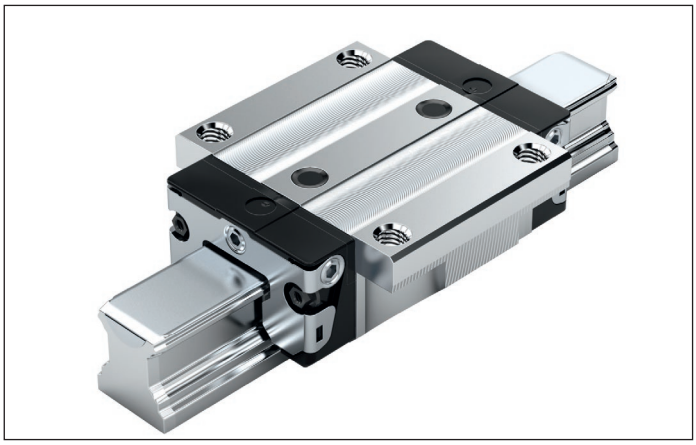
FNS – Flange, normal, standard height R1651 ... 2.



Dynamic characteristics

Travel speed: v_{max} = 5 m/s

Acceleration: a_{max} = 500 m/s²

(If $F_{comb} > 2.8 \cdot F_{pr}$: a_{max} = 50 m/s²)

Note on lubrication

- Pre-lubricated

Note

For all SNS/SNO ball guide rails.

Options and part numbers

Size	Ball runner block with size	Preload class				Accuracy class						Seal with ball runner blocks					
												without ball chain			with ball chain		
		C0	C1	C2	C3	N	H	P	XP	SP	UP	SS	LS[1)]	DS	SS	LS[1)]	DS
15	R1651 1	9				4	3	–	–	–	–	20	21	–	22	23	–
			1			4	3	2	8	1	9	20	21	–	22	23	–
				2		–	3	2	8	1	9	20	21	–	22	23	–
					3	–	–	–	8	1	9	20	21	–	22	23	–
20	R1651 8	9				4	3	–	–	–	–	20	21	–	22	23	–
			1			4	3	2	8	1	9	20	21	2Z	22	23	2Y
				2		–	3	2	8	1	9	20	21	2Z	22	23	2Y
					3	–	–	–	8	1	9	20	21	2Z	22	23	2Y
25	R1651 2	9				4	3	–	–	–	–	20	21	–	22	23	–
			1			4	3	2	8	1	9	20	21	2Z	22	23	2Y
				2		–	3	2	8	1	9	20	21	2Z	22	23	2Y
					3	–	–	–	8	1	9	20	21	2Z	22	23	2Y
30	R1651 7	9				4	3	–	–	–	–	20	21	–	22	23	–
			1			4	3	2	8	1	9	20	21	2Z	22	23	2Y
				2		–	3	2	8	1	9	20	21	2Z	22	23	2Y
					3	–	–	–	8	1	9	20	21	2Z	22	23	2Y
35	R1651 3	9				4	3	–	–	–	–	20	21	–	22	23	–
			1			4	3	2	8	1	9	20	21	2Z	22	23	2Y
				2		–	3	2	8	1	9	20	21	2Z	22	23	2Y
					3	–	–	–	8	1	9	20	21	2Z	22	23	2Y
45	R1651 4	9				4	3	–	–	–	–	20	–	–	22	–	–
			1			4	3	2	8	1	9	20	–	2Z	22	–	2Y
				2		–	3	2	8	1	9	20	–	2Z	22	–	2Y
					3	–	–	–	8	1	9	20	–	2Z	22	–	2Y
e.g.	R1651 7		1				3					20					

1) With accuracy classes N and H and XP in preload class C1 only.

Order example

Options:

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

Part number:

R1651 713 20

Preload classes

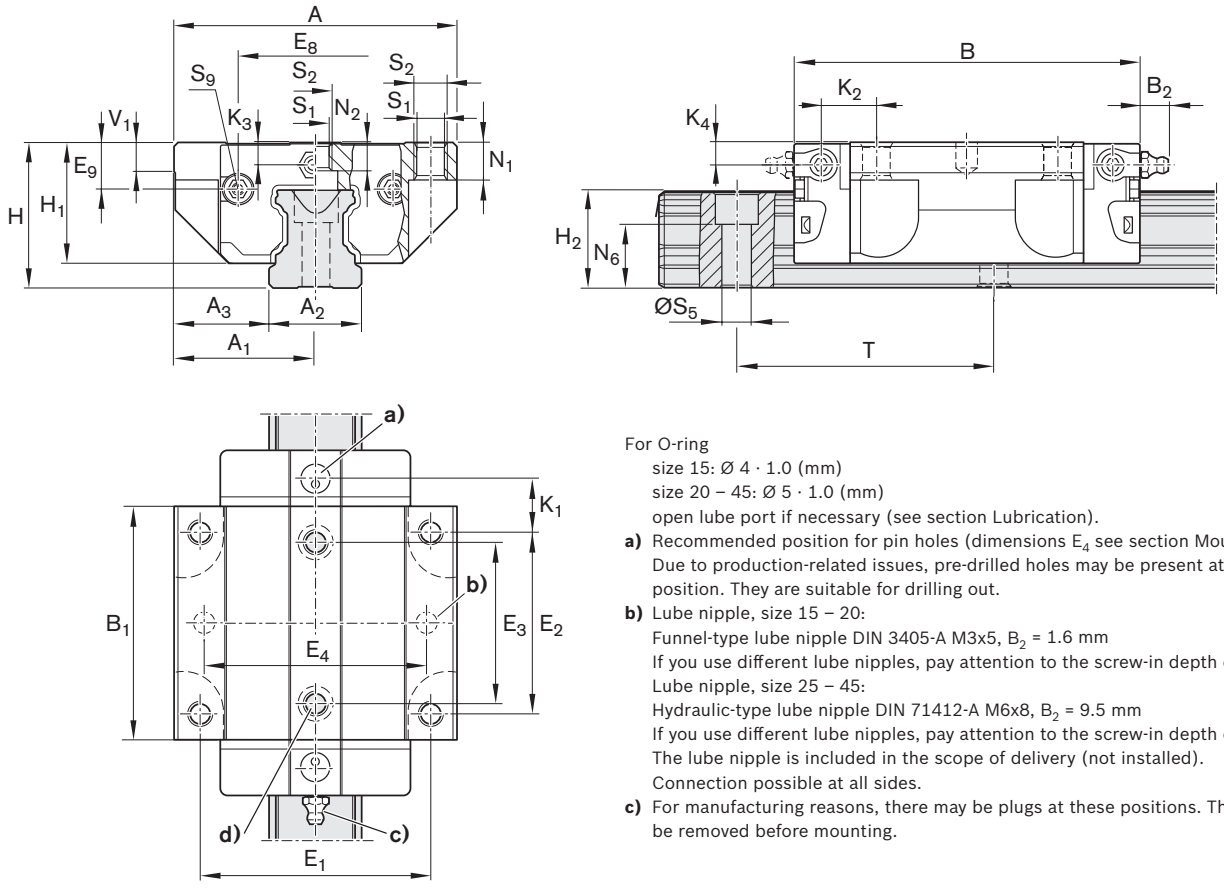
C0 = Without preload (clearance)
C1 = Moderate preload
C2 = Average preload
C3 = High preload

Seals

SS = standard seal
LS = low-friction seal
DS = double-lipped seal

Key

Gray digits
= No preferred variant/ combination
(Some delivery times may be longer)



For O-ring
size 15: Ø 4 · 1.0 (mm)
size 20 – 45: Ø 5 · 1.0 (mm)
open lube port if necessary (see section Lubrication).

a) Recommended position for pin holes (dimensions E_4 see section Mounting) Due to production-related issues, pre-drilled holes may be present at this position. They are suitable for drilling out.

b) Lube nipple, size 15 – 20:
Funnel-type lube nipple DIN 3405-A M3x5, B_2 = 1.6 mm
If you use different lube nipples, pay attention to the screw-in depth of 5 mm!
Lube nipple, size 25 – 45:
Hydraulic-type lube nipple DIN 71412-A M6x8, B_2 = 9.5 mm
If you use different lube nipples, pay attention to the screw-in depth of 8 mm!
The lube nipple is included in the scope of delivery (not installed).
Connection possible at all sides.

c) 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**	**$B^{+0.5}$**	**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
45	120	60.0	45	37.5	137.6	97.0	100	80	60	69.80	20.90	60	50.30	40.15	39.85	17.30	19.3	8.20	8.20

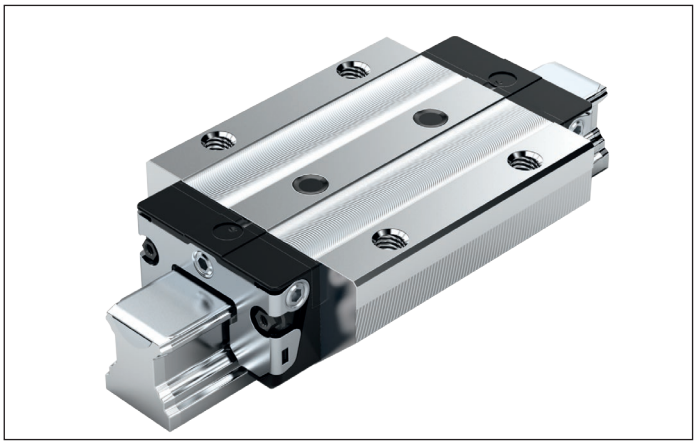
Size	**Dimensions** (mm)									**Weight** (kg)	**Load capacities 3)** (N)		**Load moments 3)** (Nm)			
	N_1	**N_2**	**$N_6^{\pm 0.5}$**	**S_1**	**S_2**	**S_5**	**S_9**	**T**	**V_1**	**m**	**C**	**C_0**	**M_t**	**M_{t0}**	**M_L**	**M_{L0}**
15	5.2	4.40	10.3	4.3	M5	4.5	M2.5x3.5	60	5.0	0.20	9 860	12 700	95	120	68	87
20	7.7	5.20	13.2	5.3	M6	6.0	M3x5	60	6.0	0.45	23 400	29 800	300	380	200	260
25	9.3	7.00	15.2	6.7	M8	7.0	M3x5	60	7.5	0.65	28 600	35 900	410	510	290	360
30	11.0	7.90	17.0	8.5	M10	9.0	M3x5	80	7.0	1.10	36 500	48 100	630	830	440	580
35	12.0	10.15	20.5	8.5	M10	9.0	M3x5	80	8.0	1.60	51 800	80 900	1 110	1 740	720	1 130
45	15.0	12.40	23.5	10.4	M12	14.0	M4x7	105	10.0	3.00	86 400	132 000	2 330	3 560	1 540	2 350

1) Dimension H_2 with cover strip

2) Dimension H_2 without cover strip

3) Load capacities and load moments for ball runner blocks **without** ball chain. Load capacities and load moments for ball runner blocks **with** ball chain ☞ 12
Determination of the dynamic load capacities and load moments is based on a 100,000 m travel life according to DIN ISO14728-1. Often only 50,000 m are actually stipulated. For comparison: Multiply values **C**, $\mathbf{M}_t$ and $\mathbf{M}_L$ by 1.26 according to the table.

FLS – Flange, long, standard height R1653 ... 2.



Dynamic characteristics

Travel speed: v_{max} = 5 m/s

Acceleration: a_{max} = 500 m/s²

(If $F_{comb} > 2.8 \cdot F_{pr}$: a_{max} = 50 m/s²)

Note on lubrication

- Pre-lubricated

Note

For all SNS/SNO ball guide rails.

Options and part numbers

Size	Ball runner block with size	Preload class				Accuracy class						Seal with ball runner blocks					
												without ball chain			with ball chain		
		C0	C1	C2	C3	N	H	P	XP	SP	UP	SS	LS[1)]	DS	SS	LS[1)]	DS
15	R1653 1	9				4	3	–	–	–	–	20	21	–	22	23	–
			1			4	3	2	8	1	9	20	21	–	22	23	–
				2		–	3	2	8	1	9	20	21	–	22	23	–
					3	–	–	–	8	1	9	20	21	–	22	23	–
20	R1653 8	9				4	3	–	–	–	–	20	21	–	22	23	–
			1			4	3	2	8	1	9	20	21	2Z	22	23	2Y
				2		–	3	2	8	1	9	20	21	2Z	22	23	2Y
					3	–	–	–	8	1	9	20	21	2Z	22	23	2Y
25	R1653 2	9				4	3	–	–	–	–	20	21	–	22	23	–
			1			4	3	2	8	1	9	20	21	2Z	22	23	2Y
				2		–	3	2	8	1	9	20	21	2Z	22	23	2Y
					3	–	–	–	8	1	9	20	21	2Z	22	23	2Y
30	R1653 7	9				4	3	–	–	–	–	20	21	–	22	23	–
			1			4	3	2	8	1	9	20	21	2Z	22	23	2Y
				2		–	3	2	8	1	9	20	21	2Z	22	23	2Y
					3	–	–	–	8	1	9	20	21	2Z	22	23	2Y
35	R1653 3	9				4	3	–	–	–	–	20	21	–	22	23	–
			1			4	3	2	8	1	9	20	21	2Z	22	23	2Y
				2		–	3	2	8	1	9	20	21	2Z	22	23	2Y
					3	–	–	–	8	1	9	20	21	2Z	22	23	2Y
45	R1653 4	9				4	3	–	–	–	–	20	–	–	22	–	–
			1			4	3	2	8	1	9	20	–	2Z	22	–	2Y
				2		–	3	2	8	1	9	20	–	2Z	22	–	2Y
					3	–	–	–	8	1	9	20	–	2Z	22	–	2Y
e.g.	R1653 7		1				3					20					

1) With accuracy classes N and H and XP in preload class C1 only.

Order example

Options:

- FLS ball runner block
- Size 30
- Preload class C1
- Accuracy class H
- With standard seal, without ball chain

Part number:

R1653 713 20

Preload classes

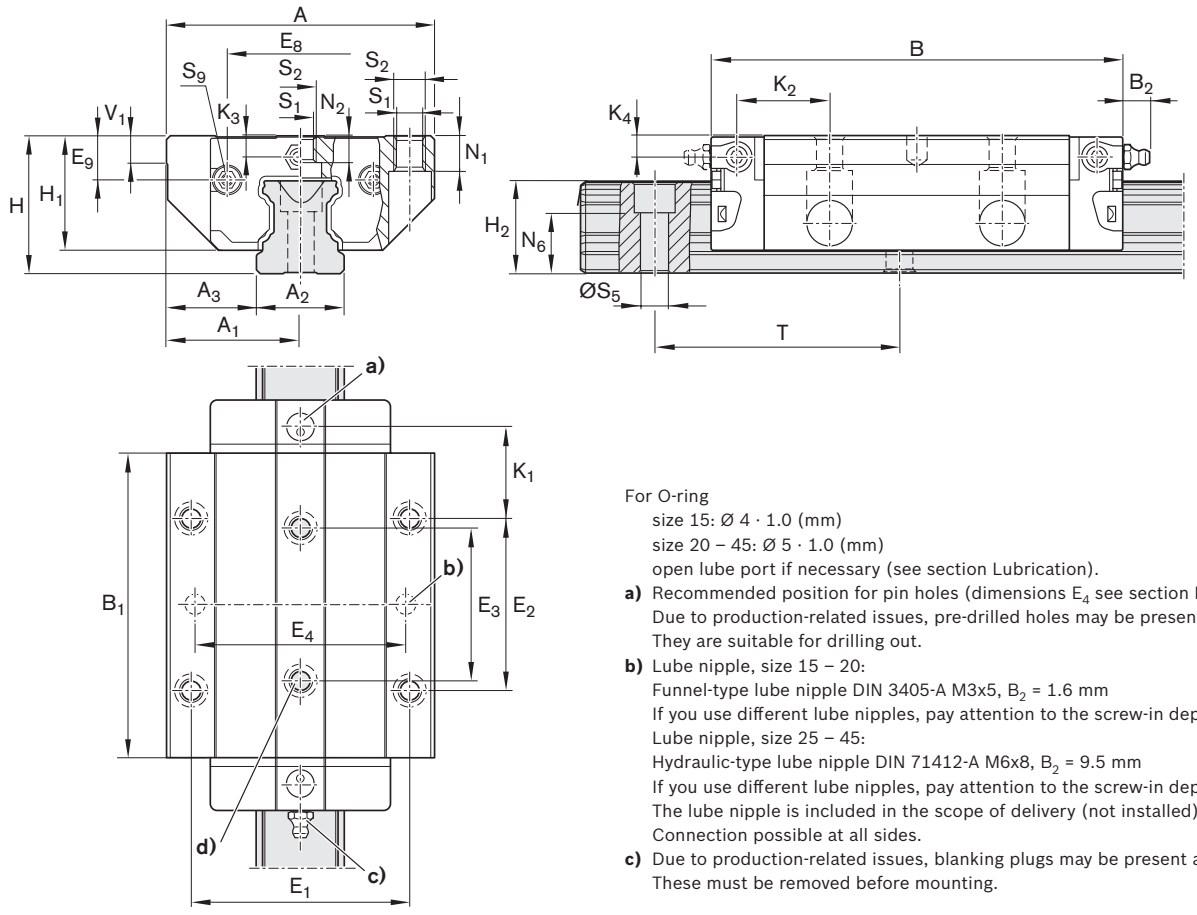
C0 = Without preload (clearance)
C1 = Moderate preload
C2 = Average preload
C3 = High preload

Seals

SS = standard seal
LS = low-friction seal
DS = double-lipped seal

Key

Gray digits
= No preferred variant/ combination
(Some delivery times may be longer)



For O-ring
size 15: Ø 4 · 1.0 (mm)
size 20 – 45: Ø 5 · 1.0 (mm)
open lube port if necessary (see section Lubrication).

a) Recommended position for pin holes (dimensions E_4 see section Mounting)
Due to production-related issues, pre-drilled holes may be present at this position. They are suitable for drilling out.

b) Lube nipple, size 15 – 20:
Funnel-type lube nipple DIN 3405-A M3x5, B_2 = 1.6 mm
If you use different lube nipples, pay attention to the screw-in depth of 5 mm!
Lube nipple, size 25 – 45:
Hydraulic-type lube nipple DIN 71412-A M6x8, B_2 = 9.5 mm
If you use different lube nipples, pay attention to the screw-in depth of 8 mm!
The lube nipple is included in the scope of delivery (not installed).
Connection possible at all sides.

c) Due to production-related issues, blanking plugs may be present at this position. These must be removed before mounting.

Size	**Dimensions** (mm)																		
	A	**A_1**	**A_2**	**A_3**	**$B^{+0.5}$**	**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	72.6	53.6	38	30	26	24.55	6.70	24	19.90	16.30	16.20	15.20	16.80	3.20	3.20
20	63	31.5	20	21.5	91.0	65.6	53	40	35	32.50	7.30	30	25.35	20.75	20.55	19.80	19.80	3.35	3.35
25	70	35.0	23	23.5	107.9	79.5	57	45	40	38.30	11.50	36	29.90	24.45	24.25	23.30	24.45	5.50	5.50
30	90	45.0	28	31.0	119.7	89.4	72	52	44	48.40	14.60	42	35.35	28.55	28.35	25.00	26.70	6.05	6.05
35	100	50.0	34	33.0	139.0	105.5	82	62	52	58.00	17.35	48	40.40	32.15	31.85	28.75	30.25	6.90	6.90
45	120	60.0	45	37.5	174.1	133.5	100	80	60	69.80	20.90	60	50.30	40.15	39.85	35.50	37.50	8.20	8.20

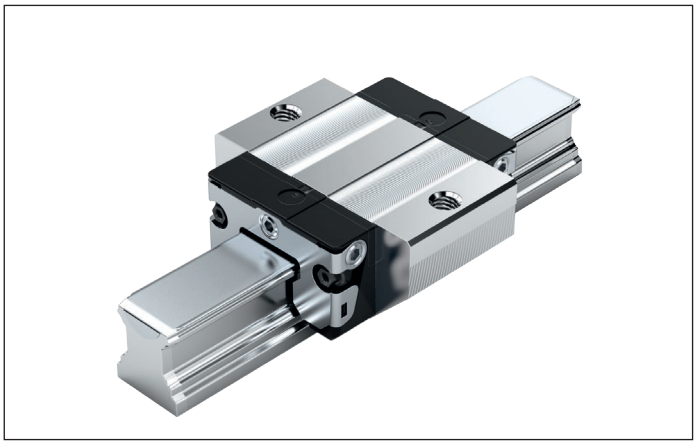
Size	**Dimensions** (mm)									**Weight** (kg)	**Load capacities 3)** (N)		**Load moments 3)** (Nm)			
	N_1	**N_2**	**$N_6^{\pm 0.5}$**	**S_1**	**S_2**	**S_5**	**S_9**	**T**	**V_1**	**m**	**C**	**C_0**	**M_t**	**M_{t0}**	**M_L**	**M_{L0}**
15	5.2	4.40	10.3	4.3	M5	4.5	M2.5x3.5	60	5.0	0.30	12 800	18 400	120	180	120	180
20	7.7	5.20	13.2	5.3	M6	6.0	M3x5	60	6.0	0.55	29 600	41 800	380	540	340	490
25	9.3	7.00	15.2	6.7	M8	7.0	M3x5	60	7.5	0.90	37 300	52 500	530	750	530	740
30	11.0	7.90	17.0	8.5	M10	9.0	M3x5	80	7.0	1.50	46 000	66 900	800	1 160	740	1 080
35	12.0	10.15	20.5	8.5	M10	9.0	M3x5	80	8.0	2.25	66 700	116 000	1 440	2 500	1 290	2 240
45	15.0	12.40	23.5	10.4	M12	14.0	M4x7	105	10.0	4.30	111 000	190 000	3 010	5 120	2 730	4 660

1) Dimension H_2 with cover strip

2) Dimension H_2 without cover strip

3) Load capacities and load moments for ball runner blocks **without** ball chain. Load capacities and load moments for ball runner blocks **with** ball chain ☞ 12
Determination of the dynamic load capacities and load moments is based on a 100,000 m travel life according to DIN ISO14728-1. Often only 50,000 m are actually stipulated. For comparison: Multiply values **C**, $\mathbf{M}_t$ and $\mathbf{M}_L$ by 1.26 according to the table.

FKS – Flange, short, standard height R1665 ... 2.



Dynamic characteristics

Travel speed: v_{max} = 5 m/s

Acceleration: a_{max} = 500 m/s²

(If $F_{comb} > 2.8 \cdot F_{pr}$: a_{max} = 50 m/s²)

Note on lubrication

- Pre-lubricated

Note

For all SNS/SNO ball guide rails.

