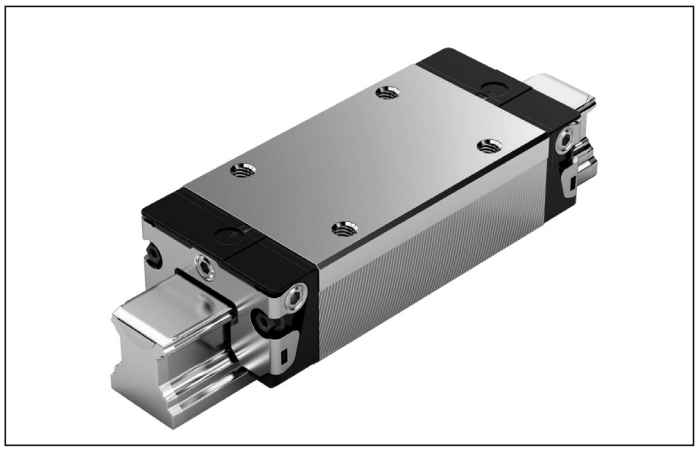
SLS – Schmal Lang Standardhöhe R1623 ... 2.



Dynamikwerte

Geschwindigkeit: v_{max} = 5 m/s

Beschleunigung: a_{max} = 500 m/s²

(Wenn $F_{comb} > 2{,}8 \cdot F_{pr}$: a_{max} = 50 m/s²)

Schmierhinweis

- Erstbefettet

Hinweis

Passend für alle Kugelschienen SNS/SNO.

Optionen und Materialnummern

Größe	Kugelwagen mit Größe	Vorspannungsklasse				Genauigkeitsklasse				Dichtung bei Kugelwagen ohne Kugelkette			mit Kugelkette		
		C0	C1	C2	C3	N	H	P	XP	SS	LS[1)]	DS	SS	LS[1)]	DS
15	R1623 1	9				4	3	–	–	20	21	–	22	23	–
			1			4	3	2	8	20	21	–	22	23	–
				2		–	3	2	8	20	21	–	22	23	–
					3	–	–	–	8	20	21	–	22	23	–
20	R1623 8	9				4	3	–	–	20	21	–	22	23	–
			1			4	3	2	8	20	21	2Z	22	23	2Y
				2		–	3	2	8	20	21	2Z	22	23	2Y
					3	–	–	–	8	20	21	2Z	22	23	2Y
25	R1623 2	9				4	3	–	–	20	21	–	22	23	–
			1			4	3	2	8	20	21	2Z	22	23	2Y
				2		–	3	2	8	20	21	2Z	22	23	2Y
					3	–	–	–	8	20	21	2Z	22	23	2Y
30	R1623 7	9				4	3	–	–	20	21	–	22	23	–
			1			4	3	2	8	20	21	2Z	22	23	2Y
				2		–	3	2	8	20	21	2Z	22	23	2Y
					3	–	–	–	8	20	21	2Z	22	23	2Y
35	R1623 3	9				4	3	–	–	20	21	–	22	23	–
			1			4	3	2	8	20	21	2Z	22	23	2Y
				2		–	3	2	8	20	21	2Z	22	23	2Y
					3	–	–	–	8	20	21	2Z	22	23	2Y
45	R1623 4	9				4	3	–	–	20	–	–	22	–	–
			1			4	3	2	8	20	–	2Z	22	–	2Y
				2		–	3	2	8	20	–	2Z	22	–	2Y
					3	–	–	–	8	20	–	2Z	22	–	2Y
Bsp.:	R1623 7		1				3			20					

1) Nur bei Genauigkeitsklassen N und H und bei XP in Vorspannungsklasse C1.

