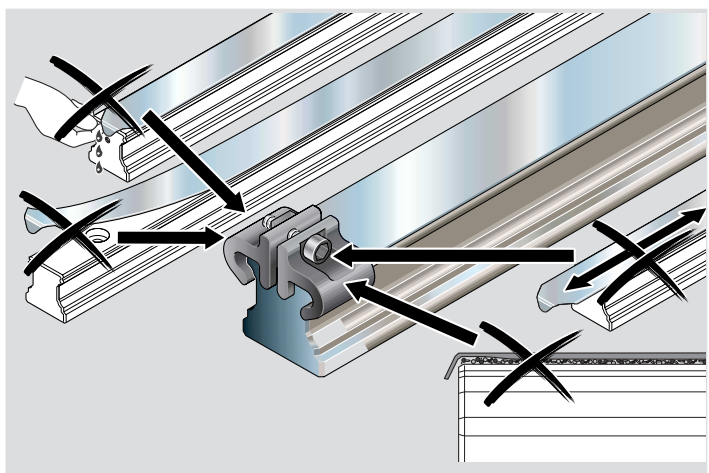


Strip holders

Rexroth uses strip holders to secure the rail seal cover strip.

Strip holders can:
- Prevent injuries
- Prevent inadvertent lifting of the strip and penetration of dirt
- Attach the rail seal cover strip.

Part numbers, see chapter "Accessories for Standard Guide Rails".



Mounting hole plugs

For more detailed information on how to mount hole plugs, see "Mounting instructions for rail seal cover strip" RDEFI 82 270.

Part numbers of hole plugs, see chapter "Accessories for Standard Guide Rails".

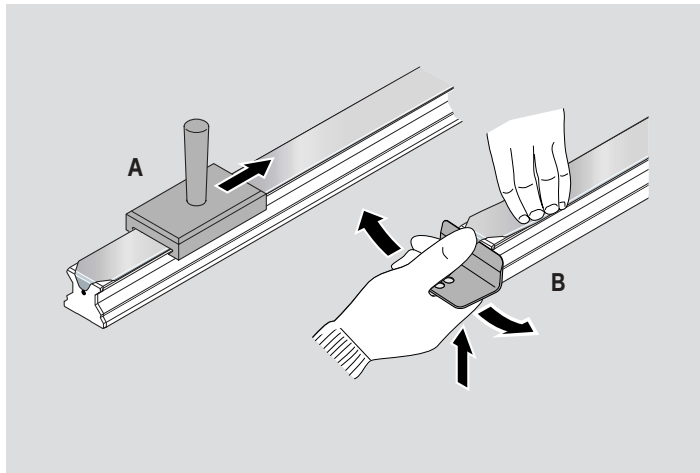
Accessories for Guide Rails

Mounting tool set for rail seal cover strip

For clipping on the rail seal cover strip, there is a mounting tool (A); for removal, there is a lifting plate (B).

Size	Part number Mounting tool + lifting plate
25	1619-210-80
30	1619-710-80
35	1619-310-60
45	1619-410-60
55	1619-510-60
65	1619-610-60

For more detailed information on how to mount cover strips, see "Mounting instructions for rail seal cover strip" RDEFI 82 070.

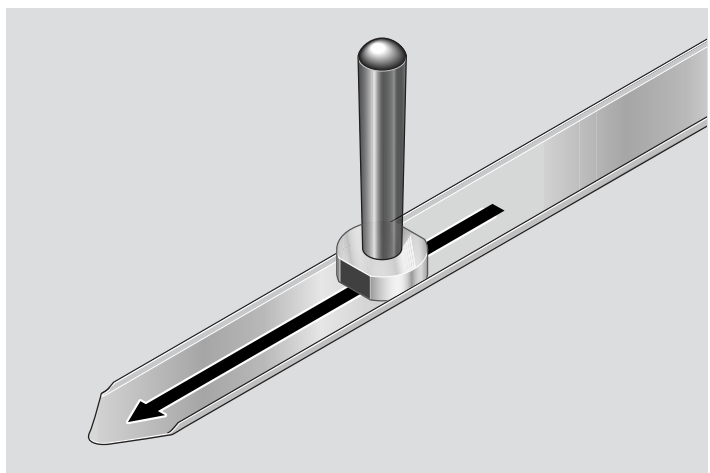


Arbor for creation of a sliding fit on rail seal cover strip

Part numbers, see product table

For more detailed information on manufacturing and mounting cover strips with sliding fit, see "Mounting instructions for the rail seal cover strip" RDEFI 82 070.

Size	Part numbers Arbor
15	1619-115-10
20	1619-815-10
25	1619-215-10
30	1619-715-10
35	1619-315-30
45	1619-415-30
55	1619-515-30
65	1619-615-30



Rexroth Ball Rail Systems
Accessories for Guide Rails

Strip holder

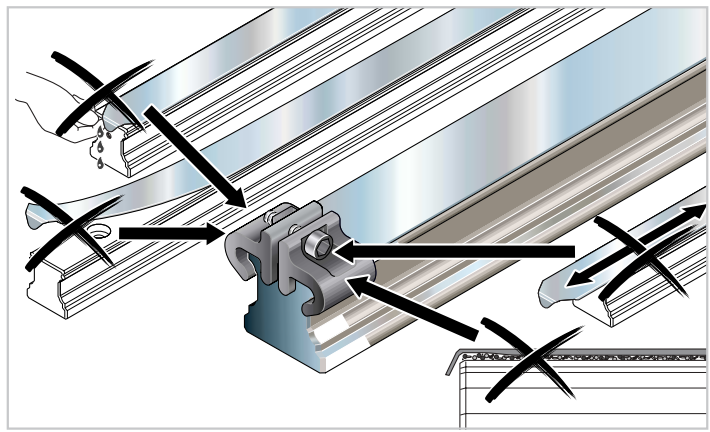
For guide rails without front face threaded mounting holes.

Rexroth recommends the use of a strip holder.

Strip holders can:

– Prevent inadvertent lifting of the strip and penetration of dirt
– Attach the rail seal cover strip.

Materials:
Aluminum strip holder, anodized
Clamping screw and nut made of corrosion-resistant steel



Part numbers for strip holder

Size	Strip holder (2 per unit) Part numbers
15	1619-139-50
20	1619-839-50
25	1619-239-50
30	1619-739-50
35	1619-339-50
45	1619-439-50
55	1619-539-50
65	1619-639-50

Protective caps

For guide rails with front face threaded mounting holes.

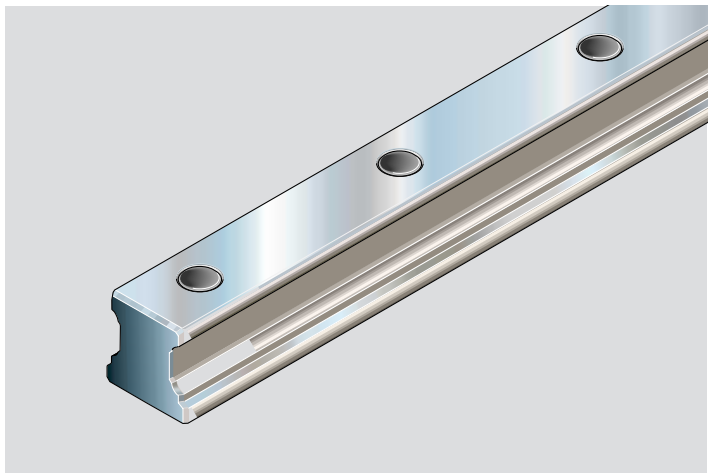
Material: plastic, black

Size	Protective caps Part numbers	
	individual	Set with screws
15	1619-139-00	1619-139-20
20	1619-839-00	1619-839-20
25	1619-239-00	1619-239-20
30	1619-739-00	1619-739-20
35	1619-339-00	1619-339-20
45	1619-439-00	1619-439-20
55	1619-539-00	1619-539-20
65	1619-639-00	1619-639-20

Accessories for Guide Rails

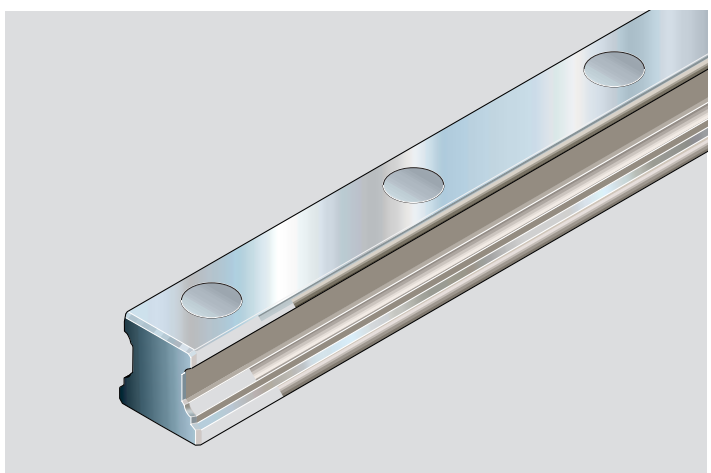
Plastic hole plugs

Size	Part numbers Plastic hole plugs
15	1605-100-80
20	1605-800-80
25	1605-200-80
30	1605-300-80
35	1605-300-80
45	1605-400-90
55	1605-500-90
65	1605-600-90



Steel mounting hole plugs

Size	Part numbers for Mounting Hole plugs made of steel
25	1606-200-75
30	1606-300-75
35	1606-300-75
45	1606-400-75
55	1606-500-75
65	1606-600-75



Mounting tool for steel mounting hole plugs

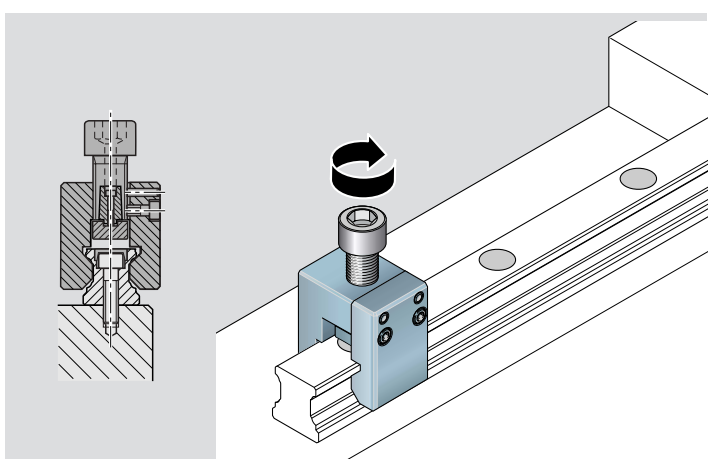
Two-piece

A mounting tool with instruction leaflet is available for mounting steel mounting hole plugs.

Size	Part numbers Two-piece mounting tool
25	1619-210-00
30	1619-710-00
35	1619-310-10
45	1619-410-10
55	1619-510-10
65	1619-610-00

-00: one-piece

-10: two-piece



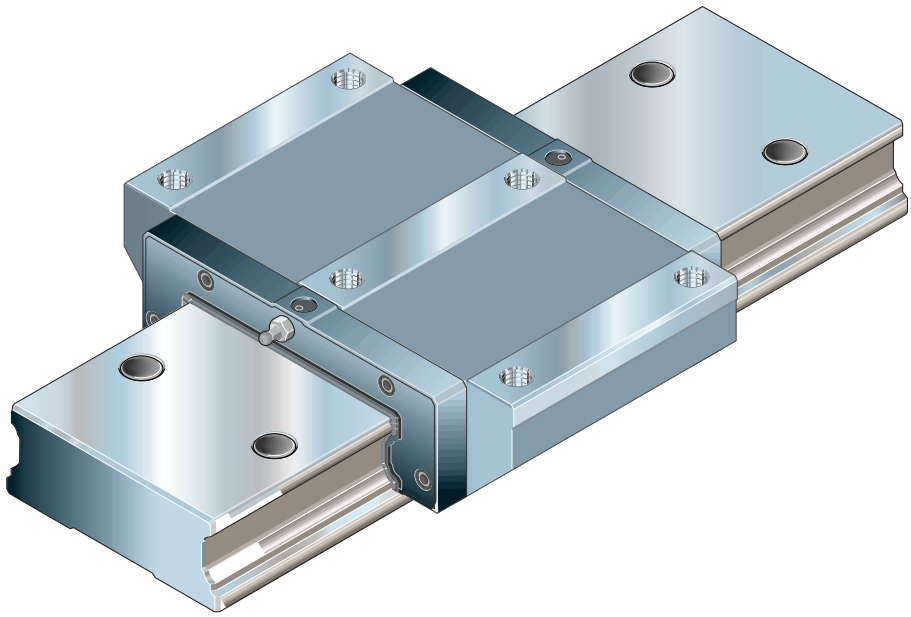
Rexroth Ball Rail Systems
Product Description, Wide Ball Rail Systems

Excellent properties

– Due to very high moment and torsional rigidity, particularly suitable for single rail applications
– High torque load capacity
– Optimized entry-zone geometry and the high number of balls per track greatly reduce fluctuation in elastic deflection

Further Highlights

– Integral, all-round sealing
– Innovative cage design allows for longer lubrication intervals
– At both end faces, 4 lubrication connections each, making it extremely easy to maintain
– End face mounting holes for attachment of bellows or scraper plates
– Guide rails and runner blocks in accuracy class N (clearance and preload 0.02 C) also available with surface protection
– Guide rail with low clearance or light preload
– Smooth, light running due to optimized ball recirculation and ideal ball/track geometry
– Improved rigidity under lift-off and side loading conditions when additional mounting screws are used at the center of the runner block
– Attachments can be mounted to runner block from above or below



Make up your own compact linear motion guideways from interchangeable standard stock elements...

