General Product Description

New Features at a Glance

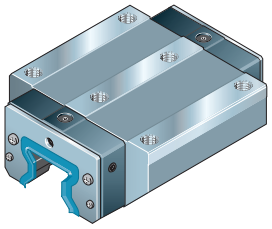
New Runner Blocks for oil and grease lubrication from above

The dimensions, load capacities, rigidity and moment loads correspond to those of standard runner blocks R18.. ... 10.

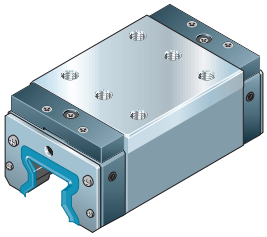
Special feature:
Runner blocks R18.. ... 16 have been prepared for oil and grease lubrication from above. In the high runner blocks S.H, the vertical clearance between the end caps and an attachment mounting surface with integrated lube adapters has been designed for ease of maintenance.

How to recognize them:
The top lube holes at both ends have already been opened, but they are closed with screws for shipment (O-rings for sealing the lube fittings are provided with the runner blocks).

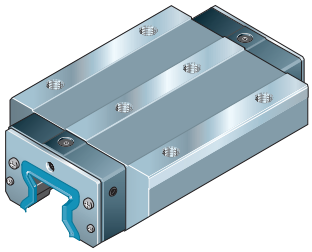
FNS R1851 ... 16



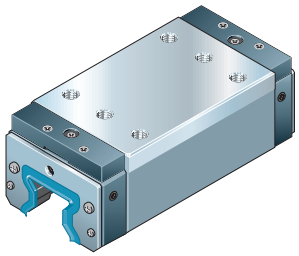
SNH R1821 ... 16



FLS R1853 ... 16



SLH R1824 ... 16



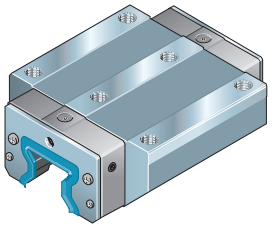
New Runner Blocks (exclusively) for central oil lubrication via dosing valves

The dimensions, load capacities, rigidity and moment loads correspond to those of standard runner blocks R18.. ... 10.

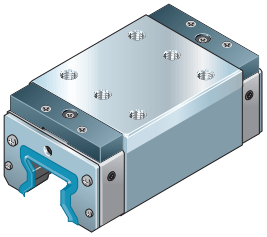
Special feature:
Runner blocks R18.. ... 17 have smaller lube ducts. They need only small quantities of lube oil even when wall-mounted and are therefore suitable for all mounting orientations.

How to recognize them:
The end caps are gray. In the high runner blocks S.H, the vertical clearance between the end caps and an attachment mounting surface with integrated lube adapters has been designed for ease of maintenance. The top lube holes have already been opened, but they are closed with screws for shipment (O-rings for sealing the lube fittings are provided with the runner blocks).

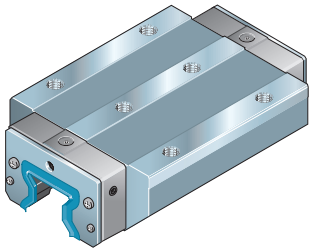
FNS R1851 ... 17



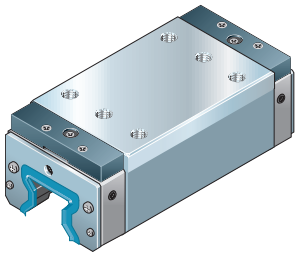
SNH R1821 ... 17



FLS R1853 ... 17



SLH R1824 ... 17



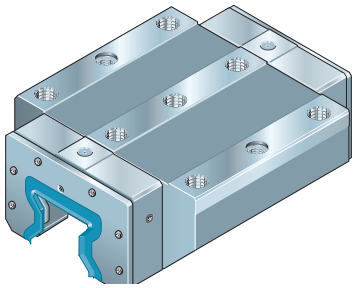
Runner block short names
FNS = Flanged, normal, standard height
FLS = Flanged, long, standard height
SNH = Slimline, normal, high
SLH = Slimline, long, high

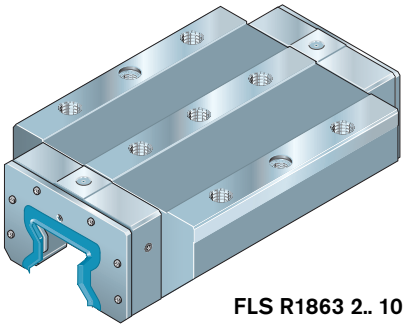
Heavy Duty Runner Blocks now also in size 100

Heavy duty steel runner blocks now also available in size 100.

Options
Corrosion-resistant runner blocks, Resist CR, matte silver hard chrome plated.
Part numbers: FNS R1861 2.. 60 or FLS R1863 2.. 60

FNS R1861 2.. 10





(Illustrations not to scale) **FLS R1863 2.. 10**

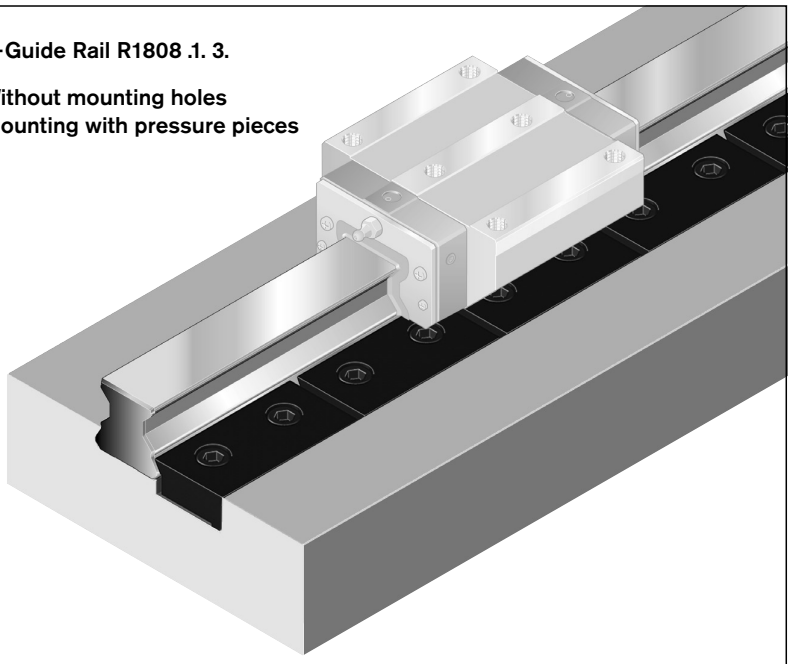
New V-Guide Rails without mounting holes

Special feature:
The V-guide rails R1808 .1. 3. have no mounting holes. Instead, pressure pieces are used to push them up against an inclined reference edge, align them and fix them in place.

Advantages:
- Optimally smooth runner block travel, since there are no mounting holes in the guide rail
- Improved straightness through uninterrupted guide rail profile
- Smooth rail surface for optimal sealing action
- Cost-saving – only one row of holes necessary for mounting and alignment
- Number of pressure pieces can be varied to match loads
- Mounting base can be machined using standard profile milling tools

V-Guide Rail R1808 .1. 3.

Without mounting holes
Mounting with pressure pieces



New Resist CR coating: matte silver hard chrome plated

Corrosion-resistant runner blocks and guide rails in Resist CR, matte silver hard chrome plated, replace the runner blocks and guide rails with zinc-iron coating.
Resist CR runner blocks and guide rails come in accuracy class H; accuracy classes P and SP on request.

One-piece Resist CR guide rails are available in two versions:
- End faces **uncoated**, on request in some cases
- End faces, chamfers and end-face threads coated

In composite Resist CR guide rails the joint faces are coated as well as the end faces.

New codes for Roller Runner Block preload classes

Preload classes
C1 = preload 3% C, manufactured on special request
C2 = preload 8% C
C3 = preload 13% C

Wide and heavy duty runner blocks are not available in preload class C1.
Please refer also to “Selection of System Preload”.