Options and part numbers

Size	Ball runner block with size	Preload class		Accuracy class		Seal with ball runner blocks					
						without ball chain			with ball chain		
		C0	C1	N	H	SS	LS	DS	SS	LS	DS
15	R1665 1	9		4	3	20	21	–	22	23	–
			1	4	3	20	21	–	22	23	–
20	R1665 8	9		4	3	20	21	–	22	23	–
			1	4	3	20	21	2Z	22	23	2Y
25	R1665 2	9		4	3	20	21	–	22	23	–
			1	4	3	20	21	2Z	22	23	2Y
30	R1665 7	9		4	3	20	21	–	22	23	–
			1	4	3	20	21	2Z	22	23	2Y
35	R1665 3	9		4	3	20	21	–	22	23	–
			1	4	3	20	21	2Z	22	23	2Y
e.g.	R1665 7		1		3	20					

Order example

Options:

- FKS ball runner block
- Size 30
- Preload class C1
- Accuracy class H
- With standard seal, without ball chain

Part number:

R1665 713 20

Preload classes

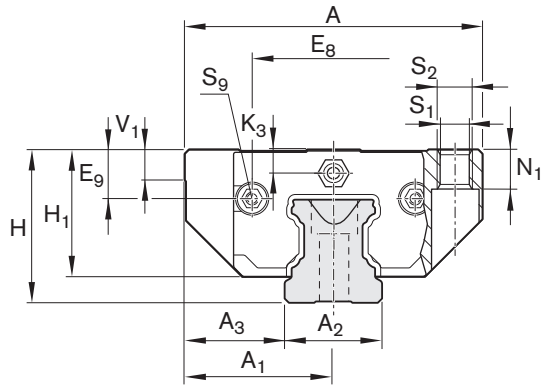
C0 = Without preload (clearance)
C1 = Moderate preload

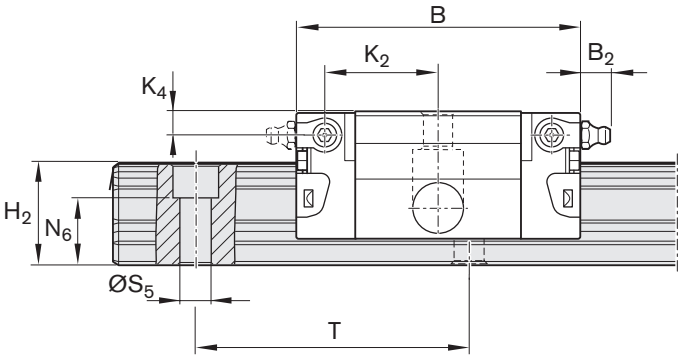
Seals

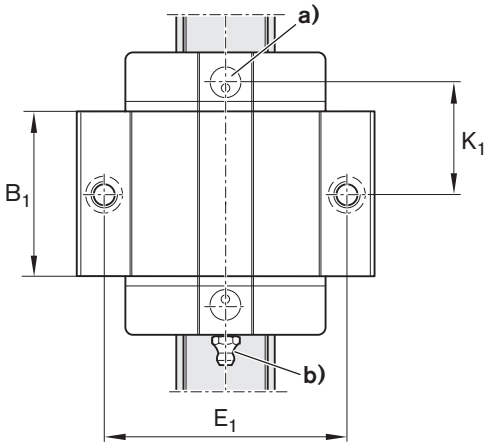
SS = standard seal
LS = low-friction seal
DS = double-lipped seal

Key

Gray digits
= No preferred variant/ combination
(Some delivery times may be longer)







For O-ring
size 15: Ø 4 · 1.0 (mm)
size 20 – 35: Ø 5 · 1.0 (mm)
open lube port if necessary (see section Lubrication).

a) Lube nipple, size 15 – 20:
Funnel-type lube nipple DIN 3405-A M3x5, B_2 = 1.6 mm
If you use different lube nipples, pay attention to the screw-in depth of 5 mm!
Lube nipple, size 25 – 35:
Hydraulic-type lube nipple DIN 71412-A M6x8, B_2 = 9.5 mm
If you use different lube nipples, pay attention to the screw-in depth of 8 mm!
The lube nipple is included in the scope of delivery (not installed).
Connection possible at all sides.

Size	**Dimensions** (mm)																
	A	**A_1**	**A_2**	**A_3**	**$B^{+0.5}$**	**B_1**	**E_1**	**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	44.7	25.7	38	24.55	6.70	24	19.90	16.30	16.20	16.25	17.85	3.20	3.20
20	63	31.5	20	21.5	57.3	31.9	53	32.50	7.30	30	25.35	20.75	20.55	22.95	22.95	3.35	3.35
25	70	35.0	23	23.5	67.0	38.6	57	38.30	11.50	36	29.90	24.45	24.25	25.35	26.50	5.50	5.50
30	90	45.0	28	31.0	75.3	45.0	72	48.40	14.60	42	35.35	28.55	28.35	28.80	30.50	6.05	6.05
35	100	50.0	34	33.0	84.9	51.4	82	58.00	17.35	48	40.40	32.15	31.85	32.70	34.20	6.90	6.90

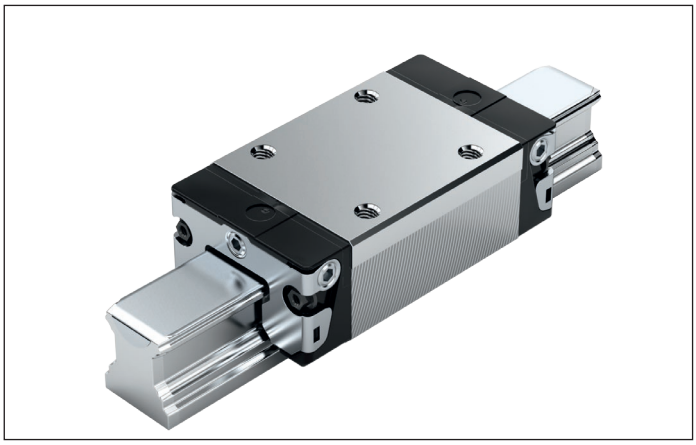
Size	**Dimensions** (mm)								**Weight** (kg)	**Load capacities 3)** (N)		**Load moments 3)** (Nm)			
	N_1	**$N_6^{\pm 0.5}$**	**S_1**	**S_2**	**S_5**	**S_9**	**T**	**V_1**	**m**	**C**	**C_0**	**M_t**	**M_{t0}**	**M_L**	**M_{L0}**
15	5.2	10.3	4.3	M5	4.5	M2.5x3.5	60	5.0	0.15	6 720	7 340	65	71	29	32
20	7.7	13.2	5.3	M6	6.0	M3x5	60	6.0	0.30	15 400	16 500	200	210	83	89
25	9.3	15.2	6.7	M8	7.0	M3x5	60	7.5	0.50	19 800	21 200	280	300	130	140
30	11.0	17.0	8.5	M10	9.0	M3x5	80	7.0	0.80	25 600	28 900	440	500	200	230
35	12.0	20.5	8.5	M10	9.0	M3x5	80	8.0	1.20	36 600	49 300	790	1 060	340	460

1) Dimension H_2 with cover strip

2) Dimension H_2 without cover strip

3) Load capacities and load moments for ball runner blocks **without** ball chain. Load capacities and load moments for ball runner blocks **with** ball chain.☞ 12
Determination of the dynamic load capacities and load moments is based on a 100,000 m travel life according to DIN ISO14728-1. Often only 50,000 m are actually stipulated. For comparison: Multiply values **C**, $\mathbf{M}_t$ and $\mathbf{M}_L$ by 1.26 according to the table.

SNS – slimline, normal, standard height R1622 ... 2.



Dynamic characteristics

Travel speed: v_{max} = 5 m/s

Acceleration: a_{max} = 500 m/s²

(If $F_{comb} > 2.8 \cdot F_{pr}$: a_{max} = 50 m/s²)

Note on lubrication

- Pre-lubricated

Note

For all SNS/SNO ball guide rails.

Options and part numbers

Size	Ball runner block with size	Preload class				Accuracy class				Seal with ball runner blocks					
										without ball chain			with ball chain		
		C0	C1	C2	C3	N	H	P	XP	SS	LS[1)]	DS	SS	LS[1)]	DS
15	R1622 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	R1622 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	R1622 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	R1622 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	R1622 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	R1622 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
e.g.	R1622 7		1				3			20					

1) With accuracy classes N and H and XP in preload class C1 only.

Order example

Options:

- SNS ball runner blocks
- Size 30
- Preload class C1
- Accuracy class H
- With standard seal, without ball chain

Part number:

R1622 713 20

Preload classes

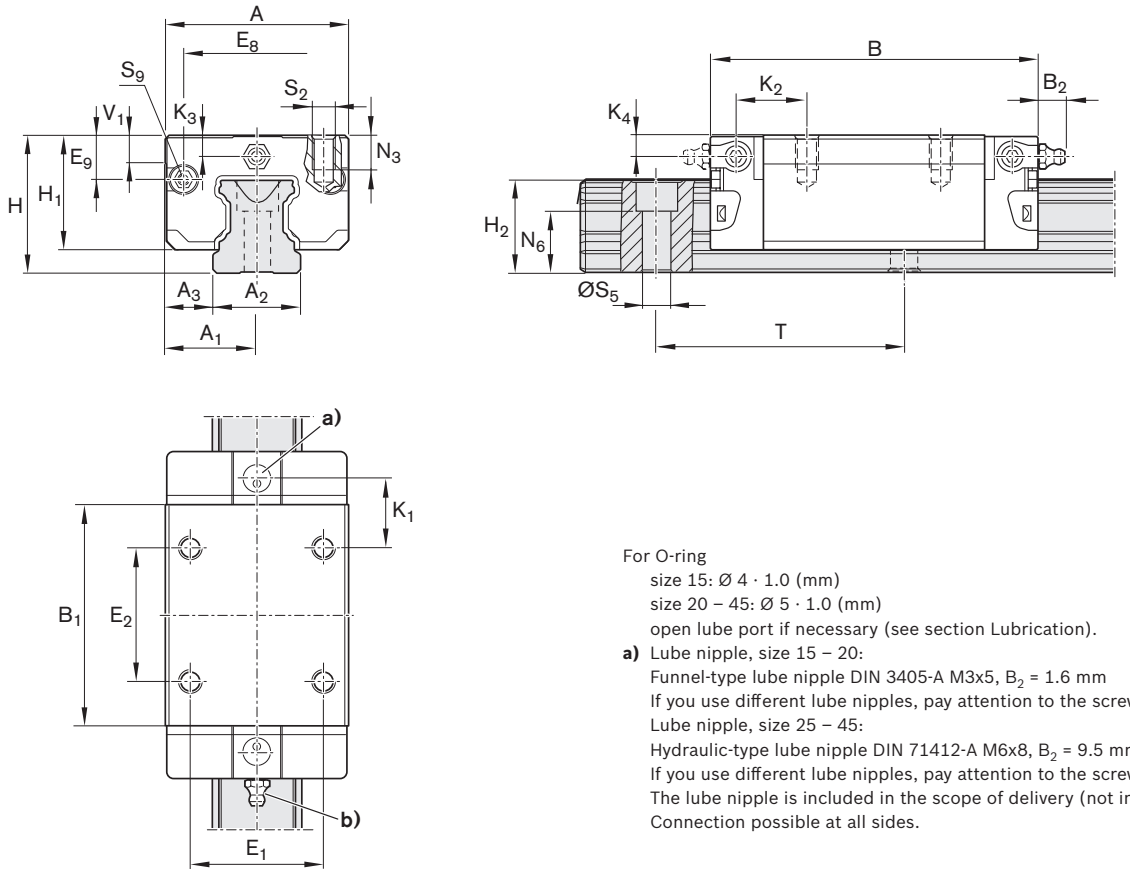
C0 = Without preload (clearance)
C1 = Moderate preload
C2 = Average preload
C3 = High preload

Seals

SS = standard seal
LS = low-friction seal
DS = double-lipped seal

Key

Gray digits
= No preferred variant/ combination
(Some delivery times may be longer)



For O-ring
size 15: Ø 4 · 1.0 (mm)
size 20 – 45: Ø 5 · 1.0 (mm)
open lube port if necessary (see section Lubrication).

a) Lube nipple, size 15 – 20:
Funnel-type lube nipple DIN 3405-A M3x5, B_2 = 1.6 mm
If you use different lube nipples, pay attention to the screw-in depth of 5 mm!
Lube nipple, size 25 – 45:
Hydraulic-type lube nipple DIN 71412-A M6x8, B_2 = 9.5 mm
If you use different lube nipples, pay attention to the screw-in depth of 8 mm!
The lube nipple is included in the scope of delivery (not installed).
Connection possible at all sides.

Size	**Dimensions** (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	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
45	86	43	45	20.5	137.6	97.0	60	60	69.80	20.90	60	50.30	40.15	39.85	27.30	29.30	8.20	8.20

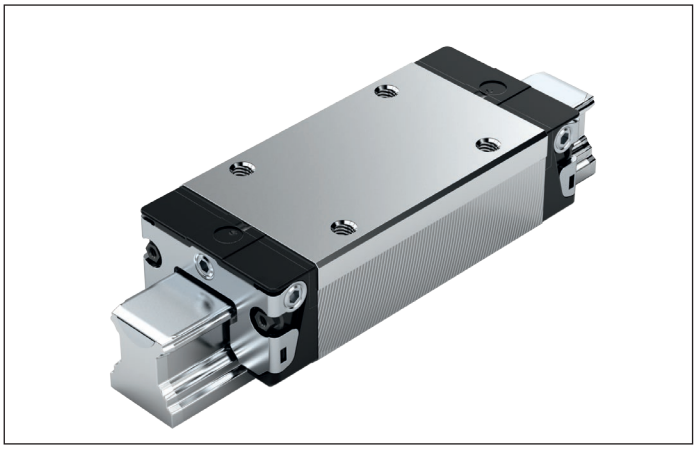
Size	**Dimensions** (mm)							**Weight** (kg)	**Load capacities[3)]** (N)		**Load moments[3)]** (Nm)			
	N_3	**$N_6^{\pm 0.5}$**	**S_2**	**S_5**	**S_9**	**T**	**V_1**	**m**	**C**	**C_0**	**M_t**	**M_{t0}**	**M_L**	**M_{L0}**
15	6.0	10.3	M4	4.5	M2.5x3.5	60	5.0	0.15	9 860	12 700	95	120	68	87
20	7.5	13.2	M5	6.0	M3x5	60	6.0	0.35	23 400	29 800	300	380	200	260
25	9.0	15.2	M6	7.0	M3x5	60	7.5	0.50	28 600	35 900	410	510	290	360
30	12.0	17.0	M8	9.0	M3x5	80	7.0	0.85	36 500	48 100	630	830	440	580
35	13.0	20.5	M8	9.0	M3x5	80	8.0	1.25	51 800	80 900	1 110	1 740	720	1 130
45	18.0	23.5	M10	14.0	M4x7	105	10.0	2.40	86 400	132 000	2 330	3 560	1 540	2 350

1) Dimension H_2 with cover strip

2) Dimension H_2 without cover strip

3) Load capacities and load moments for ball runner blocks **without** ball chain. Load capacities and load moments for ball runner blocks **with** ball chain.☞ 12
Determination of the dynamic load capacities and load moments is based on a 100,000 m travel life according to DIN ISO14728-1. Often only 50,000 m are actually stipulated. For comparison: Multiply values **C**, $\mathbf{M}_t$ and $\mathbf{M}_L$ by 1.26 according to the table.

SLS – slimline, long, standard height R1623 ... 2.



Dynamic characteristics

Travel speed: v_{max} = 5 m/s

Acceleration: a_{max} = 500 m/s²

(If $F_{comb} > 2.8 \cdot F_{pr}$: a_{max} = 50 m/s²)

Note on lubrication

- Pre-lubricated

Note

For all SNS/SNO ball guide rails.

Options and part numbers

Size	Ball runner block with size	Preload class				Accuracy class				Seal with ball runner blocks					
										without ball chain			with ball chain		
		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
e.g.	R1623 7		1				3			20					

1) With accuracy classes N and H and XP in preload class C1 only.

Order example

Options:

- SLS ball runner blocks
- Size 30
- Preload class C1
- Accuracy class H
- With standard seal, without ball chain

Part number:

R1623 713 20

Preload classes

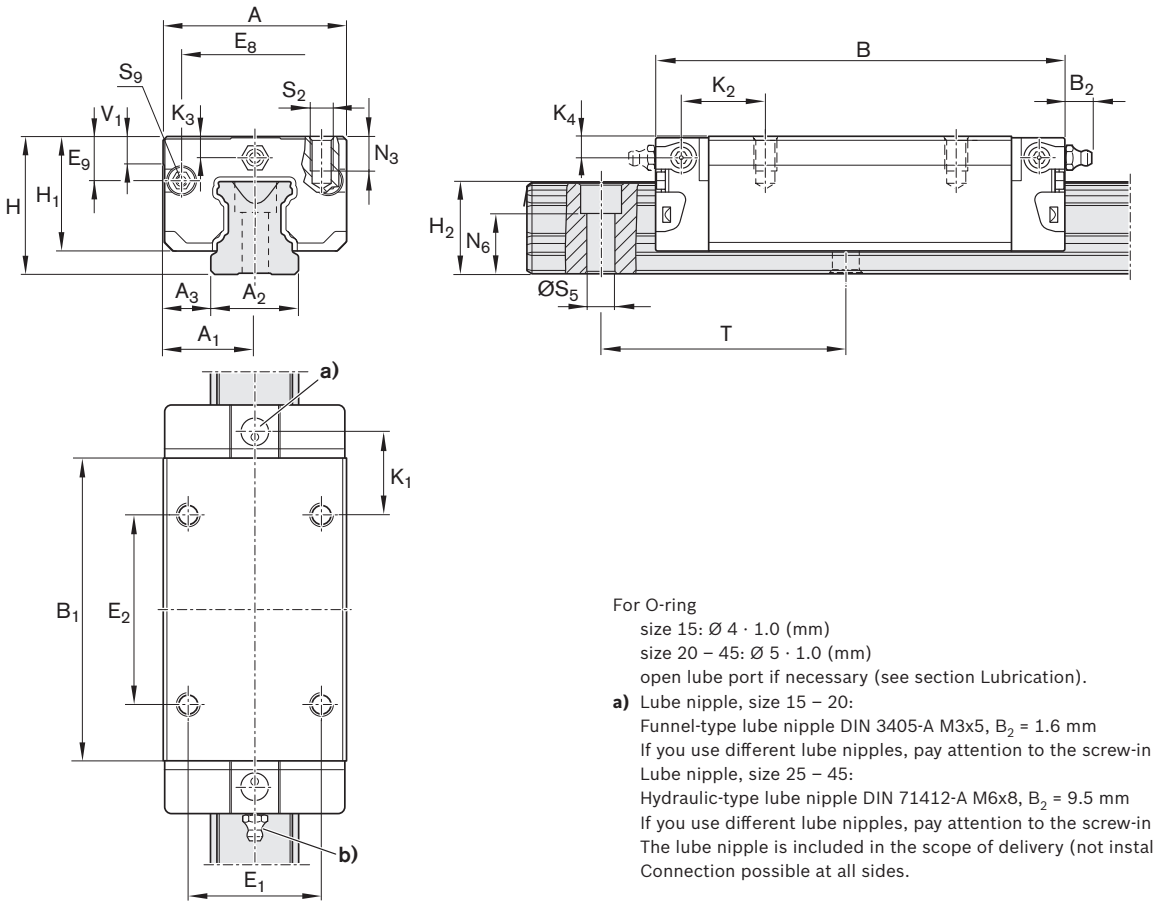
C0 = Without preload (clearance)
C1 = Moderate preload
C2 = Average preload
C3 = High preload

Seals

SS = standard seal
LS = low-friction seal
DS = double-lipped seal

Key

Gray digits
= No preferred variant/ combination
(Some delivery times may be longer)



For O-ring
size 15: Ø 4 · 1.0 (mm)
size 20 – 45: Ø 5 · 1.0 (mm)
open lube port if necessary (see section Lubrication).

a) Lube nipple, size 15 – 20:
Funnel-type lube nipple DIN 3405-A M3x5, B_2 = 1.6 mm
If you use different lube nipples, pay attention to the screw-in depth of 5 mm!
Lube nipple, size 25 – 45:
Hydraulic-type lube nipple DIN 71412-A M6x8, B_2 = 9.5 mm
If you use different lube nipples, pay attention to the screw-in depth of 8 mm!
The lube nipple is included in the scope of delivery (not installed).
Connection possible at all sides.

Size	**Dimensions** (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

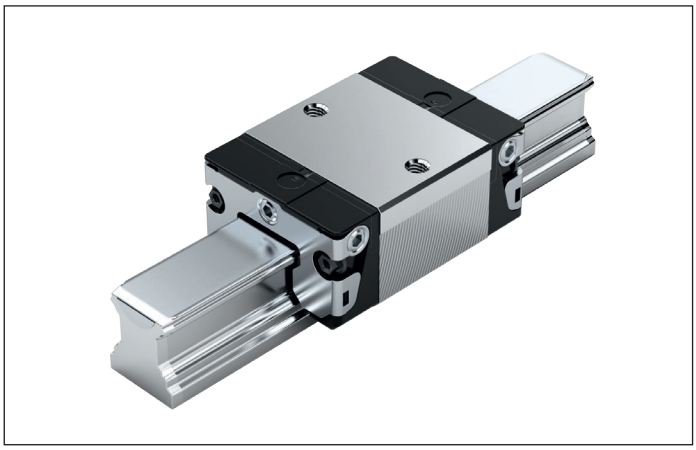
Size	**Dimensions** (mm)							**Weight** (kg)	**Load capacities[3)]** (N)		**Load moments[3)]** (Nm)			
	N_3	**$N_6^{\pm 0.5}$**	**S_2**	**S_5**	**S_9**	**T**	**V_1**	**m**	**C**	**C_0**	**M_t**	**M_{t0}**	**M_L**	**M_{L0}**
15	6.0	10.3	M4	4.5	M2.5x3.5	60	5.0	0.20	12 800	18 400	120	180	120	180
20	7.5	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) Dimension H_2 with cover strip

2) Dimension H_2 without cover strip

3) Load capacities and load moments for ball runner blocks **without** ball chain. Load capacities and load moments for ball runner blocks **with** ball chain.☞ 12
Determination of the dynamic load capacities and load moments is based on a 100,000 m travel life according to DIN ISO14728-1. Often only 50,000 m are actually stipulated. For comparison: Multiply values **C**, $\mathbf{M}_t$ and $\mathbf{M}_L$ by 1.26 according to the table.

SKS – slimline short standard height R1666 ... 2.



Dynamic characteristics

Travel speed: v_{max} = 5 m/s

Acceleration: a_{max} = 500 m/s²

(If $F_{comb} > 2.8 \cdot F_{pr}$: a_{max} = 50 m/s²)

Note on lubrication

- Pre-lubricated

Note

For all SNS/SNO ball guide rails.