Rexroth manufactures its guide rails and runner blocks with such high precision, especially in the ball track zone, that each individual component element can be replaced by another at any time.

This makes infinite combinations possible within each accuracy class.

Rexroth Ball Rail Systems
Wide Runner Block, Steel Version

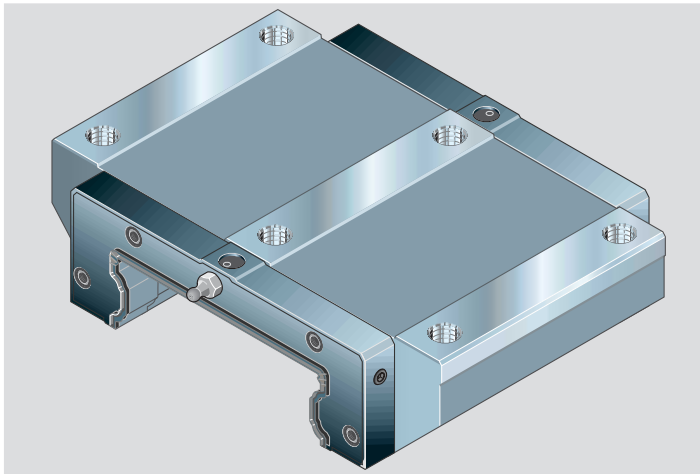
Runner Blocks
Steel Version 1671-

Wide

Dynamic characteristics

Speed v_{max} = 3 m/s

Acceleration a_{max} = 250 m/s^2

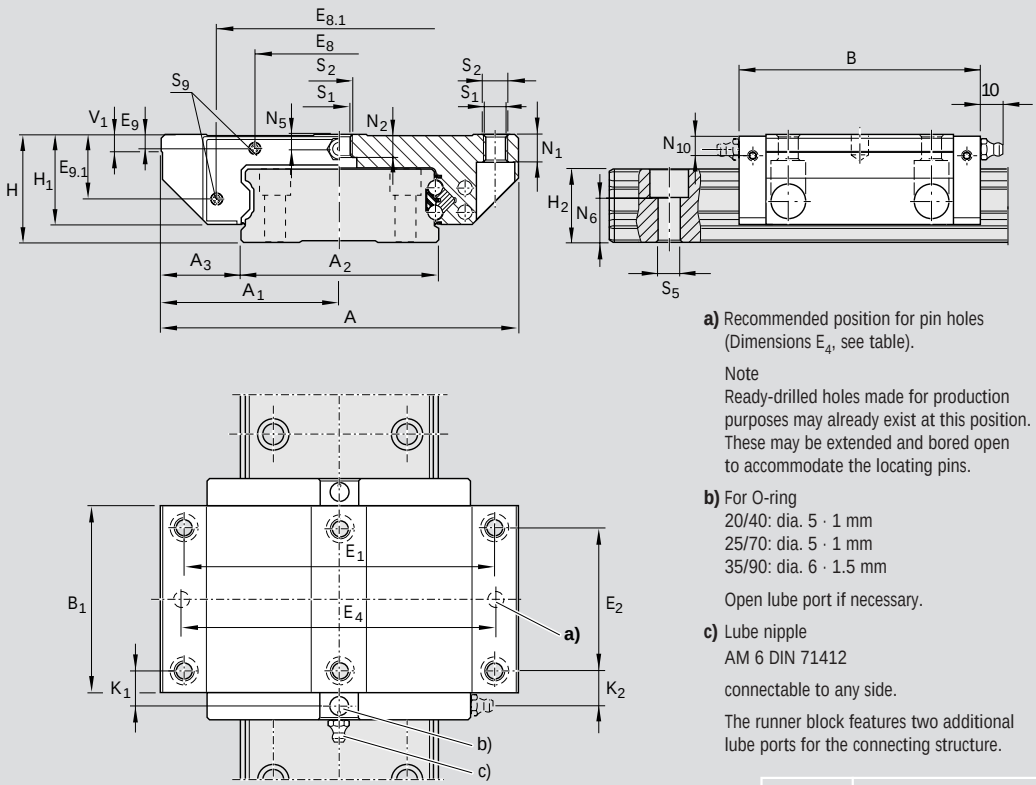


Part numbers

Size	Accuracy class	Part numbers for runner blocks for preload class	
		up to approx. 10 µm clearance	Preload 0.02 C
20/40	P		1671-812-10
	H	1671-893-10	1671-813-10
	N	1671-894-10	1671-814-10
25/70	P		1671-212-10
	H	1671-293-10	1671-213-10
	N	1671-294-10	1671-214-10
35/90	P		1671-312-10
	H	1671-393-10	1671-313-10
	N	1671-394-10	1671-314-10

Note on dynamic load capacities and moments (see table)

Determination of dynamic load capacities and moments is based on a travel life of 100 000 m.
However, frequently this is determined on the basis of only 50,000 m.
In this case for comparison:
multiply values **C**, $\mathbf{M_t}$ and $\mathbf{M_L}$ by 1.26 in accordance with Rexroth table.



a) Recommended position for pin holes (Dimensions E_4, see table).

Note
Ready-drilled holes made for production purposes may already exist at this position. These may be extended and bored open to accommodate the locating pins.

b) For O-ring
20/40: dia. 5 · 1 mm
25/70: dia. 5 · 1 mm
35/90: dia. 6 · 1.5 mm

Open lube port if necessary.

c) Lube nipple
AM 6 DIN 71412

connectable to any side.

The runner block features two additional lube ports for the connecting structure.

Size	Dimensions (mm)		
	E_4	dia.	Depth
20/40	70	4.7	7
25/70	107	5.7	8
35/90	144	7.7	8

Size	Dimensions (mm)																		
	A	A_1	A_2	A_3	B	B_1	H	H_1	H_2	V_1	E_1	E_2	E_8	$E_{8.1}$	E_9	$E_{9.1}$	N_1	N_2	N_5
20/40	80	40	42	19.0	73	52.0	27	23.5	19.05	6.0	70	40	36.0	57.5	3.55	15.5	7.7	3.7	4.0
25/70	120	60	69	25.5	105	79.5	35	30.0	23.40	7.5	107	60	70.2	90.7	5.6	20.3	9.0	7.0	5.5
35/90	162	81	90	36.0	142	113.6	50	42.5	32.00	8.0	144	80	79.0	116.0	6.8	29.9	14.0	12.0	9.0

Size	Dimensions (mm)							Mass	Load capacities (N)		Moments (Nm)			
	$N_6^{\pm 0.5}$	N_{10}	S1	S_2	K_1	K_2	S_9	(kg)	C dyn.	C_0 stat.	M_t dyn.	M_{t0} stat.	M_L dyn.	M_{L0} stat.
20/40	13.2	5.5	5.4	M6	10.6	11.0	M2.5-3.5 deep	0.45	15 600	24 100	370	640	116	200
25/70	14.4	8.0	6.4	M8	15.4	16.3	M3-5 deep	1.70	30 400	45 500	1 130	1 690	345	510
35/90	20.5	9.0	8.4	M10	22.8	24.8	M3-5 deep	3.70	58 200	86 300	2 880	4 270	920	1 370

Rexroth Ball Rail Systems
Wide Guide Rails

Guide Rail 1675-

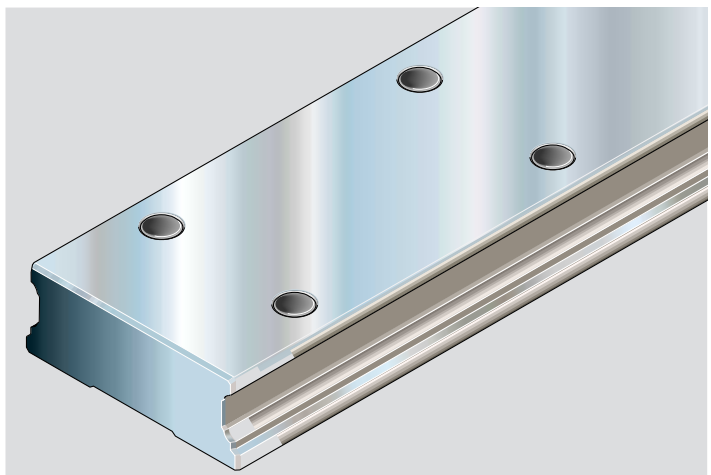
Wide, for mounting from above

– Plastic mounting hole plugs are supplied along with the rail.
  Reordering data: see table inset on right for part numbers.
– For special applications:
  Guide rails for steel mounting hole plugs,
  Part numbers: 1676-.5.-

Steel mounting hole plugs to be ordered separately.

A mounting jig with instruction leaflet is available for mounting steel mounting hole plugs.

Size	Part numbers Mounting jig
25/70	1619-210-40
35/90	1619-310-40



Part numbers and rail lengths

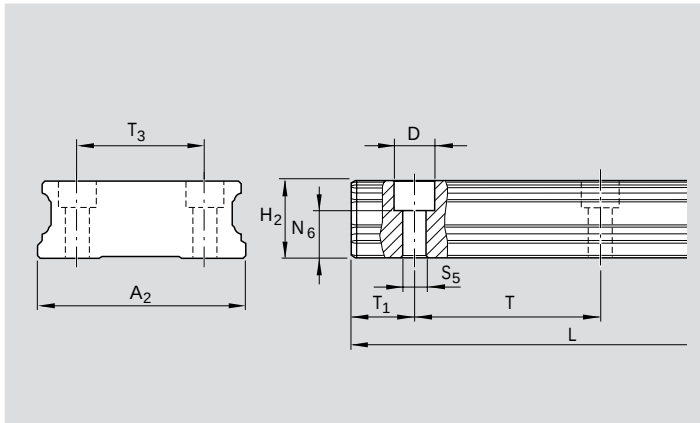
Size	Accuracy class	Guide Rail One-piece Part number, Rail length L (mm)	Guide Rail Composite Part number, Number of sections Rail length L (mm)	Spacing T (mm)	Recommended rail length Number of holes n_B / Rail length L (mm) per row				
20/40	P	1675-802-31,....	1675-802-3.,....	60	2 / 116 3 / 176 4 / 236 5 / 296 6 / 356	7 / 416 8 / 476 9 / 536 10 / 596 11 / 656	12 / 716 13 / 776 14 / 836 16 / 956 18 / 1076	20 / 1196 22 / 1316 25 / 1496 30 / 1796 35 / 2096	40 / 2396 50 / 2996 60 / 3596 66 / 3956
	H	1675-803-31,....	1675-803-3.,....						
	N	1675-804-31,....	1675-804-3.,....						
25/70	P	1675-202-31,....	1675-202-3.,....	80	2 / 156 3 / 236 4 / 316 5 / 396 6 / 476	7 / 556 8 / 636 9 / 716 10 / 796 11 / 876	12 / 956 13 / 1036 14 / 1116 16 / 1276 18 / 1436	20 / 1596 22 / 1756 25 / 1996 30 / 2396 35 / 2796	40 / 3196 50 / 3996
	H	1675-203-31,....	1675-203-3.,....						
	N	1675-204-31,....	1675-204-3.,....						
35/90	P	1675-302-31,....	1675-302-3.,....						
	H	1675-303-31,....	1675-303-3.,....						
	N	1675-304-31,....	1675-304-3.,....						

Mounting hole plugs

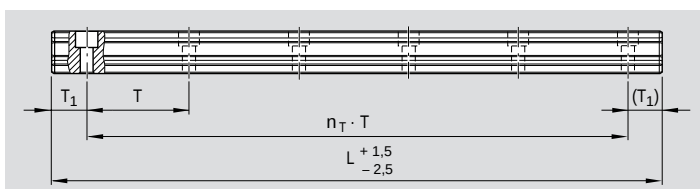
Size	Plastic mounting hole plugs Part numbers
20/40	1605-100-80
25/70	1605-200-80
35/90	1605-300-80

Size	Steel mounting hole plugs Part numbers
25/70	1606-200-75
35/90	1606-300-75

Dimensions and masses



Size	Dimension (mm)										Mass
	A_2	H_2	$N_6^{\pm 0.5}$	D	S_5	$T_{1S}{}^{+0.5}_{-1.0}$	T_{1min}	T	T_3	L_{max}	(kg/m)
20/40	42	19.05	13.2	7.4	4.4	28	10	60	24	4 000	5.3
25/70	69	23.40	14.4	11.0	7.0	38	10	80	40	4 000	11.6
35/90	90	32.00	20.5	15.0	9.0	38	12	80	60	4 000	21.0



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

or

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

L	= rail length	(mm)
T	= hole spacing*)	(mm)
T_{1S}	= preferred dimension*)	(mm)
n_B	= number of holes per row	
n_T	= number of spaces	

*) see tables for values

Ordering a guide rail

- Wherever possible, the recommended rail lengths as per table should be used.