General Product Description

Product Description

Outstanding features

Rexroth Roller Rail Systems were specially developed for use in machine tools, industrial robots and general machine construction applications calling for compact, rolling-element linear motion guideways. They are available in various accuracy classes, each with extremely high load capacity and high rigidity. Standard Roller Rail Systems are suitable for all typical applications. These space-saving assemblies in many common sizes afford the same high load capacities in all four major planes of load application. Standard runner blocks can also be supplied for special conditions of installation and use and for special working environments. Wide Roller Rail Systems were developed to cater for high moment loads and highest rigidity requirements. For heavy duty applications there is a choice of Heavy Duty Roller Rail Systems.

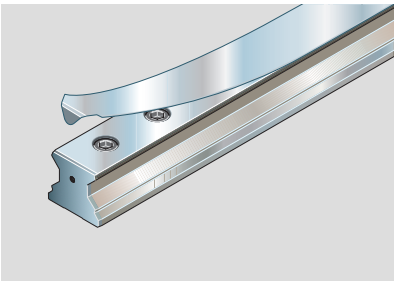
Make up your own compact linear motion guideways from interchangeable standard stock elements...

Rexroth fabricates its guide rails and runner blocks with such high precision that each individual component element can be replaced by another at any time. This makes infinite combinations possible. Each element can be individually ordered and separately stocked. Both sides of the guide rail can be used as reference edges.
Accessories can be simply attached to the ends of the runner block.

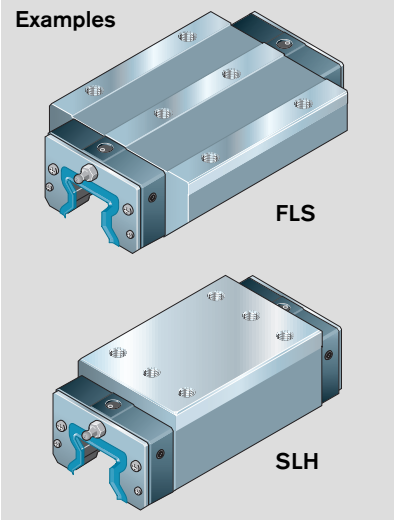
Further highlights

- Uniform guide rail profile with or without cover strip allows unrestricted interchangeability of components across all runner block variants.
- Lube ports on all sides for maximum ease of maintenance
- Novel lube duct design minimizes lubricant consumption.
- Smooth running thanks to optimized roller recirculation and guidance
- Mounting of attachments to runner block from above or below
- Maximum rigidity under load from all directions through two additional mounting screw holes at the center of the runner block
- High torque capacity
- Optimized entry-section geometry and high number of rollers per track minimizes variation in elastic deflection.
- The runner block simply slides off its arbor and onto the rail.
- Integrated all-round sealing as standard

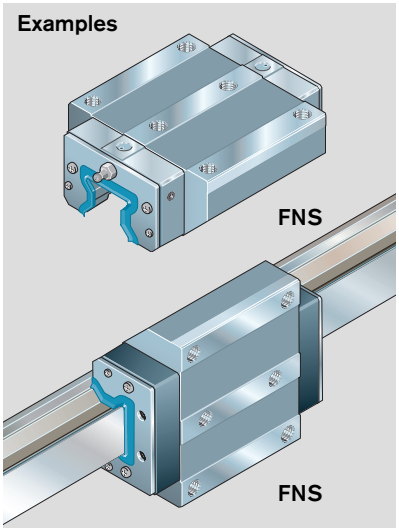
Options
- Corrosion-resistant runner blocks and guide rails in Resist CR, matte silver hard chrome plated, come in accuracy class H; accuracy classes P and SP on request



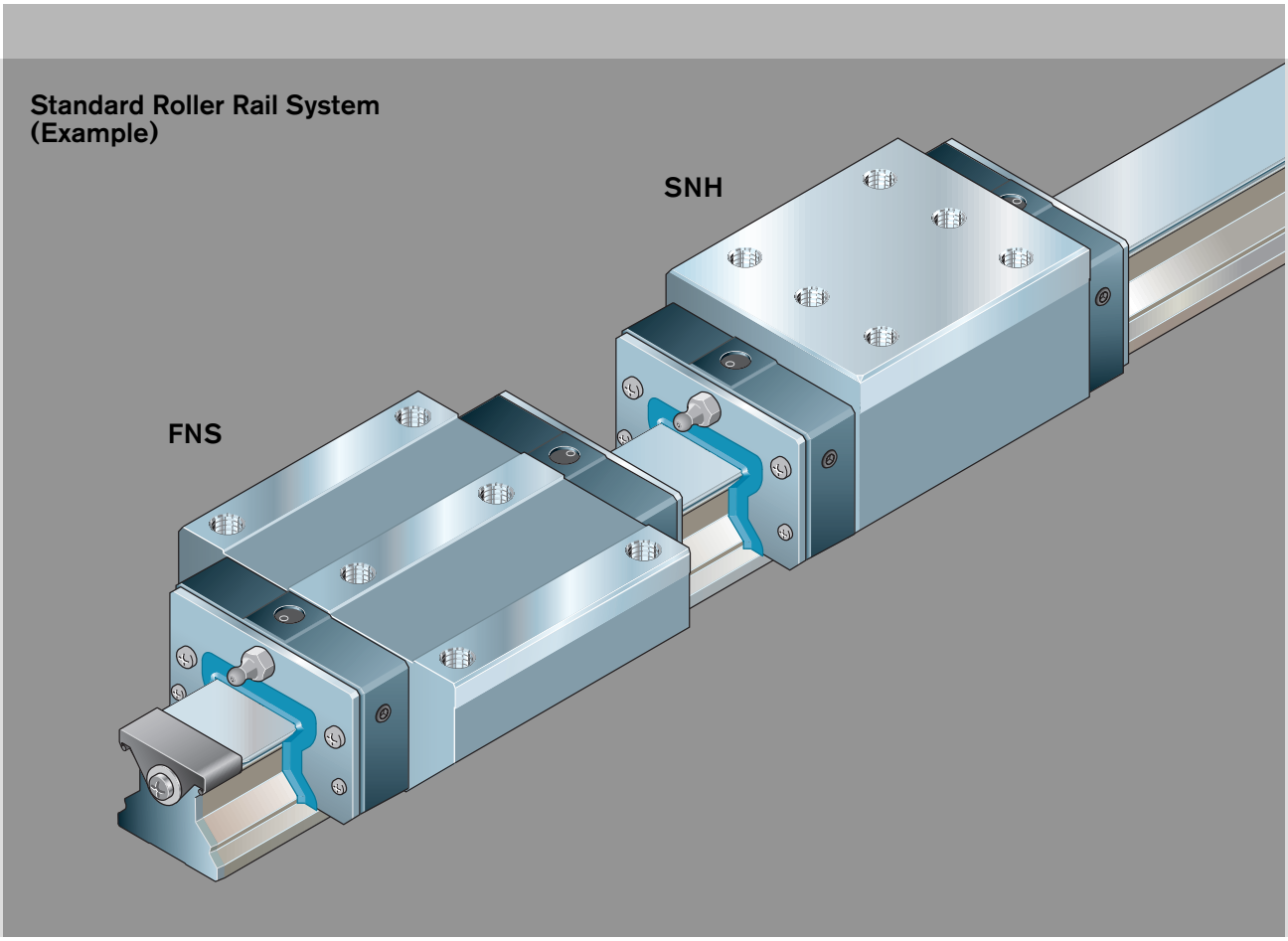
Proven cover strip for guide rail mounting holes
- A **single** cover for all holes – saves time and money
- Stainless spring steel to EN 10088
- Easy to fit – simply clip on and secure

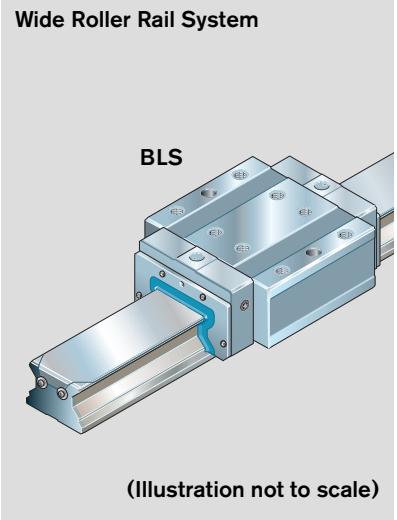


Runner block short names
FNS = Flanged, normal, standard height
FLS = Flanged, long, standard height
BLS = Wide, long, standard height
SNH = Slimline, normal, high
SLH = Slimline, long, high