Bestellbeispiel

Optionen:

- Kugelwagen SLS
- Größe 30
- Vorspannungsklasse C1
- Genauigkeitsklasse H
- Mit Standarddichtung, ohne Kugelkette

Materialnummer:

R1623 713 20

Vorspannungsklassen

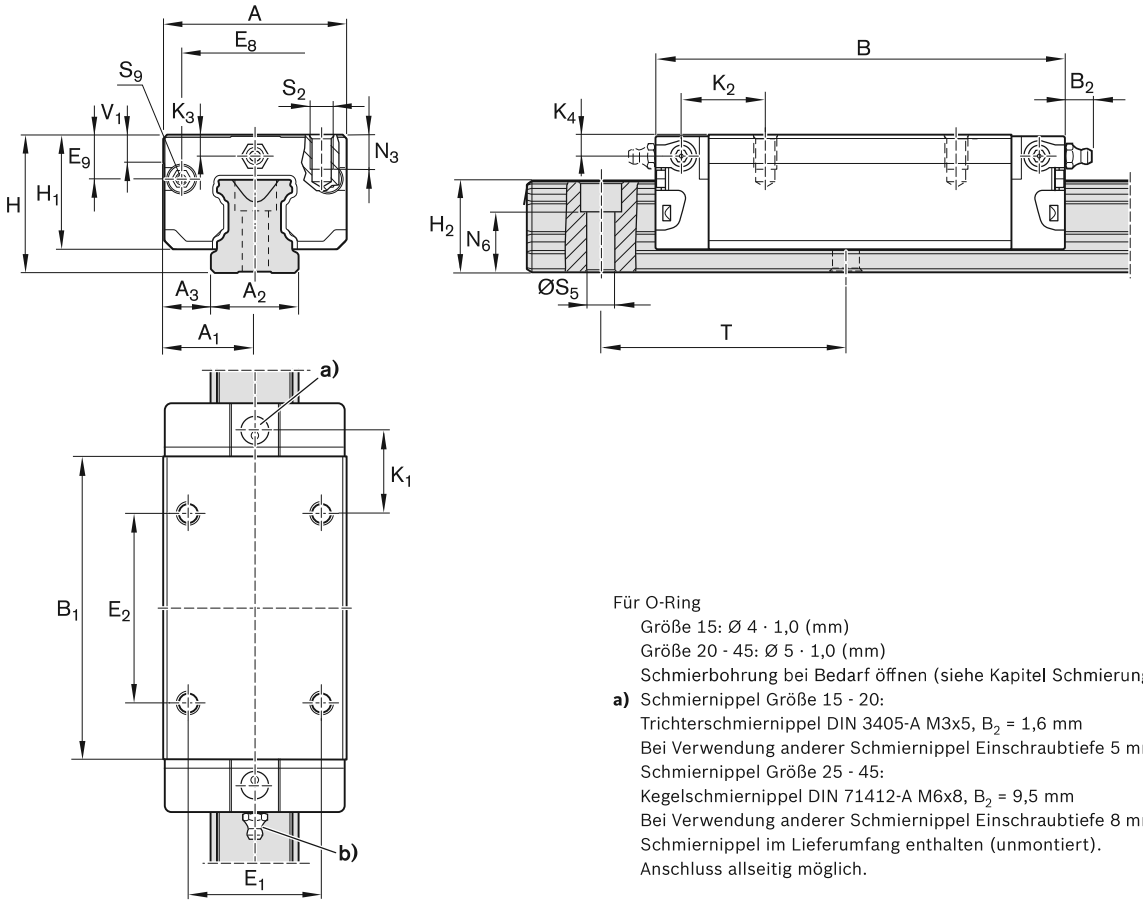
C0 = Ohne Vorspannung (Spiel)
C1 = Leichte Vorspannung
C2 = Mittlere Vorspannung
C3 = Hohe Vorspannung

Dichtungen

SS = Standarddichtung
LS = Leichtlaufdichtung
DS = Doppellippige Dichtung

Legende

Graue Ziffern
= keine Vorzugs-Variante/ Kombination
(z. T. längere Lieferzeiten)



Für O-Ring
Größe 15: Ø 4 · 1,0 (mm)
Größe 20 - 45: Ø 5 · 1,0 (mm)
Schmierbohrung bei Bedarf öffnen (siehe Kapitel Schmierung).

a) Schmiernippel Größe 15 - 20:
Trichterschmiernippel DIN 3405-A M3x5, B_2 = 1,6 mm
Bei Verwendung anderer Schmiernippel Einschraubtiefe 5 mm beachten!
Schmiernippel Größe 25 - 45:
Kegelschmiernippel DIN 71412-A M6x8, B_2 = 9,5 mm
Bei Verwendung anderer Schmiernippel Einschraubtiefe 8 mm beachten!
Schmiernippel im Lieferumfang enthalten (unmontiert).
Anschluss allseitig möglich.