Ordering example 1:

Guide rail size 35/90, accuracy class H, rail length 1756 mm,
(21 · T, number of holes n_B = 22 means 44 holes in 2 rows)
Ordering information: **1675-303-31, 1756 mm**

Intermediate lengths

Calculation of rail length L and ordering examples:

- The preferred dimension is T_{1S}
- If T_{1S} cannot be used, then
  - Select an end space T_1 between T_{1S} and $T_{1\,min}$
  - Do not go below the minimum spacing $T_{1\,min}$!

Note

- T_1, $T_{1\,min}$, T_{1S} are the same at either end of the guide rail

Ordering example 2 (up to L_{max}):

Guide rail size 35/90,

accuracy class P,
rail length 1676 mm,
(20 · T, preferred dimension T_{1S} = 38 mm; number of holes n_B = 21 giving 42 holes in 2 rows)

Ordering data:

Part number, length (mm)
T_{1S} / n_T · T / T_{1S} (mm)

1675-302-31, 1676 mm
38 / 20 · 80 / 38 mm

Rail lengths above L_{max} are made up of fitted rail sections mounted end to end.

Ordering example 3 (over L_{max}):

Guide rail size 35/90,

accuracy class P,
rail length 5036 mm, 2 sections

(62 · T, preferred dimension T_{1S} = 38 mm; number of holes n_B = 63
giving 126 holes in 2 rows)

Ordering data:

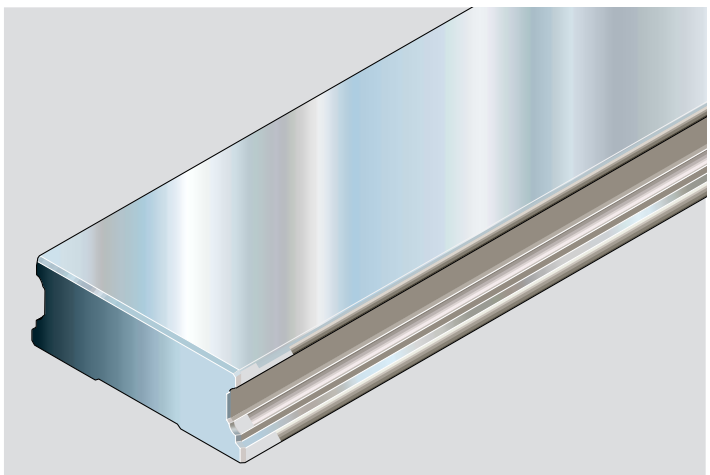
Part number and number of sections, length (mm)
T_{1S} / n_T · T / T_{1S} (mm)

1675-302-32, 5036 mm
38 / 62 · 80 / 38 mm

Rexroth Ball Rail Systems
Wide Guide Rails

Guide rail 1677-

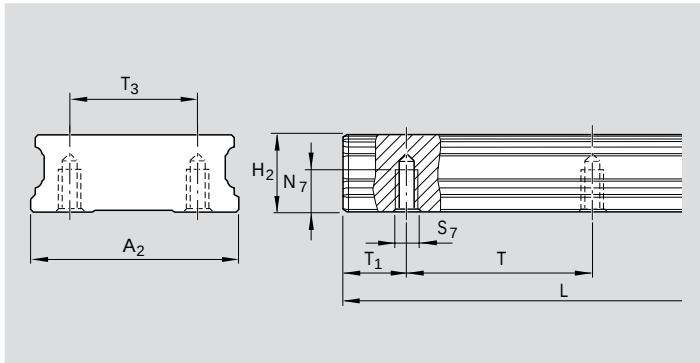
Wide, for mounting from below



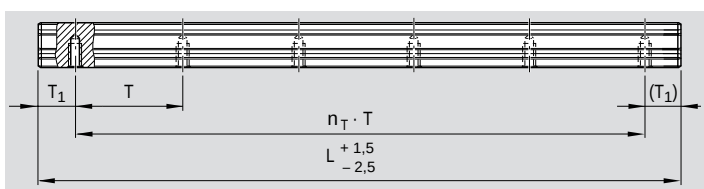
Part numbers and rail lengths

Size	Accuracy class	Guide Rail		Spacing T (mm)	Recommended rail length				
		One-piece	Composite		Number of holes n_B / Rail length L (mm) per row				
		Part number, Rail length L (mm)	Part number, Number of sections Rail length L (mm)						
20/40	P	1677-802-31,....	1677-802-3.,....	60	2 / 116	7 / 416	12 / 716	20 / 1196	40 / 2396
					3 / 176	8 / 476	13 / 776	22 / 1316	50 / 2996
	H	1677-803-31,....	1677-803-3.,....		4 / 236	9 / 536	14 / 836	25 / 1496	60 / 3596
					5 / 296	10 / 596	16 / 956	30 / 1796	66 / 3956
	N	1677-804-31,....	1677-804-3.,....		6 / 356	11 / 656	18 / 1076	35 / 2096	
25/70	P	1677-202-31,....	1677-202-3.,....	80					
	H	1677-203-31,....	1677-203-3.,....		2 / 156	7 / 556	12 / 956	20 / 1596	40 / 3196
					3 / 236	8 / 636	13 / 1036	22 / 1756	50 / 3996
	N	1677-204-31,....	1677-204-3.,....		4 / 316	9 / 716	14 / 1116	25 / 1996	
35/90	P	1677-302-31,....	1677-302-3.,....		5 / 396	10 / 796	16 / 1276	30 / 2396	
	H	1677-303-31,....	1677-303-3.,....		6 / 476	11 / 876	18 / 1436	35 / 2796	
	N	1677-304-31,....	1677-304-3.,....						

Dimensions and masses



Size	Dimension (mm)									Mass
	A_2	H_2	N_7	S_7	T_{1S} $^{+0.5}_{-1.0}$	T_{1min}	T	T_3	L_{max}	(kg/m)
20/40	42	19.05	7.5	M5	28	10	60	24	4 000	5.3
25/70	69	23.40	12.0	M6	38	10	80	40	4 000	11.6
35/90	90	32.00	15.0	M8	38	12	80	60	4 000	21.0



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

or

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

L	= rail length	(mm)
T	= hole spacing*)	(mm)
T_{1S}	= preferred dimension*)	(mm)
n_B	= number of holes per row	
n_T	= number of spaces	

*) see tables for values

Ordering a guide rail

- Wherever possible, the recommended rail lengths as per table should be used.

Ordering example 1:

Guide rail size 35/90, accuracy class H, rail length 1756 mm,
(21 · T, number of holes n_B = 22 means 44 holes in 2 rows)
Ordering information: **1677-303-31, 1756 mm**

Intermediate lengths

Calculation of rail length L and ordering examples:

- The preferred dimension is T_{1S}
- If T_{1S} cannot be used, then
  - Select an end space T_1 between T_{1S} and $T_{1\,min}$
  - Do not go below the minimum spacing $T_{1\,min}$!

Note

- T_1, $T_{1\,min}$, T_{1S} are the same at either end of the guide rail

Ordering example 2 (up to L_{max}):

Guide rail size 35/90,

accuracy class P,
rail length 1676 mm,
(20 · T, preferred dimension T_{1S} = 38 mm; number of holes n_B = 21 giving 42 holes in 2 rows)

Ordering data:

Part number, length (mm)
T_{1S} / n_T · T / T_{1S} (mm)

1677-302-31, 1676 mm
38 / 20 · 80 / 38 mm

Rail lengths above L_{max} are made up of fitted rail sections mounted end to end.

Ordering example 3 (over L_{max}):

Guide rail size 35/90,

accuracy class P,
rail length 5036 mm, 2 sections

(62 · T, preferred dimension T_{1S} = 38 mm; number of holes n_B = 63
giving 126 holes in 2 rows)

Ordering data:

Part number and number of sections, length (mm)
T_{1S} / n_T · T / T_{1S} (mm)

1677-302-32, 5036 mm
38 / 62 · 80 / 38 mm

Rexroth Ball Rail Systems
Accessories for Wide Ball Rail Systems

Wide lubrication plate, G 1/8

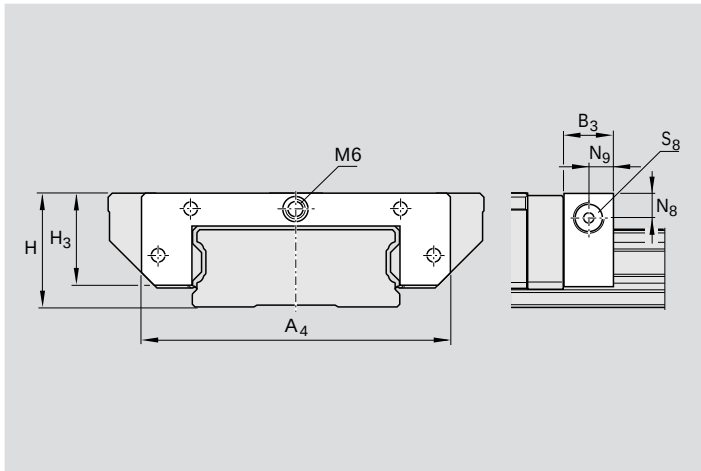
– Material: aluminum

Mounting instructions:

The parts required to mount the optional attachments on the runner block are supplied together with the standard parts.

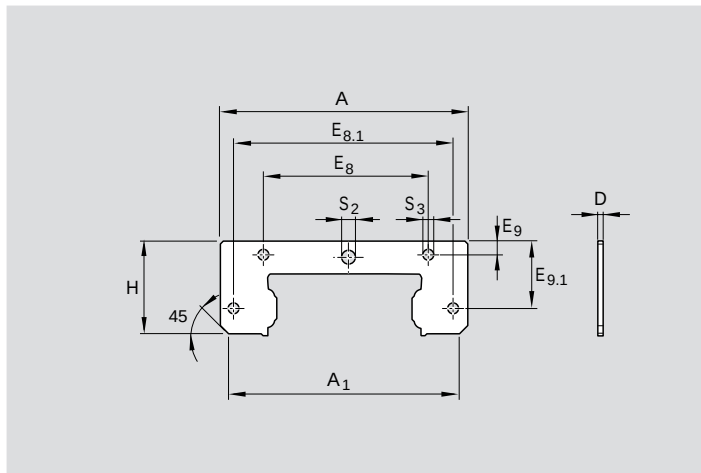
The runner block lube nipple can be used.

For mounting details, see "Mounting Instructions for Ball Rail Systems".



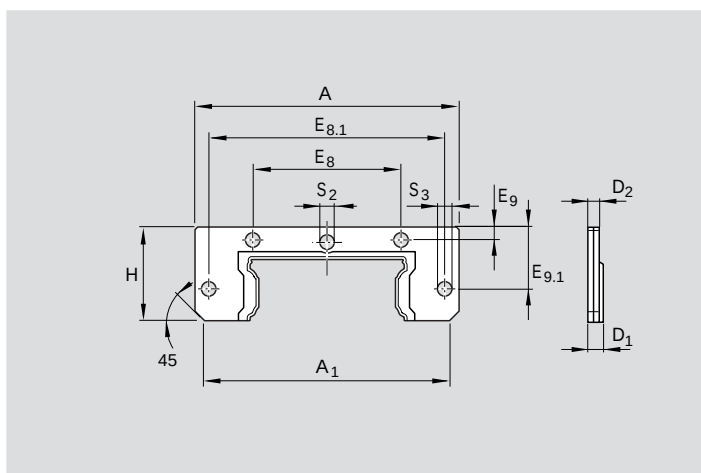
Size	Part numbers	Dimensions (mm)							Mass (g)
		A_4	B_3	H	H_3	N_8	N_9	S_8	
25/70	1670-211-30	101	16	35	29	7.7	8	G 1/8 - 8 deep	65
35/90	1670-311-30	129	16	50	41	8.3	8	G 1/8 - 8 deep	120

Wide scraper plate



Size	Part numbers	Dimensions (mm)										Mass (g)
		A	A_1	H	E_8	$E_{8.1}$	E_9	$E_{9.1}$	S_2	S_3	D	
20/40	1670-810-00	64.5	61.5	22.8	36.0	57.5	3.0	15.0	dia.4	dia.4	1.0	10
25/70	1670-210-00	101.0	92.7	28.6	70.2	90.7	5.1	19.7	dia.4	dia.4	1.0	14
35/90	1670-310-00	129.0	124.2	40.8	79.0	116	5.6	28.7	dia.4	dia.4	1.0	25

Two-piece front seal



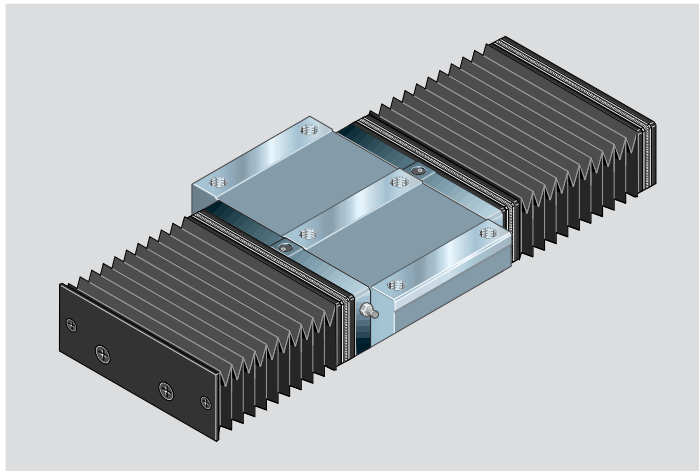
Size	Part numbers	Dimensions (mm)											Mass (g)
		A	A_1	H	E_8	$E_{8.1}$	E_9	$E_{9.1}$	S_2	S_3	D_1	D_2	
20/40	1619-822-20	64.5	61.5	22.8	36.0	57.5	3.05	15.0	dia. 3.5	dia. 3.5	3.3	2.5	7.5
25/70	1619-222-20	101.0	96.6	28.6	70.2	90.7	5.0	19.7	dia. 7	dia. 4	3.3	2.5	14.5
35/90	1619-322-20	128.6	124.2	41.0	79.0	116	5.8	28.9	dia. 7	dia. 4	4.5	3.3	40.0

Rexroth Ball Rail Systems
Accessories for Wide Ball Rail Systems

Wide bellows

– Material: bellows-type protective cover of polyurethane-coated polyester fabric

The runner block lube nipple can be used.



