Ball Runner Blocks made of aluminum

Product Description

Characteristic features

Rexroth Ball Rail Systems with aluminum runner blocks were specifically developed for use in industrial robots and general purpose machines calling for compact, lightweight rolling-element linear motion guideways. They are available in various accuracy classes, each with high load capacity. These highly compact and weight-saving assemblies are available in five common sizes and offer the same load capacities in all four main load directions.

Highlights

- High torque load capacity
- Optimized entry-zone geometry and high number of balls per track minimizes variation in elastic deflection
- Very low weight: 60% lighter than the equivalent steel runner blocks
- Limitless interchangeability; all ball guide rail versions can be combined at will with all ball runner block versions within each accuracy class

Further highlights

- Low noise level and outstanding travel performance
- Excellent dynamic characteristics:
  Travel speed: $v_{max} = 5$ m/s
  Acceleration: $a_{max} = 500$ m/s^2
- Long-term lubrication, up to several years
- Minimum quantity lubrication system with integrated reservoir for oil lubrication
- Wider permissible tolerances for parallelism and height offsets of the mounting surfaces
- Accuracy classes H and N can be combined with any of the rails in each accuracy class
- Lube ports with metal threads on all sides
- Mounting threads provided on end faces for fixing of all add-on elements
- Ball guide rails in accuracy class H also available with surface protection Resist CR (matte-silver hard chrome plated)
- Smooth, light running thanks to optimized ball recirculation and ball or ball chain guidance
- Improved rigidity under lift-off and side loading conditions when additional mounting screws are used in the two holes provided at the center of the runner block[1)]
- Attachments can be bolted to the ball runner blocks from above or below[1)]
- Predrilled locating pin holes in the runner blocks
- Available with ball chain as an option
- Ball runner blocks pre-lubricated in factory

1) depends on type

Overview of Ball Runner Block models made of aluminum

FNS

SNS

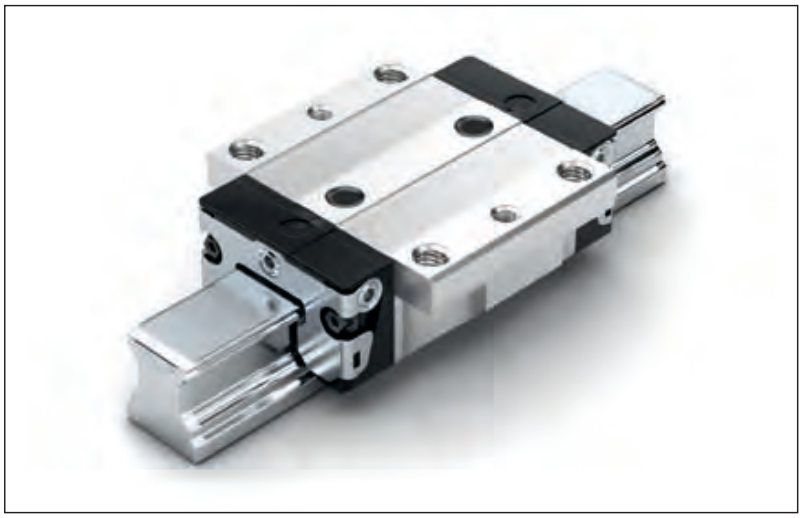
Ball chain (optional)
– Optimizes noise levels

Definition Ball Runner Block design style		Code (example) F	N	S
Width	**F**langed	**F**		
	Slimline			
	Wide			
	Compact			
Length	**N**ormal		**N**	
	Long			
	Short			
Height	**S**tandard height			**S**
	High			
	Low			

Ball Runner Blocks made of aluminum

FNS – Flanged, normal, standard height

R1631 ... 2.



Dynamic characteristics
Travel speed: $v_{max} = 5$ m/s
Acceleration: $a_{max} = 500$ m/s^2
(If $F_{comb} > 2.8 \cdot F_{pr}$: $a_{max} = 50$ m/s^2)

Note on lubrication
– Pre-lubricated

Note
Can be used on all Ball Guide Rails SNS.