Größe	Maße (mm)																	
	A	A_1	A_2	A_3	$B^{+0,5}$	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	72,6	53,6	26	26	24,55	6,70	24	19,90	16,30	16,20	17,20	18,80	3,20	3,20
20	44	22	20	12,0	91,0	65,6	32	50	32,50	7,30	30	25,35	20,75	20,55	14,80	14,80	3,35	3,35
25	48	24	23	12,5	107,9	79,5	35	50	38,30	11,50	36	29,90	24,45	24,25	20,80	21,95	5,50	5,50
30	60	30	28	16,0	119,7	89,4	40	60	48,40	14,60	42	35,35	28,55	28,35	21,00	22,70	6,05	6,05
35	70	35	34	18,0	139,0	105,5	50	72	58,00	17,35	48	40,40	32,15	31,85	23,75	25,25	6,90	6,90
45	86	43	45	20,5	174,1	133,5	60	80	69,80	20,90	60	50,30	40,15	39,85	35,50	37,50	8,20	8,20

Größe	Maße (mm)							Masse (kg)	Tragzahlen 3) (N)		Tragmomente 3) (Nm)			
	N_3	$N_6^{\pm 0,5}$	S_2	S_5	S_9	T	V_1	m	C	C_0	M_t	M_{t0}	M_L	M_{L0}
15	6,0	10,3	M4	4,5	M2,5x3,5	60	5,0	0,20	12 800	18 400	120	180	120	180
20	7,5	13,2	M5	6,0	M3x5	60	6,0	0,45	29 600	41 800	380	540	340	490
25	9,0	15,2	M6	7,0	M3x5	60	7,5	0,65	37 300	52 500	530	750	530	740
30	12,0	17,0	M8	9,0	M3x5	80	7,0	1,10	46 000	66 900	800	1 160	740	1 080
35	13,0	20,5	M8	9,0	M3x5	80	8,0	1,70	66 700	116 000	1 440	2 500	1 290	2 240
45	18,0	23,5	M10	14,0	M4x7	105	10,0	3,20	111 000	190 000	3 010	5 120	2 730	4 660

1) Maß H_2 mit Abdeckband
2) Maß H_2 ohne Abdeckband
3) Tragzahlen und Tragmomente für Kugelwagen **ohne** Kugelkette. Tragzahlen und Tragmomente für Kugelwagen **mit** Kugelkette ☞ 12
Die Festlegung der dynamischen Tragzahlen und Tragmomente basiert auf 100 000 m Hubweg nach DIN ISO 14728-1. Häufig werden jedoch nur 50 000 m zugrunde gelegt. Hierfür gilt zum Vergleich: Werte **C**, $\mathbf{M}_t$ und $\mathbf{M}_L$ nach Tabelle mit 1,26 multiplizieren.