Part numbers, bellows

Ordering example for bellows

Size 35/90, Type 2,
Number of folds: 36
1670-302-00, 36 folds

Size	Type 2		Type 4		Type 9	
	with mounting frame and end plate	Number of folds	with 2 mounting frames	Number of folds	Bellows, loose supply (spare part)	Number of folds
20/40	1670-802-00	...	1670-804-00	..	1670-809-00	...
25/70	1670-202-00	...	1670-204-00	...	1670-209-00	...
35/90	1670-302-00	...	1670-304-00	...	1670-309-00	...

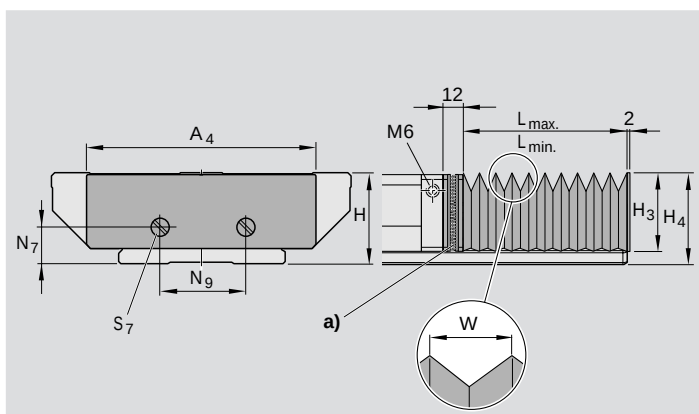
Mounting instructions

The bellows are delivered preassembled ready for installation, complete with the screws required for attachment to the guide rail.

For type 2, two threads size M4-8 10 mm deep and countersunk 2 x 45° must be tapped in each end face of the rail. *

The runner block lube nipple can be used.

* with size 20/40, only one thread in the rail center



a) Velcro-type fastener

Dimensions: bellows

Size	Dimensions (mm)								Factor
	A_4	H	H_3	H_4	N_7	N_9	S_7	W	U
20/40	73	27	31	35	11.5	–	M4	19.9	1.12
25/70	101	35	29	35	14.0	26	M4	12.9	1.25
35/90	128	50	42	49	21.5	40	M4	19.9	1.18

Accessories for Wide Ball Rail Systems

Bellows design formulas

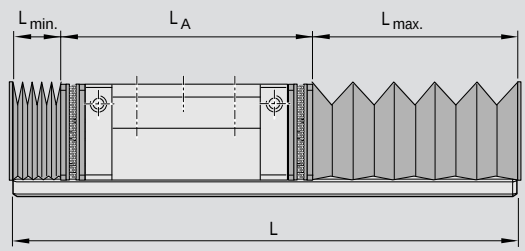
$L_{max} = (Stroke + 30) \cdot U$

$L_{min} = L_{max} - Stroke$

$$No.\ of\ folds = \frac{L_{max}}{W} + 2$$

L_{max}	=	Bellows extended
L_{min}	=	Bellows compressed
Stroke	=	Stroke (mm)
U	=	Calculation factor
W	=	Maximum extension (mm)

Rail length formula



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

L = Rail length (mm)

Mounting Accessories

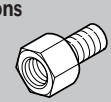
For details of how to mount accessories such as the lubrication plate, bellows etc, see "Mounting Instructions for Ball Rail Systems" RDEFI 82 270.

Rexroth Ball Rail Systems
Overview of Accessories and Allocation

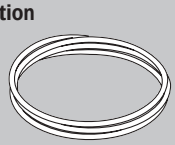
General Accessories – for Runner Blocks

Lube nipple

Lubrication connections
– Reduction pieces
– Swiveling screw fittings
– Plug-in connectors (NEW)
– Extensions



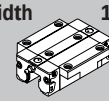
Plastic hose for lubrication connection



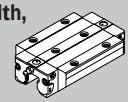
With the corresponding dimensions, suitable for

Standard Runner Blocks

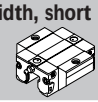
Runner block standard width **1651-/ 2001-/ 1631-**



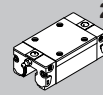
Runner block standard width, long **1653-**



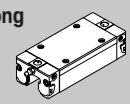
Runner block standard width, short **1665-/ S 1661-**



Runner block Slimline **1622-/ 1632/ 2011**

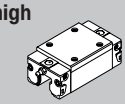


Runner block Slimline, long **1623-**

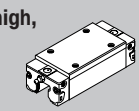


Runner Block Slimline, short **1666-/ S 1662-**

Runner block Slimline, high **1621-**



Runner block Slimline, high, long **1624-**

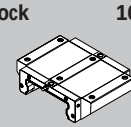


Mounting Accessories

Mounting accessories, see Mounting Instructions for Ball Rail Systems RDEFI 82 270

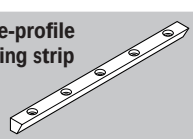
Wide Runner Blocks

Runner block wide **1671-**



General Accessories – for Guide Rails

Wedge-profile retaining strip

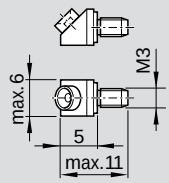


suitable for

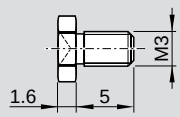
all guide rails

General Accessories – for Runner Blocks

Funnel-type lube nipple

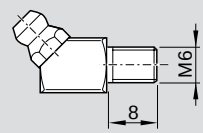


Part number
8417-004-09

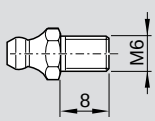


Part number
8417-029-09

Hydraulic-type lube nipple

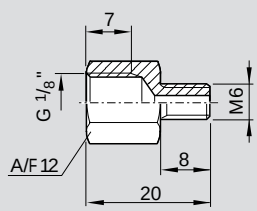


Part number
8417-007-02

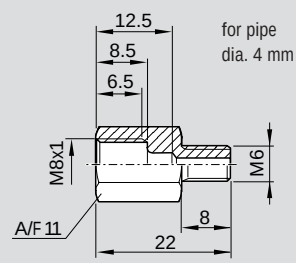


Part number
8417-008-02

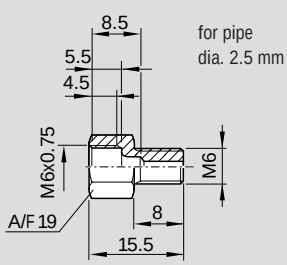
Reducing adapters



Part number
8455-030-34

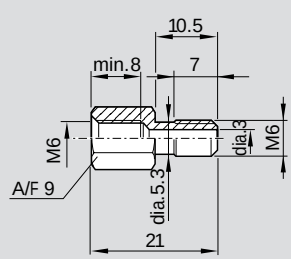


Part number
8455-030-37



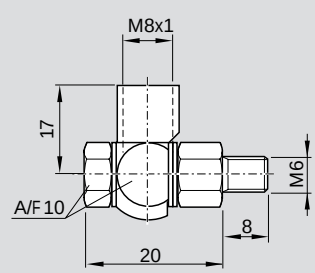
Part number
8455-030-38

Extension



Part number
8455-030-69

Swiveling screw fitting



Part number
8417-018-09

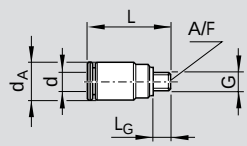
Rexroth Ball Rail Systems
General Accessories – for Runner Blocks

Fittings for plastic hoses

for runner blocks without accessories

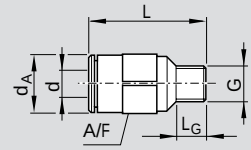
Straight fitting

(phased-out part)

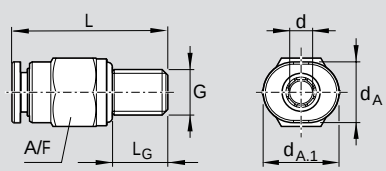


Part numbers	Dimensions (mm)					
	d_A	d	L	A/F	G	L_G
8417-010-09	5.8	3	12.5	1.5	M3	3
8417-011-09	7.8	3	13.5	2.0	M5	4

(phased-out part)



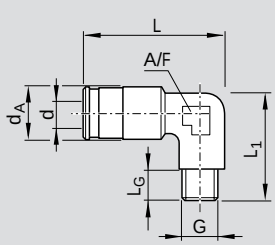
Part numbers	Dimensions (mm)					
	d_A	d	L	A/F	G	L_G
8417-013-09	11.0	4	21	10	M6	5.5
8417-014-09	13.5	6	21	12	M6	5.5



Part numbers	Dimensions (mm)						
	d_A	$d_{A.1}$	d	L	A/F	G	L_G
8417-033-09	6.0	7.0	3	15.5	6	M3	5.0
8417-034-09	8.0	9.0	3	18.0	8	M5	5.0
8417-035-09	8.5	10.0	4	20.5	9	M6	8.0
8417-036-09	10.0	12.0	6	21.5	10	M6	8.0

Angle coupling

(phased-out part)

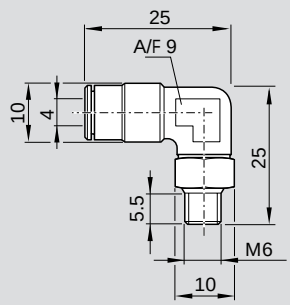


Part numbers	Dimensions (mm)						
	d_A	d	L	L_1	A/F	G	L_G
8417-016-09	11.0	4	24	19	9	M6	5.5
8417-017-09	13.5	6	27	21	10	M6	5.5

General Accessories – for Runner Blocks

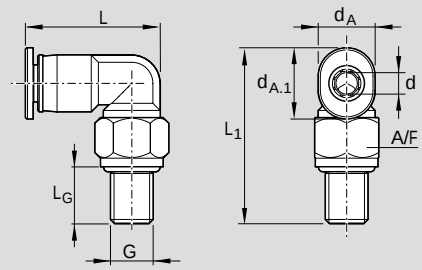
Angle coupling, rotating

(phased-out part)



Part number

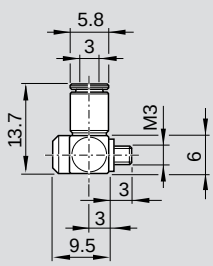
8417-015-09



Part numbers	Dimensions (mm)							
	d_A	$d_{A.1}$	d	L	L_1	A/F	G	L_G
8417-037-09	6.0	7	3	13.7	18.0	6	M3	5.0
8417-038-09	8.0	10	4	19.5	24.7	9	M6	8.0
8417-039-09	10.5	12	6	20.0	25.0	9	M6	8.0

Swiveling angle screw connection

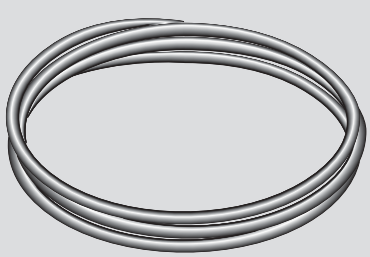
(phased-out part)