Options and part numbers

Size	Ball runner block with size	Preload class		Accuracy class		Seal with ball runner blocks					
						without ball chain			with ball chain		
		C0	C1	N	H	SS	LS	DS	SS	LS	DS
15	R1666 1	9		4	3	20	21	–	22	23	–
			1	4	3	20	21	–	22	23	–
20	R1666 8	9		4	3	20	21	–	22	23	–
			1	4	3	20	21	2Z	22	23	2Y
25	R1666 2	9		4	3	20	21	–	22	23	–
			1	4	3	20	21	2Z	22	23	2Y
30	R1666 7	9		4	3	20	21	–	22	23	–
			1	4	3	20	21	2Z	22	23	2Y
35	R1666 3	9		4	3	20	21	–	22	23	–
			1	4	3	20	21	2Z	22	23	2Y
e.g.	R1666 7		1		3	20					

Order example

Options:

- SKS ball runner block
- Size 30
- Preload class C1
- Accuracy class H
- With standard seal, without ball chain

Part number:

R1666 713 20

Preload classes

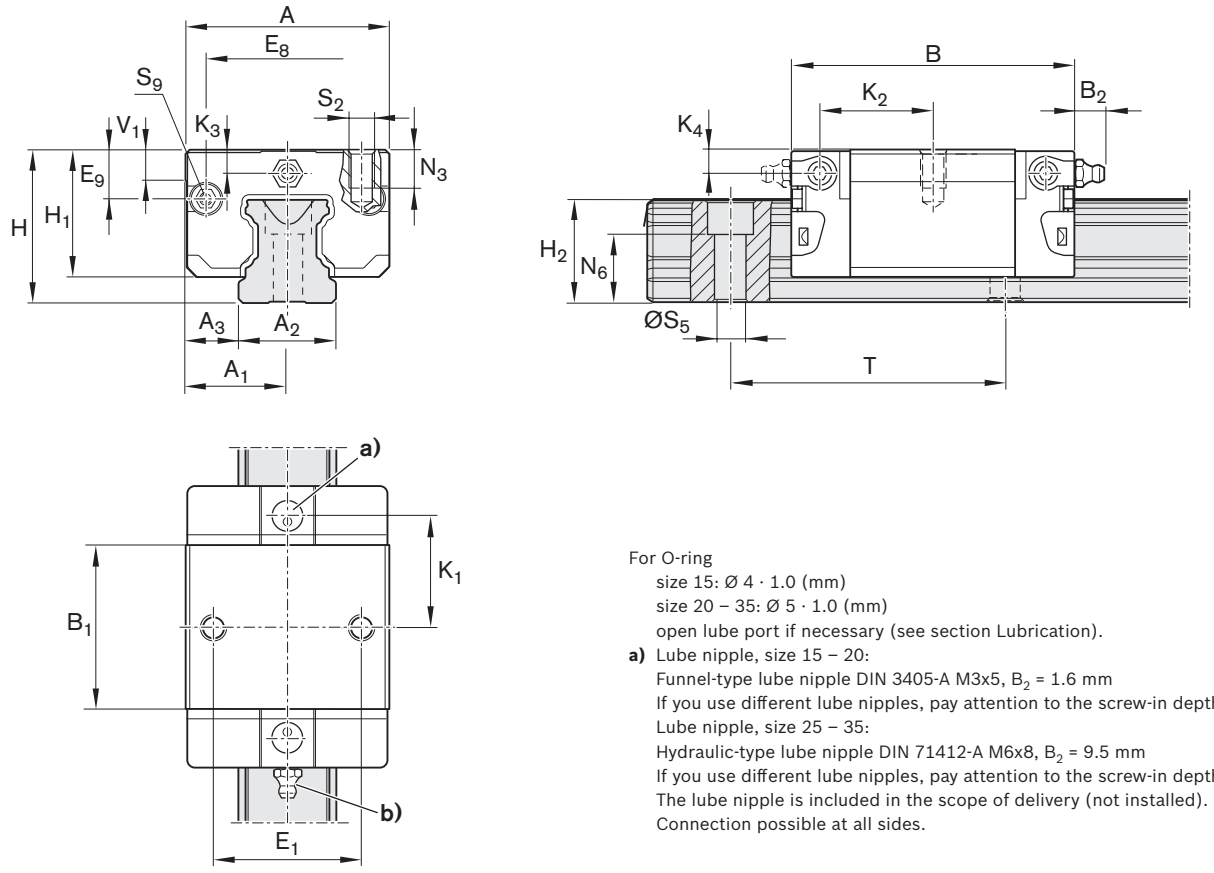
C0 = Without preload (clearance)
C1 = Moderate preload

Seals

SS = standard seal
LS = low-friction seal
DS = double-lipped seal

Key

Gray digits
= No preferred variant/ combination
(Some deliver.y times may be longer)



For O-ring
size 15: Ø 4 · 1.0 (mm)
size 20 – 35: Ø 5 · 1.0 (mm)
open lube port if necessary (see section Lubrication).

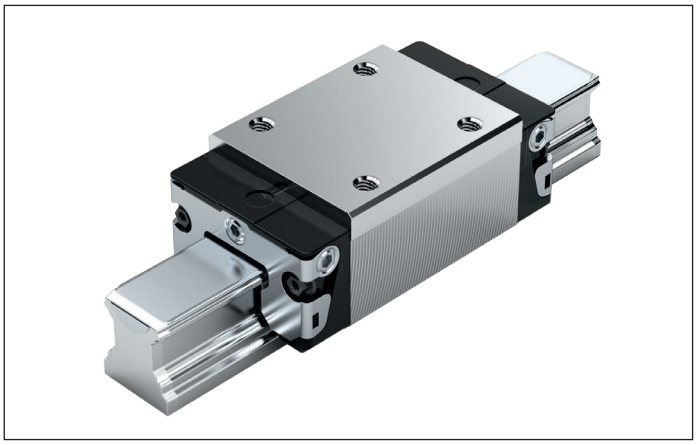
a) Lube nipple, size 15 – 20:
Funnel-type lube nipple DIN 3405-A M3x5, B_2 = 1.6 mm
If you use different lube nipples, pay attention to the screw-in depth of 5 mm!
Lube nipple, size 25 – 35:
Hydraulic-type lube nipple DIN 71412-A M6x8, B_2 = 9.5 mm
If you use different lube nipples, pay attention to the screw-in depth of 8 mm!
The lube nipple is included in the scope of delivery (not installed).
Connection possible at all sides.

Size	**Dimensions** (mm)																
	A	**A_1**	**A_2**	**A_3**	**$B^{+0.5}$**	**B_1**	**E_1**	**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	44.7	25.7	26	24.55	6.70	24	19.90	16.30	16.20	16.25	17.85	3.20	3.20
20	44	22	20	12.0	57.3	31.9	32	32.50	7.30	30	25.35	20.75	20.55	22.95	22.95	3.35	3.35
25	48	24	23	12.5	67.0	38.6	35	38.30	11.50	36	29.90	24.45	24.25	25.35	26.50	5.50	5.50
30	60	30	28	16.0	75.3	45.0	40	48.40	14.60	42	35.35	28.55	28.35	28.80	30.50	6.05	6.05
35	70	35	34	18.0	84.9	51.4	50	58.00	17.35	48	40.40	32.15	31.85	32.70	34.20	6.90	6.90

Size	**Dimensions** (mm)							**Weight** (kg)	**Load capacities 3)** (N)		**Load moments 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	0.10	6 720	7 340	65	71	29	32
20	7.5	13.2	M5	6.0	M3x5	60	6.0	0.25	15 400	16 500	200	210	83	89
25	9.0	15.2	M6	7.0	M3x5	60	7.5	0.35	19 800	21 200	280	300	130	140
30	12.0	17.0	M8	9.0	M3x5	80	7.0	0.60	25 600	28 900	440	500	200	230
35	13.0	20.5	M8	9.0	M3x5	80	8.0	0.90	36 600	49 300	790	1 060	340	460

1) Dimension H_2 with cover strip
2) Dimension H_2 without cover strip
3) Load capacities and load moments for ball runner blocks **without** ball chain. Load capacities and load moments for ball runner blocks **with** ball chain.☞ 12
Determination of the dynamic load capacities and load moments is based on a 100,000 m travel life according to DIN ISO14728-1. Often only 50,000 m are actually stipulated. For comparison: Multiply values **C**, $\mathbf{M}_t$ and $\mathbf{M}_L$ by 1.26 according to the table.

SNH – slimline, normal, high R1621 ... 2.



Dynamic characteristics

Travel speed: v_{max} = 5 m/s

Acceleration: a_{max} = 500 m/s²

(If $F_{comb} > 2.8 \cdot F_{pr}$: a_{max} = 50 m/s²)

Note on lubrication

- Pre-lubricated

Note

For all SNS/SNO ball guide rails.

Options and part numbers

Size	Ball runner block with size	Preload class				Accuracy class				Seal with ball runner blocks					
										without ball chain			with ball chain		
		C0	C1	C2	C3	N	H	P	XP	SS	LS[1)]	DS	SS	LS[1)]	DS
15	R1621 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	–
25	R1621 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	R1621 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	R1621 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	R1621 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
e.g.	R1621 7		1				3			20					

1) With accuracy classes N and H and XP in preload class C1 only.

Order example

Options:

- SNH ball runner block
- Size 30
- Preload class C1
- Accuracy class H
- With standard seal, without ball chain

Part number:

R1621 713 20

Preload classes

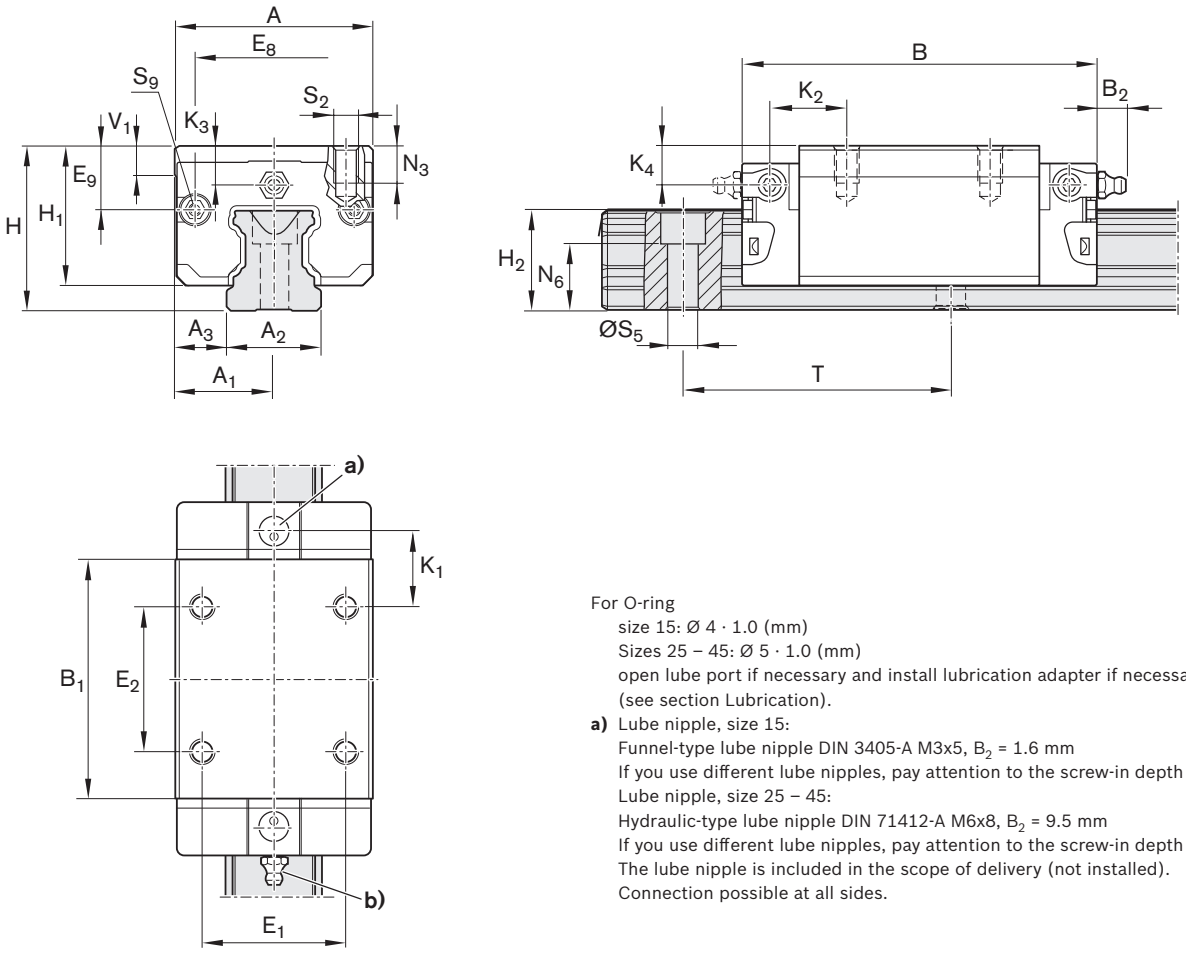
C0 = Without preload (clearance)
C1 = Moderate preload
C2 = Average preload
C3 = High preload

Seals

SS = standard seal
LS = low-friction seal
DS = double-lipped seal

Key

Gray digits
= No preferred variant/ combination
(Some delivery times may be longer)



For O-ring
size 15: Ø 4 · 1.0 (mm)
Sizes 25 – 45: Ø 5 · 1.0 (mm)
open lube port if necessary and install lubrication adapter if necessary (see section Lubrication).

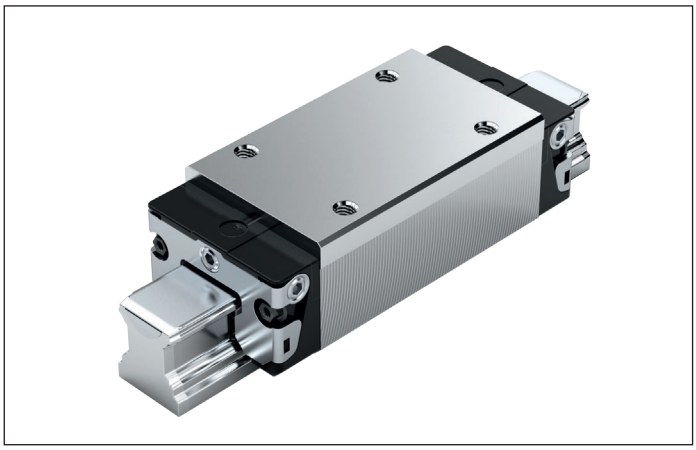
a) Lube nipple, size 15:
Funnel-type lube nipple DIN 3405-A M3x5, B_2 = 1.6 mm
If you use different lube nipples, pay attention to the screw-in depth of 5 mm!
Lube nipple, size 25 – 45:
Hydraulic-type lube nipple DIN 71412-A M6x8, B_2 = 9.5 mm
If you use different lube nipples, pay attention to the screw-in depth of 8 mm!
The lube nipple is included in the scope of delivery (not installed).
Connection possible at all sides.

Size	**Dimensions** (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	58.2	39.2	26	26	24.55	10.70	28	23.90	16.30	16.20	10.00	11.60	7.20	7.20
25	48	24	23	12.5	86.2	57.8	35	35	38.30	15.50	40	33.90	24.45	24.25	17.45	18.60	9.50	9.50
30	60	30	28	16.0	97.7	67.4	40	40	48.40	17.60	45	38.35	28.55	28.35	20.00	21.70	9.05	9.05
35	70	35	34	18.0	110.5	77.0	50	50	58.00	24.35	55	47.40	32.15	31.85	20.50	22.00	13.90	13.90
45	86	43	45	20.5	137.6	97.0	60	60	69.80	30.90	70	60.30	40.15	39.85	27.30	29.30	18.20	18.20

Size	**Dimensions** (mm)							**Weight** (kg)	**Load capacities[3)]** (N)		**Load moments[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	9 860	12 700	95	120	68	87
25	9.0	15.2	M6	7.0	M3x5	60	7.5	0.60	28 600	35 900	410	510	290	360
30	12.0	17.0	M8	9.0	M3x5	80	7.0	0.95	36 500	48 100	630	830	440	580
35	13.0	20.5	M8	9.0	M3x5	80	8.0	1.55	51 800	80 900	1 110	1 740	720	1 130
45	18.0	23.5	M10	14.0	M4x7	105	10.0	3.00	86 400	132 000	2 330	3 560	1 540	2 350

1) Dimension H_2 with cover strip
2) Dimension H_2 without cover strip
3) Load capacities and load moments for ball runner blocks **without** ball chain. Load capacities and load moments for ball runner blocks **with** ball chain.☞ 12
Determination of the dynamic load capacities and load moments is based on a 100,000 m travel life according to DIN ISO14728-1. Often only 50,000 m are actually stipulated. For comparison: Multiply values **C**, $\mathbf{M_t}$ and $\mathbf{M_L}$ by 1.26 according to the table.

SLH – slimline, long, high R1624 ... 2.



Dynamic characteristics

Travel speed: v_{max} = 5 m/s

Acceleration: a_{max} = 500 m/s²

(If $F_{comb} > 2.8 \cdot F_{pr}$: a_{max} = 50 m/s²)

Note on lubrication

- Pre-lubricated

Note

For all SNS/SNO ball guide rails.

Options and part numbers

Size	Ball runner block with size	Preload class				Accuracy class				Seal with ball runner blocks					
										without ball chain			with ball chain		
		C0	C1	C2	C3	N	H	P	XP	SS	LS[1)]	DS	SS	LS[1)]	DS
25	R1624 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	R1624 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	R1624 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	R1624 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
e.g.	R16247		1				3			20					

1) With accuracy classes N and H and XP in preload class C1 only.

Order example

Options:

- SLH ball runner block
- Size 30
- Preload class C1
- Accuracy class H
- With standard seal, without ball chain

Part number:

R1624 713 20

Preload classes

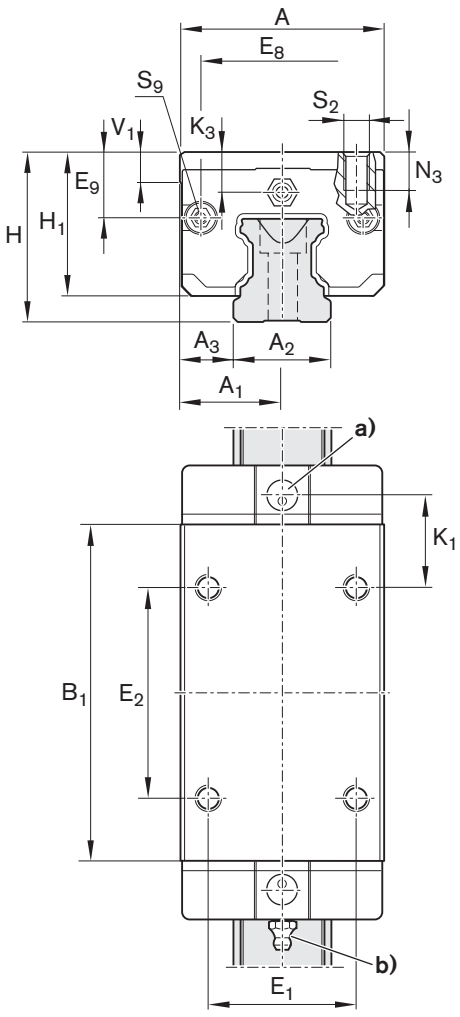
C0 = Without preload (clearance)
C1 = Moderate preload
C2 = Average preload
C3 = High preload

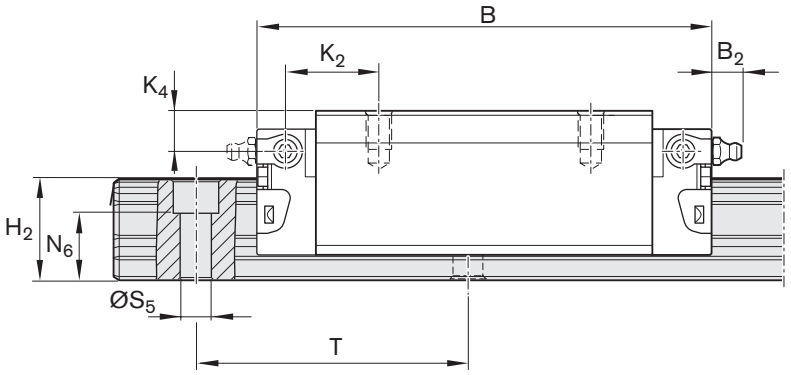
Seals

SS = standard seal
LS = low-friction seal
DS = double-lipped seal

Key

Gray digits
= No preferred variant/ combination
(Some delivery times may be longer)





For O-ring
size 25 – 45: Ø 5 · 1.0 (mm)
open lube port if necessary and install lubrication adapter if necessary (see section Lubrication).

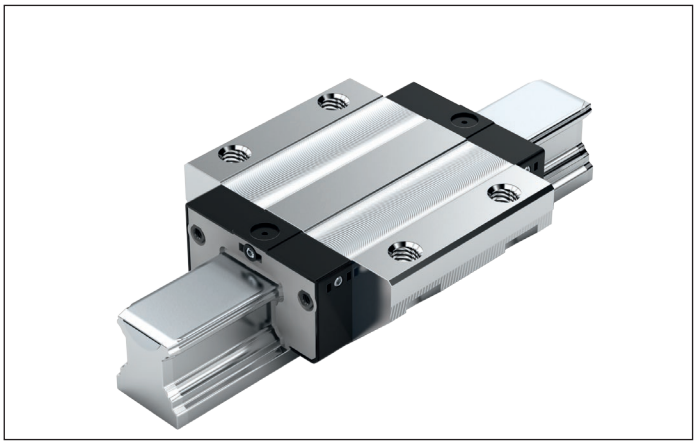
a) Lube nipple, size 25 – 45:
Hydraulic-type lube nipple DIN 71412-A M6x8, B_2 = 9.5 mm
If you use different lube nipples, pay attention to the screw-in depth of 8 mm!
The lube nipple is included in the scope of delivery (not installed).
Connection possible at all sides.

Size	**Dimensions** (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**
25	48	24	23	12.5	107.9	79.5	35	50	38.30	15.50	40	33.90	24.45	24.25	20.80	21.95	9.50	9.50
30	60	30	28	16.0	119.7	89.4	40	60	48.40	17.60	45	38.35	28.55	28.35	21.00	22.70	9.05	9.05
35	70	35	34	18.0	139.0	105.5	50	72	58.00	24.35	55	47.40	32.15	31.85	23.75	25.25	13.90	13.90
45	86	43	45	20.5	174.1	133.5	60	80	69.80	30.90	70	60.30	40.15	39.85	35.50	37.50	18.20	18.20

Size	**Dimensions** (mm)							**Weight** (kg)	**Load capacities**[3)] (N)		**Load moments**[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}**
25	9.0	15.2	M6	7.0	M3x5	60	7.5	0.80	37 300	52 500	530	750	530	740
30	12.0	17.0	M8	9.0	M3x5	80	7.0	1.20	46 000	66 900	800	1 160	740	1 080
35	13.0	20.5	M8	9.0	M3x5	80	8.0	2.10	66 700	116 000	1 440	2 500	1 290	2 240
45	18.0	23.5	M10	14.0	M4x7	105	10.0	4.10	111 000	190 000	3 010	5 120	2 730	4 660

1) Dimension H_2 with cover strip
2) Dimension H_2 without cover strip
3) Load capacities and load moments for ball runner blocks **without** ball chain. Load capacities and load moments for ball runner blocks **with** ball chain.☞ 12
Determination of the dynamic load capacities and load moments is based on a 100,000 m travel life according to DIN ISO14728-1. Often only 50,000 m are actually stipulated. For comparison: Multiply values **C**, $\mathbf{M_t}$ and $\mathbf{M_L}$ by 1.26 according to the table.