FNS, FLS, FKS, SNS, SLS, SKS

Format	Size	Ball runner block with size	Preload class		Accuracy class	Seal on ball runner block without ball chain			with ball chain		
			C0	C1	H	SS	LS	DS	SS	LS	DS
FNS	**15**	R2001 1	9	–	3	30	31	–	32	33	–
	20	R2001 8	9	–	3	30	31	–	32	33	–
	25	R2001 2	9	–	3	30	31	–	32	33	–
	30	R2001 7	9		3	30	31	–	32	33	–
				1	3	30	31	3Z	32	33	3Y
	35	R2001 3	9		3	30	31	–	32	33	–
				1	3	30	31	3Z	32	33	3Y
	E.g.:	R2001 7		1	3	30					
FLS	**15**	R2002 1	9	–	3	30	31	–	32	33	–
	20	R2002 8	9	–	3	30	31	–	32	33	–
	25	R2002 2	9	–	3	30	31	–	32	33	–
	30	R2002 7	9		3	30	31	–	32	33	–
				1	3	30	31	3Z	32	33	3Y
	35	R2002 3	9		3	30	31	–	32	33	–
				1	3	30	31	3Z	32	33	3Y
FKS	**15**	R2000 1	9	–	3	30	31	–	32	33	–
	20	R2000 8	9	–	3	30	31	–	32	33	–
	25	R2000 2	9	–	3	30	31	–	32	33	–
	30	R2000 7	9		3	30	31	–	32	33	–
				1	3	30	31	3Z	32	33	3Y
	35	R2000 3	9		3	30	31	–	32	33	–
				1	3	30	31	3Z	32	33	3Y
SNS	**15**	R2011 1	9	–	3	30	31	–	32	33	–
	20	R2011 8	9	–	3	30	31	–	32	33	–
	25	R2011 2	9	–	3	30	31	–	32	33	–
	30	R2011 7	9		3	30	31	–	32	33	–
				1	3	30	31	3Z	32	33	3Y
	35	R2011 3	9		3	30	31	–	32	33	–
				1	3	30	31	3Z	32	33	3Y
SLS	**15**	R2012 1	9		3	30	31	–	32	33	–
	20	R2012 8	9		3	30	31	–	32	33	–
	25	R2012 2	9		3	30	31	–	32	33	–
	30	R2012 7	9		3	30	31	–	32	33	–
				1	3	30	31	3Z	32	33	3Y
	35	R2012 3	9		3	30	31	–	32	33	–
				1	3	30	31	3Z	32	33	3Y
SKS	**15**	R2010 1	9	–	3	30	31	–	32	33	–
	20	R2010 8	9	–	3	30	31	–	32	33	–
	25	R2010 2	9	–	3	30	31	–	32	33	–
	30	R2010 7	9		3	30	31	–	32	33	–
				1	3	30	31	3Z	32	33	3Y
	35	R2010 3	9		3	30	31	–	32	33	–
				1	3	30	31	3Z	32	33	3Y

Ordering example FNS

Options:

- Ball runner block BSHP Resist NR, FNS
- Size 30
- Preload class C1
- Accuracy class H
- With standard seal, without ball chain

Material number: R2001 713 30

Note

Dimensions, dimension drawing, load capacities, rigidity and moments see standard ball runner block BSHP

Preload classes
C0 = Without preload (clearance)
C1 = Moderate preload

Seals
SS = Standard seal
LS = Low-friction seal
DS = Double-lip seal

Key
gray numbers
= no preferred variant / combination
(partially longer delivery times)

Product description

Characteristic features

Ball rail systems Resist NR II made of corrosion-resistant steel[1)] are used specifically in conjunction with water-based media, heavily diluted acidic materials, alkali or saline solutions. These guides are also ideally suitable for use at relative humidities above 70% and temperatures exceeding 30 °C.
Such conditions are found mainly in cleaning plants, electroplating and pickling lines, vapor degreasing plants and refrigeration systems.
Since no additional corrosion protection is required, ball rail systems Resist NR II are ideally suited for use in clean rooms and general printed circuit board manufacturing. They are also suitable for other applications in the general packaging industry.

General notes on ball runner blocks Resist NR II

- Can be used on all SNS ball guide rails, not initially lubricated, not preserved
- For dimensions see corresponding ball runner blocks made of steel

Highlights

- All metal parts are made of corrosion-resistant steel
- Available in five common sizes
- Excellent dynamic characteristics:
  Travel speed: v_{max} = 5 m/s
  Acceleration: a_{max} = 500 m/s^2
- The same high load capacities in all four main directions of loading
- Available in accuracy classes N, H and P, up to preload class C2
- Long-term lubrication is possible over several years
- Minimum quantity lubrication system with integrated reservoir for oil lubrication
- Lube fittings with metal threads on all sides
- Optionally available with ball chain

1) Resist NR II:
Ball runner block body and ball guide rail as well as all steel parts made of corrosion-resistant steel in accordance with DIN EN 10088

General notes

- Ball rail systems for sectors of the food industry, see the ball rail systems NRFG catalog R310DE2226 (2011.04).
- Combinations of different accuracy classes
  Combining ball guide rails and ball runner blocks of different accuracy classes results in different tolerances for the dimensions H and A3. See "Accuracy classes and their tolerances."
- Combinations of different materials
  Combining ball guide rails and ball runner blocks made of different materials will change the load capacities, permitted loads and load moments. The lower value must be used in each case.