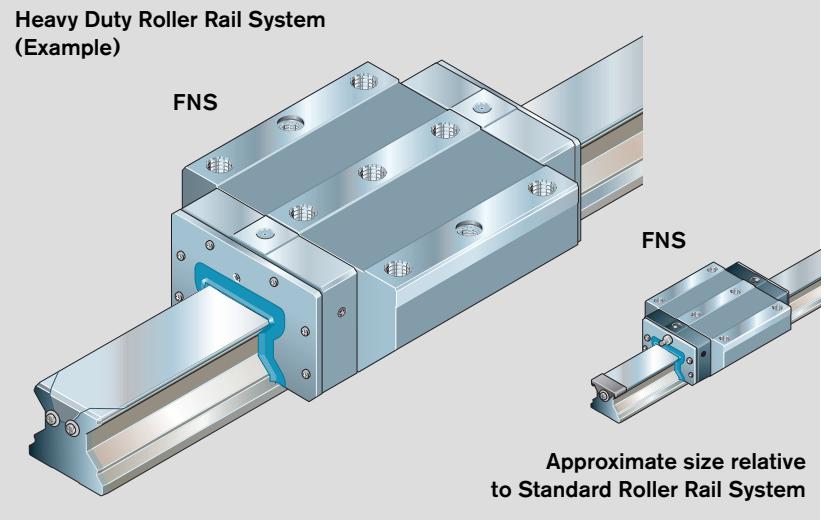


Runner blocks for special installation conditions and working environments
- with aluminum end caps
- for lubrication from above
- for wall mounting





Wide Roller Rail Systems for high moment loads, highest rigidity and travel accuracy

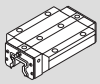
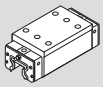
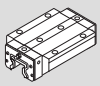
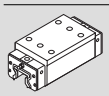
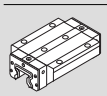
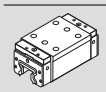
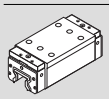


Heavy Duty Roller Rail Systems for heavy duty applications

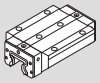
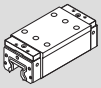
Approximate size comparison: Heavy Duty vs. Standard (example):
- Heavy duty runner block FNS R1861 on guide rail R1835 (size 125)
- Standard runner block FNS R1851 on guide rail R1805 (size 45)

General Product Description

Product Overview with Load Capacities

Standard Steel Runner Blocks		Page	Size	25	35	45	55	65
				Load capacities[1] (N)				
Steel runner blocks	 **Flanged, normal, standard height FNS R1851 … 10**	**38**	**C**	26 900	56 300	92 300	128 900	207 000
			$\mathbf{C_0}$	53 200	113 500	184 800	248 600	382 000
	 **Flanged, long, standard height FLS R1853 … 10**	**40**	**C**	33 300	69 700	119 200	165 000	265 500
			$\mathbf{C_0}$	70 000	149 300	256 600	345 300	525 600
	 **Slimline, normal, high SNH R1821 … 10**	**42**	**C**	26 900	56 300	92 300	128 900	–
			$\mathbf{C_0}$	53 200	113 500	184 800	248 600	–
	 **Slimline, long, high SLH (SLS)[3] R1824 … 10**	**44**	**C**	33 300	69 700	119 200	165 000	265 500
			$\mathbf{C_0}$	70 000	149 300	256 600	345 300	525 600
Steel runner blocks with aluminum end caps	 **Flanged, normal, standard height FNS R1851 … 13**	**46**	**C**	–[2]	56 300	92 300	128 900	207 000
			$\mathbf{C_0}$	–[2]	113 500	184 800	248 600	382 000
	 **Flanged, long, standard height FLS R1853 … 13**	**46**	**C**	–[2]	69 700	119 200	165 000	265 500
			$\mathbf{C_0}$	–[2]	149 300	256 600	345 300	525 600
	 **Slimline, normal, high SNH R1821 … 13**	**46**	**C**	–[2]	56 300	92 300	128 900	–
			$\mathbf{C_0}$	–[2]	113 500	184 800	248 600	–
	 **Slimline, long, high SLH (SLS)[3] R1824 … 13**	**46**	**C**	–[2]	69 700	119 200	165 000	265 500
			$\mathbf{C_0}$	–[2]	149 300	256 600	345 300	525 600
Steel runner blocks for oil and grease lubrication from above	 **Flanged, normal, standard height FNS R1851 … 16**	**48**	**C**	26 900	56 300	92 300	128 900	207 000
			$\mathbf{C_0}$	53 200	113 500	184 800	248 600	382 000
	 **Flanged, long, standard height FLS R1853 … 16**	**48**	**C**	33 300	69 700	119 200	165 000	265 500
			$\mathbf{C_0}$	70 000	149 300	256 600	345 300	525 600
	 **Slimline, normal, high SNH R1821 … 16**	**48**	**C**	26 900	56 300	92 300	128 900	–
			$\mathbf{C_0}$	53 200	113 500	184 800	248 600	–
	 **Slimline, long, high SLH R1824 … 16**	**48**	**C**	33 300	69 700	119 200	165 000	–
			$\mathbf{C_0}$	70 000	149 300	256 600	345 300	–

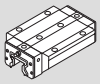
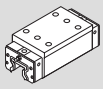
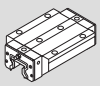
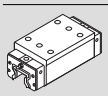
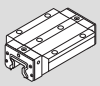
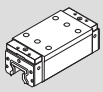
1) Basis for load capacities: The dynamic load capacities C are based on 100,000 m travel.
However, a travel of just 50,000 m is often taken as a basis. If this is the case, for comparison purposes: Multiply values **C** from the table by 1.23.
2) Size 25 in preparation
3) Size 65: Slimline, long, standard height SLS

Standard Steel Runner Blocks		Page	Size	25	35	45	55	65
				Load capacities[1] (N)				
Steel runner blocks for central oil lubrication systems	 **Flanged, normal, standard height FNS R1851 ... 17**	**50**	**C**	–	56 300	92 300	128 900	–
			$\mathbf{C_0}$	–	113 500	184 800	248 600	–
	 **Flanged, long, standard height FLS R1853 ... 17**	**50**	**C**	–	69 700	119 200	165 000	–
			$\mathbf{C_0}$	–	149 300	256 600	345 300	–
	 **Slimline, normal, high SNH R1821 ... 17**	**50**	**C**	–	56 300	92 300	128 900	–
			$\mathbf{C_0}$	–	113 500	184 800	248 600	–
	 **Slimline, long, high SLH R1824 ... 17**	**50**	**C**	–	69 700	119 200	165 000	–
			$\mathbf{C_0}$	–	149 300	256 600	345 300	–
Steel runner blocks for wall mounting	 **Flanged, normal, standard height FNS R1851 ... 18**	**52**	**C**	–	56 300	92 300	128 900	–
			$\mathbf{C_0}$	–	113 500	184 800	248 600	–
	 **Flanged, long, standard height FLS R1853 ... 18**	**52**	**C**	–	69 700	119 200	165 000	–
			$\mathbf{C_0}$	–	149 300	256 600	345 300	–
	 **Flanged, long, standard height FLS R1859 620 31**	**53**	**C**	–	–	–	–	265 500
			$\mathbf{C_0}$	–	–	–	–	525 600
	 **Slimline, normal, high SNH R1821 ... 18**	**54**	**C**	–	56 300	92 300	128 900	–
			$\mathbf{C_0}$	–	113 500	184 800	248 600	–
	 **Slimline, long, high SLH R1824 ... 18**	**55**	**C**	–	69 700	119 200	165 000	–
			$\mathbf{C_0}$	–	149 300	256 600	345 300	–

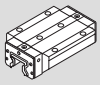
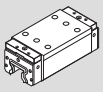
1) Basis for load capacities: The dynamic load capacities C are based on 100,000 m travel.
However, a travel of just 50,000 m is often taken as a basis. If this is the case, for comparison purposes: Multiply values **C** from the table by 1.23.