FNN – Flange, normal, low profile R1693 ... 1.



Dynamic characteristics

Travel speed: v_{max} = 3 m/s

Acceleration: a_{max} = 250 m/s²

(If $F_{comb} > 2.8 \cdot F_{pr}$: a_{max} = 50 m/s²)

Note on lubrication

- Not pre-lubricated

Note

For all SNS/SNO ball guide rails.

Options and part numbers

Size	Ball runner block with size	Preload class		Accuracy class		Seal with ball runner blocks without ball chain	
		C0	C1	N	H	SS	LS
20	R1693 8	9	1	4	3	10	11
25[1)]	R1693 2	9	1	4	3	10	11
e.g.	R1693 8		1		3	10	

1) BSHP ball runner block

Order example

Options:

- FNN ball runner block
- Size 20
- Preload class C1
- Accuracy class H
- With standard seal, without ball chain

Part number:

R1693 813 10

Preload classes

C0 = Without preload (clearance)

C1 = Moderate preload

Seals

SS = standard seal

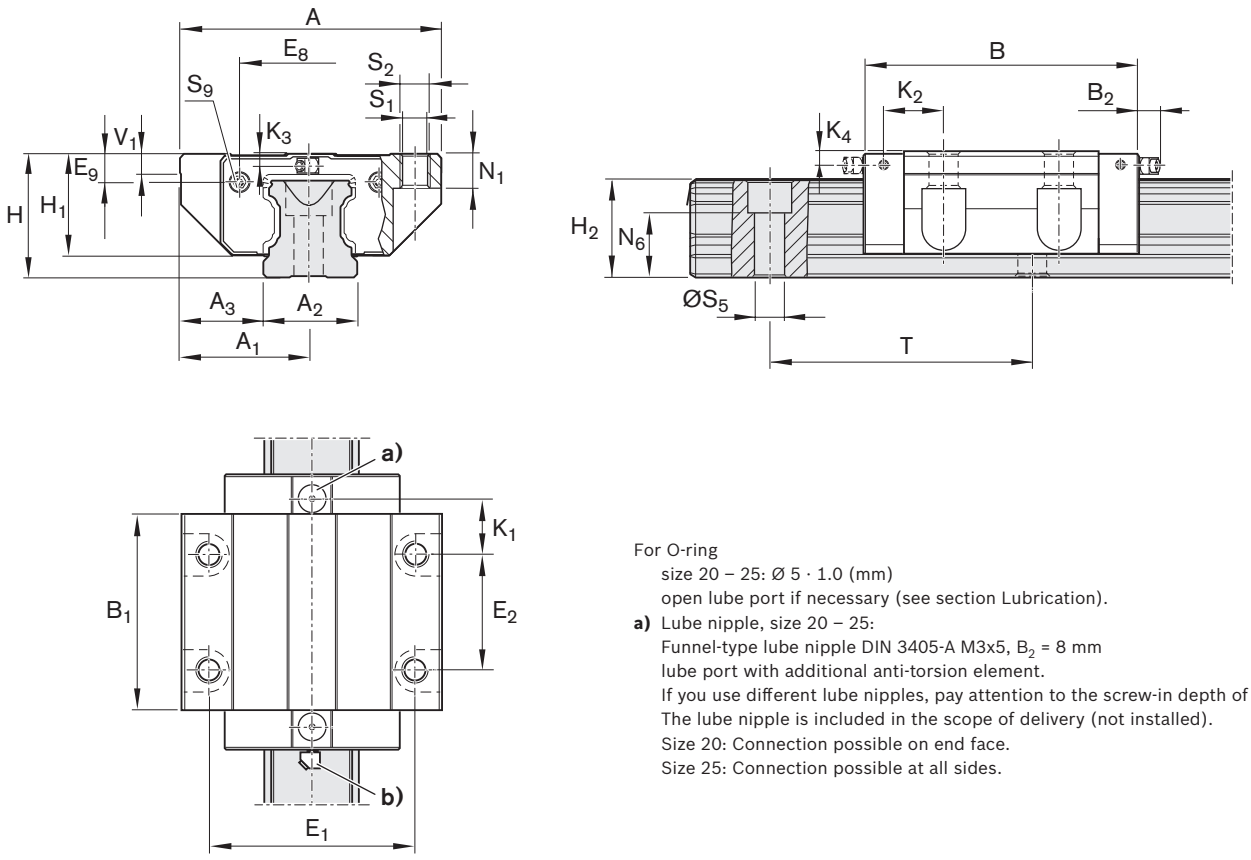
LS = low-friction seal

Key

Gray digits

= No preferred variant/ combination

(Some delivery times may be longer)



For O-ring
size 20 – 25: Ø 5 · 1.0 (mm)
open lube port if necessary (see section Lubrication).

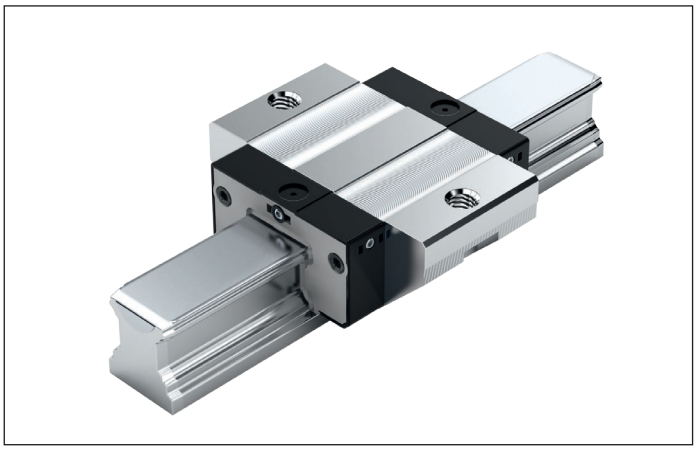
a) Lube nipple, size 20 – 25:
Funnel-type lube nipple DIN 3405-A M3x5, B_2 = 8 mm
lube port with additional anti-torsion element.
If you use different lube nipples, pay attention to the screw-in depth of 5 mm!
The lube nipple is included in the scope of delivery (not installed).
Size 20: Connection possible on end face.
Size 25: Connection possible at all sides.

Size	**Dimensions** (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**
20	59	29.5	20	19.5	72.5	49.6	49	32	30.5	5.6	28	23.0	20.75	20.55	13.0	–	3.6	–
25	73	36.5	23	25.0	81.0	57.8	60	35	38.3	8.5	33	26.5	24.45	24.25	16.6	17.0	4.1	4.1

Size	**Dimensions** (mm)								**Weight** (kg)	**Load capacities 3)** (N)		**Load moments 3)** (Nm)			
	N_1	**$N_6^{\pm 0.5}$**	**S_1**	**S_2**	**S_5**	**S_9**	**T**	**V_1**	**m**	**C**	**C_0**	**M_t**	**M_{t0}**	**M_L**	**M_{L0}**
20	7.7	13.2	5.3	M6	6.0	M3x5	60	6.0	0.40	14 500	24 400	190	310	100	165
25	9.3	15.2	6.7	M8	7.0	M3x5	60	7.5	0.60	28 600	35 900	410	510	290	360

1) Dimension H_2 with cover strip
2) Dimension H_2 without cover strip
3) Load capacities and load moments for ball runner blocks **without** ball chain.
Determination of the dynamic load capacities and load moments is based on a 100,000 m travel life according to DIN ISO14728-1. Often only 50,000 m are actually stipulated. For comparison: Multiply values **C**, $\mathbf{M_t}$ and $\mathbf{M_L}$ by 1.26 according to the table.

FKN – Flange, short, low profile R1663 ... 1.



Dynamic characteristics

Travel speed: v_{max} = 3 m/s

Acceleration: a_{max} = 250 m/s²

(If $F_{comb} > 2.8 \cdot F_{pr}$: a_{max} = 50 m/s²)

Note on lubrication

- Not pre-lubricated

Note

For all SNS/SNO ball guide rails.

Options and part numbers

Size	Ball runner block with size	Preload class		Accuracy class		Seal with ball runner blocks without ball chain	
		C0	C1	N	H	SS	LS
20	R1663 8	9	1	4	3	10	11
25[1)]	R1663 2	9	1	4	3	10	11
e.g.	R1663 8		1		3	10	

1) BSHP ball runner block

Order example

Options:

- FKN ball runner block
- Size 20
- Preload class C1
- Accuracy class H
- With standard seal, without ball chain

Part number:

R1663 813 10

Preload classes

C0 = Without preload (clearance)

C1 = Moderate preload

Seals

SS = standard seal

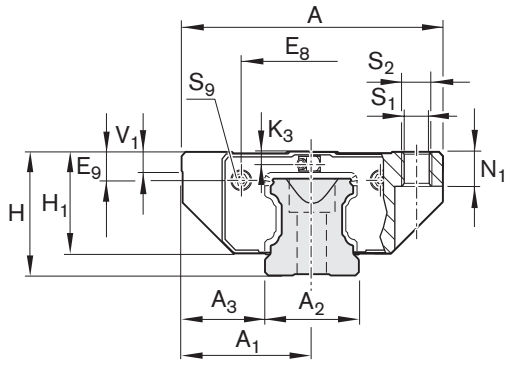
LS = low-friction seal

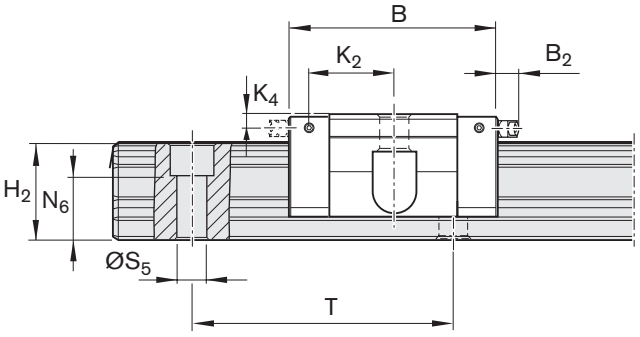
Key

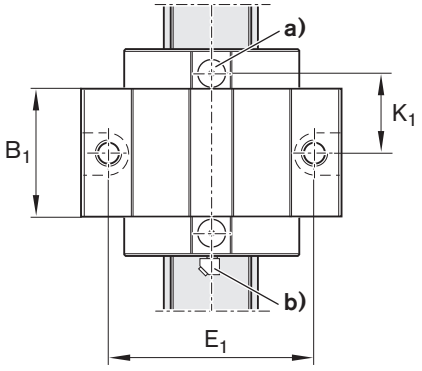
Gray digits

= No preferred variant/ combination

(Some delivery times may be longer)







For O-ring
size 20 – 25: Ø 5 · 1.0 (mm)
open lube port if necessary (see section Lubrication).

a) Lube nipple, size 20 – 25:
Funnel-type lube nipple DIN 3405-A M3x5, B_2 = 8 mm
lube port with additional anti-torsion element.
If you use different lube nipples, pay attention to the screw-in depth of 5 mm!
The lube nipple is included in the scope of delivery (not installed).
Size 20: Connection possible on end face.
Size 25: Connection possible at all sides.

Size	**Dimensions** (mm)																
	A	**A_1**	**A_2**	**A_3**	**$B^{+0.5}$**	**B_1**	**E_1**	**E_8**	**E_9**	**H**	**H_1**	**H_2[1)]**	**H_2[2)]**	**K_1**	**K_2**	**K_3**	**K_4**
20	59	29.5	20	19.5	55	31.9	49	30.5	5.6	28	23.0	20.75	20.55	20.1	–	3.6	–
25	73	36.5	23	25.0	62	38.6	60	38.3	8.5	33	26.5	24.45	24.25	24.5	25.0	4.1	4.1

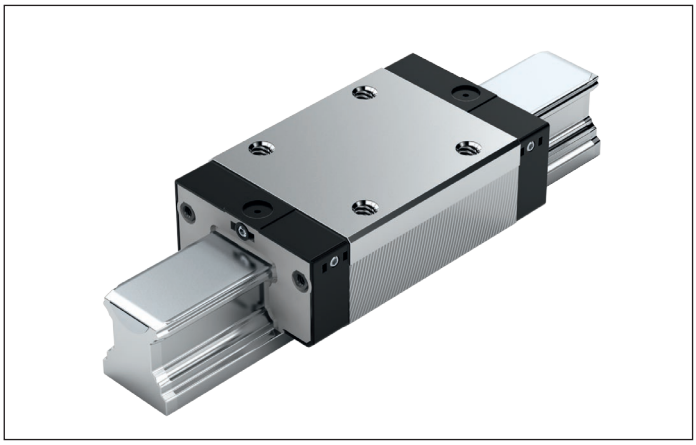
Size	**Dimensions** (mm)								**Weight** (kg)	**Load capacities[3)]** (N)		**Load moments[3)]** (Nm)			
	N_1	**$N_6^{\pm 0.5}$**	**S_1**	**S_2**	**S_5**	**S_9**	**T**	**V_1**	**m**	**C**	**C_0**	**M_t**	**M_{t0}**	**M_L**	**M_{L0}**
20	7.7	13.2	5.3	M6	6.0	M3x5	60	6.0	0.25	9 600	13 600	120	170	40	58
25	9.3	15.2	6.7	M8	7.0	M3x5	60	7.5	0.45	19 800	21 200	280	300	130	140

1) Dimension H_2 with cover strip

2) Dimension H_2 without cover strip

3) Load capacities and load moments for ball runner blocks **without** ball chain.
Determination of the dynamic load capacities and load moments is based on a 100,000 m travel life according to DIN ISO14728-1. Often only 50,000 m are actually stipulated. For comparison: Multiply values **C**, $\mathbf{M}_t$ and $\mathbf{M}_L$ by 1.26 according to the table.

SNN – slimline, normal, low profile R1694 ... 1.



Dynamic characteristics

Travel speed: v_{max} = 3 m/s

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

(If $F_{comb} > 2.8 \cdot F_{pr}$: a_{max} = 50 m/s^2)

Note on lubrication

- Not pre-lubricated

Note

For all SNS/SNO ball guide rails.

Options and part numbers

Size	Ball runner block with size	Preload class		Accuracy class		Seal with ball runner blocks without ball chain	
		C0	C1	N	H	SS	LS
20	R1694 8	9	1	4	3	10	11
25[1)]	R1694 2	9	1	4	3	10	11
e.g.	R1694 8		1		3	10	

1) BSHP ball runner block

Order example

Options:

- SNN ball runner block
- Size 20
- Preload class C1
- Accuracy class H
- With standard seal, without ball chain

Part number:

R1694 813 10

Preload classes

C0 = Without preload (clearance)

C1 = Moderate preload

Seals

SS = standard seal

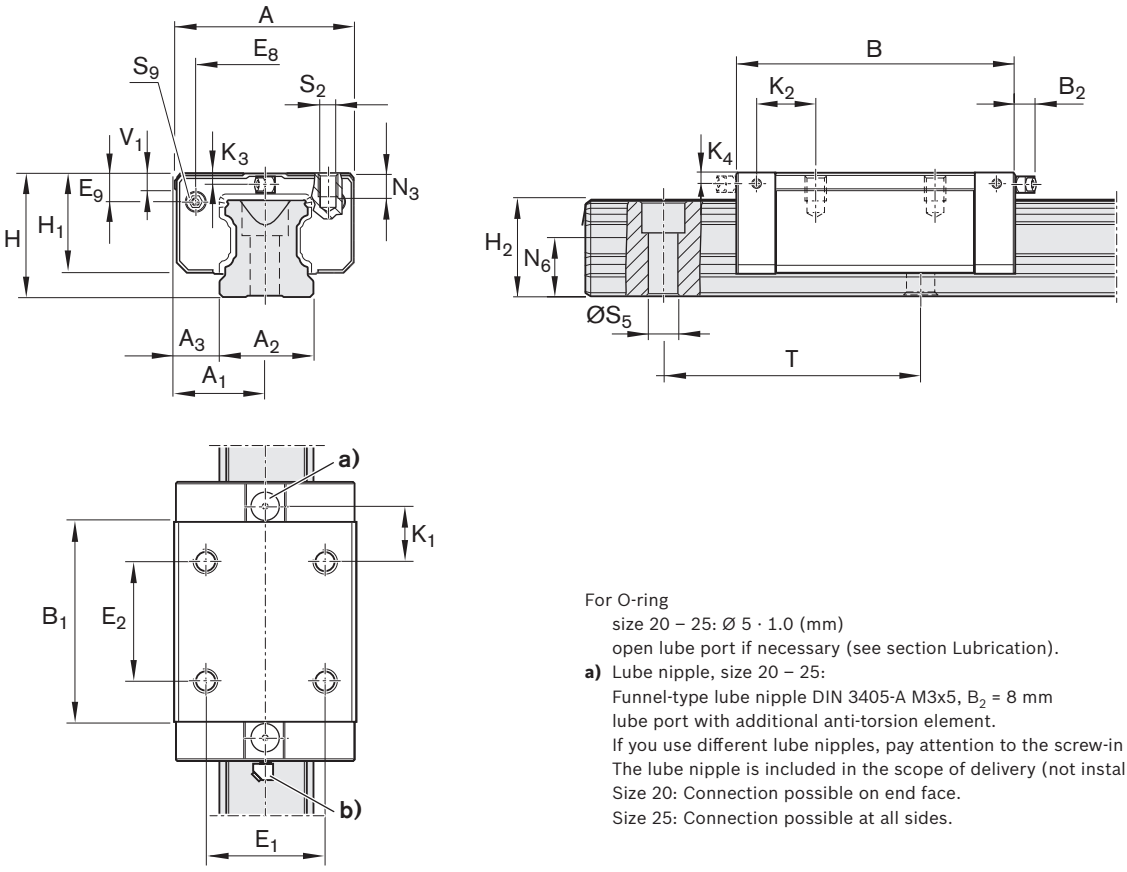
LS = low-friction seal

Key

Gray digits

= No preferred variant/ combination

(Some delivery times may be longer)



For O-ring
size 20 – 25: Ø 5 · 1.0 (mm)
open lube port if necessary (see section Lubrication).

a) Lube nipple, size 20 – 25:
Funnel-type lube nipple DIN 3405-A M3x5, B_2 = 8 mm
lube port with additional anti-torsion element.
If you use different lube nipples, pay attention to the screw-in depth of 5 mm!
The lube nipple is included in the scope of delivery (not installed).
Size 20: Connection possible on end face.
Size 25: Connection possible at all sides.

Size	Dimensions (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**
20	42	21	20	11.0	72.5	49.6	32	32	30.5	5.6	28	23.0	20.75	20.55	13.0	–	3.6	–
25	48	24	23	12.5	81.0	57.8	35	35	38.3	8.5	33	26.5	24.45	24.25	16.6	17.0	4.1	4.1

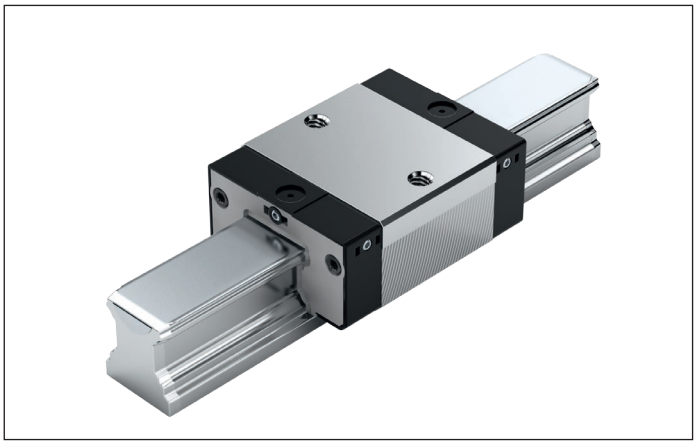
Size	Dimensions (mm)							Weight (kg)	Load capacities 3) (N)		Load moments 3) (Nm)			
	N_3	**$N_6^{\pm 0.5}$**	**S_2**	**S_5**	**S_9**	**T**	**V_1**	**m**	**C**	**C_0**	**M_t**	**M_{t0}**	**M_L**	**M_{L0}**
20	6.3	13.2	M5	6.0	M3x5	60	6.0	0.30	14 500	24 400	190	310	100	165
25	7.0	15.2	M6	7.0	M3x5	60	7.5	0.45	28 600	35 900	410	510	290	360

1) Dimension H_2 with cover strip

2) Dimension H_2 without cover strip

3) Load capacities and load moments for ball runner blocks **without** ball chain.
Determination of the dynamic load capacities and load moments is based on a 100,000 m travel life according to DIN ISO14728-1. Often only 50,000 m are actually stipulated. For comparison: Multiply values **C**, $\mathbf{M}_t$ and $\mathbf{M}_L$ by 1.26 according to the table.

SKN – slimline, short, low profile R1664 ... 1.



Dynamic characteristics

Travel speed: v_{max} = 3 m/s

Acceleration: a_{max} = 250 m/s²

(If $F_{comb} > 2.8 \cdot F_{pr}$: a_{max} = 50 m/s²)

Note on lubrication

- Not pre-lubricated

Note

For all SNS/SNO ball guide rails.