Ordering example
Options:
– Ball Runner Block FNS
– Size 30
– Preload class C1
– Accuracy class H
– With standard seal, without ball chain
Part number: R1631 713 20

Options and part numbers

Size	Ball runner block with size	Preload class		Accuracy class		Seal for ball runner block			
						without ball chain		with ball chain	
		C0	C1	N	H	SS	LS	SS	LS
15	R1631 1	9	1	4	3	20	21	22	23
20	R1631 8	9	1	4	3	20	21	22	23
25	R1631 2	9	1	4	3	20	21	22	23
30	R1631 7	9	1	4	3	20	21	22	23
35	R1631 3	9	1	4	3	20	21	22	23
e.g.	R1631 7		1		3	20			

Size	Load capacities[1] (N)	Permissible load (N)	Load moments[1] (Nm)			
	C	F_{max}	M_t	$M_{t\,max}$	M_L	$M_{L\,max}$
15	7 800	3 000	74	29	40	16
20	18 800	7 200	240	92	130	50
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

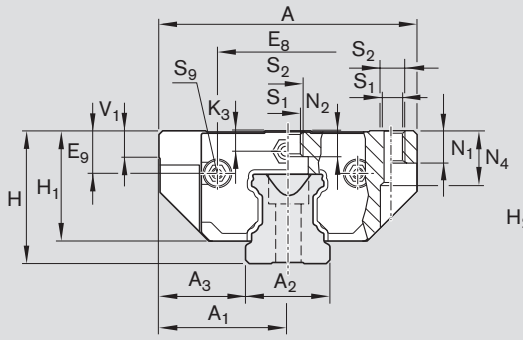
1) Load capacities and moments for Ball Runner Block **without** ball chain.
Load capacities and moments for Ball Runner Block **with** ball chain ☞ 8.
Determination of the dynamic load capacities and moments is based on a travel life of 100,000 m per ISO 14728-1. Often only 50,000 m are actually stipulated. For comparison: Multiply values **C**, $\mathbf{M_t}$ and $\mathbf{M_L}$ from the table by 1.26.

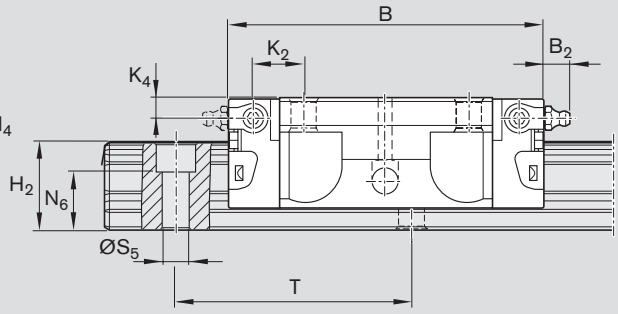
Preload classes
C0 = without preload
C1 = preload 2% C

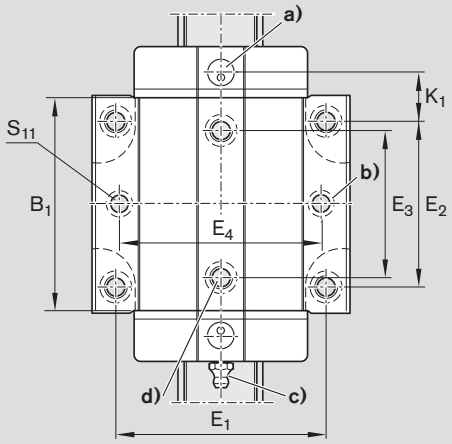
Seals
SS = standard seal
LS = low-friction seal

Key to table
Gray numbers
= version/combination not preferred (longer delivery times in some cases)

Ball Runner Blocks FNS







a) For O-ring
Size 15: Ø 4 · 1.0 (mm)
Size 20 - 35: Ø 5 · 1.0 (mm)
Open lube bore as required (☞🗎 258).

b) Pin holes are already predrilled as illustrated (dimensions E_4 ☞🗎 235).

c) Lube nipple, size 15 - 20:
Funnel-type lube nipple DIN 3405-A M3x5, $B_2 = 1.6$ mm
If another lube nipple is used: observe the screw-in depth of 5 mm!
Lube nipple, size 25 - 35:
Hydraulic-type lube nipple DIN 71412-B M6x8, $B_2 = 9.5$ mm
If another lube nipple is used: observe the screw-in depth of 8 mm!
Lube nipples are provided (unmounted).
Connection possible at all sides.

d) For manufacturing reasons, there may be plugs at these positions.
These must be removed before mounting.

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

Size	Dimensions (mm)										Weight
	N_1	N_2	N_4	$N_6^{\pm 0.5}$	S_1	S_2	S_5	S_9	S_{11}	T	V_1	(kg)
15	5.2	4.40	10.3	10.3	4.3	M5	4.4	M2.5x3.5	3.7	60	5.0	0.10
20	7.7	5.20	13.5	13.2	5.3	M6	6.0	M3x5	4.7	60	6.0	0.24
25	9.3	7.00	17.8	15.2	6.7	M8	7.0	M3x5	5.7	60	7.5	0.30
30	11.0	7.90	20.5	17.0	8.5	M10	9.0	M3x5	7.7	80	7.0	0.55
35	12.0	10.15	24.0	20.5	8.5	M10	9.0	M3x5	7.7	80	8.0	0.75

1) Dimension H_2 with cover strip
2) Dimension H_2 without cover strip

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SNS – Slimline, normal, standard height

R1632 ... 2.