General Product Description

Product Overview with Load Capacities

Standard Resist CR[1] Runner Blocks		Page	Size	25	35	45	55	65
				Load capacities[2] (N)				
Resist CR[1] runner blocks	 **Flanged, normal, standard height FNS R1851 … 60**	**57**	**C**	26 900	56 300	92 300	128 900	207 000
			C_0	53 200	113 500	184 800	248 600	382 000
	 **Flanged, long, standard height FLS R1853 … 60**	**57**	**C**	33 300	69 700	119 200	165 000	265 500
			C_0	70 000	149 300	256 600	345 300	525 600
	 **Slimline, normal, high SNH R1821 … 60**	**57**	**C**	26 900	56 300	92 300	128 900	–
			C_0	53 200	113 500	184 800	248 600	–
	 **Slimline, long, high SLH (SLS)[4] R1824 … 60**	**57**	**C**	33 300	69 700	119 200	165 000	265 500
			C_0	70 000	149 300	256 600	345 300	525 600
Resist CR[1] runner blocks with aluminum end caps	 **Flanged, normal, standard height FNS R1851 … 63**	**58**	**C**	–[3]	56 300	92 300	128 900	207 000
			C_0	–[3]	113 500	184 800	248 600	382 000
	 **Flanged, long, standard height FLS R1853 … 63**	**58**	**C**	–[3]	69 700	119 200	165 000	265 500
			C_0	–[3]	149 300	256 600	345 300	525 600
	 **Slimline, normal, high SNH R1821 … 63**	**58**	**C**	–[3]	56 300	92 300	128 900	–
			C_0	–[3]	113 500	184 800	248 600	–
	 **Slimline, long, high SLH (SLS)[4] R1824 … 63**	**58**	**C**	–[3]	69 700	119 200	165 000	265 500
			C_0	–[3]	149 300	256 600	345 300	525 600
Resist CR[1] runner blocks for oil and grease lubrication from above	 **Flanged, normal, standard height FNS R1851 … 66**	**59**	**C**	26 900	56 300	92 300	128 900	207 000
			C_0	53 200	113 500	184 800	248 600	382 000
	 **Flanged, long, standard height FLS R1853 … 66**	**59**	**C**	33 300	69 700	119 200	165 000	265 500
			C_0	70 000	149 300	256 600	345 300	525 600
	 **Slimline, normal, high SNH R1821 … 66**	**59**	**C**	26 900	56 300	92 300	128 900	–
			C_0	53 200	113 500	184 800	248 600	–
	 **Slimline, long, high SLH R1824 … 66**	**59**	**C**	33 300	69 700	119 200	165 000	–
			C_0	70 000	149 300	256 600	345 300	–

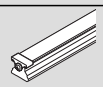
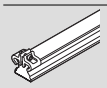
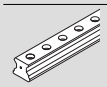
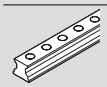
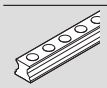
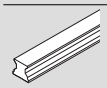
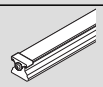
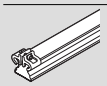
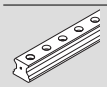
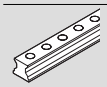
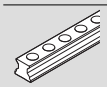
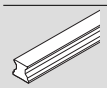
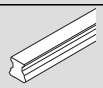
1) Corrosion-resistant runner blocks, Resist CR, matte silver hard chrome plated, replace runner blocks with zinc-iron coating.
2) Basis for load capacities: The dynamic load capacities C are based on 100,000 m travel.
However, a travel of just 50,000 m is often taken as a basis. If this is the case, for comparison purposes: Multiply values **C** from the table by 1.23.
3) Size 25 in preparation
4) Size 65: Slimline, long, standard height SLS

Standard Resist CR[1] Runner Blocks		Page	Size	25	35	45	55	65
				Load capacities[2] (N)				
Resist CR[1] runner blocks for central oil lubrication systems	 **Flanged, normal, standard height FNS R1851 ... 67**	**60**	**C**	–	56 300	92 300	128 900	–
			C_0	–	113 500	184 800	248 600	–
	 **Flanged, long, standard height FLS R1853 ... 67**	**60**	**C**	–	69 700	119 200	165 000	–
			C_0	–	149 300	256 600	345 300	–
	 **Slimline, normal, high SNH R1821 ... 67**	**60**	**C**	–	56 300	92 300	128 900	–
			C_0	–	113 500	184 800	248 600	–
	 **Slimline, long, high SLH R1824 ... 67**	**60**	**C**	–	69 700	119 200	165 000	–
			C_0	–	149 300	256 600	345 300	–
Resist CR[1] runner blocks for wall mounting	 **Flanged, normal, standard height FNS R1851 ... 68**	**61**	**C**	–	56 300	92 300	128 900	–
			C_0	–	113 500	184 800	248 600	–
	 **Flanged, long, standard height FLS R1853 ... 68**	**61**	**C**	–	69 700	119 200	165 000	–
			C_0	–	149 300	256 600	345 300	–
	 **Slimline, normal, high SNH R1821 ... 68**	**61**	**C**	–	56 300	92 300	128 900	–
			C_0	–	113 500	184 800	248 600	–
	 **Slimline, long, high SLH R1824 ... 68**	**61**	**C**	–	69 700	119 200	165 000	–
			C_0	–	149 300	256 600	345 300	–

1) Corrosion-resistant runner blocks, Resist CR, matte silver hard chrome plated, replace runner blocks with zinc-iron coating.
2) Basis for load capacities: The dynamic load capacities C are based on 100,000 m travel.
However, a travel of just 50,000 m is often taken as a basis. If this is the case, for comparison purposes: Multiply values **C** from the table by 1.23.

General Product Description

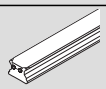
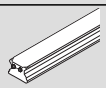
Product Overview with Rail Lengths

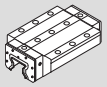
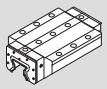
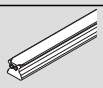
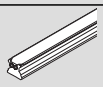
Guide Rails			Page	Size	25	35	45	55	65
					Maximum length per one-piece section (mm)				
Standard steel guide rails		**R1805 .6. ..** For mounting from above, with cover strip and screw-down protective caps	**64**		4 000	6 000[2)]	6 000[2)]	6 000[2)]	6 000[2)]
		**R1805 .3. ..** For mounting from above, with cover strip and strip clamp	**66**		4 000	6 000[2)]	6 000[2)]	6 000[2)]	6 000[2)]
		**R1805 .2. ..** For mounting from above, for cover strip	**68**		4 000	6 000[2)]	6 000[2)]	6 000[2)]	6 000[2)]
		**R1805 .5. ..** For mounting from above, with plastic mounting hole plugs	**70**		4 000	6 000[2)]	6 000[2)]	6 000[2)]	6 000[2)]
		**R1806 .5. ..** For mounting from above, for steel mounting hole plugs	**72**		4 000	6 000[2)]	6 000[2)]	6 000[2)]	6 000[2)]
		**R1807 .0. ..** For mounting from below	**74**		4 000	4 000	4 000	4 000	4 000
Standard Resist CR[1)] guide rails		**R1845 .6. ..** For mounting from above, with cover strip and screw-down protective caps	**77**		4 000	4 000	4 000	4 000	4 000
		**R1845 .3. ..** For mounting from above, with cover strip and strip clamp	**77**		4 000	4 000	4 000	4 000	4 000
		**R1845 .7. ..** For mounting from above, for cover strip	**78**		4 000	4 000	4 000	4 000	4 000
		**R1845 .0. ..** For mounting from above, with plastic mounting hole plugs	**79**		4 000	4 000	4 000	4 000	4 000
		**R1846 .0. ..** For mounting from above, for steel mounting hole plugs	**80**		4 000	4 000	4 000	4 000	4 000
		**R1847 .0. ..** For mounting from below	**81**		4 000	4 000	4 000	4 000	4 000
V-guide rails		**R1808 .1. 3.** Without mounting holes, for mounting with pressure pieces	**84**		–	4 000	4 000	4 000	4 000[3)]

1) Corrosion-resistant guide rails, Resist CR, matte silver hard chrome plated, replace guide rails with zinc-iron coating.
2) Maximum one-piece length up to 6000 mm only for special cases: The standard guide rail length is up to 4000 mm.
3) Size 65 in preparation