Options and part numbers

Size	Ball runner block with size	Preload class		Accuracy class		Seal with ball runner blocks without ball chain	
		C0	C1	N	H	SS	LS
20	R1664 8	9	1	4	3	10	11
25[1)]	R1664 2	9	1	4	3	10	11
e.g.	R1664 8		1		3	10	

1) BSHP ball runner block

Order example

Options:

- SKN ball runner block
- Size 20
- Preload class C1
- Accuracy class H
- With standard seal, without ball chain

Part number:

R1664 813 10

Preload classes

C0 = Without preload (clearance)

C1 = Moderate preload

Seals

SS = standard seal

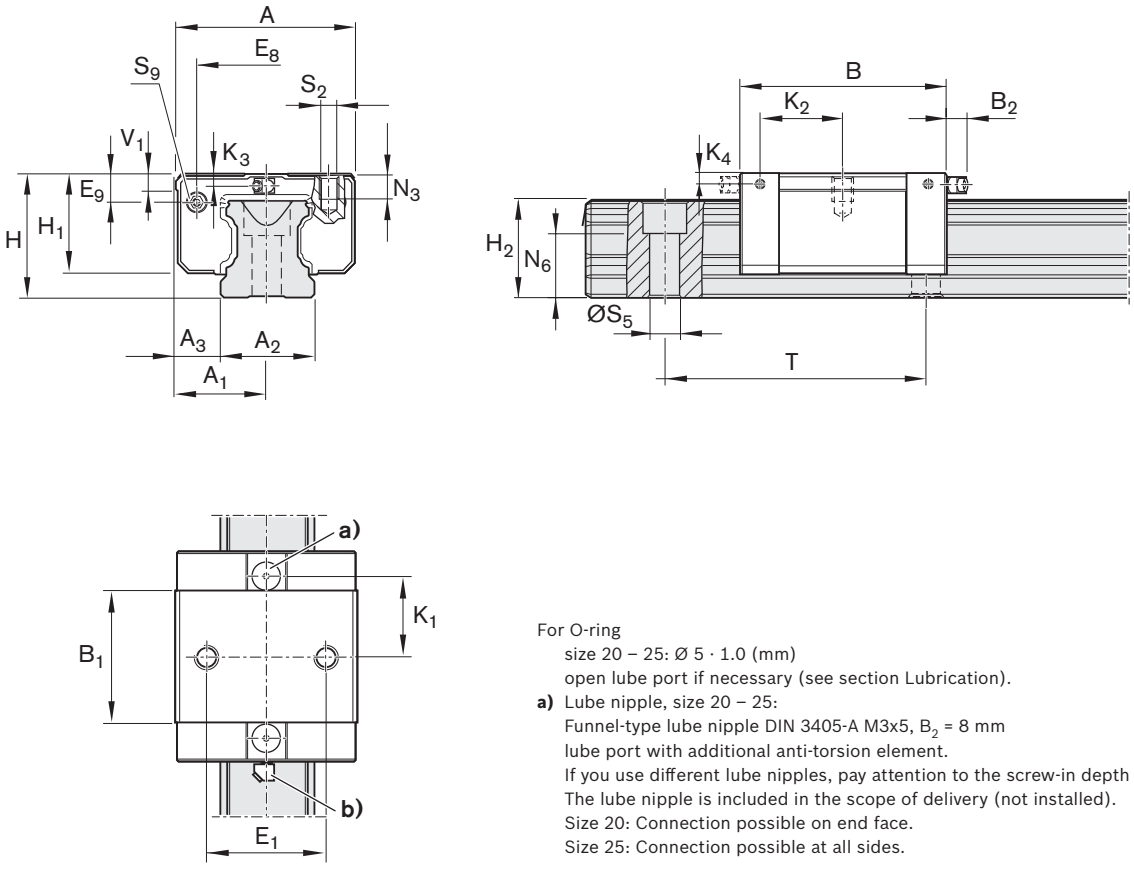
LS = low-friction seal

Key

Gray digits

= No preferred variant/ combination

(Some delivery times may be longer)



For O-ring
size 20 – 25: Ø 5 · 1.0 (mm)
open lube port if necessary (see section Lubrication).

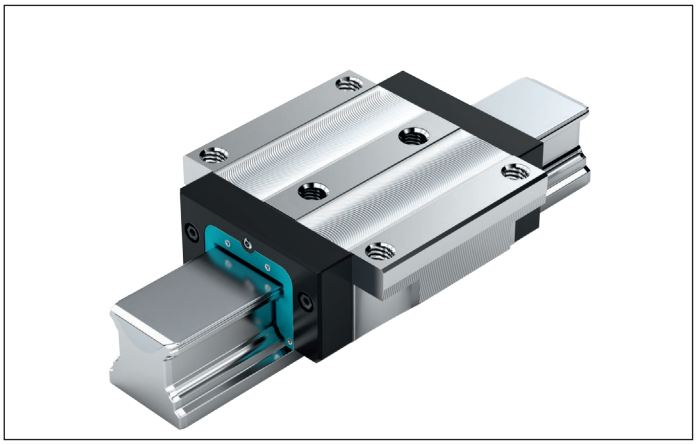
a) Lube nipple, size 20 – 25:
Funnel-type lube nipple DIN 3405-A M3x5, B_2 = 8 mm
lube port with additional anti-torsion element.
If you use different lube nipples, pay attention to the screw-in depth of 5 mm!
The lube nipple is included in the scope of delivery (not installed).
Size 20: Connection possible on end face.
Size 25: Connection possible at all sides.

Size	**Dimensions** (mm)																
	A	**A_1**	**A_2**	**A_3**	**$B^{+0.5}$**	**B_1**	**E_1**	**E_8**	**E_9**	**H**	**H_1**	**H_2[1)]**	**H_2[2)]**	**K_1**	**K_2**	**K_3**	**K_4**
20	42	21	20	11.0	55	31.9	32	30.5	5.6	28	23.0	20.75	20.55	20.1	–	3.6	–
25	48	24	23	12.5	62	38.6	35	38.3	8.5	33	26.5	24.45	24.25	24.5	25.0	4.1	4.1

Size	**Dimensions** (mm)							**Weight** (kg)	**Load capacities[3)]** (N)		**Load moments[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}**
20	6.3	13.2	M5	6.0	M3x5	60	6.0	0.20	9 600	13 600	120	170	40	58
25	7.0	15.2	M6	7.0	M3x5	60	7.5	0.30	19 800	21 200	280	300	130	140

1) Dimension H_2 with cover strip
2) Dimension H_2 without cover strip
3) Load capacities and load moments for ball runner blocks **without** ball chain.
Determination of the dynamic load capacities and load moments is based on a 100,000 m travel life according to DIN ISO14728-1. Often only 50,000 m are actually stipulated. For comparison: Multiply values **C**, $\mathbf{M}_t$ and $\mathbf{M}_L$ by 1.26 according to the table.

FNS – Flange normal standard height, R1651 ... 1.



Dynamic characteristics

Speed: v_{max} = 3 m/s

Acceleration: a_{max} = 250 m/s²

(If $F_{comb} > 2.8 \cdot F_{pr}$: a_{max} = 50 m/s²)

Note on lubrication

- Not pre-lubricated

Note

Can be used on all ball guide rails SNS.

Options and part numbers

Size	Ball runner block with size	Preload class				Accuracy class					Seal with ball runner blocks without ball chain
		C0	C1	C2	C3	N	H	P	SP	UP	SS
55	R1651 5	9				4	3	–	–	–	10
			1			4	3	2	1	9	10
				2		–	3	2	1	9	10
					3	–	–	2	1	9	10
65	R1651 6	9				4	3	–	–	–	10
			1			4	3	2	1	9	10
				2		–	3	2	1	9	10
					3	–	–	2	1	9	10
e.g.	R1651 5		1				3				10

Order example

Options:

- FNS ball runner block
- Size 55
- Preload class C1
- Accuracy class H
- With standard seal, without ball chain

Part number:

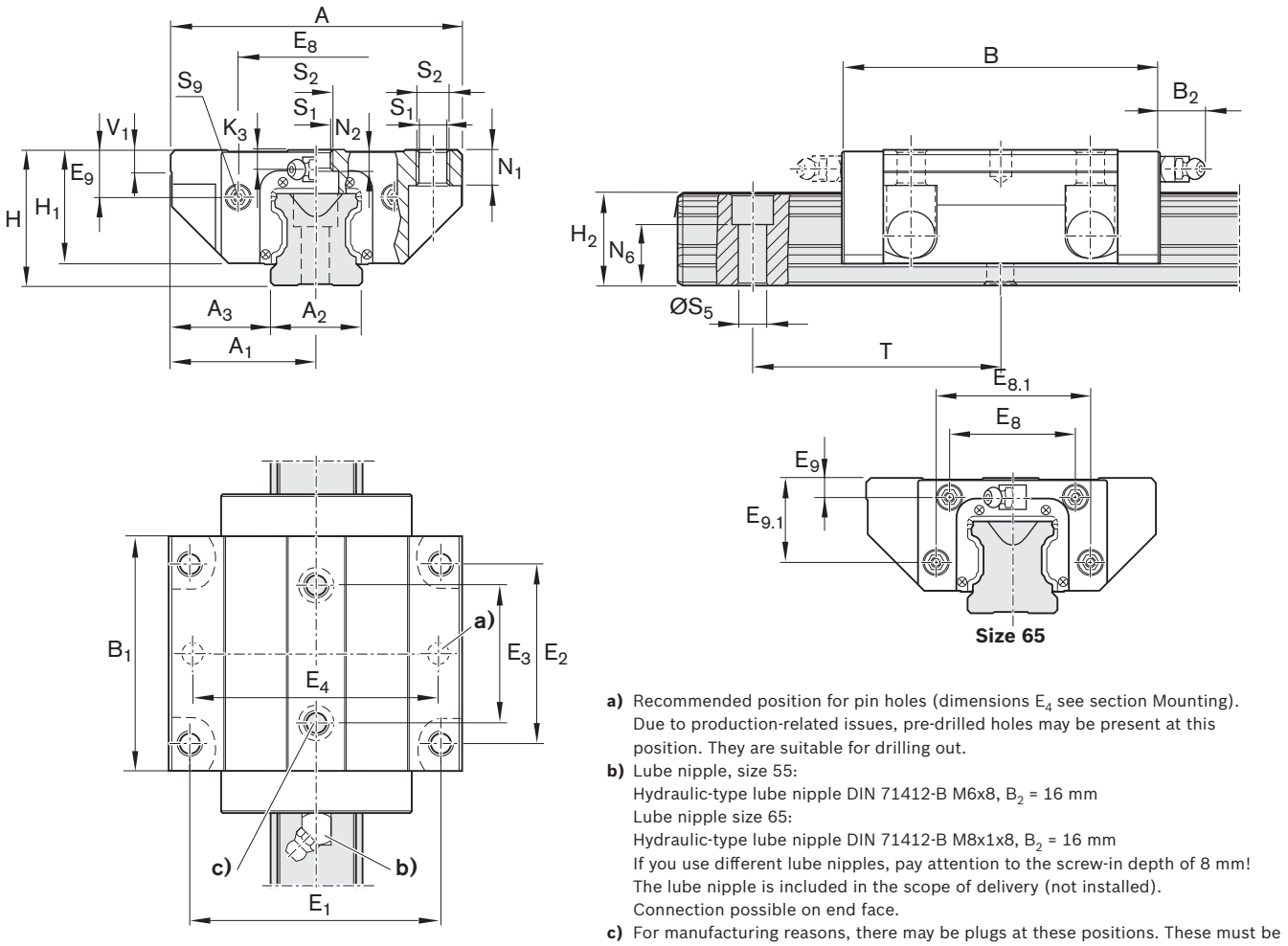
R1651 513 10

Preload classes

C0 = Without preload (clearance)
C1 = Moderate preload
C2 = Average preload
C3 = High preload

Seals

SS = standard seal



a) Recommended position for pin holes (dimensions E_4 see section Mounting). Due to production-related issues, pre-drilled holes may be present at this position. They are suitable for drilling out.

b) Lube nipple, size 55:
Hydraulic-type lube nipple DIN 71412-B M6x8, B_2 = 16 mm
Lube nipple size 65:
Hydraulic-type lube nipple DIN 71412-B M8x1x8, B_2 = 16 mm
If you use different lube nipples, pay attention to the screw-in depth of 8 mm!
The lube nipple is included in the scope of delivery (not installed).
Connection possible on end face.

c) 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**	**$B^{+0.5}$**	**B_1**	**E_1**	**E_2**	**E_3**	**E_8**	**$E_{8.1}$**	**E_9**	**$E_{9.1}$**	**H**	**H_1**	**H_2 1)**	**H_2 2)**
55	140	70	53	43.5	159	115.5	116	95	70	80	–	22.3	–	70	57	48.15	47.85
65	170	85	63	53.5	188	139.6	142	110	82	76	100	11.0	53.5	90	76	60.15	59.85

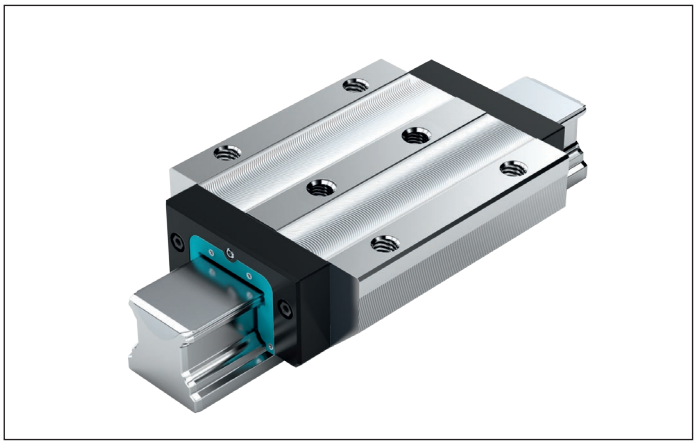
Size	**Dimensions** (mm)										**Weight** (kg)	**Load capacities 3)** (N)		**Load moments 3)** (Nm)			
	K_3	**N_1**	**N_2**	**$N_6^{\pm 0.5}$**	**S_1**	**S_2**	**S_5**	**S_9**	**T**	**V_1**	**m**	**C**	**C_0**	**M_t**	**M_{t0}**	**M_L**	**M_{L0}**
55	9	18	13.5	29.0	12.4	M14	16	M5x8	120	12	5.20	109 000	174 000	3 480	5 550	2 320	3 690
65	16	23	14.0	38.5	14.6	M16	18	M4x7	150	15	10.25	172 000	280 000	6 810	11 100	4 560	7 400

1) Dimension H_2 with cover strip

2) Dimension H_2 without cover strip

3) Load capacities and load moments for ball runner blocks **without** ball chain.
Determination of the dynamic load capacities and load moments is based on a 100,000 m travel life according to DIN ISO14728-1. Often only 50,000 m are actually stipulated. For comparison: Multiply values **C**, $\mathbf{M}_t$ and $\mathbf{M}_L$ by 1.26 according to the table.

FLS – Flange long standard height, R1653 ... 1.



Dynamic characteristics

Travel speed: v_{max} = 3 m/s

Acceleration: a_{max} = 250 m/s²

(If $F_{comb} > 2.8 \cdot F_{pr}$: a_{max} = 50 m/s²)

Note on lubrication

- Not pre-lubricated

Note

Can be used on all ball guide rails SNS.

Options and part numbers

Size	Ball runner block with size	Preload class				Accuracy class					Seal with ball runner blocks without ball chain
		C0	C1	C2	C3	N	H	P	SP	UP	SS
55	R1653 5	9				4	3	–	–	–	10
			1			4	3	2	1	9	10
				2		–	3	2	1	9	10
					3	–	–	2	1	9	10
65	R1653 6	9				4	3	–	–	–	10
			1			4	3	2	1	9	10
				2		–	3	2	1	9	10
					3	–	–	2	1	9	10
e.g.	R1653 5		1				3				10

Order example

Options:

- FLS ball runner block
- Size 55
- Preload class C1
- Accuracy class H
- With standard seal, without ball chain

Part number:

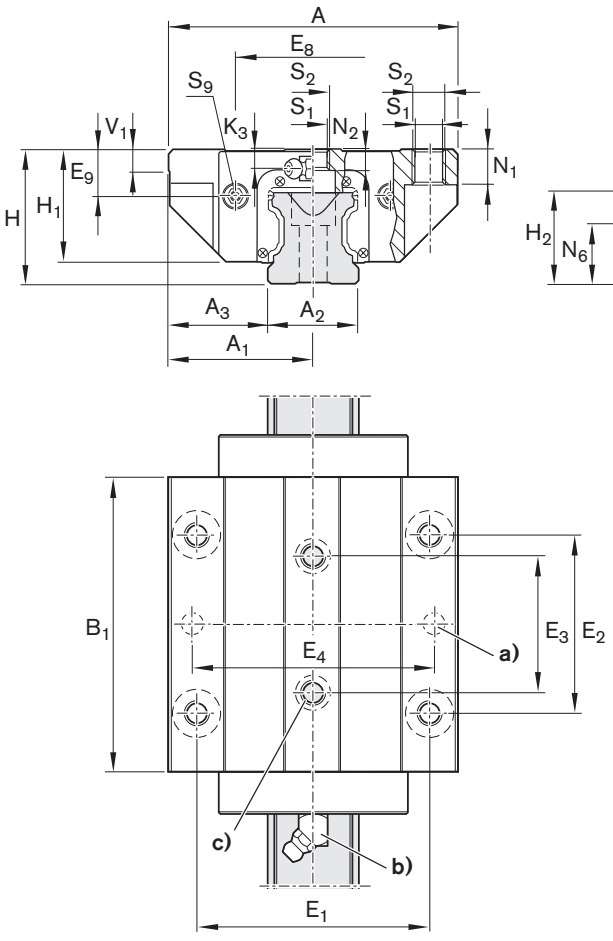
R1653 513 10

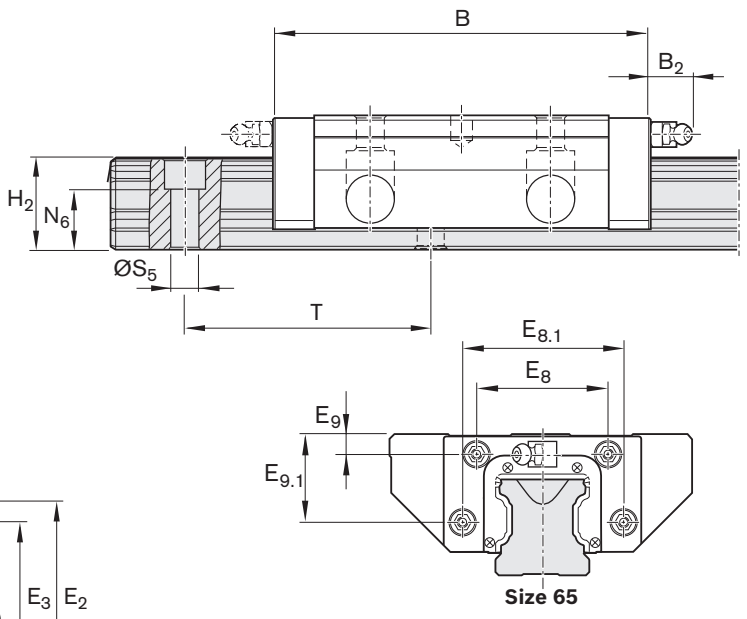
Preload classes

C0 = Without preload (clearance)
C1 = Moderate preload
C2 = Average preload
C3 = High preload

Seals

SS = standard seal





Size 65

a) Recommended position for pin holes (dimensions E_4 see section Mounting). Due to production-related issues, pre-drilled holes may be present at this position. They are suitable for drilling out.

b) Lube nipple, size 55:
Hydraulic-type lube nipple DIN 71412-B M6x8, B_2 = 16 mm
Lube nipple size 65:
Hydraulic-type lube nipple DIN 71412-B M8x1x8, B_2 = 16 mm
If you use different lube nipples, pay attention to the screw-in depth of 8 mm!
The lube nipple is included in the scope of delivery (not installed).
Connection possible on end face.

c) 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**	**$B^{+0.5}$**	**B_1**	**E_1**	**E_2**	**E_3**	**E_8**	**$E_{8.1}$**	**E_9**	**$E_{9.1}$**	**H**	**H_1**	**H_2 1)**	**H_2 2)**
55	140	70	53	43.5	199	155.5	116	95	70	80	–	22.3	–	70	57	48.15	47.85
65	170	85	63	53.5	243	194.6	142	110	82	76	100	11.0	53.5	90	76	60.15	59.85

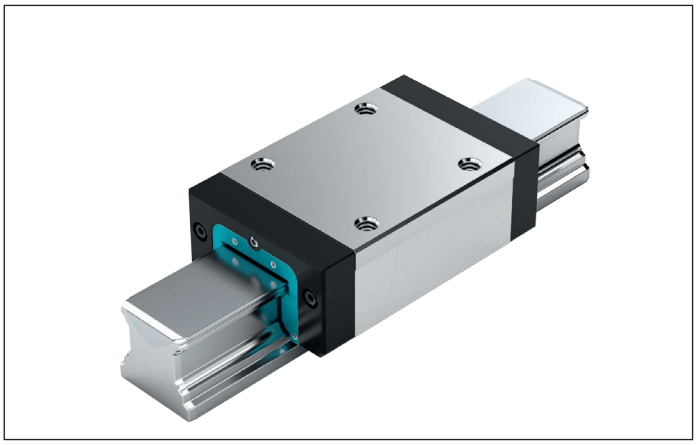
Size	**Dimensions** (mm)										**Weight** (kg)	**Load capacities 3)** (N)		**Load moments 3)** (Nm)			
	K_3	**N_1**	**N_2**	**$N_6^{\pm 0.5}$**	**S_1**	**S_2**	**S_5**	**S_9**	**T**	**V_1**	**m**	**C**	**C_0**	**M_t**	**M_{t0}**	**M_L**	**M_{L0}**
55	9	18	13.5	29.0	12.4	M14	16	M5x8	120	12	7.50	139 000	245 000	4 410	7 780	3 960	6 990
65	16	23	14.0	38.5	14.6	M16	18	M4x7	150	15	14.15	223 000	404 000	8 810	16 000	8 160	14 800

1) Dimension H_2 with cover strip

2) Dimension H_2 without cover strip

3) Load capacities and load moments for ball runner blocks **without** ball chain.
Determination of the dynamic load capacities and load moments is based on a 100,000 m travel life according to DIN ISO14728-1. Often only 50,000 m are actually stipulated. For comparison: Multiply values **C**, $\mathbf{M}_t$ and $\mathbf{M}_L$ by 1.26 according to the table.

SNS – slimline normal standard height, R1622 ...1.



Dynamic characteristics

Travel speed: v_{max} = 3 m/s

Acceleration: a_{max} = 250 m/s²

(If $F_{comb} > 2.8 \cdot F_{pr}$: a_{max} = 50 m/s²)

Note on lubrication

- Not pre-lubricated

Note

Can be used on all ball guide rails SNS.