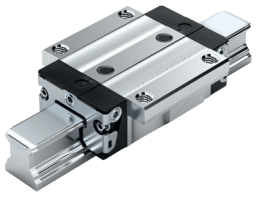
Further highlights

- Limitless interchangeability as all ball guide rail systems can be combined at will with all ball runner block versions within each accuracy class (also made of steel, aluminum, Resist NR or Resist CR)
- Maximum system rigidity due to preloaded O-arrangement
- Existing range of accessories fully usable
- Attachments on the ball runner block can be bolted from above and below[2)]
- Improved rigidity under lift-off and side loading conditions due to two additional mounting screw bores at the center of the ball runner block[2)]
- End-face fastening thread for all attachments
- High rigidity in all directions of loading – permits applications with just one runner block per rail
- Integrated all-round sealing
- Optimized entry-zone geometry and high number of balls minimize variation in elastic deflection
- Quiet, smooth running thanks to optimally designed ball and ball chain return and guideway
- Ball guide rail Resist NR II, with or without cover strip, available for bolting from above and below
- Ball runner block also available with chrome-plated ball guide rails

2) Type-dependent

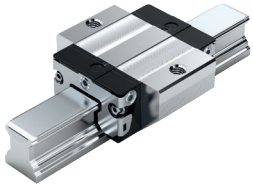
Overview of formats

FNS R2001 ... 0.



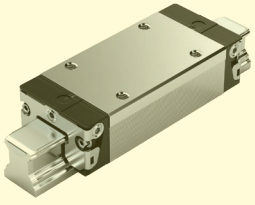
FLS R2002 ... 0.

FKS R2000 ... 0.

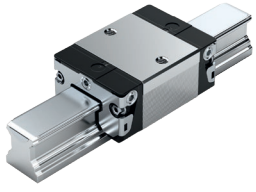


SNS R2011 ... 0.

SLS R2012 ... 0.



SKS R2010 ... 0.



Definition of the format of ball runner blocks

Criterion	Designation	Code (example) F	N	S
Width	Flange **(F)**	F		
	Slimline **(S)**	S		
	Wide (B)	B		
	Compact (C)	C		
Length	Normal **(N)**		N	
	Long **(L)**		L	
	Short **(K)**		K	
Height	Standard height **(S)**			S
	High (H)			H
	Low (N)			N

Ball chain (optional)