General Product Description

Product Overview with Load Capacities and Rail Lengths

Wide Roller Rail Systems			Page	Size	55/85	65/100
					Load capacities[2] (N)	
Wide steel runner blocks		**Wide, long, standard height BLS R1872 … 10**	**92**	**C** **C_0**	165 000 345 300	265 000 525 600
Wide Resist CR[1] runner blocks		**Wide, long, standard height BLS R1872 … 60**	**92**	**C** **C_0**	165 000 345 300	265 000 525 600
					Maximum length per one-piece section (mm)	
Wide steel guide rails		**R1875 .6. ..** For mounting from above, with cover strip, screws and washers	**94**		4 000	6 000
Wide Resist CR[1] guide rails		**R1873 .6. ..** For mounting from above, with cover strip, screws and washers	**94**		4 000	4 000

Heavy Duty Roller Rail Systems			Page	Size	100	125
					Load capacities[2] (N)	
Heavy duty steel runner blocks		**Flanged, normal, standard height FNS R1861 … 10**	**100**	**C** **C_0**	461 000 811 700	757 200 1 324 000
		**Flanged, long, standard height FLS R1863 … 10**	**102**	**C** **C_0**	632 000 1 220 000	1 020 000 1 941 900
Heavy duty Resist CR[1] runner blocks		**Flanged, normal, standard height FNS R1861 … 60**	**100**	**C** **C_0**	461 000 811 700	757 200 1 324 000
		**Flanged, long, standard height FLS R1863 … 60**	**102**	**C** **C_0**	632 000 1 220 000	1 020 000 1 941 900
					Maximum length per one-piece section (mm)	
Heavy duty steel guide rails		**R1835 .6. ..** For mounting from above, with cover strip, screws and washers	**104**		3 900	2 900
Heavy duty Resist CR[1] guide rails		**R1865 .6. ..** For mounting from above, with cover strip, screws and washers	**104**		3 900	2 900

1) Corrosion-resistant runner blocks and guide rails in Resist CR, matte silver hard chrome plated, replace the runner blocks and guide rails with zinc-iron coating.

2) Basis for load capacities: The dynamic load capacities C are based on 100,000 m travel. However, a travel of just 50,000 m is often taken as a basis. If this is the case, for comparison purposes: Multiply values **C** from the table by 1.23.

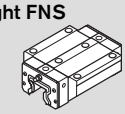
General Product Description

Combination Options

Rexroth profiled rail systems are no “off-the-peg” products.
They can be assembled in any desired combination for optimal customization to the user’s specific application, true to our motto:
Make up your own compact linear motion guideways from interchangeable standard stock elements…
Modular design at its best.

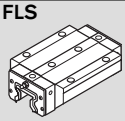
Standard runner blocks

Flanged, normal, standard height FNS



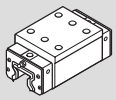
Steel:
R1851 … 10
R1851 … 13 with aluminum end caps
R1851 … 16 for oil and grease lubrication from above
R1851 … 17 for central oil lubrication systems
R1851 … 18 for wall mounting
Resist CR[1]:
R1851 … 6. (last digit same as in corresponding steel runner block)

Flanged, long, standard height FLS



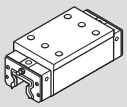
Steel:
R1853 … 10
R1853 … 13 with aluminum end caps
R1853 … 16 for oil and grease lubrication from above
R1853 … 17 for central oil lubrication systems
R1853 … 18 for wall mounting
Resist CR[1]:
R1853 … 6. (last digit same as in corresponding steel runner block)

Slimline, normal, high SNH



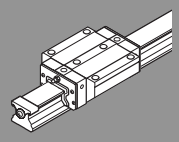
Steel:
R1821 … 10
R1821 … 13 with aluminum end caps
R1821 … 16 for oil and grease lubrication from above
R1821 … 17 for central oil lubrication systems
R1821 … 18 for wall mounting
Resist CR[1]:
R1821 … 6. (last digit same as in corresponding steel runner block)

Slimline, long, high SLH



Steel:
R1824 … 10
R1824 … 13 with aluminum end caps
R1824 … 16 for oil and grease lubrication from above
R1824 … 17 for central oil lubrication systems
R1824 … 18 for wall mounting
Resist CR[1]:
R1824 … 6. (last digit same as in corresponding steel runner block)

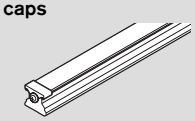
…can be combined with…



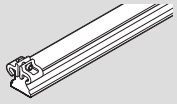
to form a complete guideway unit.

Standard guide rails

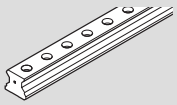
For mounting from above, with cover strip and screw-down protective caps
R1805 .6. ..
Steel
R1845 .6. ..
Resist CR[1]



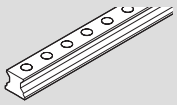
For mounting from above, with cover strip and strip clamp
R1805 .3. ..
Steel
R1845 .3. ..
Resist CR[1]



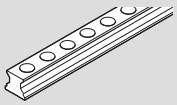
For mounting from above, for cover strip
R1805 .2. ..
Steel
R1845 .7. ..
Resist CR[1]



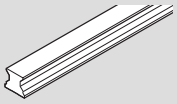
For mounting from above, with plastic mounting hole plugs
R1805 .5. ..
Steel
R1845 .0. ..
Resist CR[1]



For mounting from above, for steel mounting hole plugs
R1806 .5. ..
Steel
R1846 .0. ..
Resist CR[1]

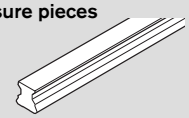


For mounting from below
R1807 .0. ..
Steel
R1847 .0. ..
Resist CR[1]



V-guide rails

Without mounting holes, for mounting with pressure pieces
R1808 .1. 3.
Steel

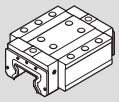


1) Corrosion-resistant runner blocks and guide rails in Resist CR, matte silver hard chrome plated, replace the runner blocks and guide rails with zinc-iron coating.

Wide runner blocks

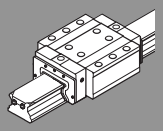
Wide, long, standard height BLS

R1872 … 10
Steel



R1872 … 60
Resist CR[1)]

…can be combined with…

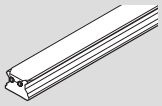


to form a complete guideway unit.

Wide guide rails

For mounting from above, with cover strip, screws and washers

R1875 .6. ..
Steel

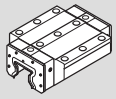


R1873 .6. ..
Resist CR[1)]

Heavy duty runner blocks

Flanged, normal, standard height FNS

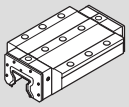
R1861 … 10
Steel



R1861 … 60
Resist CR[1)]

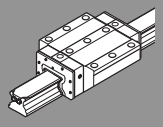
Flanged, long, standard height FLS

R1863 … 10
Steel



R1863 … 60
Resist CR[1)]

…can be combined with…

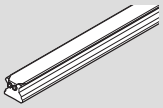


to form a complete guideway unit.

Heavy duty guide rails

For mounting from above, with cover strip, screws and washers

R1835 .6. ..
Steel



R1865 .6. ..
Resist CR[1)]

1) Corrosion-resistant runner blocks and guide rails in Resist CR, matte silver hard chrome plated, replace the runner blocks and guide rails with zinc-iron coating.

General Product Description

General Technical Data and Calculations

General Notes

The general technical data and calculations apply to all Roller Rail Systems, i.e., to all runner blocks and guide rails.

Special technical data relating to the individual runner blocks and guide rails is given separately.

Preload classes

To cater for the widest possible range of applications Rexroth roller runner blocks (RB) are provided in different preload classes.

The following preload classes are available as standard:
- RB with preload 8% C (preload class C2)
- RB with preload 13% C (preload class C3)

Special version on request:
- RB with preload 3% C (preload class C1)
- RB with preload >13% C (example: 17% C)

To prevent any reduction of service life, the preload should not exceed 1/3 of the bearing load F.

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

Guides with parallel rails

In addition to the preload class, the permissible parallelism offset of the rails must also be taken into account (see “Selection of Accuracy Classes”).

Speed

$v_{max} = 3^{1)}$ m/s

Speeds of up to 4 m/s are possible. Service life is limited by wear of plastic parts.

1) Sizes 100 and 125: 2 m/s

Acceleration

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

Requirement:
The Roller Rail System must always be preloaded, even when operated under load!

Operating temperature range

–10 °C … 80 °C

Brief peaks up to 100°C are permissible.

For even lower sub-zero temperatures, please consult us.

