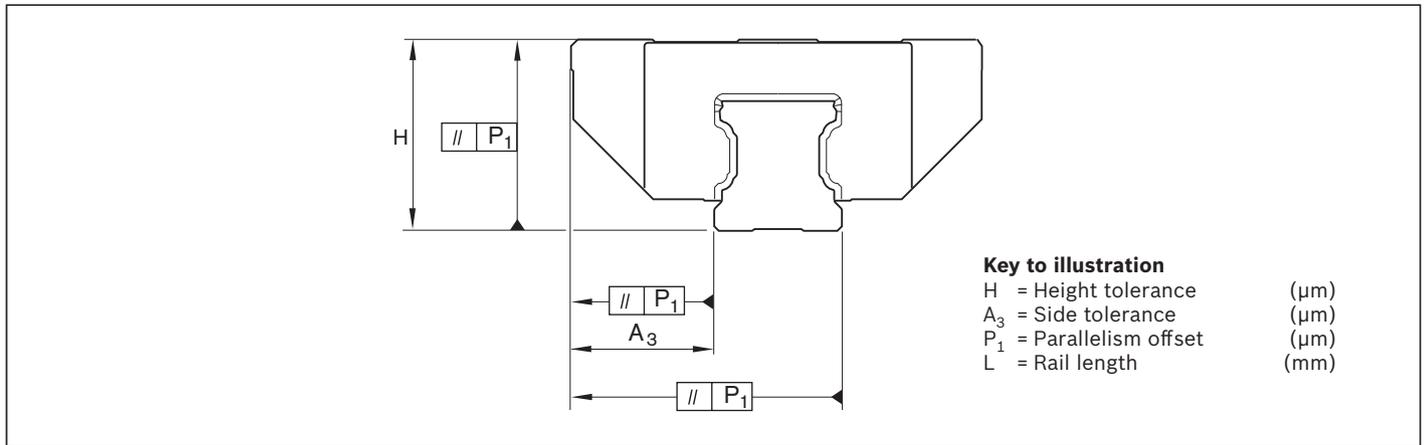


Accuracy classes

Accuracy classes and their tolerances

Ball rail systems are available in six accuracy classes for ball runner blocks and five for ball guide rails.

For details of the available ball runner blocks and ball guide rails, see the “Material numbers” tables.



Precision manufacturing process makes interchangeability easy

Rexroth manufactures its ball guide rails and ball runner blocks with such high precision, especially in the ball raceway zone, that each individual component element is fully interchangeable. For example, a ball runner block can be used without problems on various ball guide rails of the same size. Similarly, different ball runner blocks can also be used on one and the same ball guide rail.

	H	A ₃	ΔH, ΔA ₃
Measured in middle of runner block			
	For any ball runner block/rail combination at any position along the entire rail length		For different ball runner blocks at same position on rail

Ball rail system made of steel, aluminum, Resist NR and Resist NR II

Accuracy classes	Tolerances of the dimensions (µm)		Max. differences of dimensions H and A ₃ on one rail (µm)	
	H	A ₃	ΔH, ΔA ₃	
N	±100	±40		30
H	±40	±20		15
P	±20	±10		7
XP¹⁾	±11	±8		7
SP	±10	±7		5
UP	±5	±5		3

1) Ball runner block with accuracy class XP, ball guide rail with accuracy class SP