Options and part numbers

Size	Ball runner block with size	Preload class				Accuracy class			Seal with ball runner blocks without ball chain
		C0	C1	C2	C3	N	H	P	SS
55	R1622 5	9				4	3	–	10
			1			4	3	2	10
				2		–	3	2	10
					3	–	–	2	10
65	R1622 6	9				4	3	–	10
			1			4	3	2	10
				2		–	3	2	10
					3	–	–	2	10
e.g.	R1622 5		1				3		10

Order example

Options:

- SNS ball runner blocks
- Size 55
- Preload class C1
- Accuracy class H
- With standard seal, without ball chain

Part number:

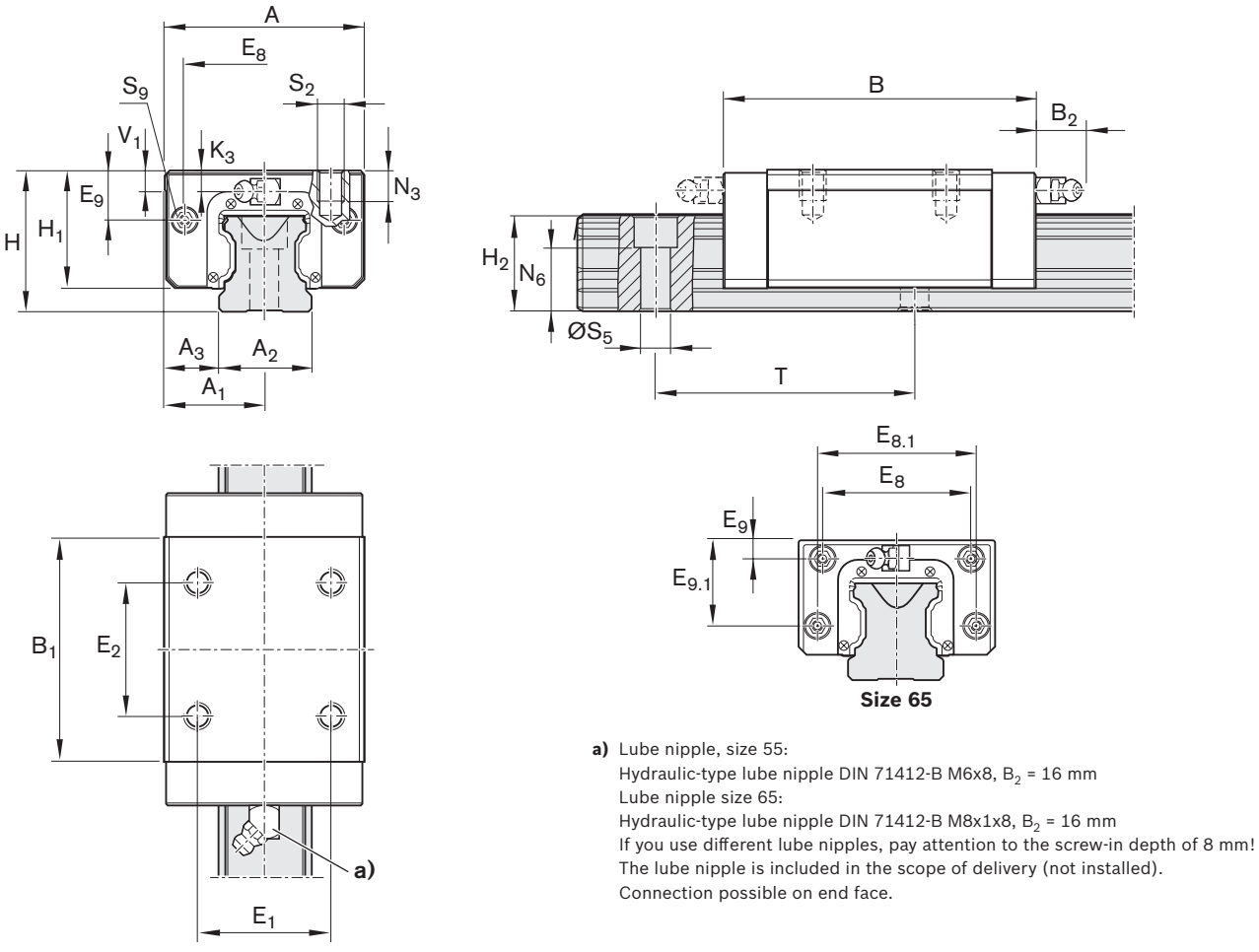
R1622 513 10

Preload classes

C0 = Without preload (clearance)
C1 = Moderate preload
C2 = Average preload
C3 = High preload

Seals

SS = standard seal



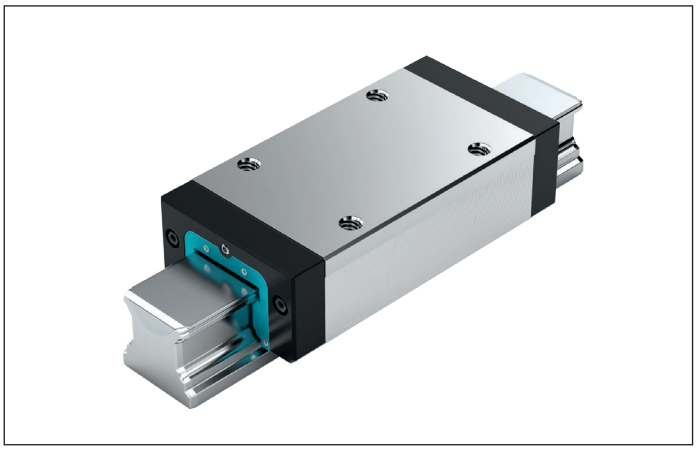
a) Lube nipple, size 55:
Hydraulic-type lube nipple DIN 71412-B M6x8, B_2 = 16 mm
Lube nipple size 65:
Hydraulic-type lube nipple DIN 71412-B M8x1x8, B_2 = 16 mm
If you use different lube nipples, pay attention to the screw-in depth of 8 mm!
The lube nipple is included in the scope of delivery (not installed).
Connection possible on end face.

Size	**Dimensions** (mm)															
	A	**A_1**	**A_2**	**A_3**	**$B^{+0.5}$**	**B_1**	**E_1**	**E_2**	**E_8**	**$E_{8.1}$**	**E_9**	**$E_{9.1}$**	**H**	**H_1**	**H_2 1)**	**H_2 2)**
55	100	50	53	23.5	159	115.5	75	75	80	–	22.3	–	70	57	48.15	47.85
65	126	63	63	31.5	188	139.6	76	70	76	100	11.0	53.5	90	76	60.15	59.85

Size	**Dimensions** (mm)								**Weight** (kg)	**Load capacities 3)** (N)		**Load moments 3)** (Nm)			
	K_3	**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}**
55	9	19	29.0	M12	16	M5x8	120	12	3.80	109 000	174 000	3 480	5 550	2 320	3 690
65	16	21	38.5	M16	18	M4x7	150	15	6.90	172 000	280 000	6 810	11 100	4 560	7 400

1) Dimension H_2 with cover strip
2) Dimension H_2 without cover strip
3) Load capacities and load moments for ball runner blocks **without** ball chain.
Determination of the dynamic load capacities and load moments is based on a 100,000 m travel life according to DIN ISO14728-1. Often only 50,000 m are actually stipulated. For comparison: Multiply values **C**, $\mathbf{M}_t$ and $\mathbf{M}_L$ by 1.26 according to the table.

SLS – slimline long standard height, R1623 ...1.



Dynamic characteristics

Travel speed: v_{max} = 3 m/s

Acceleration: a_{max} = 250 m/s²

(If $F_{comb} > 2.8 \cdot F_{pr}$: a_{max} = 50 m/s²)

Note on lubrication

- Not pre-lubricated

Note

Can be used on all ball guide rails SNS.

Options and part numbers

Size	Ball runner block with size	Preload class				Accuracy class			Seal with ball runner blocks without ball chain
		C0	C1	C2	C3	N	H	P	SS
55	R1623 5	9				4	3	–	10
			1			4	3	2	10
				2		–	3	2	10
					3	–	–	2	10
65	R1623 6	9				4	3	–	10
			1			4	3	2	10
				2		–	3	2	10
					3	–	–	2	10
e.g.	R1623 5		1				3		10

Order example

Options:

- SLS ball runner blocks
- Size 55
- Preload class C1
- Accuracy class H
- With standard seal, without ball chain

Part number:

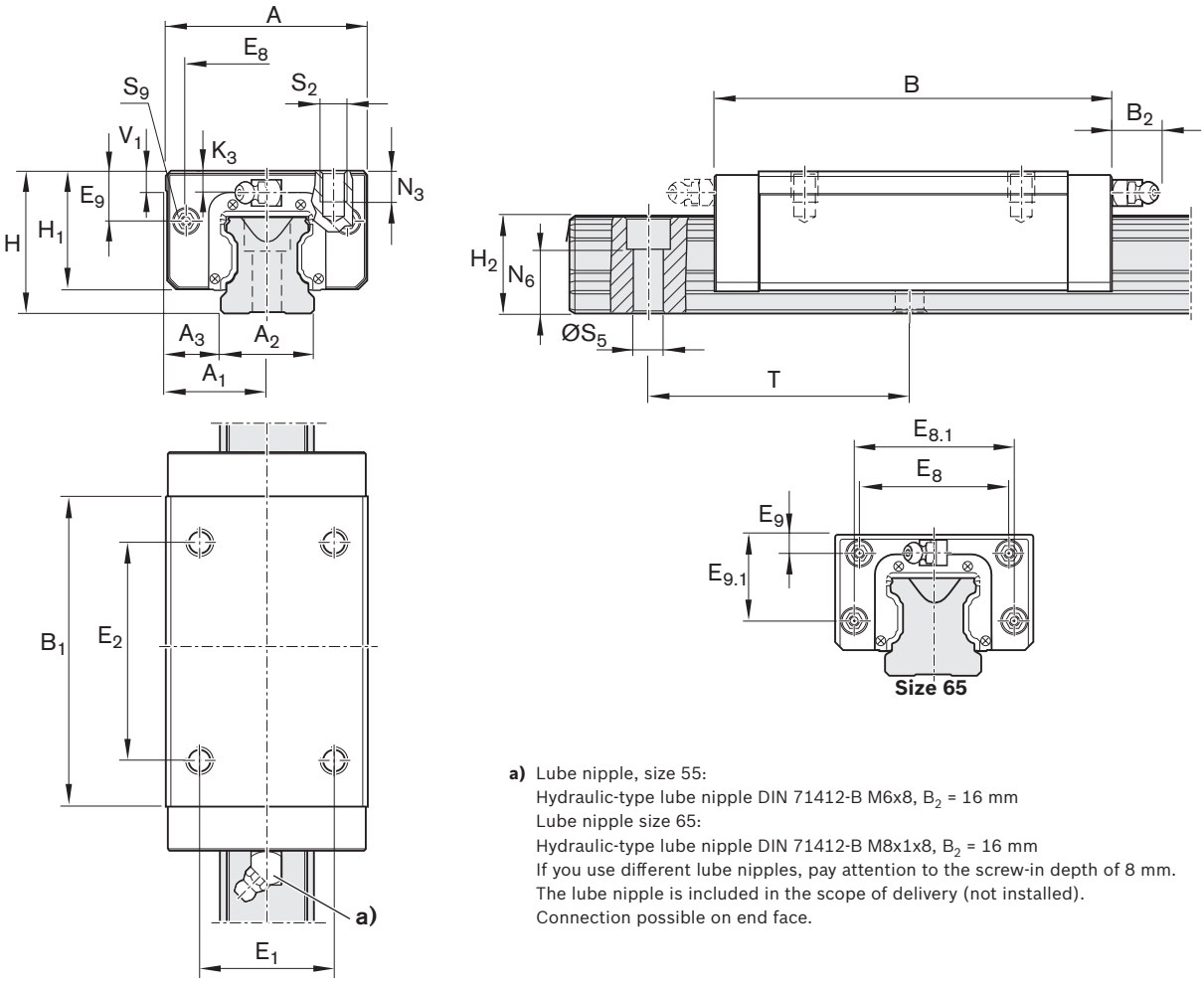
R1623 513 10

Preload classes

C0 = Without preload (clearance)
C1 = Moderate preload
C2 = Average preload
C3 = High preload

Seals

SS = standard seal



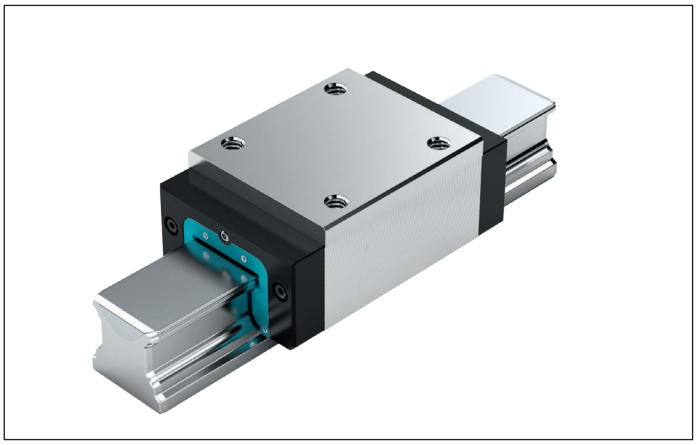
a) Lube nipple, size 55:
Hydraulic-type lube nipple DIN 71412-B M6x8, B_2 = 16 mm
Lube nipple size 65:
Hydraulic-type lube nipple DIN 71412-B M8x1x8, B_2 = 16 mm
If you use different lube nipples, pay attention to the screw-in depth of 8 mm.
The lube nipple is included in the scope of delivery (not installed).
Connection possible on end face.

Size	**Dimensions** (mm)															
	A	**A_1**	**A_2**	**A_3**	**$B^{+0.5}$**	**B_1**	**E_1**	**E_2**	**E_8**	**$E_{8.1}$**	**E_9**	**$E_{9.1}$**	**H**	**H_1**	**H_2[1)]**	**H_2[2)]**
55	100	50	53	23.5	199	155.5	75	95	80	–	22.3	–	70	57	48.15	47.85
65	126	63	63	31.5	243	194.6	76	120	76	100	11.0	53.5	90	76	60.15	59.85

Size	**Dimensions** (mm)								**Weight** (kg)	**Load capacities**[3)] (N)		**Load moments**[3)] (Nm)			
	K_3	**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}**
55	9	19	29.0	M12	16	M5x8	120	12	4.8	139 000	245 000	4 410	7 780	3 960	6 990
65	16	21	38.5	M16	18	M4x7	150	15	9.8	223 000	404 000	8 810	16 000	8 160	14 800

1) Dimension H_2 with cover strip
2) Dimension H_2 without cover strip
3) Load capacities and load moments for ball runner blocks **without** ball chain.
Determination of the dynamic load capacities and load moments is based on a 100,000 m travel life according to DIN ISO14728-1. Often only 50,000 m are actually stipulated. For comparison: Multiply values **C**, $\mathbf{M}_t$ and $\mathbf{M}_L$ by 1.26 according to the table.

SNH – slimline normal high, R1621 ... 1.



Dynamic characteristics

Travel speed: v_{max} = 3 m/s

Acceleration: a_{max} = 250 m/s²

(If $F_{comb} > 2.8 \cdot F_{pr}$: a_{max} = 50 m/s²)

Note on lubrication

- Not pre-lubricated

Note

Can be used on all ball guide rails SNS.

Options and part numbers

Size	Ball runner block with size	Preload class				Accuracy class			Seal with ball runner blocks without ball chain
		C0	C1	C2	C3	N	H	P	SS
55	R1621 5	9				4	3	–	10
			1			4	3	2	10
				2		–	3	2	10
					3	–	–	2	10
e.g.	R1621 5		1				3		10

Order example

Options:

- SNH ball runner block
- Size 55
- Preload class C1
- Accuracy class H
- With standard seal, without ball chain

Part number:

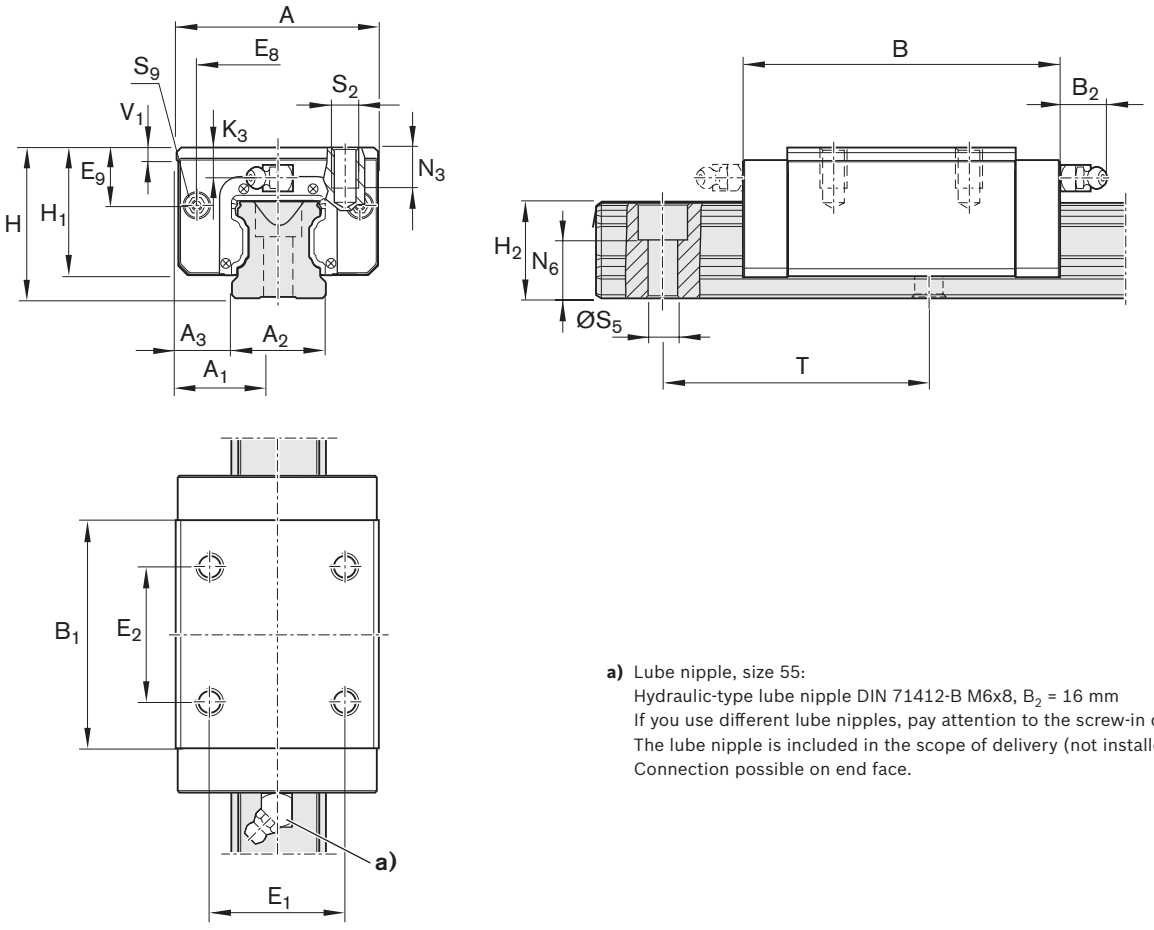
R1621 513 10

Preload classes

C0 = Without preload (clearance)
C1 = Moderate preload
C2 = Average preload
C3 = High preload

Seals

SS = standard seal



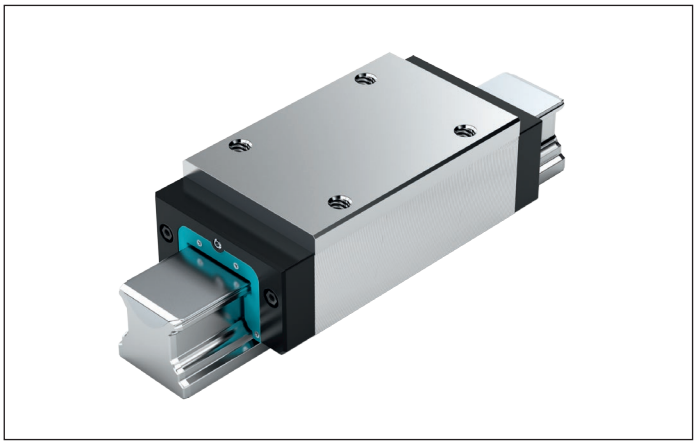
a) Lube nipple, size 55:
Hydraulic-type lube nipple DIN 71412-B M6x8, B_2 = 16 mm
If you use different lube nipples, pay attention to the screw-in depth of 8 mm.
The lube nipple is included in the scope of delivery (not installed).
Connection possible on end face.

Size	Dimensions (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)
55	100	50	53	23.5	159	115.5	75	75	80	32.3	80	67	48.15	47.85

Size	Dimensions (mm)								Weight (kg)	Load capacities 3) (N)		Load moments 3) (Nm)			
	K_3	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}
55	19	19	29	M12	16	M5x8	120	12	4.70	109 000	174 000	3 480	5 550	2 320	3 690

1) Dimension H_2 with cover strip
2) Dimension H_2 without cover strip
3) Load capacities and load moments for ball runner blocks **without** ball chain.
Determination of the dynamic load capacities and load moments is based on a 100,000 m travel life according to DIN ISO14728-1. Often only 50,000 m are actually stipulated. For comparison: Multiply values **C**, $\mathbf{M}_t$ and $\mathbf{M}_L$ by 1.26 according to the table.

SLH – slimline long high, R1624 ... 1.



Dynamic characteristics

Travel speed: v_{max} = 3 m/s

Acceleration: a_{max} = 250 m/s²

(If $F_{comb} > 2.8 \cdot F_{pr}$: a_{max} = 50 m/s²)

Note on lubrication

- Not pre-lubricated

Note

Can be used on all ball guide rails SNS.

Options and part numbers

Size	Ball runner block with size	Preload class				Accuracy class			Seal with ball runner blocks without ball chain
		C0	C1	C2	C3	N	H	P	SS
55	R1624 5	9				4	3	–	10
			1			4	3	2	10
				2		–	3	2	10
					3	–	–	2	10
e.g.	R1624 5		1				3		10

Order example

Options:

- SLH ball runner block
- Size 55
- Preload class C1
- Accuracy class H
- With standard seal, without ball chain

Part number:

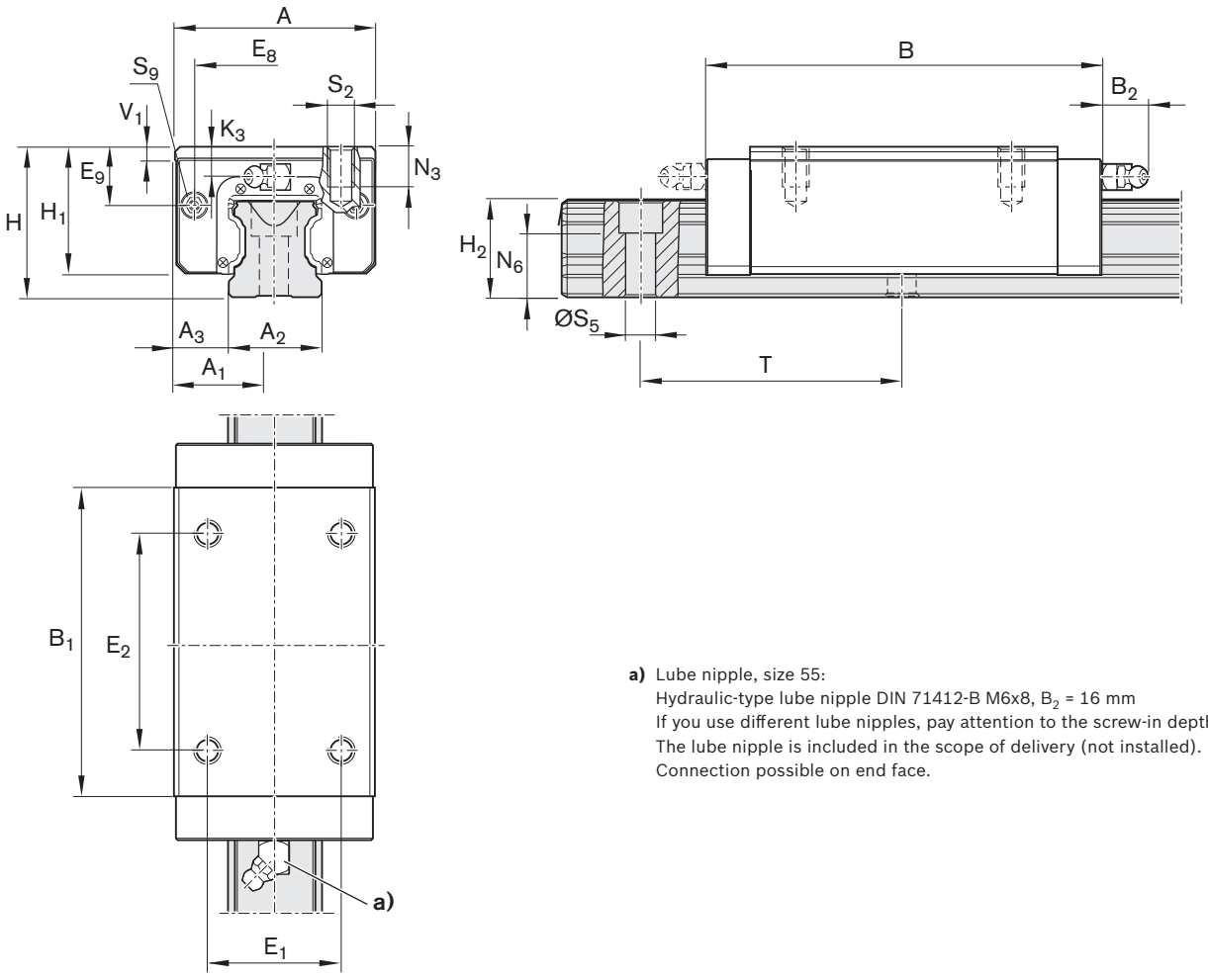
R1624 513 10

Preload classes

C0 = Without preload (clearance)
C1 = Moderate preload
C2 = Average preload
C3 = High preload

Seals

SS = standard seal



a) Lube nipple, size 55:
Hydraulic-type lube nipple DIN 71412-B M6x8, B_2 = 16 mm
If you use different lube nipples, pay attention to the screw-in depth of 8 mm!
The lube nipple is included in the scope of delivery (not installed).
Connection possible on end face.