Part number

8417-012-09

Plastic hose, dia. 3 mm



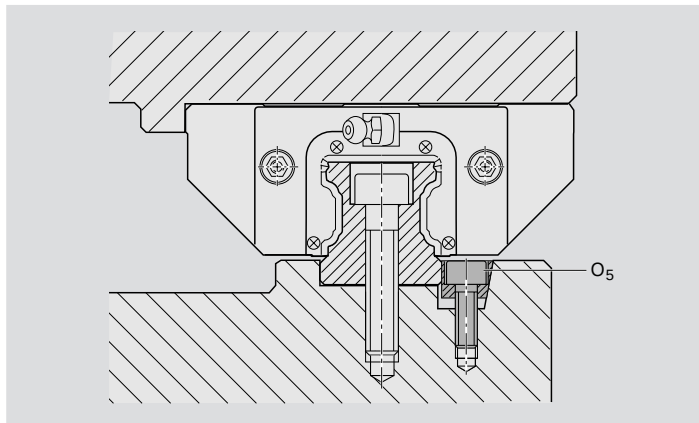
Part number

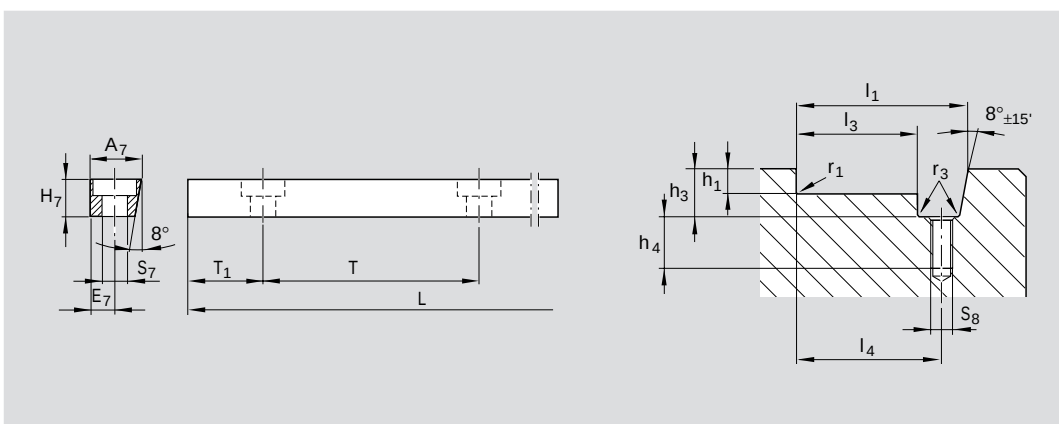
8499-287-00

Rexroth Ball Rail Systems
General Accessories – for Guide Rails

Wedge profile for ball rail systems – Lateral retention

– Material: steel
– Version: gunmetal finish





Part numbers and dimensions

Size	Wedge profile									Wedge profile groove								
	Part numbers	Dimensions (mm)								Dimensions (mm)								
		A_7	E_7	H_7	S_7	T	T_1	L	O_5 DIN 6912	h_1 -0.2	h_3 +1	h_4 +2	l_1 ±0.05	l_3 -0.1 -0.2	l_4 ±0.1	S_8	r_1 max.	r_3 max.
15	1619-200-01	12	6	10	6.0	60	28.5	957	M5x20	3.5	12.5	15	27	15	21	M5	0.4	0.5
20										4	12.5	15	32	20	26	M5	0.5	0.5
25										5	12.5	15	35	23	29	M5	0.8	0.5
30										5	12.5	15	40	28	34	M5	0.8	0.5
35										6	12.5	15	46	34	40	M5	0.8	0.5
45	1619-400-01	19	9	16	9.0	105	51.0	942	M8x25	8	19.0	16	64	45	54	M8	0.8	0.5
55										10	19.0	16	72	53	62	M8	1.2	0.5
65										10	19.0	16	82	63	72	M8	1.2	0.5

General Mounting Instructions

General Notes

The following notes relating to mounting apply to all ball rail systems.

However, different specifications exist with regard to the parallelism of the guide rails and to mounting the runner blocks with locating pins.

This information is provided separately alongside the descriptions of the individual types.

Rexroth Ball Rail Systems are high-grade quality products.

Particular care must be taken during transportation and subsequent mounting.

All steel components are protected with anti-corrosion oil.
Preservative substances do not need to be removed provided the recommended lubricants are used.

Mounting examples

Guide rails:

☞ Each guide rail has ground contact surfaces on both sides.

Possibilities for side fixing:
1 Reference edges
2 Retaining strips
3 Wedge-profile retaining strip

Note

Guide rails without side fixing have to be aligned straight and parallel when mounting, preferably to an auxiliary strip. (recommended limits for side load if no additional lateral retention is provided, see individual types)

Runner Blocks:

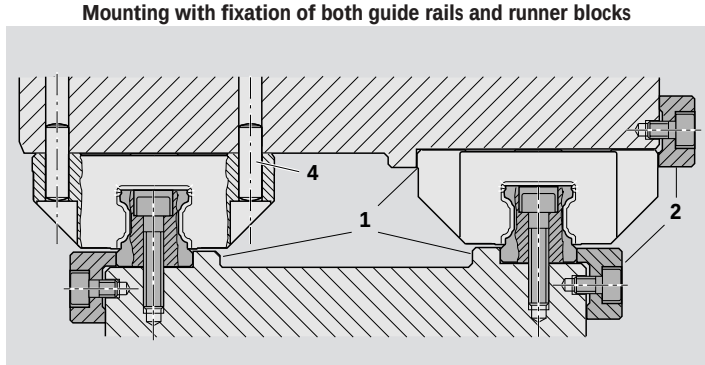
☞ Each runner block has a ground reference edge on one side (! Dimension V_1 in the dimension drawings).

Possibilities for additional fixing:
1 Reference edges
2 Retaining strips
4 Locating pins

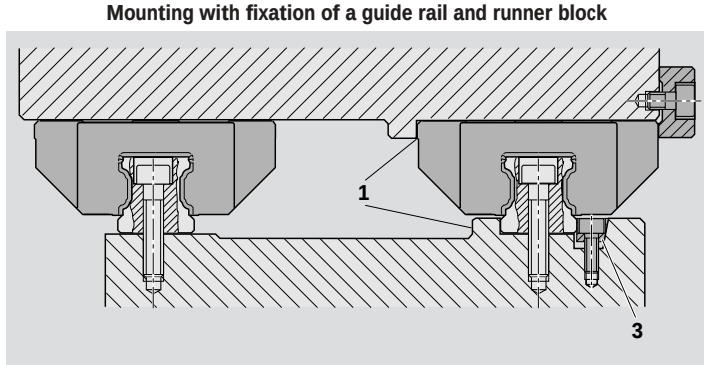
Note

After mounting, it should be possible to move the runner block easily.

Mounting with fixation of both guide rails and runner blocks



Mounting with fixation of a guide rail and runner block



Mounting Instructions

For detailed mounting steps, see "Mounting Instructions for Ball Rail Systems" RDEFI 82 270.

Rexroth Ball Rail Systems
Mounting Instructions

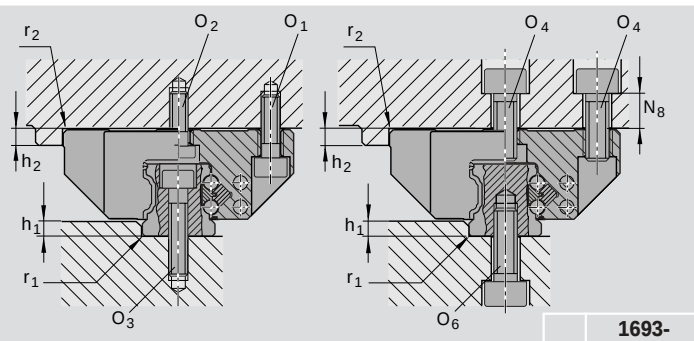
Reference edges, corner radii, mounting screw sizes and tightening torque

Steel Runner Block
1651-, 1653-, 1693-, 2001-
aluminum Runner Block 1631-

– Standard Width

Guide Rails

left:
– For mounting from above
1605-, 1645-, 2045-
right:
– For mounting from below
1607-, 1647, 2047-



Size	1693- O_4 DIN 912 4 pcs.	N_8 (mm)
20	M6x16	9
25	M8x20	10

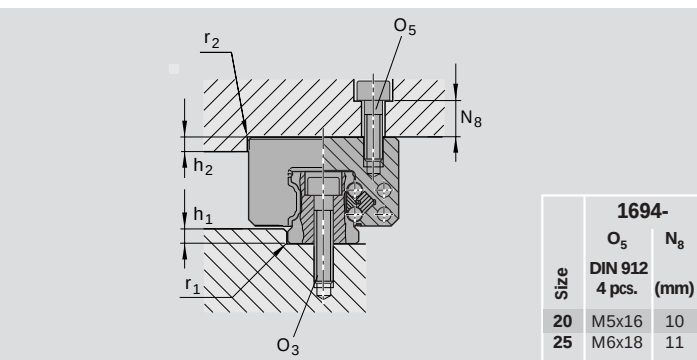
Steel Runner Blocks
1621-, 1622-, 1623-, 1624-, 1694-, 2011-

Aluminum Runner Blocks 1632-
– Slimline

Guide rail
– For mounting from above 1605-,1645-, 2045-

Note

The indicated combinations represent examples. It is basically possible to combine any runner block with all the offered guide rail types.



Size	1694- O_5 DIN 912 4 pcs.	N_8 (mm)
20	M5x16	10
25	M6x18	11

Dimensions and recommended limits for side load if no additional lateral retention is provided

Size	h_1 min. (mm)	h_1 max. (mm)	r_1 max. (mm)	h_2 (mm)	r_2 max. (mm)	O_1 DIN 912 4 pcs.	O_2 [2] DIN 6912 2 pcs.	O_4 [1)2)] DIN 912 6 pcs.	O_5 DIN 912 4 pcs.	O_3 DIN 912	O_6 DIN 912	N_8 (mm)
15	2.5	3.5	0.4	4	0.6	M4x12	M4x10	M5x12	M4x12	M4x20	M5x12	6
20	2.5	4.0	0.6	5	0.6	M5x16	M5x12	M6x16	M5x16	M5x25	M6x16	9
25	3.0	5.0	0.8	5	0.8	M6x20	M6x16	M8x20	M6x18	M6x30	M6x20	10
30	3.0	5.0	0.8	6	0.8	M8x25	M8x16	M10x20	M8x20	M8x30	M8x20	10
35	3.5	6.0	0.8	6	0.8	M8x25	M8x20	M10x25	M8x25	M8x35	M8x25	13
45	4.5	8.0	0.8	8	0.8	M10x30	M10x25	M12x30	M10x30	M12x45	M12x30	14
55	7.0	10.0	1.2	10	1.0	M12x40	M12x30	M14x40	M12x35	M14x50	M14x40	20
65	7.0	10.0	1.2	14	1.0	M14x45	M14x35	M16x45	M16x40	M16x60	M16x45	22

[1)] When mounting the runner block from above using only 4 O_4 screws:
- Permissible side force 1/3 lower
- Lower rigidity

[2)] For runner block mounting with 6 screws:
Tighten screws with torque of strength class 8.8.

[3)] When mounting with 2 O_2 screws and 4 O_1 screws

Runner Blocks 1621-, 1622-,1651, 1694-, 1693-, 1631-, 1632-, 2001-, 2011-

Runner Blocks 1623-, 1624-, 1653-

Screw strength class	Runner blocks				Guide rails		
8.8	0.11 C	0.15 C[3)]	0.23 C	0.11 C	0.06 C	0.06 C	
12.9	0.18 C	0.22 C[3)]	0.35 C	0.18 C	0.10 C	0.10 C	
8.8	0.08 C	0.13 C[3)]	0.18 C	0.08 C	0.04 C	0.04 C	
12.9	0.14 C	0.18 C[3)]	0.26 C	0.14 C	0.07 C	0.07 C	

Tightening torque of the mounting screws

	M4	M5	M6	M8	M10	M12	M14	M16
8.8	2.7	5.5	9.5	23	46	80	125	195
12.9	4.6	9.5	16	39	77	135	215	330

Mounting Instructions

Locating pins

If the recommended values for permissible side forces are exceeded (see table), the runner block must be additionally fixed by means of locating pins or reference edges.

Recommended dimensions for the pin holes are indicated in the drawings and table.

Possible pin types:

– Taper pin (hardened) or
– Straight pin DIN ISO 8734

Note

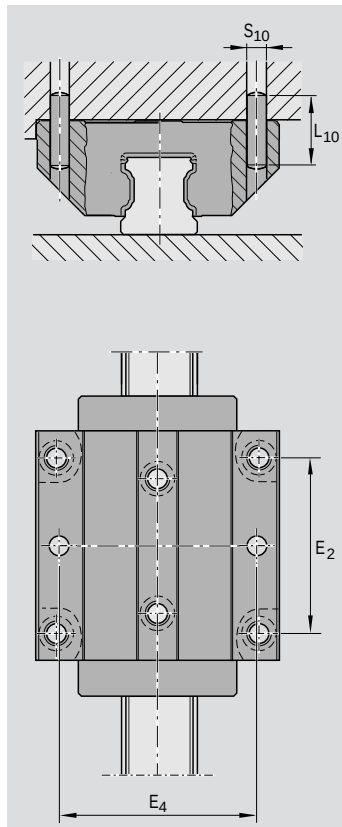
Ready-drilled holes made for production reasons may exist at the recommended pin hole positions (dia. < S_{10}).

These may be extended and bored open to accommodate the locating pins.

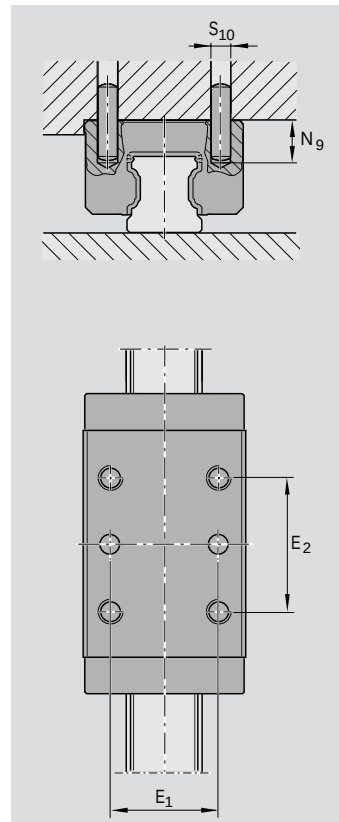
If the locating pins have to be driven in at another point (e.g. when the lube port is central), dimension E_2 must not be exceeded in the longitudinal direction (for dimension E_2, see the tables for the individual types).