Friction

The table lists reference values for the frictional force in a sealed and lubricated complete runner block.
When the runner block starts to move, the frictional force can be 1.5 to 2 times the given value, depending on the length of time it has been at a standstill, as well as the type, quantity and condition of the lubricant, and the amount of dirt that has accumulated on the guide rail. This applies to all runner blocks in all preload classes.

Size	Frictional drag F_R (N)
25	30
35	40
45	60
55	70
65	90
55/85	70
65/100	90
100	approx. 400[1)]
125	600[1)]

1) Directly after lubrication, the frictional drag will be approx. 50% higher.

The friction coefficient μ is approx. 0.0004 to 0.001 (excluding seal friction).

Seals/scrapers

Additional seals and scrapers are intended to prevent dirt, chips, etc. from entering the runner block and to avoid premature termination of its useful life.

Standard version: Internal universal seal and end seal

Universal seals and end seals are standard built-in features of Rexroth runner blocks.
They provide uniform sealing efficiency on guide rails with and without cover strip.

Viton or NBR wiper seals

Wiper seals made from Viton or NBR are optional accessories to be fitted by the customer.

Viton or NBR seals
- For use in environments heavily soiled with fine dirt or metal particles
- In applications involving the use of coolants or cutting fluids in addition to the presence of dirt and metal particles, only Viton seals should be used.
- Replaceable
- Two-piece version

Metal scrapers

Metal scrapers with spacer plates are optional accessories to be fitted by the customer.

Metal scrapers with spacer plates
- For use in environments with hot metal chips or welding splatter.

General Product Description

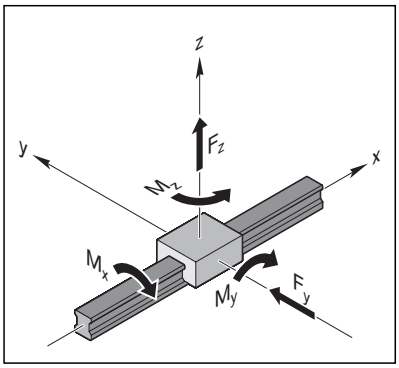
General Technical Data and Calculations

Forces and load moments

In Rexroth Roller Rail Systems the running tracks are arranged at a compression angle of 45°.
This results in the same high load capacity of the entire system in all four major planes of load application. The runner blocks may be subjected to both forces and load moments.

Forces in the four major planes of load application
- Pull F_z (positive z-direction)
- Push $-F_z$ (negative z-direction)
- Side load F_y (positive y-direction)
- Side load $-F_y$ (negative y-direction)

Moment loads
- Moment M_x (about the x-axis)
- Moment M_y (about the y-axis)
- Moment M_z (about the z-axis)



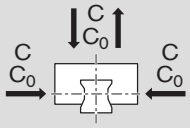
Definition of load capacities

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 (as per ISO 14728 Part 1).

Note:
The dynamic load capacities given in the tables are mostly 20% above the DIN or ISO values. They have been proven in tests.

Static 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) of 4000 MPa.

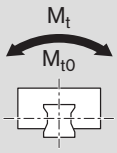
Note:
With this load on the contact point, a permanent overall deformation of the rolling element and track zone occurs, corresponding to around 0.0001 times the roller body diameter (as per ISO 14728 Part 1).



Definition of moment load capacities

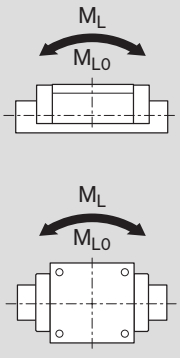
Dynamic torsional moment load capacity M_t
Comparative dynamic moment about the longitudinal axis x which causes a load equivalent to the dynamic load capacity C.

Static torsional moment load capacity M_{t0}
Comparative static moment about the longitudinal axis x which causes a load equivalent to the static load capacity C_0.



Dynamic longitudinal moment load capacity M_L
Comparative dynamic moment about the transverse axis y or the vertical axis z which causes a load equivalent to the dynamic load capacity C.

Static longitudinal moment load capacity M_{L0}
Comparative static moment about the transverse axis y or the vertical axis z which causes a load equivalent to the dynamic load capacity C_0.



Definition and calculation of the nominal life

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

If 90% probability is not sufficient, the nominal life values must be reduced by the factor a_1 as given in the table below.

Probability %	Factor a_1
90	1.00
95	0.62
96	0.53
97	0.44
98	0.33
99	0.21

Nominal life in meters

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

L_{10} = nominal life (m)
C = dynamic load capacity (N)
F_m = equivalent dynamic load on the bearing (N)

Service life in operating hours at constant stroke length and stroke frequency

If the stroke length s and the stroke frequency n are constant throughout the service life, the service life in operating hours can be calculated using formula (2).

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

L_{10} = nominal life (m)
$L_{h\,10}$ = nominal life (h)
s = length of stroke (m)
n = stroke repetition rate (full cycles) (min^{-1})

Service life in operating hours at average speed

Alternatively, the service life in operating hours at average speed v_m can be calculated using formula (3).

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

L_{10} = nominal life (m)
$L_{h\,10}$ = nominal life (h)
v_m = average speed (m/min)

When the speed is varied in steps, this average speed v_m is calculated using the discrete time steps q_{tn} of the individual load levels (4).

v_m = average speed (m/min)
$v_1 \ldots v_n$ = discrete speed steps (m/min)
$q_{t1} \ldots q_{tn}$ = discrete time steps for $v_1 \ldots v_n$ (%)

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

Notes

ISO 14728 Part 1 limits the applicability of formula (1) to equivalent dynamic loads $F_m < 0.5\ C$.

However, our tests have demonstrated that – under ideal operating conditions – this nominal life formula can be applied up to loads of $F_m = C$.

For stroke lengths less than 2 · runner block length B_1 (see dimension tables), a reduction in load capacity may have to be taken into account. Please consult us.

General Product Description

General Technical Data and Calculations

Load on bearings for calculation of nominal life

Recommended minimum load ratios

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

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

Note
In general, the load ratio should not fall below the minimum value of 4.0 for both dynamic and static loads. A higher load ratio is always required in applications requiring high rigidity and/or long life.

For pulling loads, the strength of the screws must verified. Please refer to the “Mounting Instructions” section.

Combined equivalent load on bearing

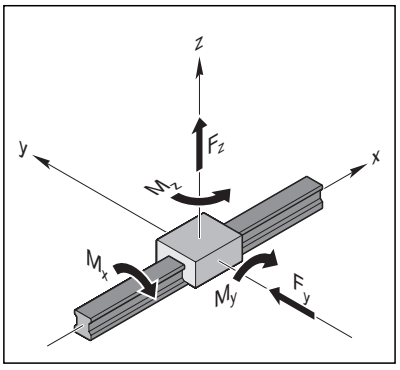
With formula (5) all of the partial loads in a particular load case can be factored in to calculate the combined equivalent load on the bearing.

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

F_{comb} = combined equivalent load on bearing (N)
$F_{m,max}$ = largest effective equivalent load on bearing (N)
$F_{eff,max}$ = maximum load occurring during the travel cycle (N)
F_y = external load due to a resulting force in the y-direction (N)

Notes
The calculation of the moment loads as shown in formula (5) applies only for applications with one single rail and one runner block. The formula is simpler for other combinations.

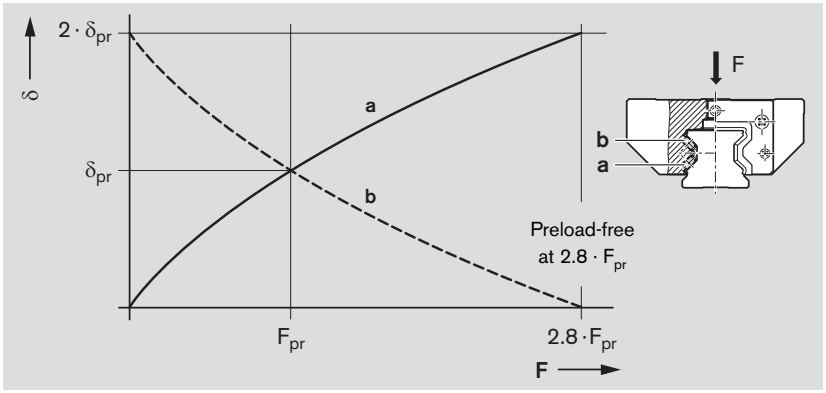
The forces and load moments shown in the coordinate system can also act in the opposite direction.
An external load acting at an angle on the runner block is to be broken down into its F_y and F_z components, and these values are then to be used in formula (5). The structure of the runner blocks allows this simplified calculation.