Size	Dimensions (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)**
55	100	50	53	23.5	199	155.5	75	95	80	32.3	80	67	48.15	47.85

Size	Dimensions (mm)								Weight (kg)	Load capacities 3) (N)		Load moments 3) (Nm)			
	K_3	**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}**
55	19	19	29	M12	16	M5x8	120	12	6.00	139 000	245 000	4 410	7 780	3 960	6 990

1) Dimension H_2 with cover strip
2) Dimension H_2 without cover strip
3) Load capacities and load moments for ball runner blocks **without** ball chain.
Determination of the dynamic load capacities and load moments is based on a 100,000 m travel life according to DIN ISO14728-1. Often only 50,000 m are actually stipulated. For comparison: Multiply values **C**, $\mathbf{M}_t$ and $\mathbf{M}_L$ by 1.26 according to the table.

Product description

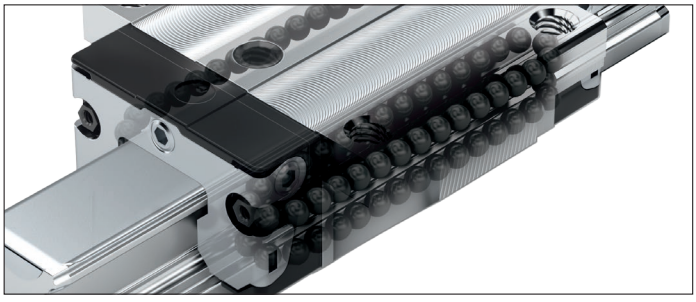
Characteristic features

- Excellent dynamic characteristics:
  Speed: v_{max} = 10 m/s
  Acceleration: a_{max} = 500 m/s²
- The same high load capacities in all four main directions of loading
- Long-term lubrication, up to several years
- Minimum quantity lubrication system with integrated reservoir for oil lubrication
- Lube ports with metal threads on all sides
- Limitless interchangeability; all ball guide rail versions can be combined at will with all ball runner block versions within each accuracy class
- Optimum system rigidity through preloaded O-arrangement
- Electrically insulating due to the use of ceramic balls
- Existing range of accessories fully utilizable
- Top logistics that are unique worldwide

Further highlights:

- High travel speed thanks to low mass of ceramic balls
- Attachments on the ball runner block for mounting from above and below[1)]
- 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 ball runner block
- Mounting threads provided on end faces for fixing of all add-on elements
- High rigidity in all load directions – permits applications with just one runner block per rail
- Integrated all-round sealing
- High torque load capacity
- Optimized entry-zone geometry and high number of balls per track minimizes variation in elastic deflection
- Smooth running thanks to optimized ball recirculation and guidance
- Available in five common sizes
- Ball runner blocks pre-lubricated in factory

1) Type-dependent



Ceramic balls

- Permit very high speeds

Definition of ball runner block format

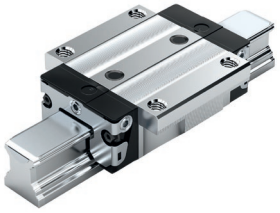
Criterion	Designation	Abbreviation (example)		
		F	**N**	**S**
Width	**F**lange	F		
	Slimline	S		
	Wide	B		
	Compact	C		
Length	**N**ormal		N	
	Long		L	
	Short		K	
Height	**S**tandard height			S
	High			H
	Low			N

Note

For all SNS/SNO ball guide rails.

Overview of formats

FNS R2001 ... 9.

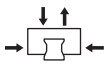


FLS R2002 ... 9.

SNS R2011 ... 9.

SLS R2012 ... 9.

FNS, FLS, SNS, SLS

Design style	Size	Ball runner block with size	Preload class	Accuracy class		Seal with ball runner blocks without ball chain	Load capacities[1] (N)		Load moments[1] (Nm)				Weight (kg)
													
			C2	H	P	SS	C	C_0	M_t	M_{t0}	M_L	M_{L0}	m
FNS	**15**	R2001 1	2	3	2	90	6 880	8 860	66	85	47	61	0.20
	20	R2001 8	2	3	2	90	16 300	20 800	210	270	140	180	0.45
	25	R2001 2	2	3	2	90	20 000	25 100	280	360	200	250	0.60
	30	R2001 7	2	3	2	90	25 500	33 500	440	580	310	400	1.05
	35	R2001 3	2	3	2	90	36 200	56 500	780	1 210	510	790	1.50
	e.g.	R2001 7	2	3		90							
FLS	**15**	R2002 1	2	3	2	90	8 930	12 800	86	120	85	120	0.30
	20	R2002 8	2	3	2	90	20 700	29 200	260	370	240	340	0.55
	25	R2002 2	2	3	2	90	26 000	36 600	370	520	370	520	0.80
	30	R2002 7	2	3	2	90	32 100	46 700	560	810	520	750	1.45
	35	R2002 3	2	3	2	90	46 600	81 100	1 000	1 740	900	1 560	2.15
SNS	**15**	R2011 1	2	3	2	90	6 880	8 860	66	85	47	61	0.15
	20	R2011 8	2	3	2	90	16 300	20 800	210	270	140	180	0.35
	25	R2011 2	2	3	2	90	20 000	25 100	280	360	200	250	0.45
	30	R2011 7	2	3	2	90	25 500	33 500	440	580	310	400	0.80
	35	R2011 3	2	3	2	90	36 200	56 500	780	1 210	510	790	1.15
SLS	**15**	R2012 1	2	3	2	90	8 930	12 800	86	120	85	120	0.20
	20	R2012 8	2	3	2	90	20 700	29 200	260	370	240	340	0.45
	25	R2012 2	2	3	2	90	26 000	36 600	370	520	370	520	0.60
	30	R2012 7	2	3	2	90	32 100	46 700	560	810	520	750	1.05
	35	R2012 3	2	3	2	90	46 600	81 100	1 000	1 740	900	1 560	1.60

1) Load capacities and load moments for ball runner blocks **without** ball chain.
Determination of the dynamic load capacities and load moments is based on a 100,000 m travel life according to DIN ISO14728-1. Often only 50,000 m are actually stipulated. For comparison: Multiply values **C**, $\mathbf{M}_t$ and $\mathbf{M}_L$ by 1.26 according to the table.

Note

For dimensions, dimension drawing, load capacities, rigidities and moments, see “Standard ball runner block BSHP”

FNS order example

Options:

- FNS ball runner block
- Size 30
- Preload class C2
- Accuracy class H
- With standard seal, without ball chain

Part number:
R2001 723 90

Preload classes
C2 = Average preload

Seals
SS = standard seal

Product description

Characteristic features

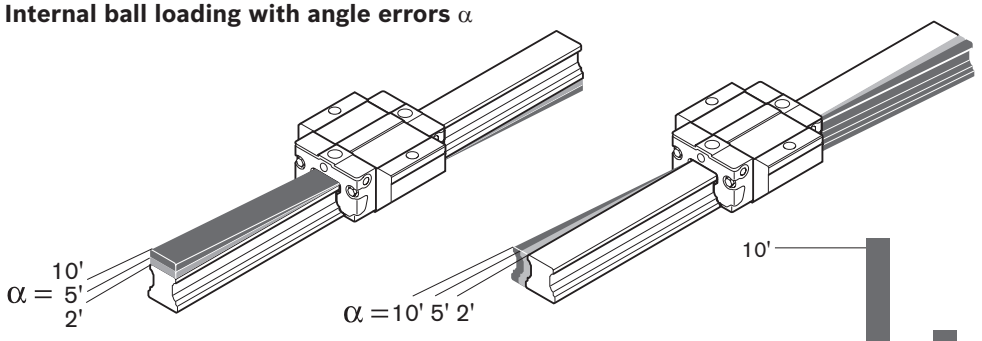
- Automatically compensates for errors in alignment (of up to 10' arc about two axes)
- Extra-compact design
- The same high load capacities in all four main directions of loading
- Wider permissible tolerances for parallelism and height offsets of the mounting surfaces
- Accuracy classes H and N
- Preload classes:
  C0 (without preload, clearance)
  C1 (moderate preload)
- Quiet running due to the optimum design of the return unit and entry
- Low noise level and outstanding travel performance
- Excellent dynamic characteristics:
  Speed: v_{max} = 5 m/s
  Acceleration: a_{max} = 500 m/s^2
- Minimum quantity lubrication system with integrated reservoir for oil lubrication
- Lube ports with metal thread on all sides
- Ball runner blocks pre-lubricated in factory
- Limitless interchangeability; all ball guide rail versions can be combined at will with all ball runner block versions within each accuracy class

Self-alignment

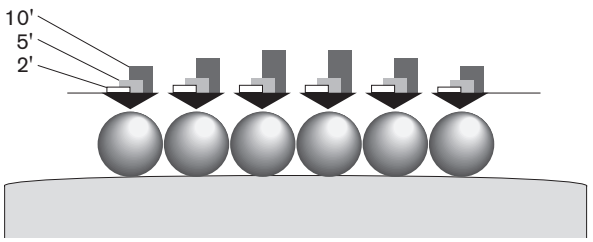
Rexroth's Super ball runner blocks with self-aligning feature automatically compensate for errors in alignment to 10' of arc.
There is no load capacity reduction through compression across the edges.
The centers of the mating surfaces supporting the steel load bearing plates serve as a rocking fulcrum.
Therefore slight errors in alignment between runner block and guide rail do not cause problems. Also, inaccuracies in machining, mounting errors or guide rail flex will automatically be corrected.
The self-aligning feature assures that the balls enter the load-bearing zone smoothly and that the load is distributed evenly across the entire row of balls.
Result:
Considerably quieter running and much longer service life.

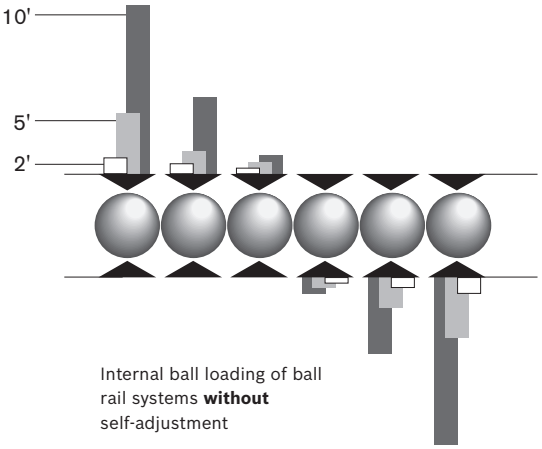
With two Super runner blocks on one guide rail, it is also possible to produce tilt-free ball rail systems with a high load capacity, particularly for handling applications.

Internal ball loading with angle errors α



Internal ball loading of Rexroth ball rail system **with** self-adjustment

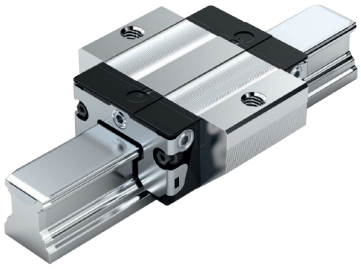




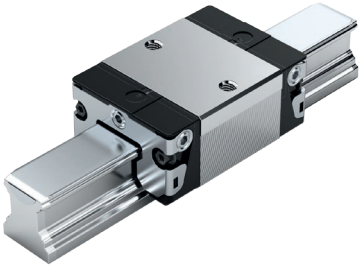
Internal ball loading of ball rail systems **without** self-adjustment

Overview of formats

FKS



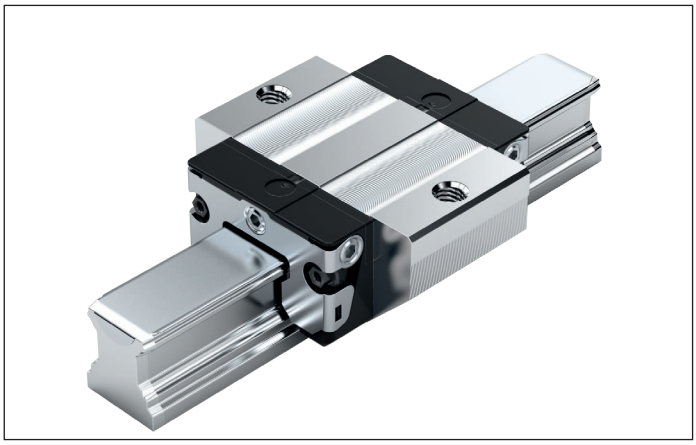
SKS



Definition of ball runner block format

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

FKS – Flange, short, standard height



R1661 … 2.

Dynamic characteristics

Travel speed: v_{max} = 5 m/s

Acceleration: a_{max} = 500 m/s²

(If $F_{comb} > 2.8 \cdot F_{pr}$: a_{max} = 50 m/s²)

Note on lubrication

- Pre-lubricated

Note

Can be used on all ball guide rails SNS.

Options and part numbers

Size	Ball runner block with size	Preload class		Accuracy class		Seal with ball runner blocks without ball chain	
		C0	C1	N	H	SS	LS
15	R1661 1	9	1	4	3	20	21
20	R1661 8	9	1	4	3	20	21
25	R1661 2	9	1	4	3	20	21
30	R1661 7	9	1	4	3	20	21
35	R1661 3	9	1	4	3	20	21
e.g.	R1661 7		1		3	20	

Order example

Options:

- FKS ball runner block
- Size 30
- Preload class C1
- Accuracy class H
- With standard seal, without ball chain

Part number:

R1661 713 20

Preload classes

C0 = Without preload (clearance)

C1 = Moderate preload

Seals

SS = standard seal

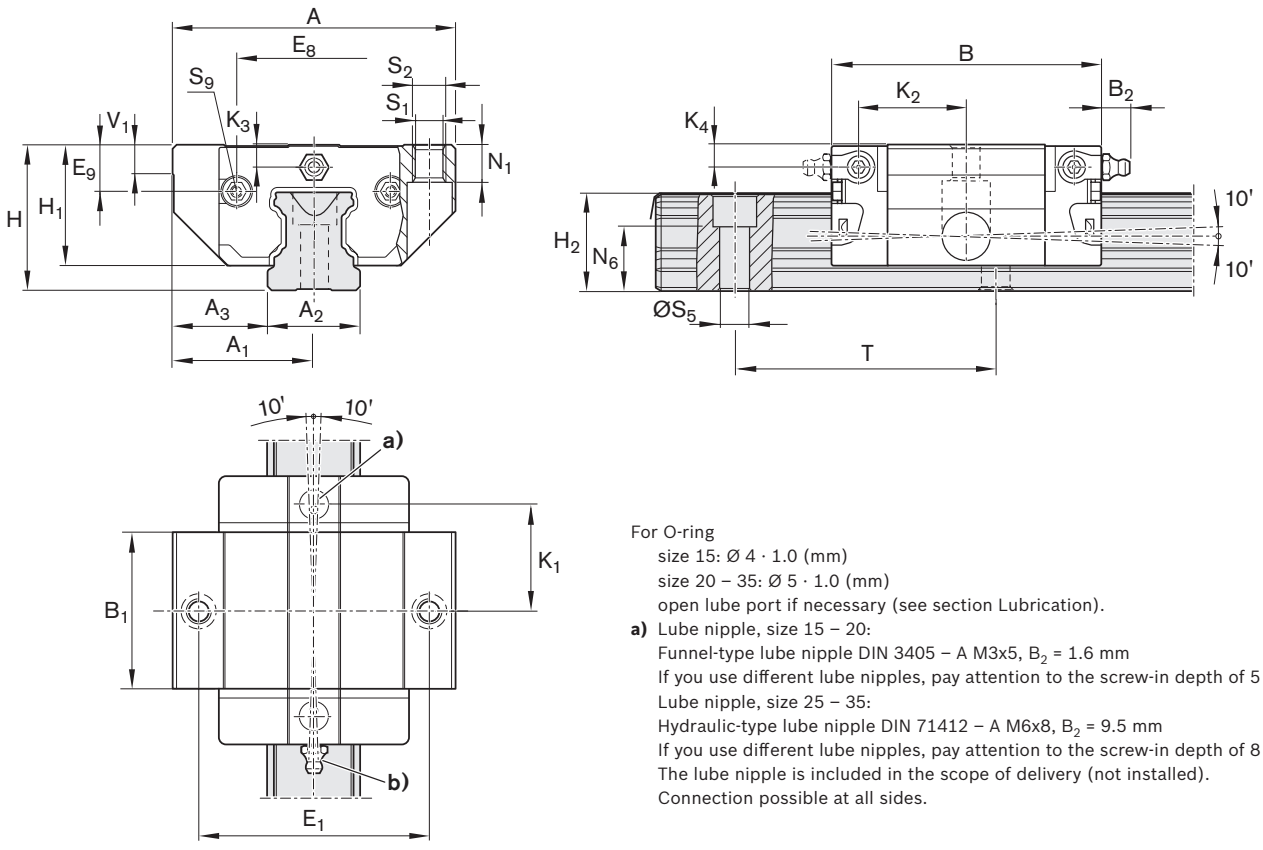
LS = low-friction seal

Key

Gray digits

= No preferred variant/ combination

(Some delivery times may be longer)



For O-ring
size 15: Ø 4 · 1.0 (mm)
size 20 – 35: Ø 5 · 1.0 (mm)
open lube port if necessary (see section Lubrication).

a) Lube nipple, size 15 – 20:
Funnel-type lube nipple DIN 3405 – A M3x5, B_2 = 1.6 mm
If you use different lube nipples, pay attention to the screw-in depth of 5 mm!
Lube nipple, size 25 – 35:
Hydraulic-type lube nipple DIN 71412 – A M6x8, B_2 = 9.5 mm
If you use different lube nipples, pay attention to the screw-in depth of 8 mm!
The lube nipple is included in the scope of delivery (not installed).
Connection possible at all sides.

Size	**Dimensions** (mm)																
	A	**A_1**	**A_2**	**A_3**	**$B^{+0.5}$**	**B_1**	**E_1**	**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	44.7	25.7	38	24.55	6.70	24	19.90	16.30	16.20	16.25	17.85	3.20	3.20
20	63	31.5	20	21.5	57.3	31.9	53	32.50	7.30	30	25.35	20.75	20.55	22.95	22.95	3.35	3.35
25	70	35.0	23	23.5	67.0	38.6	57	38.30	11.50	36	29.90	24.45	24.25	25.35	26.50	5.50	5.50
30	90	45.0	28	31.0	75.3	45.0	72	48.40	14.60	42	35.35	28.55	28.35	28.80	30.50	6.05	6.05
35	100	50.0	34	33.0	84.9	51.4	82	58.00	17.35	48	40.40	32.15	31.85	32.70	34.20	6.90	6.90

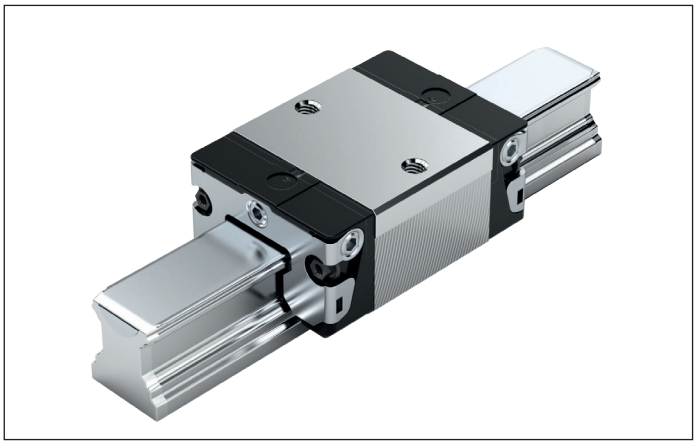
Size	**Dimensions** (mm)								**Weight** (kg)	**Load capacities 3)** (N)	**Permissible load (**N)	**Load moments 3)** (Nm)	
	N_1	**$N_6^{\pm 0.5}$**	**S_1**	**S_2**	**S_5**	**S_9**	**T**	**V_1**		**C**	**F_{max}**	**M_t**	**$M_{t\,max}$**
15	5.2	10.3	4.3	M5	4.5	M2.5x3.5	60	5.0	0.15	3 900	1 500	39	15
20	7.7	13.2	5.3	M6	6.0	M3x5	60	6.0	0.30	10 100	3 900	130	50
25	9.3	15.2	6.7	M8	7.0	M3x5	60	7.5	0.50	11 400	4 400	170	65
30	11.0	17.0	8.5	M10	9.0	M3x5	80	7.0	0.80	15 800	6 100	270	105
35	12.0	20.5	8.5	M10	9.0	M3x5	80	8.0	1.20	21 100	8 100	450	175

1) Dimension H_2 with cover strip

2) Dimension H_2 without cover strip

3) Load capacities and load moments for ball runner blocks **without** ball chain.
Determination of the dynamic load capacities and load moments is based on a 100,000 m travel life according to DIN ISO14728-1. Often only 50,000 m are actually stipulated. For comparison: Multiply values **C** and $\mathbf{M}_t$ by 1.26 according to the table.

SKS – slimline short standard height



R1662 ... 2.

Dynamic characteristics

Travel speed: v_{max} = 5 m/s

Acceleration: a_{max} = 500 m/s²

(If $F_{comb} > 2.8 \cdot F_{pr}$: a_{max} = 50 m/s²)

Note on lubrication

- Pre-lubricated

Note

Can be used on all ball guide rails SNS.