Observe dimensions E_1 and E_4!

Only prepare the pin holes after the installation is complete (see also "General Mounting Instructions").



Standard Width 1651-, 1653-, 1631-, 2001-
Standard Width, low profile 1693-

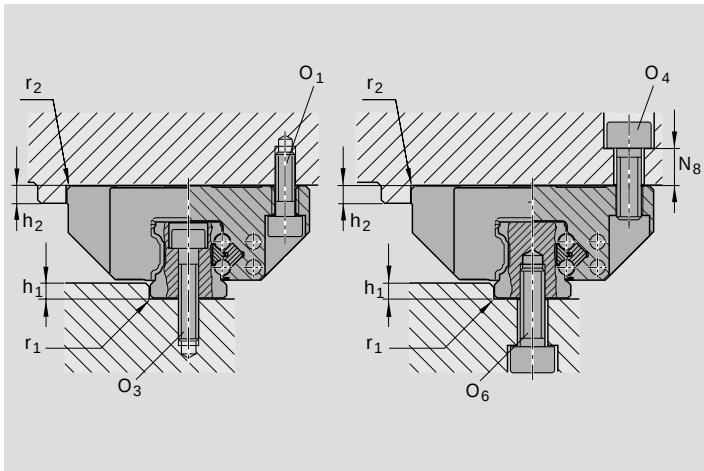


Slimline 1622-, 1623-, 1632-, 2011-
Slimline, high 1621-, 1624-
Slimline, low profile 1694-

Size	Dimensions (mm)						
	Taper pin (hardened) Straight pin (DIN 6325)					1693- 1694-	
	S_{10}	L_{10}	E_1	E_4	$N_{9\,(max)}$	E_4	$N_{9\,(max)}$
15	4	18	26	38	6.0	–	–
20	5	24	32	53	7.5	49	6.5
25	6	32	35	55	9.0	60	7.0
30	8	36	40	70	12.0	–	–
35	8	40	50	80	13.0	–	–
45	10	50	60	98	18.0	–	–
55	12	60	75	114	19.0	–	–
65	14	60	76	140	22.0	–	–

Rexroth Ball Rail Systems
Mounting Instructions

Reference edges, corner radii, mounting screw sizes and tightening torque



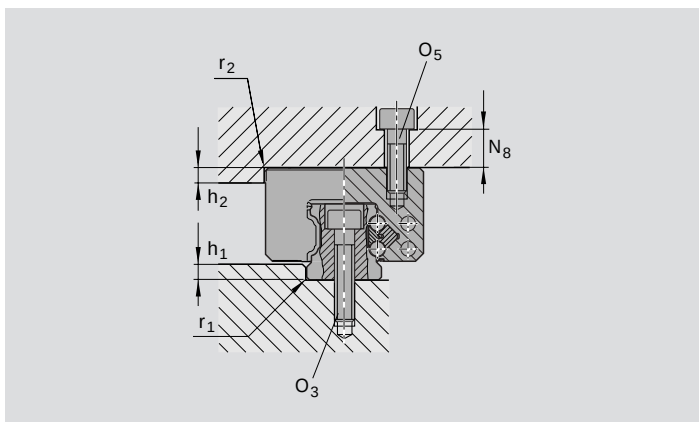
Super Runner Block s **1661 Runner Block 1665-**

– Standard Width, short

Guide Rails

left:
– For mounting from above 1605-

right:
– For mounting from below 1607-



Super Runner Blocks s **1662 Runner Blocks 1666-**

– Slimline,short

Guide Rails

– For mounting from above 1605-

Note

The indicated combinations represent examples. It is basically possible to combine any runner block with all the offered guide rail types.

Screw mounting of runner blocks using two screws is fully sufficient up to maximum load.
(See maximum permissible force and moment loads indicated under the individual types.)

Dimensions and recommended limits for side load if no additional lateral retention is provided (Runner Blocks 1665-, 1666-)

	h_1		r_1	h_2	r_2	O_1	O_4	O_5	O_3	O_6	N_8
	min. (mm)	max. (mm)	max. (mm)	(mm)	max. (mm)	DIN 912 2 pcs.	DIN 912 2 pcs.	DIN 912 2 pcs.	DIN 912 (rail)	DIN 912 (rail)	(mm)
15	2.5	3.5	0.4	4	0.6	M4x12	M5x12	M4x12	M4x20	M5x12	6
20	2.5	4.0	0.6	5	0.6	M5x16	M6x16	M5x16	M5x25	M6x16	9
25	3.0	5.0	0.8	5	0.8	M6x20	M8x20	M6x18	M6x30	M6x20	10
30	3.0	5.0	0.8	6	0.8	M8x25	M10x20	M8x20	M8x30	M8x20	10
35	3.5	6.0	0.8	6	0.8	M8x25	M10x25	M8x25	M8x35	M8x25	13

Screw strength class	Runner blocks			Guide rails		
8.8	0.08 C	0.12 C	0.08 C	0.09 C	0.09 C	
12.9	0.13 C	0.21 C	0.13 C	0.15 C	0.15 C	

Tightening torque of the mounting screws

		M4	M5	M6	M8	M10	M12	M14	M16
Nm	**8.8**	2.7	5.5	9.5	23	46	80	125	195
	12.9	4.6	9.5	16	39	77	135	215	330

Mounting Instructions

Locating pins

If the recommended values for permissible side forces are exceeded, the runner block must be additionally fixed by means of locating pins or reference edges.

Recommended dimensions for the pin holes are indicated in the drawings and table.

Possible pin types:

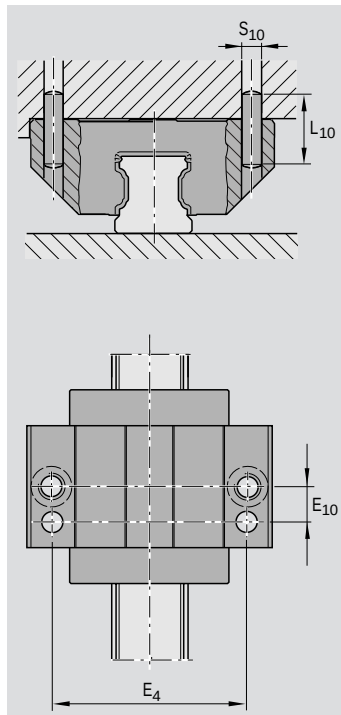
– Taper pin (hardened) or
– Straight pin DIN ISO 8734

Note

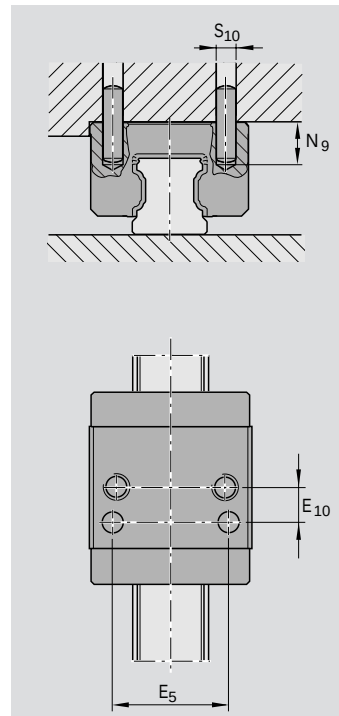
Ready-drilled holes made for production reasons may exist at the recommended pin hole positions (dia. < S_{10}).

These may be extended and bored open to accommodate the locating pins.

Only prepare the pin holes after the installation is complete (see also "General Mounting Instructions").



Super Runner Blocks s 1661-
Standard Width, short 1665-
Standard Width, short, low profile 1663-

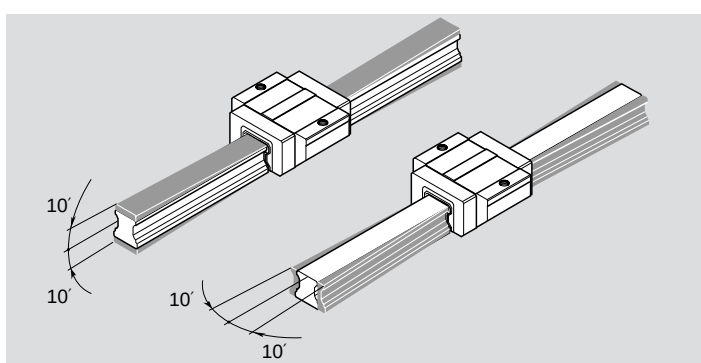


Super Runner Blocks s 1662-
Slimline, short 1666-
Slimline, short, low profile 1664-

Size	Dimensions (mm)							
	Taper pin (hardened) Straight pin (DIN 6325)						1663- 1664-	
	S_{10}	L_{10}	E_4	E_5	E_{10}	$N_{9\,(max)}$	E_4	$N_{9\,(max)}$
15	4	18	38	26	9	3.0	–	–
20	5	24	53	32	10	3.5	49	2
25	6	32	55	35	11	7.0	60	5
30	8	36	70	40	14	10.0	–	–
35	8	40	80	50	15	12.0	–	–

Permitted alignment error for Super Runner Blocks s

at the guide rail and at the runner block



Rexroth Ball Rail Systems
Mounting Instructions

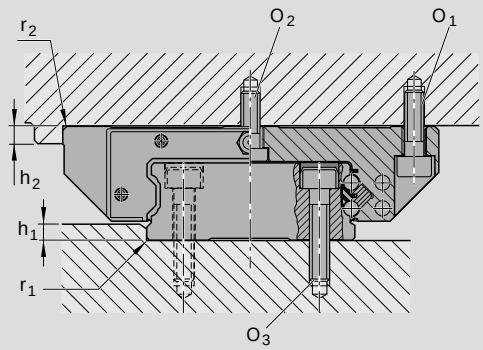
Reference edges, corner radii, mounting screw sizes and tightening torque

Runner Block 1671-

– wide

Guide rail:

– Wide, for mounting from above 1675-

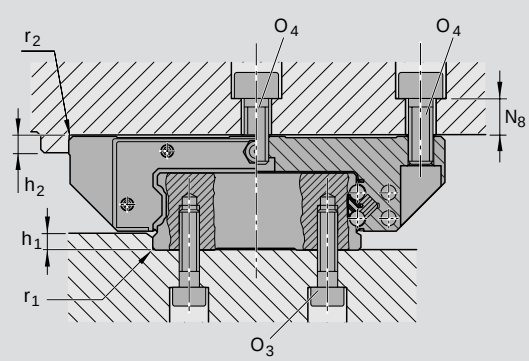


Runner Block 1671-

– wide

Guide rail:

– wide, for mounting from below 1677-



Dimensions and recommended limits for side load if no additional lateral retention is provided

[1]) When mounting the runner block from above using only 4 O_4 screws:
– Permissible side force 1/3 lower
– Lower stiffness

[2]) For runner block mounting with 6 screws:
– Tighten the centerline screws with the torque for strength class 8.8

[3]) When mounting with 2 O_2 screws and 4 O_1 screws

Size	h_1 min. (mm)	h_1 max. (mm)	r_1 max. (mm)	h_2 max. (mm)	r_2 (mm)	O_1 DIN 912 4 pcs.	O_2[2]) DIN 6912 2 pcs.	O_4[1)2)] DIN 912 6 pcs.	O_3 DIN 912	N_8 (mm)
20/40	2.0	2.5	0.5	4	0.5	M5x16	M5x12	M6x16	M4x20	9.5
25/70	3.0	4.5	0.8	5	0.8	M6x20	M6x16	M8x20	M6x30	10.0
35/90	3.5	6.0	0.8	6	0.8	M8x25	M8x20	M10x25	M8x35	13.0

Screw strength class	Runner block			Rails	
8.8	0.08 C	0.11[3]) C	0.16 C	0.08 C	
12.9	0.13 C	0.16[3]) C	0.24 C	0.13 C	

Tightening torque of the mounting screws

		M4	M5	M6	M8	M10
Nm	**8.8**	2.7	5.5	9.5	23	46
	12.9	4.6	9.5	16	39	77

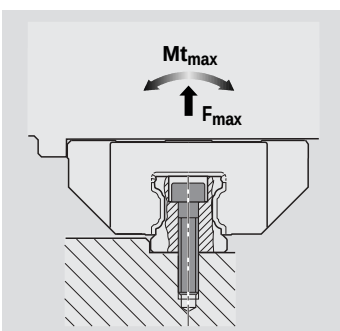
Mounting Instructions

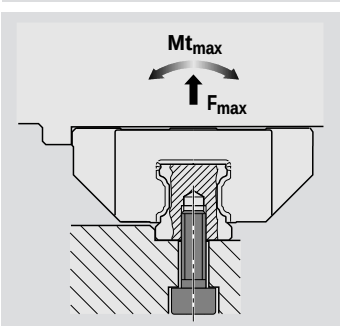
Load on the screwed connection between guide rail and base

The screw connections specified in the standard DIN 645-1 can be subjected to excessive loads due to the performance capability of the profile guide rails. The mounting screws between guide rail and base are critical. If the lifting loads (F) or moments (M_t) are higher than the applicable load values in the table, the screw connections must be re-calculated separately.