Allowance for internal preload force F_{pr}

To increase the rigidity and accuracy of the guide system preloaded runner blocks should be used (see also “Selection of System Preload”).

When runner blocks in preload classes C2 and C3 are used, it may be necessary to take the internal preload force into account since the two rows of rollers a and b are designed to be oversized and are therefore preloaded against each other with an internal preload force F_{pr} which causes them to deflect by the amount δ_{pr} (see chart).



a = loaded (lower) row of rollers
b = non-loaded (upper) row of rollers
δ = deflection of rollers at F
δ_{pr} = deflection of rollers at F_{pr}
F = load on the runner block
F_{pr} = internal preload force

Effective equivalent load on bearing

When an external load reaches 2.8 times the internal preload force F_{pr}, one row of rollers becomes preload-free.

Note
For highly dynamic load cases, the combined equivalent load on the bearings should be $F_{comb} < 2.8 \cdot F_{pr}$ in order to avoid damage to the roller bearings due to slip.

2 different cases should be considered:

Case 1: $F_{comb} > 2.8 \cdot F_{pr}$

In case 1, the internal preload force F_{pr} has no effect on the service life:

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

Case 2: $F_{comb} \leq 2.8 \cdot F_{pr}$

In case 2 the preload force F_{pr} is factored into the calculation of the effective

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

F_{comb} = combined equivalent load on bearing (N)
F_{eff} = effective equivalent load on bearing (N)
F_{pr} = preload force (N)

F_{pr} = 8% C (at preload class C2)
F_{pr} = 13% C (at preload class C3)

Equivalent dynamic load on bearing

For varying load levels, calculate the equivalent dynamic load on the bearings using formula (8).

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

F_m = equivalent total dynamic load on bearing (N)
$F_{eff\,1} \ldots F_{eff\,n}$ = uniform effective single loads (m/min)
$q_{s1} \ldots q_{sn}$ = discrete travel steps for $F_{eff\,1} \ldots F_{eff\,n}$ (%)

Equivalent static load on bearing

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

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

Notes
The equivalent static load on the bearing $F_{0\,comb}$ must not exceed the static load capacity C_0. Formula (9) only applies if a single guide rail is used.

An external load acting at an angle on the runner block is to be broken down into its F_{0y} and F_{0z} components, and these values are then to be used in formula (9).

$F_{0\,comb}$ = static equivalent load on bearing (N)
F_{0y} = external static load due to a force in the y-direction (N)
F_{0z} = external static load due to a force in the z-direction (N)
C_0 = static load capacity[1] (N)
M_{t0} = static torsional moment load capacity[1] (Nm)
M_{L0} = static longitudinal moment load capacity[1] (Nm)
M_{0x} = load due to a static moment load about the x-axis (Nm)
M_{0y} = load due to a static moment load about the y-axis (Nm)
M_{0z} = load due to a static moment load about the z-axis (Nm)

1) See tables for values

General Product Description

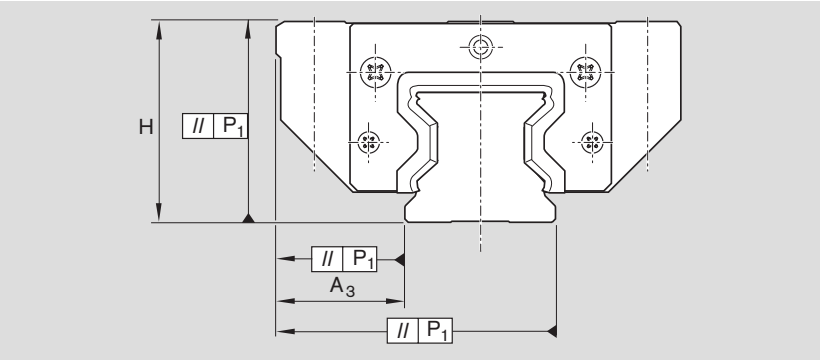
Selection of Accuracy Classes

Accuracy classes and their tolerances for Standard and Heavy Duty Roller Rail Systems

Standard roller rail systems are offered in up to five different accuracy classes, and heavy duty roller rail systems in up to three accuracy classes. For details of the available runner blocks and guide rails, see the “Part numbers” tables.

Built-in interchangeability through precision machining
Rexroth manufactures its guide rails and runner blocks with such high precision, especially in the roller track zone, that each individual component element can be replaced by another at any time.
For example, a runner block can be used without problems on various guide rails of the same size.
This applies equally to the use of different runner blocks on one and the same guide rail.

Abbreviations
RB/GR = runner block and guide rail hard chrome plated
GR = only guide rail hard chrome plated



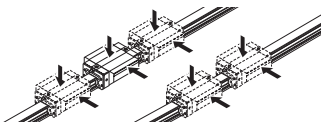
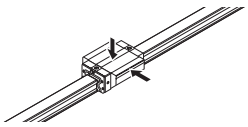
Standard and heavy duty roller rail systems, steel version

Accuracy classes	Dimensional tolerances (µm)		Max. difference in dimension H and A_3 on one guide rail (µm)
	H	A_3	$\Delta H, \Delta A_3$
H	±40	±20	15
P	±20	±10	7
SP	±10	±7	5
GP[1)]	(±10) 10	±7	5
UP	±5	±5	3

1) Dimension H: (±10) sorted by height (GP) to 10 µm (see “Combination of Accuracy Classes”)

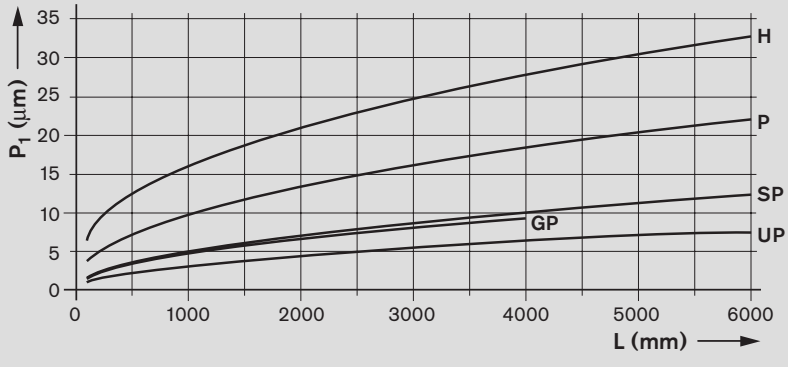
Standard and heavy duty RRS Resist CR, matte silver hard chrome plated

	H		A_3		$\Delta H, \Delta A_3$	
	RB/GR	GR	RB/GR	GR	RB/GR	GR
H	+47 −38	+44 −39	±23	+19 −24	18	15
P	+27 −18	+24 −19	±13	+9 −14	10	7
SP	+17 −8	+14 −9	±10	+6 −11	8	5

	H	A_3	$\Delta H, \Delta A_3$
			
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 roller rail system in service

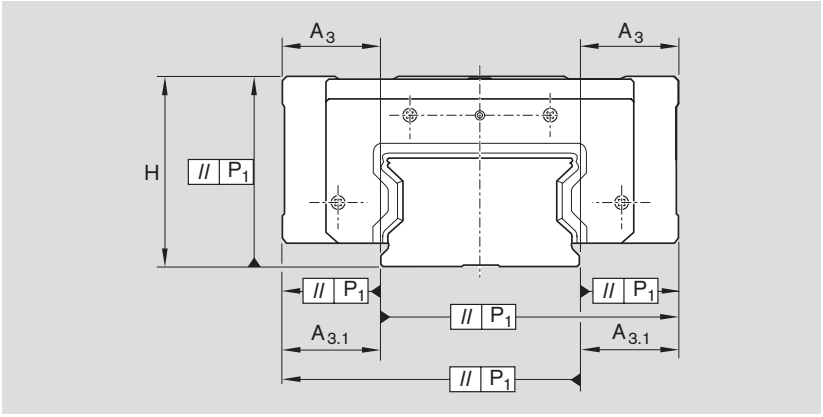
Values measured at middle of runner block for roller rail systems without surface coating.
For hard chrome plated guide rails the values may increase by up to 2 µm.