Ball rail system, Resist CR, matte-silver, hard chrome plated

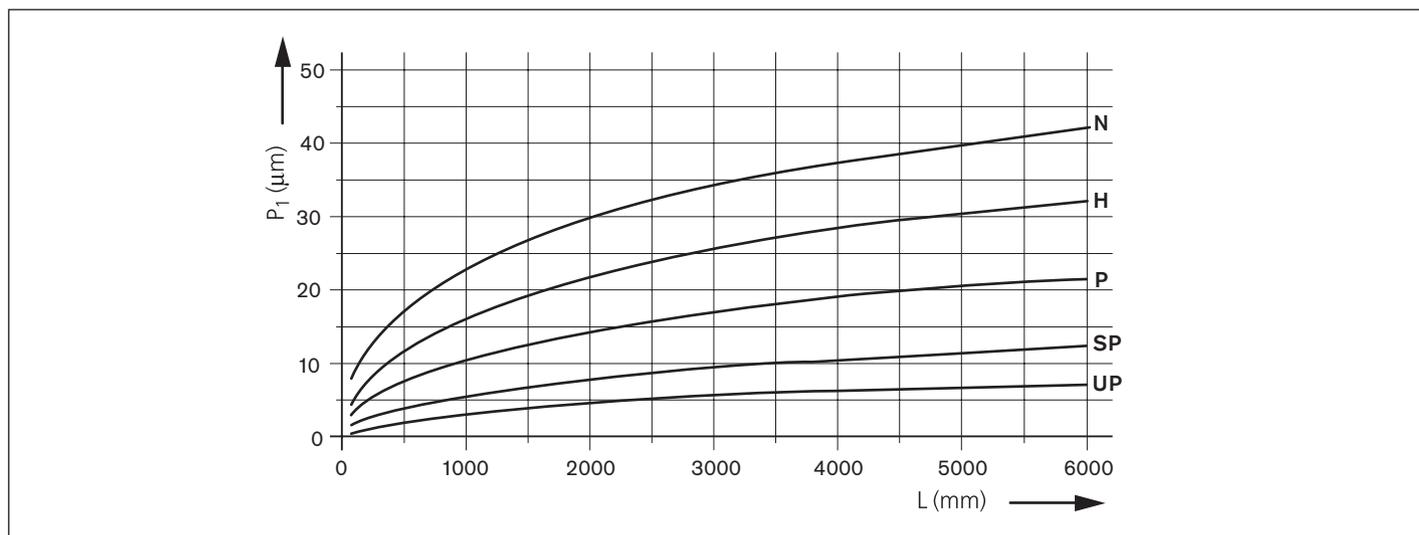
Accuracy classes	Tolerances of the dimensions (µm)				Max. differences of dimensions H and A ₃ (µm) on rails	
	H		A ₃		Ball runner block/ Ball guide rail	Ball guide rail
	Ball runner block/ball guide rail	Ball guide rail	Ball runner block/ball guide rail	Ball guide rail		ΔH, ΔA ₃
H	+47 -38	+44 -39	± 23	+19 -24	18	15

Accuracy classes

Parallelism offset P_1 of the ball rail system in operation

Values measured at middle of runner block with ball rail systems without surface coating.

For hard chrome plated ball guide rails Resist CR, the values can increase up to 2 μm .



Tolerances for combination of accuracy classes

Ball runner blocks		Ball guide rails				
		N (μm)	H (μm)	P (μm)	SP (μm)	UP (μm)
N	Tolerance of dimension H (μm)	± 100	± 48	± 32	± 23	± 19
	Tolerance of dimension A_3 (μm)	± 40	± 28	± 22	± 20	± 19
	Max. diff. dimensions H and A_3 on one rail (μm)	30	30	30	30	30
H	Tolerance of dimension H (μm)	± 92	± 40	± 24	± 15	± 11
	Tolerance of dimension A_3 (μm)	± 32	± 20	± 14	± 12	± 11
	Max. diff. dimensions H and A_3 on one rail (μm)	15	15	15	15	15
P	Tolerance of dimension H (μm)	± 88	± 36	± 20	± 11	± 7
	Tolerance of dimension A_3 (μm)	± 28	± 16	± 10	± 8	± 7
	Max. diff. dimensions H and A_3 on one rail (μm)	7	7	7	7	7
XP	Tolerance of dimension H (μm)	± 88	± 36	± 20	± 11	± 7
	Tolerance of dimension A_3 (μm)	± 28	± 16	± 10	± 8	± 7
	Max. diff. dimensions H and A_3 on one rail (μm)	7	7	7	7	7
SP	Tolerance of dimension H (μm)	± 87	± 35	± 19	± 10	± 6
	Tolerance of dimension A_3 (μm)	± 27	± 15	± 9	± 7	± 6
	Max. diff. dimensions H and A_3 on one rail (μm)	5	5	5	5	5
UP	Tolerance of dimension H (μm)	± 86	± 34	± 18	± 9	± 5
	Tolerance of dimension A_3 (μm)	± 26	± 14	± 8	± 6	± 5
	Max. diff. dimensions H and A_3 on one rail (μm)	3	3	3	3	3

Recommendations for combining accuracy classes

Recommended with **relatively large ball runner block distances** and long strokes:

Ball guide rail in higher accuracy class than ball runner blocks.

Recommended with **small ball runner block distances** and short strokes:

Ball runner blocks in higher accuracy class than ball guide rail.

Sequence accuracy selection criterion

By means of perfected ball inlet and outlet zones in the ball runner blocks and the optimized pitch of the mounting holes in the ball guide rails, a very high sequence accuracy with lowest pulsation is achieved. Particularly suitable for highly precise, chipping processing, measuring technique, high-precision scanners, eroding technology etc. (See chapter Product Description High-precision Ball Runner Block BSHP made of steel, Application examples)