The data applies to the following conditions:

– Mounting screws, quality 12.9
– Screws tightened using a torque wrench
– Screws lightly oiled
(for screws of quality 8.8, an approximate break factor of 0.6 can be applied)





Lift-off Loads and Moments

Guide rail mounted from above

Runner Blocks	1663, 1664, 1665 1666		1621, 1622, 1651, 1693, 1694, 2001, 2011		1623, 1624, 1653	
Size	$F_{max.}$ (N)	$M_{t\,max.}$ (Nm)	$F_{max.}$ (N)	$M_{t\,max.}$ (Nm)	$F_{max.}$ (N)	$M_{t\,max.}$ (Nm)
15	6 040	41	7 050	47	8 060	54
20	10 000	90	11 700	106	13 400	121
25	14 600	154	17 100	180	19 500	205
30	–	360	32 400	420	37 100	480
35	27 500	440	32 100	510	36 700	580
45			78 100	1 680	89.300	1 920
55			107 800	2 690	123 200	3 080
65			152 300	4 490	174 100	5 130

Guide rail mounted from below

Runner Blocks	1663, 1664, 1665 1666		1621, 1622, 1651, 1693, 1694, 2001, 2011		1623, 1624, 1653	
Size	$F_{max.}$ (N)	$M_{t\,max.}$ (Nm)	$F_{max.}$ (N)	$M_{t\,max.}$ (Nm)	$F_{max.}$ (N)	$M_{t\,max.}$ (Nm)
15	–	67	11 600	78	13 300	89
20	–	128	16 500	149	18 900	170
25	14 300	150	16 700	170	19 100	200
30	–	350	31 700	410	36 200	470
35	27 100	430	31 600	500	36 200	570
45			77 700	1 670	88 800	1 900
55			106 800	2 670	122 100	3 050
65			150 850	4 450	172 400	5 080

Wide Ball Rail Systems

	Size	1671 $F_{max.}$ (N)	1671 $M_{t\,max.}$ (Nm)
1675	20/40	14 100	227
	25/70	33 500	890
	35/90	64 800	2.390
1677	20/40	13 800	224
	25/70	33 700	900
	35/90	3 700	2.350

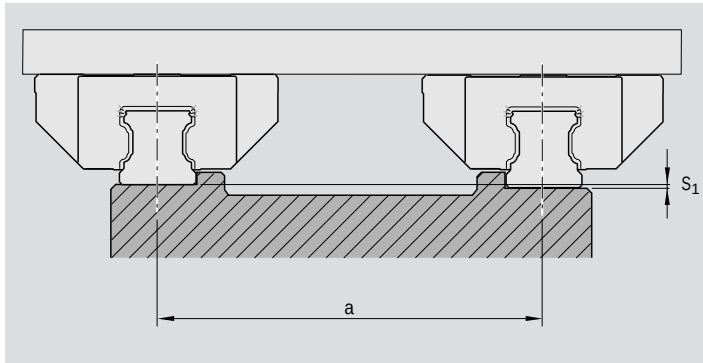
Rexroth Ball Rail Systems
Mounting Instructions

Vertical offset

The vertical offset values apply to all runner blocks of the standard program.

Values around 20% higher are permissible for the runner block 1665- (Standard Width, short) and 1666- (slimline, short).

If the admissible vertical offset S_1 and S_2 is not exceeded, reduction in travel life will as a rule be negligible.



Permissible vertical offset in the transverse direction

The permissible offset S_1 includes the tolerance for dimension H as given in the table under "Technical Data".

$$S_1 = a \cdot Y$$

S_1 = Permissible vertical offset (mm)
a = Distance between rails (mm)
Y = Calculation factor

Calculation factor Y for steel runner blocks

Calculation factor	for preload class			
	up to approx. 10 µm clearance	Preload 0.02 C	Preload 0.08 C	Preload 0.13 C
Y	$4.3 \cdot 10^{-4}$	$2.8 \cdot 10^{-4}$	$1.7 \cdot 10^{-4}$	$1.2 \cdot 10^{-4}$

Calculation factor Y for Super Runner Blocks S

Calculation factor	up to approx. 10 µm clearance	Preload 0.02 C
Y	$8 \cdot 10^{-4}$	$6 \cdot 10^{-4}$

Calculation factor Y for aluminum runner blocks

Calculation factor	up to approx. 10 µm clearance	Preload 0.02 C
Y	$7 \cdot 10^{-4}$	$5 \cdot 10^{-4}$

Mounting Instructions

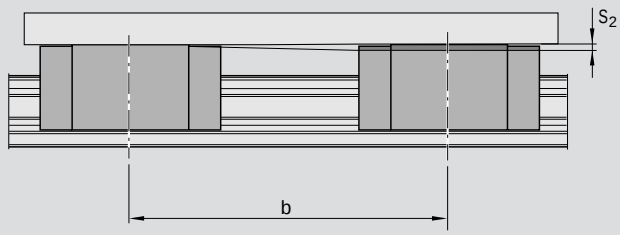
Permissible vertical offset in the longitudinal direction

For steel and aluminum runner blocks

The permissible vertical offset S_2 takes into account the tolerance for the "max. difference in dimensions H on the same rail" according to the table given in the "Technical Data" section.

Values around 40% higher are permissible for the runner block 1665- (Standard Width, short) and 1666- (Slimline, short).

Values around 30% lower are permissible for runner block 1653- (standard width long), 1623- (slimline, long) and 1624- (slimline, high, long).



Permitted deviation S_2 for steel runner blocks

$$S_2 = b \cdot 4.3 \cdot 10^{-5}$$

S_2 = Permissible vertical offset (mm)
b = Distance between runner blocks (mm)

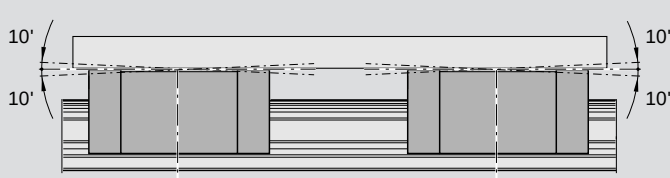
Permitted deviation S_2 for aluminum runner blocks

$$S_2 = b \cdot 6 \cdot 10^{-5}$$

S_2 = Permissible vertical offset (mm)
b = Distance between runner blocks (mm)

Permissible deviation from straightness in the longitudinal direction with two consecutive Super Runner Blocks s

The runner blocks can automatically compensate for a nonlinearity of 10' in the longitudinal direction.



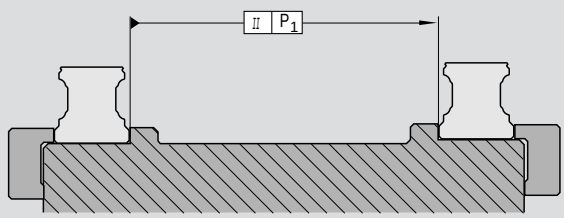
Rexroth Ball Rail Systems
Mounting Instructions

Parallelism of the rails after mounting

measured at the guide rails and at the runner blocks

The values for parallelism offset P_1 apply to all runner blocks of the standard range.

Values around 20% higher are permissible for the runner block 1665- (Standard Width, short) and 1666- (slimline, short).



Parallelism offset P_1 for steel runner blocks

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

If the tolerances given in the table are not exceeded, reduction in travel life will as a rule be negligible.

The given values apply to precision mounting.
For standard mounting, double the stated values can be used.

Size	Parallelism offset P_1 (mm) for precision mounting			
	up to approx. 10 µm clearance	Preload 0.02 C	Preload 0.08 C	Preload 0.13 C
15	0.015	0.009	0.005	0.004
20	0.018	0.011	0.006	0.004
25	0.019	0.012	0.007	0.005
30	0.021	0.014	0.009	0.006
35	0.023	0.015	0.010	0.007
45	0.028	0.019	0.012	0.009
55	0.035	0.025	0.016	0.011
65	0.048	0.035	0.022	0.016

Parallelism offset P_1 for Super Runner Blocks S

Size	Parallelism offset P_1 (mm)	
	up to approx. 10 µm clearance	Preload 0.02 C
15	0.025	0.017
20	0.029	0.021
25	0.032	0.023
30	0.035	0.026
35	0.040	0.030

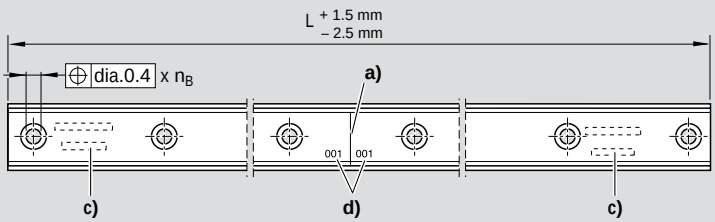
Parallelism offset P_1 for aluminum runner blocks

Size	Parallelism offset P_1 (mm)	
	up to approx. 10 µm clearance	Preload 0.02 C
15	0.021	0.014
25	0.026	0.017
30	0.029	0.019
35	0.035	0.022

Mounting Instructions

Composite guide rails

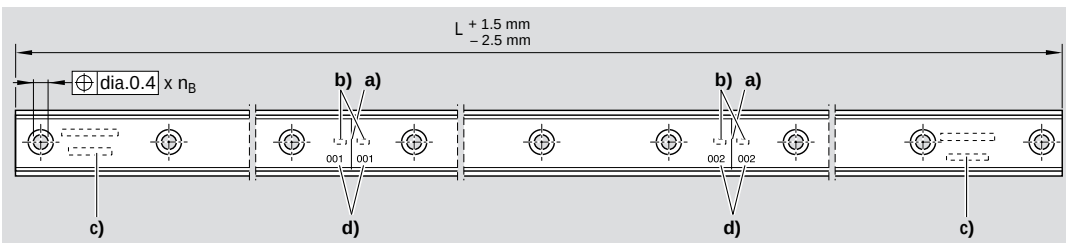
Guide rails made up of two sections



Sections of a composite guide rail that belong together are already indicated as such by a label on the packaging.

Guide rails made up of three or more sections

All sections of the same rail have the same number.



n_B Number of holes

a) Joint
b) Counter number
c) Complete rail identification on first and last section
d) Code number of the joint

Note on rail seal cover strip

For composite guide rails, a one-piece rail seal to cover the total length L is supplied separately.

Rexroth Ball Rail Systems
Maintenance and Lubrication

Maintenance

Dirt can settle and encrust on guide rails, especially when these are not enclosed.

To ensure that seals and rail seal cover strips retain their functionality, this dirt must be removed at regular intervals.

It is advisable to run the machine through a full "cleaning cycle" over the entire installed rail length at least twice a day, but no later than at the end of every 8-hour shift.

Always run a cleaning cycle before shutting down the machine.

Lubrication

Rexroth Ball Rail Systems are delivered filled with an anti-corrosion agent. Either oil or grease can be used as a lubricant.

Before start-up, make sure the system has sufficient initial lubrication.

Grease Lubrication

⚠ Greases with solid lubricant content (such as graphite or MoS_2) must not be used!

We recommend a lubricant grease to DIN 51825:

- K2K with normal loads
- KP2K with higher loads
  Consistency class NLGI 2 complying with DIN 51818, can be purchased through Rexroth (cartridge, content 400 g).
  Part number: 8416-037-00

Observe the information provided by the manufacturers, in particular with regard to incompatibilities.

Always lubricate runner blocks before start-up (initial lubrication)

Initial lubrication requires a total of three times the partial quantity given in table 1:

1. Apply the first partial quantity of lubricant as per table 1 to runner block.
2. Slide runner block back and forth over at least three times the block length for three full cycles.
3. Repeat steps 1. and 2. two more times
4. Check whether a film of lubricant is visible on the guide rail.

Size	Grease lubrication	
	Initial lubrication partial quantity lubrication (cm^3)	In-service (cm^3)
15	0.4 (x 3)	0.4
20	0.7 (x 3)	0.7
25	1.4 (x 3)	1.4
30	2.2 (x 3)	2.2
35	2.2 (x 3)	2.2
45	4.7 (x 3)	4.7
55	9.4 (x 3)	9.4
65	15.4 (x 3)	15.4
20/40	1.0 (x 3)	1.0
25/70	1.4 (x 3)	1.4
35/90	2.7 (x 3)	2.7

Table 1

In-service lubrication of runner blocks

- Once the in-service lubrication interval as given in table 2 or 3 is reached, apply the lubricant quantity as stated in table 1.

If the equipment is to operate in an environment subject to contamination, vibration, shock loads, etc., or where cooling lubricants are used, we recommend shortening the in-service lubrication interval.

The smaller the load, the longer the intervals between in-service lubrication will be.

For runner blocks, with ball retainer as an option: 16..-...-20, 16..-...-22

Size	In-service lubrication intervals under normal operating conditions Travel (km)
	Load ≤ 0.15 C
15	5000
20	5000
25	10000
30	10000
35	10000

Table 2

For runner blocks: 16..-...-10, 16..-...-11

Size	In-service lubrication intervals under normal operating conditions Travel (km)
	Load ≤ 0.15 C
15	1000
20	1000
25	1000
30	1000
35	500
45	250
55	150
65	100
20/40	1000
25/70	1000
35/90	500

Table 3

Maintenance and Lubrication

Oil lubrication

Oil quantities for initial and in-service lubrication

⚠ Add the entire oil quantity in one go!