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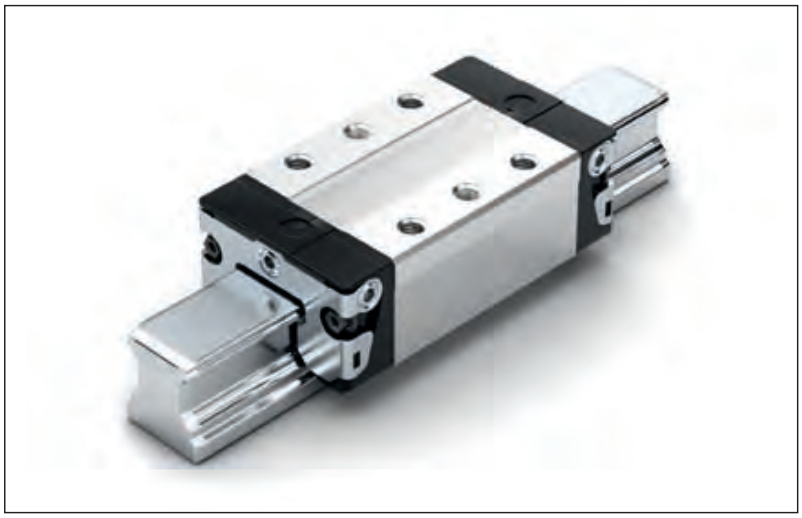

Options and part numbers

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Ordering example
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– Ball Runner Block SNS
– Size 30
– Preload class C1
– Accuracy class H
– With standard seal, without ball chain
Part number: R1632 713 20

Size	Load capacities[1] (N)	Permissible load (N)	Load moments[1] (Nm)			
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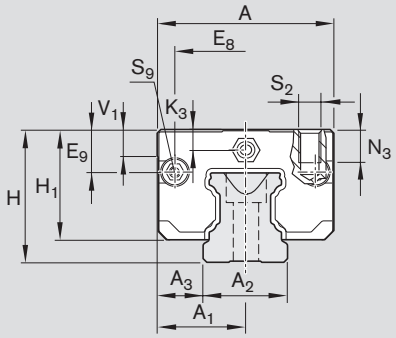
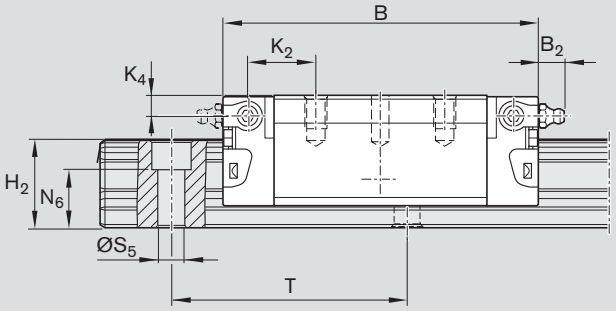
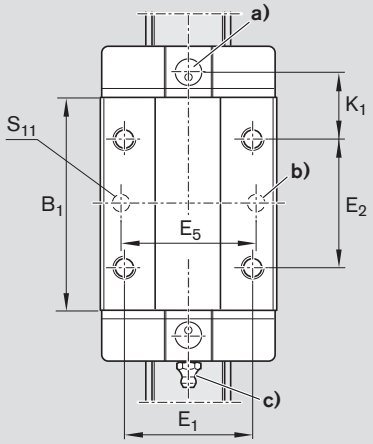
Ball Runner Blocks SNS







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c) Lube nipple, size 15 - 20:
Funnel-type lube nipple DIN 3405-A M3x5, $B_2 = 1.6$ mm
If another lube nipple is used: observe the screw-in depth of 5 mm!
Lube nipple, size 25 - 35:
Hydraulic-type lube nipple DIN 71412-B M6x8, $B_2 = 9.5$ mm
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Connection possible at all sides.

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

Size	Dimensions (mm)								Weight
	N_3	N_6 ±0.5	S_2	S_5	S_9	S_{11}	T	V_1	(kg)
15	6.0	10.3	M4	4.4	M2.5x3.5	3.7	60	5.0	0.10
20	7.5	13.2	M5	6.0	M3x5	4.7	60	6.0	0.20
25	9.0	15.2	M6	7.0	M3x5	5.7	60	7.5	0.35
30	12.0	17.0	M8	9.0	M3x5	7.7	80	7.0	0.45
35	13.0	20.5	M8	9.0	M3x5	7.7	80	8.0	0.65

1) Dimension H_2 with cover strip
2) Dimension H_2 without cover strip