- Optimized noise level

FNS, FLS, FKS, SNS, SLS, SKS

Size	Ball runner block with size	Preload class			Accuracy class			Seal on ball runner block						Mass (kg)	Load capacities[2] (N)		Load moments[2] (Nm)			
								without ball chain			with ball chain									
		C0	C1	C2	N	H	P	SS	LS[1]	DS	SS	LS[1]	DS	m	C	C_0	M_t	M_{t0}	M_L	M_{L0}
FNS																				
15	R2001 1	9			4	3	–	04	05	–	06	07	–	0.20	5100	9300	63	90	34	49
			1		4	3	2	04	05	0X	06	07	0W							
				2	–	3	2	04	–	0X	06	–	0W							
20	R2001 8	9			4	3	–	04	05	–	06	07	–	0.45	12300	16900	205	215	110	115
			1		4	3	2	04	05	0X	06	07	0W							
				2	–	3	2	04	–	0X	06	–	0W							
25	R2001 2	9			4	3	–	04	05	–	06	07	–	0.65	15000	21000	270	295	150	165
			1		4	3	2	04	05	0X	06	07	0W							
				2	–	3	2	04	–	0X	06	–	0W							
30	R2001 7	9			4	3	–	04	05	–	06	07	–	1.10	20800	28700	460	500	245	265
			1		4	3	2	04	05	0X	06	07	0W							
				2	–	3	2	04	–	0X	06	–	0W							
35	R2001 3	9			4	3	–	04	05	–	06	07	–	1.60	27600	37500	760	805	375	390
			1		4	3	2	04	05	0X	06	07	0W							
				2	–	3	2	04	–	0X	06	–	0W							
FLS																				
15	R2002 1	9			4	3	–	04	05	–	06	07	–	0.30	8500	14000	82	132	64	104
			1		4	3	2	04	05	0X	06	07	0W							
				2	–	3	2	04	–	0X	06	–	0W							
20	R2002 8	9			4	3	–	04	05	–	06	07	–	0.55	16000	24400	265	310	190	230
			1		4	3	2	04	05	0X	06	07	0W							
				2	–	3	2	04	–	0X	06	–	0W							
25	R2002 2	9			4	3	–	04	05	–	06	07	–	0.90	20000	31600	365	450	290	350
			1		4	3	2	04	05	0X	06	07	0W							
				2	–	3	2	04	–	0X	06	–	0W							
30	R2002 7	9			4	3	–	04	05	–	06	07	–	1.50	26300	40100	590	695	420	495
			1		4	3	2	04	05	0X	06	07	0W							
				2	–	3	2	04	–	0X	06	–	0W							
35	R2002 3	9			4	3	–	04	05	–	06	07	–	2.25	36500	56200	1,025	1210	710	840
			1		4	3	2	04	05	0X	06	07	0W							
				2	–	3	2	04	–	0X	06	–	0W							
FKS																				
15	R2000 1	9			4	3	–	04	05	–	06	07	–	0.15	4500	5600	44	55	16	19
			1		4	3	–	04	05	0X	06	07	0W							
				–	–	–	–	–	–	–	–	–	–							
20	R2000 8	9			4	3	–	04	05	–	06	07	–	0.30	8200	9400	125	115	45	40
			1		4	3	–	04	05	0X	06	07	0W							
				–	–	–	–	–	–	–	–	–	–							
25	R2000 2	9			4	3	–	04	05	–	06	07	–	0.50	10500	12600	195	180	70	65
			1		4	3	–	04	05	0X	06	07	0W							
				–	–	–	–	–	–	–	–	–	–							
30	R2000 7	9			4	3	–	04	05	–	06	07	–	0.80	14500	17200	320	295	110	105
			1		4	3	–	04	05	0X	06	07	0W							
				–	–	–	–	–	–	–	–	–	–							
35	R2000 3	9			4	3	–	04	05	–	06	07	–	1.20	19300	22400	545	485	170	150
			1		4	3	–	04	05	0X	06	07	0W							
				–	–	–	–	–	–	–	–	–	–							

Ordering example

Options:

- Ball runner block BSHP Resist NR II, SKS
- Size 30
- Preload class C1
- Accuracy class H
- With standard seal, without ball chain

Material number: R2010 713 04

Preload classes
C0 = Without preload (clearance)
C1 = Moderate preload
C2 = Average preload

Seals
SS = Standard seal
LS = Low-friction seal
DS = Double-lip seal

Key
gray numbers
= no preferred variant / combination
(partially longer delivery times)