Runner blocks that have been initially lubricated at the plant can be re-lubricated with oil.

If the equipment is to operate in an environment subject to contamination, vibration, shock loads, etc., or where cooling lubricants are used, we recommend shortening the in-service lubrication interval.

* If runner block is not initially lubricated at the plant, perform initial lubrication with double the oil quantity.

For runner blocks, with ball retainer as an option: 16..-...-20, 16..-...-22

Size	Oil Lubrication Initial and in-service lubrication* (cm^3)
15	0.4
20	0.7
25	1.0
30	1.1
35	1.2

Size	Oil lubrication In-service lubrication intervals under normal operating conditions Travel (km)
	Load ≤ 0.15 C, v ≤ 1 m/s
15	3000
20	3000
25	5000
30	5000
35	3000

Table 1

For runner blocks: 16..-...-10, 16..-...-11

Size	Oil Lubrication Initial and in-service lubrication (cm^3)
15	0.4
20	0.7
25	1.0
30	1.1
35	1.2
45	2.2
55	3.6
65	6.0
20/40	0.7
25/70	1.1
35/90	1.8

Size	In-service lubrication interval under normal operating conditions Travel life (km)
	Load ≤ 0.3 C, v ≤ 1 m/s
every	40

Table 2

One-point oil lubrication

Oil quantities and lubrication intervals of central lubrication

Notes:

Recommended interval between two pulses: 10 seconds.

Example for size 45:
4 pulses of 0.6 cm^3 each in 30 seconds.

If the equipment is to operate in an environment subject to contamination, vibration, shock loads, etc., or where cooling lubricants are used, we recommend shortening the in-service lubrication interval.

* If runner block is not initially lubricated at the plant, perform initial lubrication with double the number of pulses.

For runner blocks, with ball retainer as an option: 16..-...-20, 16..-...-22

Size	Oil lubrication quantity/Pulse (cm3)	Pulses* per lubrication cycle
15	0.6	1
20	0.6	1
25	0.6	2
30	0.6	2
35	0.6	2

Size	Oil lubrication In-service lubrication intervals under normal operating conditions Travel (km)
	Load ≤ 0.15 C, v ≤ 1m/s
15	3000
20	3000
25	5000
30	5000
35	3000

Table 3

For runner blocks: 16..-...-10, 16..-...-11

Size	Oil lubrication quantity/Pulse (cm3)	Pulses per lubrication cycle
15	0.6	1
20	0.6	1
25	0.6	2
30	0.6	2
35	0.6	2
45	0.6	4
55	1.5	3
65	1.5	4
20/40	0.6	1
25/70	0.6	2
35/90	0.6	2

Size	In-service lubrication interval under normal operating conditions Travel life (km)
	Load ≤ 0.3 C, v ≤ 1m/s
every	40

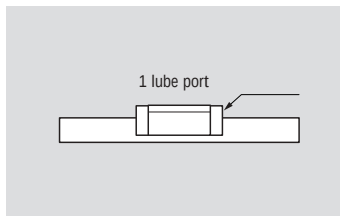
Table 4

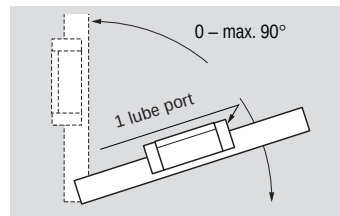
Rexroth Ball Rail Systems
Maintenance and Lubrication

Dependency on the travel length

Stroke > 2 · runner block length

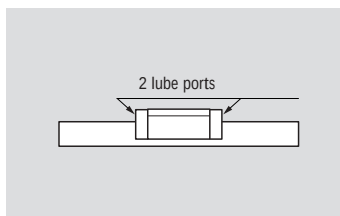
- Provide 1 lube port per runner block.
- Oil lubrication to ISO VG 220. Lubricant quantities as per previous page.

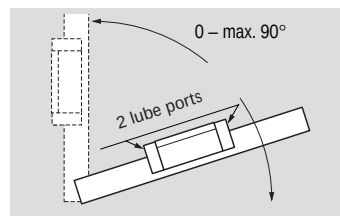




Stroke < 2 · runner block length:

- Provide 2 lube ports per runner block.
- Apply the specified lubricant quantity per lube port.
- Oil lubrication to ISO VG 220. Lubricant quantities as per previous page.

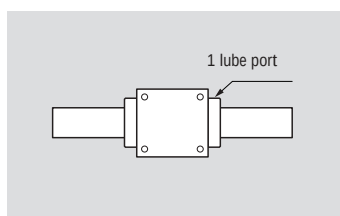


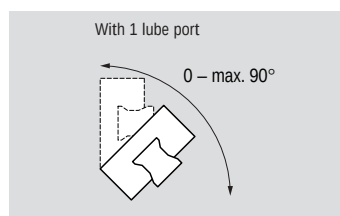


Installation at an angle about the centerline (wall mounting)

Stroke > 2 · runner block length:

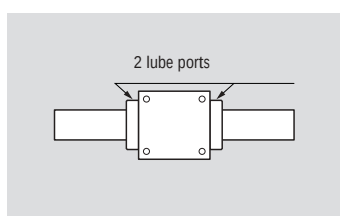
- Provide 1 lube port per runner block.
- Add the lubricant quantity as specified in table in one pulse.
- If the lubrication quantity cannot be added in one pulse, please consult us.

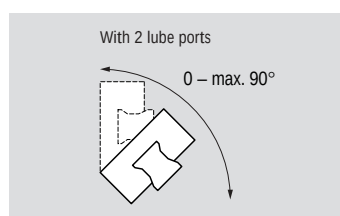




Stroke < 2 · runner block length:

- Provide 2 lube ports per runner block.
- Add the lubricant quantity as specified in table in one pulse.
- If the lubrication quantity cannot be added in one pulse, please consult us.





Maintenance and Lubrication

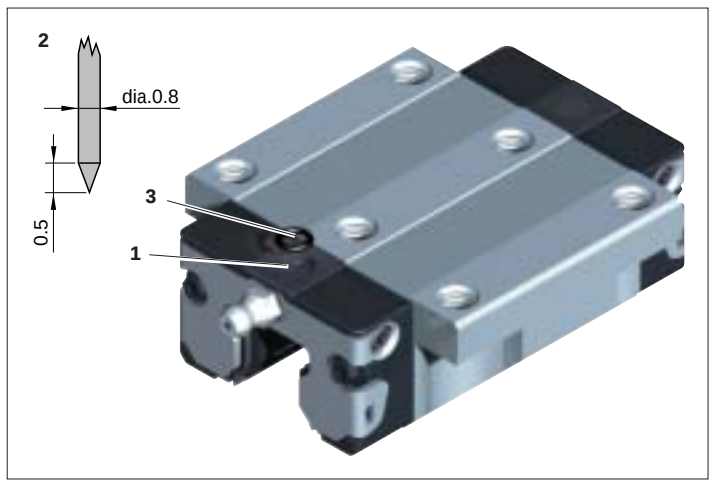
Lubricating from above

Lubricating from above without lubrication adapter

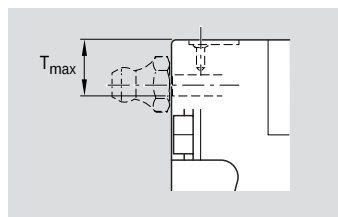
For all runner blocks with preparation for lubrication from above (exceptions: standard runner blocks 1621-... and 1624-...).

⚠ In the recess for the O-ring, a further small recess (1) has been preformed. Do not open this with a drill bit. Danger of contamination!

- Preheat the metal tip (2) with a diameter of 0.8 mm.
- Carefully open the recess (1) with the metal tip and pierce through it. Observe the maximum permissible depth T_{max} indicated in the table!
- Insert round sealing ring (3) in the recess (the round sealing ring is not supplied with the runner block).



Size	Lube hole at top: max. perm. depth for piercing T_{max} (mm)
15	3.6
20	3.9
25	3.3
30	6.6
35	7.5
45	8.8



Special Lube Ports

Lube ports mounted on the top (1) or on the sides (2) are available on request.

Rexroth Ball Rail Systems
Other Information Material

Lubrication Guide

Rexroth provides a lubrication guide specially designed linear guide rails: "Lubrication Guide", RE 82 051/2000-05

The guide covers the following topics:

- Initial lubrication, in-service lubrication
- Supply of lubricant
- Operating conditions for lubricants
- Selection table
- Suitable lubricants
- DIN standards used as basis
- Addresses of lubricant manufacturers

Selection table

Operating temperature range	Environmental and operating conditions	Applications
Normal temperature +10 °C to +35 °C	Dry, Relative air humidity 35% to 70%	Mounting devices, Transport systems
	Damp, Relative air humidity 70% to 100%	Supplies to cleaning systems
	Load from vibrations,	Printing presses, Short travel, Oscillation Molding technology, Tensioning technology, Injection-molding machines
	High mechanical-dynamic loads	Machine tools, Robots
	Clean room / Vacuum	Computer industry Printed circuit board production
	Food industry USDA H1 requirements USDA H2 requirements	Filling systems Packaging, Food Pharmaceuticals Cosmetics industry, Beverages industry
	Watery media	Machine tools, Cleaning systems
	Diluted acids, alkalis, Salt solutions (max. 10% solutions)	Pickling systems, Galvanization, Bottle washing
High-temperature up to +100 °C	Dry, rel. air humidity 35% to 70%, Damp, rel. air humidity 70% to 100%	Paper processing, Hardening systems, Steam degreasing
Low temperature up to -40 °C	Dry, rel. air humidity 35% to 70%	Aerospace, Cooling machines

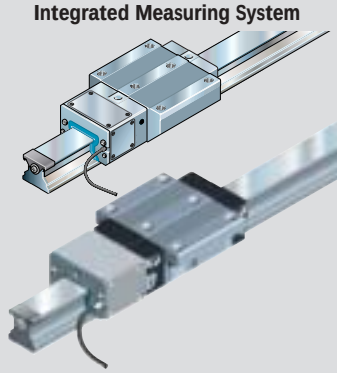
DIN standards used as basis

Content	DIN
Short description of lubricants	DIN 51502 22
Lubrication greases K, KP, KF, KPF	DIN 51825 24
Lubrication oils C, CL, CLP, CGLP	DIN 51517 24
Hydraulic oils HL, HLP, HVLP	DIN 51524 25
ISO viscosity classification for lubrication oils	DIN 51519 26

Other Information Material

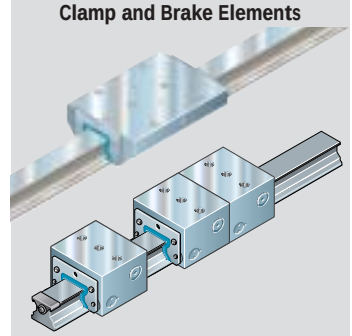
Special Catalogs

Integrated Measuring System



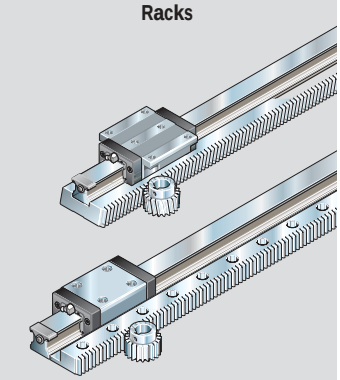
Catalog "Ball and Roller Rail Systems with Integrated Measuring System", RE 82 350

Clamp and Brake Elements



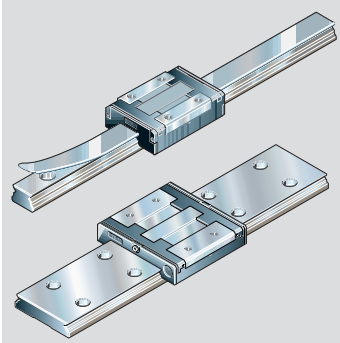
Catalog "Ball and Roller Rail Systems, Hydraulic Clamp Elements, Pneumatic Brake Elements", RE 82 215

Racks



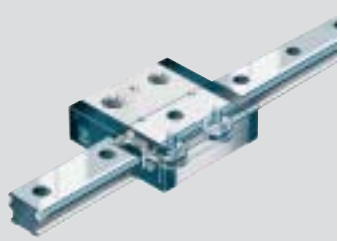
Catalog "Ball and Roller Rail Systems with Rack", RE 82 217

Miniature Ball Rail Systems



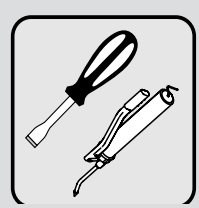
Catalog "Miniature Ball Rail Systems", RE 82 210

Cam Roller Guides



Catalog "Cam Roller Guides", RE 82 101

Mounting Instructions



Catalog "Mounting Instructions for Ball Rail Systems", RD EFI 82 270

Rexroth
Bosch Group

Rexroth Star GmbH
D-97419 Schweinfurt
Member of the Bosch Rexroth Group
Telephone +49-97 219 37-937-0
Telefax (general) +49- 97 21 9 37-2 75
Telefax (direct) +49- 97 21 9 37-2 50
Internet www.boschrexroth.com/brl
E-mail info.brl@boschrexroth.de

Ball Rail Systems
RE 82 202/2002-12
Printed in Germany – p 2002/04/1.5/St