Key to graph
P_1 = parallelism offset (µm)
L = rail length (mm)

Accuracy classes and their tolerances for Wide Roller Rail Systems

Wide roller rail systems are offered in up to three different accuracy classes. For details of the available runner blocks and guide rails, see the “Part numbers” tables.



Wide roller rail systems, steel version

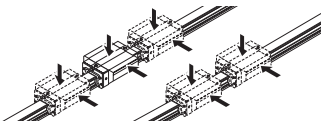
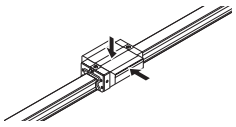
Accuracy classes	Dimensional tolerances (µm)			Max. difference in dimension H and A_3 on one guide rail (µm)	
	H	A_3	$A_{3.1}$	$\Delta H, \Delta A_3$	$\Delta A_{3.1}$
H	±40	±20	+26/–24	15	17
P	±20	±10	+15/–13	7	9
SP	±10	±7	+12/–10	5	7

Wide roller rail systems, Resist CR, matte silver hard chrome plated

	H		A_3		$A_{3.1}$		$\Delta H, \Delta A_3$		$\Delta A_{3.1}$	
	RB/GR	GR	RB/GR	GR	RB/GR	GR	RB/GR	GR	RB/GR	GR
H	+47 –38	+44 –39	±23	+19 –24	+29 –27	+25 –28	18	15	20	17
P	+27 –18	+24 –19	±13	+9 –14	+18 –16	+14 –17	10	7	12	9
SP	+17 –8	+14 –9	±10	+9 –14	+18 –16	+14 –17	10	7	12	9

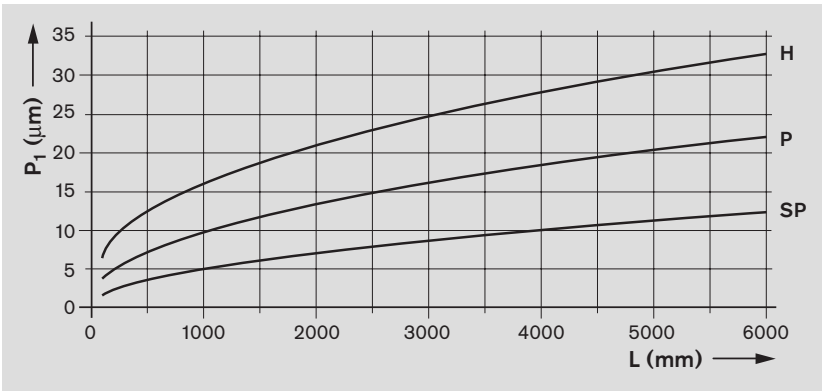
Abbreviations

RB/GR = runner block and guide rail hard chrome plated
GR = only guide rail hard chrome plated

	H | A_3 | $A_{3.1}$	$\Delta H, \Delta A_3$ | $\Delta A_{3.1}$
		
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 roller rail system in service

Values measured at middle of runner block for roller rail systems without surface coating.
For hard chrome plated guide rails the values may increase by up to 2 µm.



Key to graph

P_1 = parallelism offset (µm)
L = rail length (mm)

General Product Description

Selection of Accuracy Classes

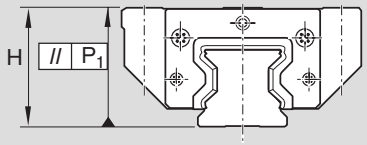
Combination of accuracy classes

Accuracy classes			Guide rail class				
Runner block class	Dimensional tolerances		H µm	P µm	SP µm	GP µm	UP µm
H	Tolerance for dimension H	µm	**±40**	**±24**	±15	–	±11
	Tolerance for dimension A_3	µm	**±20**	**±14**	±12	–	±11
	Max. difference in dimension H and A_3 on one rail	µm	**15**	**15**	15	–	15
P	Tolerance for dimension H	µm	**±36**	**±20**	**±11**	–	±7
	Tolerance for dimension A_3	µm	**±16**	**±10**	**±8**	–	±7
	Max. difference in dimension H and A_3 on one rail	µm	**7**	**7**	**7**	–	7
SP	Tolerance for dimension H	µm	±35	**±19**	**±10**	**(±10)[1] ±5**	**±6**
	Tolerance for dimension A_3	µm	±15	**±9**	**±7**	**±7**	**±6**
	Max. difference in dimension H and A_3 on one rail	µm	5	**5**	**5**	**5**	**5**
UP	Tolerance for dimension H	µm	±34	±18	**±9**	**±4**	**±5**
	Tolerance for dimension A_3	µm	±14	±8	**±6**	**±6**	**±5**
	Max. difference in dimension H and A_3 on one rail	µm	3	3	**3**	**3**	**3**

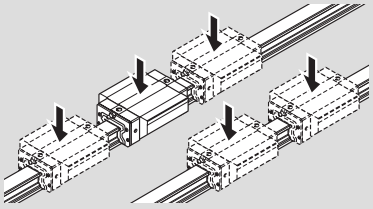
1) Dimension H: (±10) sorted by height (GP) to 10 µm (see “Combination: Runner block SP with guide rail GP”)

Combination: Runner block SP with guide rail GP

Tolerances for dimension H



Measured at middle of runner block over the entire rail length

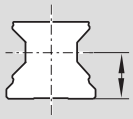


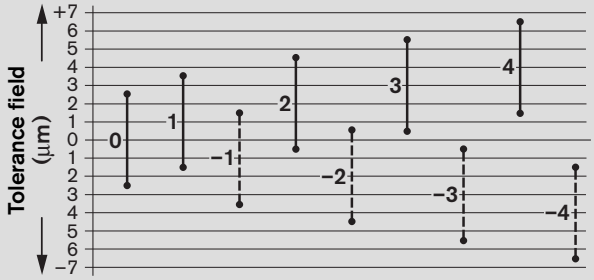
Dimension H (±10) sorted by height (GP) to ±5 ... 10 µm:
Applies for any combination of runner blocks with accuracy class SP and guide rails R1805 .68 .. with the same sorting dimension, e.g. $-1^{\pm 2.5}$ µm, over the entire rail length.

Sorting code on the guide rail and the additional label, e.g. GP –1, GP +3, etc.

When ordering, please state the quantity per sorting dimension, e.g. 2 pcs per sorting dimension.

Height sorting of the guide rails





Recommendations for combining accuracy classes

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

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

Caution!
For runner blocks and guide rails in Resist CR, matte silver hard chrome plated, different tolerances apply for the dimensions H and A_3 (see “Accuracy classes and their tolerances”).

Travel accuracy

Perfected roller entry and exit zones in the runner blocks and optimized spacing of the mounting screws provide unmatched travel accuracy with very low pulsation.

These high accuracy systems are especially suitable for high-precision machining processes, measurement systems, high-precision scanners, EDM equipment, etc.

General Product Descriptions

Selection of System Preload

Definition of the preload class

Preloading force relative to the dynamic load capacity C of the respective runner block.

Example
- Runner block FNS R1851 423 10
- Preload class C2
- Dynamic load capacity C = 92,300 N (value taken from runner block table)

Calculation:
C2 = 8% C = 7384 N

This runner block is preloaded with a base load of 7384 N.

Selection of the preload class

Code	Preload	Application area
C1	**3% C**	Special version on request
C2	**8% C**	For precise guide systems with both high external loading and high demands on overall rigidity; also recommended for single rail systems. Above average moment loads can be absorbed without significant elastic deflection. Further improved overall rigidity with only medium moment loads.
C3	**13% C**	For highly rigid guide systems such as precision machine tools, etc. Above average loads and moments can be absorbed with the least possible elastic deflection. Runner blocks with preload C3 available in accuracy classes P, SP (GP) and UP only.

Recommended preload for roller runner blocks

Preference should be given to runner blocks with preload C2.

Runner blocks with preload C1 are available on request (special versions).

Recommended preload and accuracy class combinations

Recommended for preload C2:
Accuracy classes H and P

Recommended for preload C3:
Accuracy classes P and SP (GP)

Combination of hard chrome plated runner blocks with hard chrome plated guide rails

When hard chrome plated runner blocks with preload C2 = 8% C (or C3 = 13% C) are combined with hard chrome plated guide rails, the preload increases to approx. 10% C (or approx. 15% C).