Size	Ball runner block with size	Preload class			Accuracy class			Seal on ball runner block						Mass (kg)	Load capacities[2] (N)		Load moments[2] (Nm)			
								without ball chain			with ball chain									
		C0	C1	C2	N	H	P	SS	LS[1]	DS	SS	LS[1]	DS	m	C	C_0	M_t	M_{t0}	M_L	M_{L0}
SNS																				
15	R2011 1	9			4	3	–	04	05	–	06	07	–	0.15	5100	9300	63	90	34	49
			1		4	3	2	04	05	0X	06	07	0W							
				2	–	3	2	04	–	0X	06	–	0W							
20	R2011 8	9			4	3	–	04	05	–	06	07	–	0.35	12300	16900	205	215	110	115
			1		4	3	2	04	05	0X	06	07	0W							
				2	–	3	2	04	–	0X	06	–	0W							
25	R2011 2	9			4	3	–	04	05	–	06	07	–	0.50	15000	21000	270	295	150	165
			1		4	3	2	04	05	0X	06	07	0W							
				2	–	3	2	04	–	0X	06	–	0W							
30	R2011 7	9			4	3	–	04	05	–	06	07	–	0.85	20800	28700	460	500	245	265
			1		4	3	2	04	05	0X	06	07	0W							
				2	–	3	2	04	–	0X	06	–	0W							
35	R2011 3	9			4	3	–	04	05	–	06	07	–	1.25	27600	37500	760	805	375	390
			1		4	3	2	04	05	0X	06	07	0W							
				2	–	3	2	04	–	0X	06	–	0W							
SLS																				
15	R2012 1	9			4	3	–	04	05	–	06	07	–	0.20	8500	14000	82	132	64	104
			1		4	3	2	04	05	0X	06	07	0W							
				2	–	3	2	04	–	0X	06	–	0W							
20	R2012 8	9			4	3	–	04	05	–	06	07	–	0.45	16000	24400	265	310	190	230
			1		4	3	2	04	05	0X	06	07	0W							
				2	–	3	2	04	–	0X	06	–	0W							
25	R2012 2	9			4	3	–	04	05	–	06	07	–	0.65	20000	31600	365	450	290	350
			1		4	3	2	04	05	0X	06	07	0W							
				2	–	3	2	04	–	0X	06	–	0W							
30	R2012 7	9			4	3	–	04	05	–	06	07	–	1.10	26300	40100	590	695	420	495
			1		4	3	2	04	05	0X	06	07	0W							
				2	–	3	2	04	–	0X	06	–	0W							
35	R2012 3	9			4	3	–	04	05	–	06	07	–	1.70	36500	56200	1,025	1210	710	840
			1		4	3	2	04	05	0X	06	07	0W							
				2	–	3	2	04	–	0X	06	–	0W							
SKS																				
15	R2010 1	9			4	3	–	04	05	–	06	07	–	0.10	4500	5600	44	55	16	19
			1		4	3	–	04	05	0X	06	07	0W							
				–	–	–	–	–	–	–	–	–	–							
20	R2010 8	9			4	3	–	04	05	–	06	07	–	0.25	8200	9400	125	115	45	40
			1		4	3	–	04	05	0X	06	07	0W							
				–	–	–	–	–	–	–	–	–	–							
25	R2010 2	9			4	3	–	04	05	–	06	07	–	0.35	10500	12600	195	180	70	65
			1		4	3	–	04	05	0X	06	07	0W							
				–	–	–	–	–	–	–	–	–	–							
30	R2010 7	9			4	3	–	04	05	–	06	07	–	0.60	14500	17200	320	295	110	105
			1		4	3	–	04	05	0X	06	07	0W							
				–	–	–	–	–	–	–	–	–	–							
35	R2010 3	9			4	3	–	04	05	–	06	07	–	0.90	19300	22400	545	485	170	150
			1		4	3	–	04	05	0X	06	07	0W							
				–	–	–	–	–	–	–	–	–	–							
E.g.:	R2010 7		1			3		04												

1) Only for accuracy classes N and H

2) Load capacities and load moments for ball runner block **without** ball chain. Load capacities and load moments for ball runner block **with** ball chain ☞ 14
Determination of the dynamic load capacities and load moments is based on a stroke travel of 100,000 m according to DIN ISO 14728-1. Often only 50,000 m are actually stipulated. For comparison: Multiply the values **C**, $\mathbf{M}_t$ and $\mathbf{M}_L$ by 1.26 according to the table.

Note

Dimensions, dimension drawing see standard ball runner block BSHP

Product description

General notes on the ball runner blocks Resist CR

- For material numbers, please refer to the following pages.
- Dimensions, dimension drawing, dynamic characteristics, load capacities, rigidity and moments see corresponding standard ball runner blocks made of steel
- Steel ball runner block body with corrosion-resistant coating, matte-silver finish, hard chrome plated.
- Pre-lubricated

For ball runner blocks and ball guide rails Resist CR, matte-silver, hard chrome plated, deviating tolerances of the dimensions H and A_3 are to be observed (see "Accuracy classes and their tolerances").

Recommended ball runner blocks for ball guide rails Resist CR of accuracy class H and preload class C0 and C1

Recommended ball runner blocks, size 15 – 65
- Accuracy class H
- Preload class C0

Recommended ball runner blocks, size 30 – 65
- Accuracy class H
- Preload class C1

Definition of the format of ball runner blocks

Criterion	Designation	Code (example)		
		F	**N**	**S**
Width	Flange **(F)**	F		
	Slimline **(S)**	S		
	Wide (B)	B		
	Compact (C)	C		
Length	Normal **(N)**		N	
	Long **(L)**		L	
	Short **(K)**		K	
Height	Standard height **(S)**			S
	High **(H)**			H
	Low **(N)**			N

Ball chain (optional)
- Optimized noise level