Options and part numbers

Size	Ball runner block with size	Preload class		Accuracy class		Seal with ball runner blocks without ball chain	
		C0	C1	N	H	SS	LS
15	R1662 1	9	1	4	3	20	21
20	R1662 8	9	1	4	3	20	21
25	R1662 2	9	1	4	3	20	21
30	R1662 7	9	1	4	3	20	21
35	R1662 3	9	1	4	3	20	21
e.g.	R1662 7		1		3	20	

Order example

Options:

- SKS ball runner block
- Size 30
- Preload class C1
- Accuracy class H
- With standard seal, without ball chain

Part number:

R1662 713 20

Preload classes

C0 = Without preload (clearance)

C1 = Moderate preload

Seals

SS = standard seal

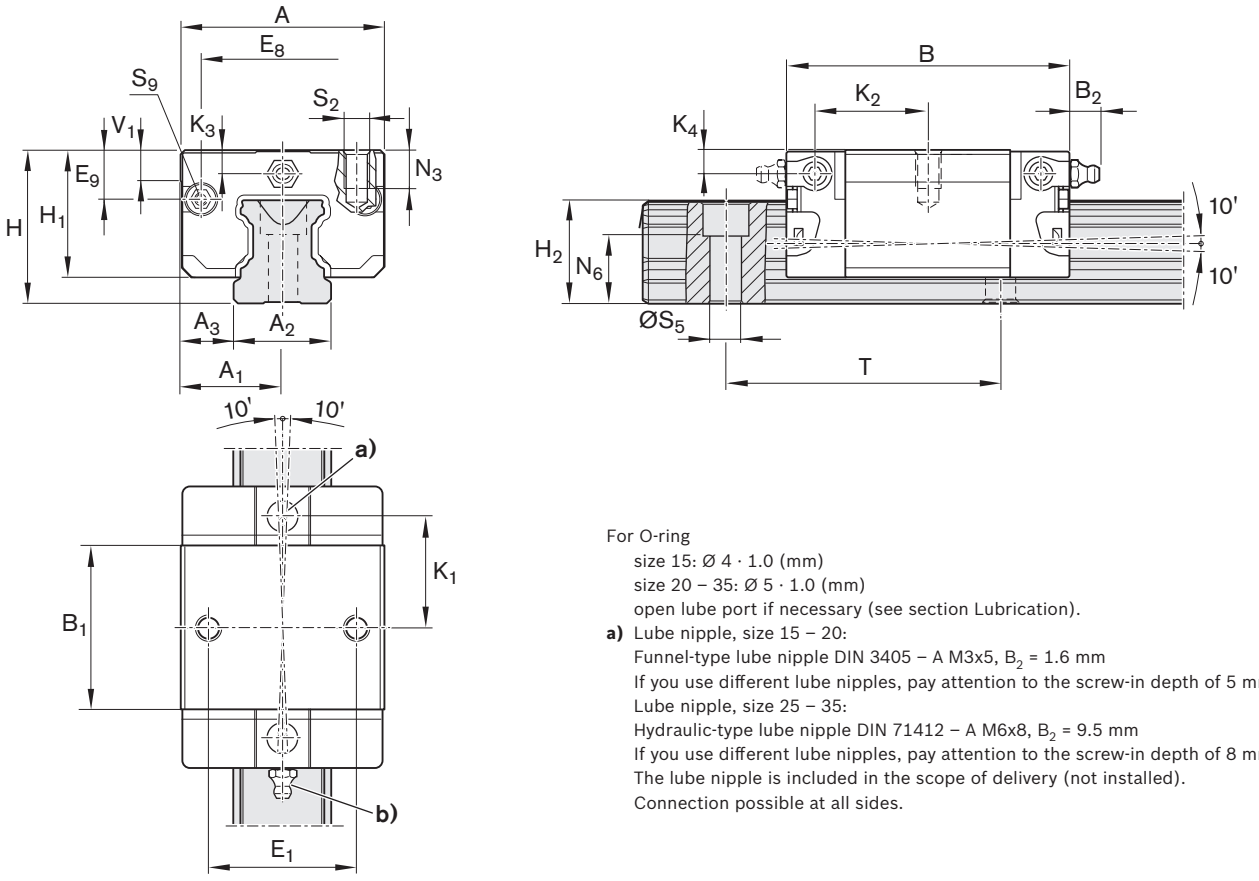
LS = low-friction seal

Key

Gray digits

= No preferred variant/ combination

(Some delivery times may be longer)



For O-ring
size 15: Ø 4 · 1.0 (mm)
size 20 – 35: Ø 5 · 1.0 (mm)
open lube port if necessary (see section Lubrication).

a) Lube nipple, size 15 – 20:
Funnel-type lube nipple DIN 3405 – A M3x5, B_2 = 1.6 mm
If you use different lube nipples, pay attention to the screw-in depth of 5 mm!
Lube nipple, size 25 – 35:
Hydraulic-type lube nipple DIN 71412 – A M6x8, B_2 = 9.5 mm
If you use different lube nipples, pay attention to the screw-in depth of 8 mm!
The lube nipple is included in the scope of delivery (not installed).
Connection possible at all sides.

Size	**Dimensions** (mm)																
	A	**A_1**	**A_2**	**A_3**	**$B^{+0.5}$**	**B_1**	**E_1**	**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	44.7	25.7	26	24.55	6.70	24	19.90	16.30	16.20	16.25	17.85	3.20	3.20
20	44	22	20	12.0	57.3	31.9	32	32.50	7.30	30	25.35	20.75	20.55	22.95	22.95	3.35	3.35
25	48	24	23	12.5	67.0	38.6	35	38.30	11.50	36	29.90	24.45	24.25	25.35	26.50	5.50	5.50
30	60	30	28	16.0	75.3	45.0	40	48.40	14.60	42	35.35	28.55	28.35	28.80	30.50	6.05	6.05
35	70	35	34	18.0	84.9	51.4	50	58.00	17.35	48	40.40	32.15	31.85	32.70	34.20	6.90	6.90

Size	**Dimensions** (mm)							**Weight** (kg)	**Load capacities 3)** (N)	**Permissible load** (N)	**Load moments 3)** (Nm)	
	N_3	**$N_6^{\pm 0.5}$**	**S_2**	**S_5**	**S_9**	**T**	**V_1**		**C**	**F_{max}**	**M_t**	**$M_{t\,max}$**
15	6.0	10.3	M4	4.5	M2.5x3.5	60	5.0	0.10	3900	1500	39	15
20	7.5	13.2	M5	6.0	M3x5	60	6.0	0.25	10100	3900	130	50
25	9.0	15.2	M6	7.0	M3x5	60	7.5	0.35	11400	4400	170	65
30	12.0	17.0	M8	9.0	M3x5	80	7.0	0.60	15800	6100	270	105
35	13.0	20.5	M8	9.0	M3x5	80	8.0	0.90	21100	8100	450	175

1) Dimension H_2 with cover strip

2) Dimension H_2 without cover strip

3) Load capacities and load moments for ball runner blocks **without** ball chain.
Determination of the dynamic load capacities and load moments is based on a 100,000 m travel life according to DIN ISO14728-1. Often only 50,000 m are actually stipulated. For comparison: Multiply values **C** and $\mathbf{M}_t$ by 1.26 according to the table.

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-bearing 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 % weight reduction compared to steel ball runner blocks
- Limitless interchangeability; all ball guide rail versions can be combined at will with all ball runner block versions within each accuracy class

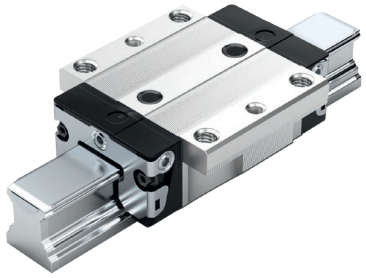
Further highlights

- Low noise level and outstanding travel performance
- Excellent dynamic characteristics:
  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
- Increase in rigidity with lift-off and lateral loading by means of additional screw connections on two holes in the middle of the ball runner block[1)]
- Attachments on the ball runner block for mounting from above and below[1)]
- Predrilled locating pin holes in the ball runner blocks
- Available with ball chain as an option
- Ball runner blocks pre-lubricated in factory

1) Type-dependent

Overview

FNS



SNS

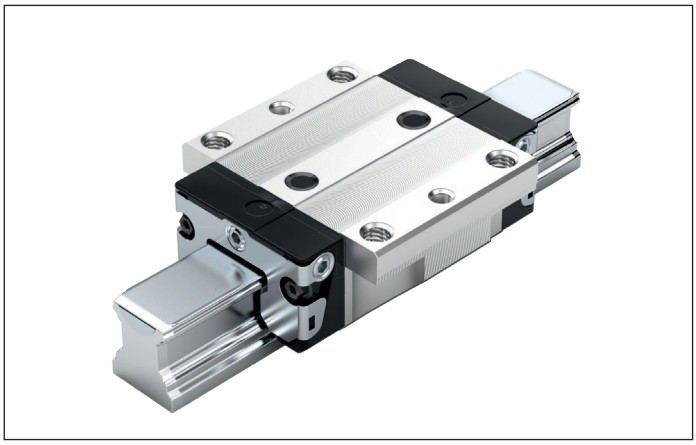
Definition of ball runner block format

Criterion	Designation	Abbreviation (example)		
		F	**N**	**S**
Width	**F**lange	F		
	Slimline	S		
	Wide	B		
	Compact	C		
Length	**N**ormal		N	
	Long		L	
	Short		K	
Height	**S**tandard height			S
	High			H
	Low			N

Ball chain (optional)

- Optimizes noise levels

FNS – Flange normal standard height, R1631 ... 2.



R1631 ... 2.

Dynamic characteristics

Travel speed: v_{max} = 5 m/s

Acceleration: a_{max} = 500 m/s²

(If $F_{comb} > 2.8 \cdot F_{pr}$: a_{max} = 50 m/s²)

Note on lubrication

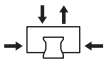
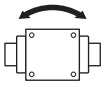
- Pre-lubricated

Note

Can be used on all ball guide rails SNS.

Options/material numbers/technical data

Size	Ball runner block with size	Preload class		Accuracy class		Seal with ball runner blocks			
						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	9 860	3 000	95	29	68	16
20	23 400	7 200	300	92	200	50
25	28 600	8 800	410	125	290	70
30	36 500	12 200	630	210	440	110
35	51 800	16 200	1 110	345	720	170

1) Load capacities and load moments for ball runner blocks **without** ball chain.
Load capacities and load moments for ball runner blocks **with** ball chain ☞ 13
Determination of the dynamic load capacities and load moments is based on a 100,000 m travel life according to DIN ISO14728-1. Often only 50,000 m are actually stipulated. For comparison: Multiply values **C**, $\mathbf{M}_t$ and $\mathbf{M}_L$ by 1.26 according to the table.

Order example

Options:

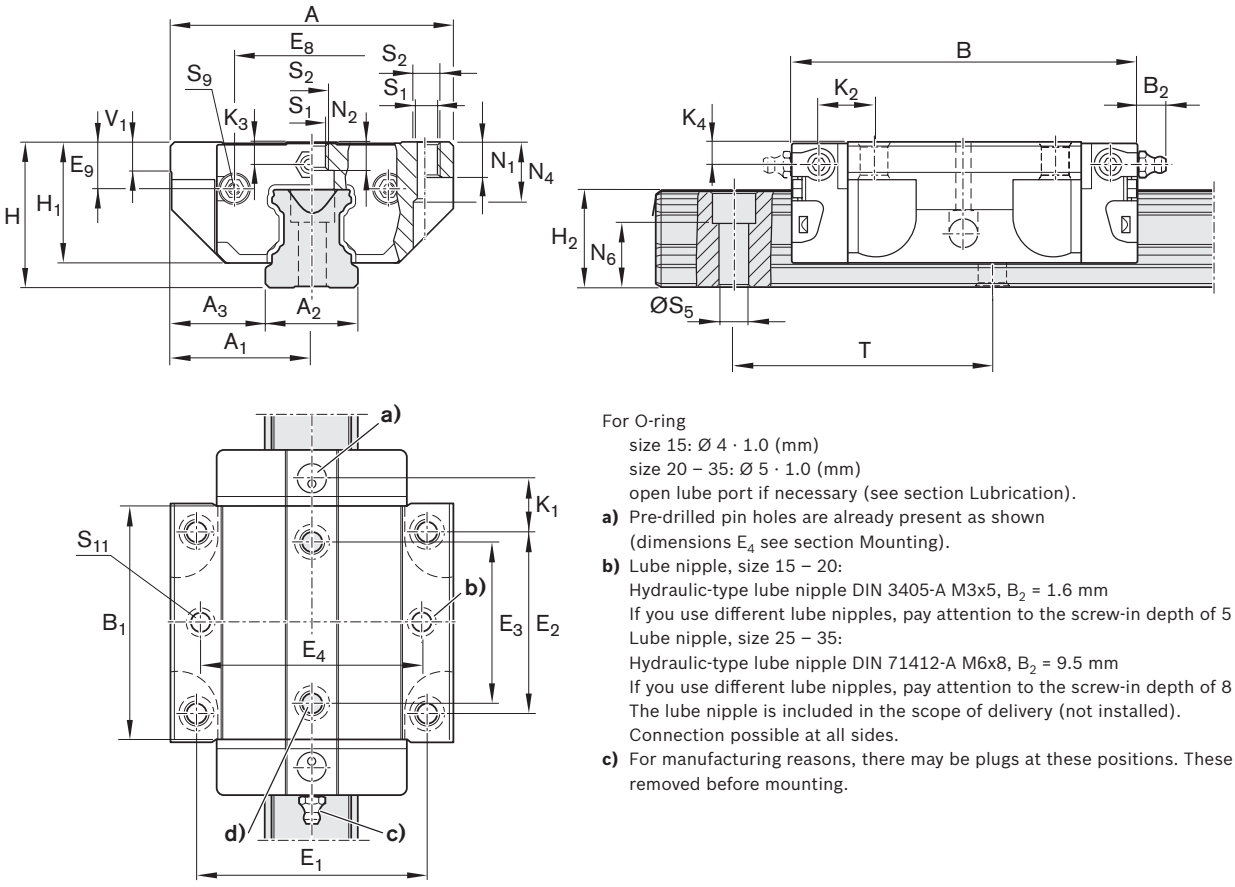
- FNS ball runner block
- Size 30
- Preload class C1
- Accuracy class H
- With standard seal, without ball chain

Part number:
R1631 713 20

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

Seals
SS = standard seal
LS = low-friction seal

Key
Gray digits
= No preferred variant/ combination
(Some delivery times may be longer)



For O-ring
size 15: Ø 4 · 1.0 (mm)
size 20 – 35: Ø 5 · 1.0 (mm)
open lube port if necessary (see section Lubrication).

a) Pre-drilled pin holes are already present as shown (dimensions E_4 see section Mounting).

b) Lube nipple, size 15 – 20:
Hydraulic-type lube nipple DIN 3405-A M3x5, B_2 = 1.6 mm
If you use different lube nipples, pay attention to the screw-in depth of 5 mm!
Lube nipple, size 25 – 35:
Hydraulic-type lube nipple DIN 71412-A M6x8, B_2 = 9.5 mm
If you use different lube nipples, pay attention to the screw-in depth of 8 mm!
The lube nipple is included in the scope of delivery (not installed).
Connection possible at all sides.

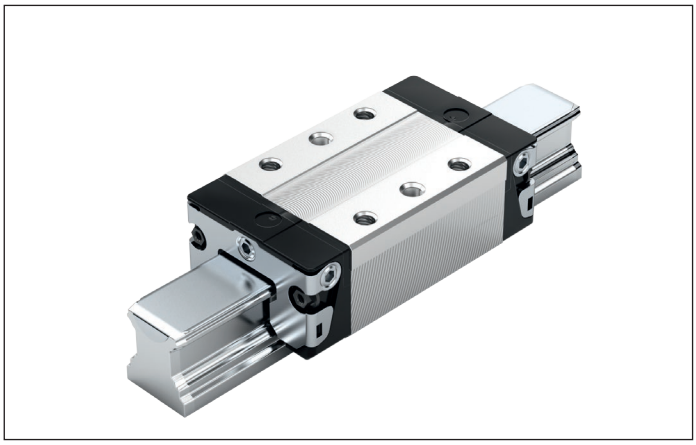
c) For manufacturing reasons, there may be plugs at these positions. These must be removed before mounting.

Size	**Dimensions** (mm)																		
	A	**A_1**	**A_2**	**A_3**	**$B^{+0.5}$**	**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	4.5	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

SNS – slimline normal standard height, R1632 ... 2.



R1632 ... 2.

Dynamic characteristics

Travel speed: v_{max} = 5 m/s

Acceleration: a_{max} = 500 m/s²

(If $F_{comb} > 2.8 \cdot F_{pr}$: a_{max} = 50 m/s²)

Note on lubrication

- Pre-lubricated

Note

Can be used on all ball guide rails SNS.

Options/material numbers/technical data

Size	Ball runner block with size	Preload class		Accuracy class		Seal with ball runner blocks			
						without ball chain		with ball chain	
		C0	C1	N	H	SS	LS	SS	LS
15	R1632 1	9	1	4	3	20	21	22	23
20	R1632 8	9	1	4	3	20	21	22	23
25	R1632 2	9	1	4	3	20	21	22	23
30	R1632 7	9	1	4	3	20	21	22	23
35	R1632 3	9	1	4	3	20	21	22	23
e.g.	R1632 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	9 860	3 000	95	29	68	16
20	23 400	7 200	300	92	200	50
25	28 600	8 800	410	125	290	70
30	36 500	12 200	630	210	440	110
35	51 800	16 200	1 110	345	720	170

1) Load capacities and load moments for ball runner blocks **without** ball chain.
Load capacities and load moments for ball runner blocks **with** ball chain.☞ 13
Determination of the dynamic load capacities and load moments is based on a 100,000 m travel life according to DIN ISO14728-1. Often only 50,000 m are actually stipulated. For comparison: Multiply values **C**, $\mathbf{M}_t$ and $\mathbf{M}_L$ by 1.26 according to the table.

Order example

Options:

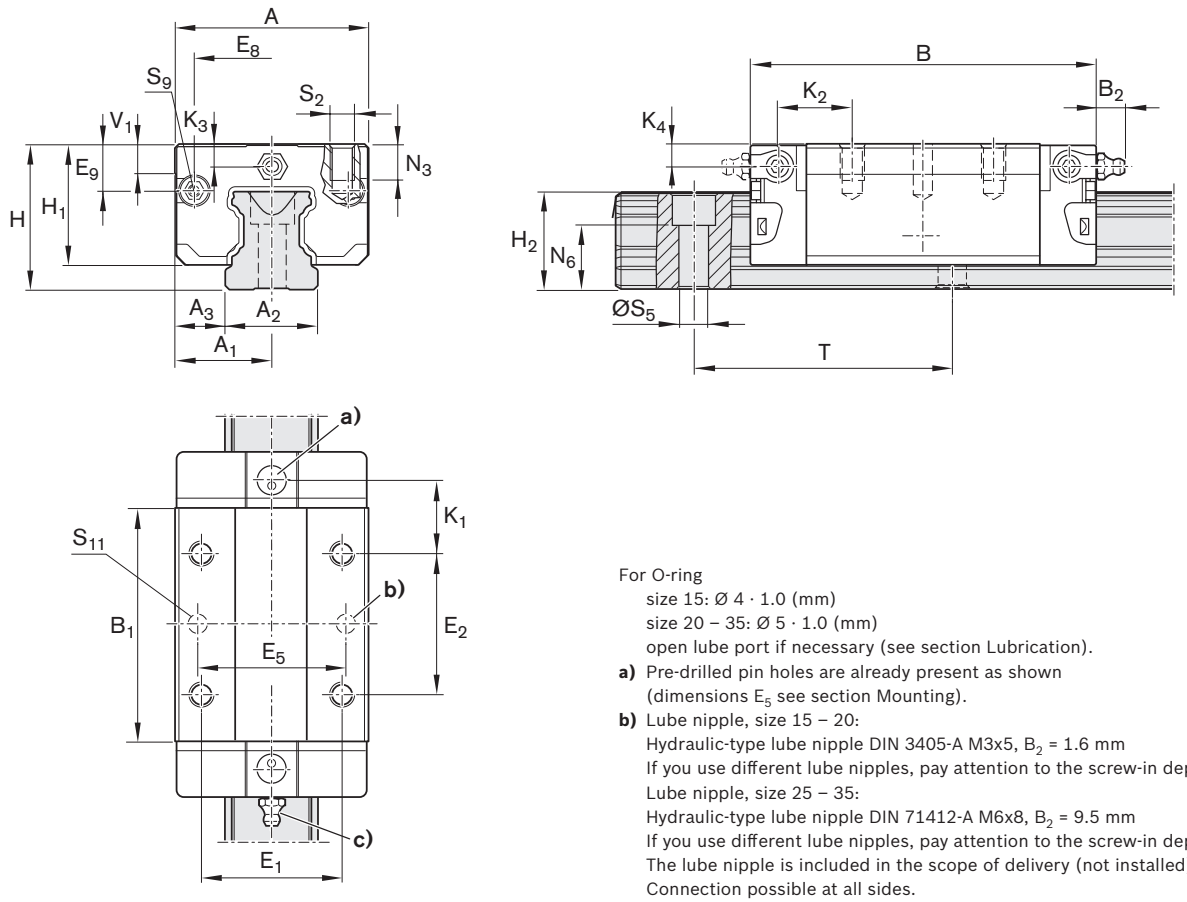
- SNS ball runner blocks
- Size 30
- Preload class C1
- Accuracy class H
- With standard seal, without ball chain

Part number:
R1632 713 20

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

Seals
SS = standard seal
LS = low-friction seal

Key
Gray digits
= No preferred variant/ combination
(Some delivery times may be longer)



For O-ring
size 15: Ø 4 · 1.0 (mm)
size 20 – 35: Ø 5 · 1.0 (mm)
open lube port if necessary (see section Lubrication).

a) Pre-drilled pin holes are already present as shown (dimensions E_5 see section Mounting).

b) Lube nipple, size 15 – 20:
Hydraulic-type lube nipple DIN 3405-A M3x5, B_2 = 1.6 mm
If you use different lube nipples, pay attention to the screw-in depth of 5 mm!
Lube nipple, size 25 – 35:
Hydraulic-type lube nipple DIN 71412-A M6x8, B_2 = 9.5 mm
If you use different lube nipples, pay attention to the screw-in depth of 8 mm!
The lube nipple is included in the scope of delivery (not installed).
Connection possible at all sides.

Size	**Dimensions** (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	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	**$N_6^{\pm 0.5}$**	**S_2**	**S_5**	**S_9**	**S_{11}**	**T**	**V_1**	(kg)
15	6.0	10.3	M4	4.5	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

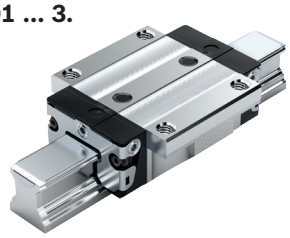
Product description

General information about corrosion-resistant Resist NR ball runner blocks

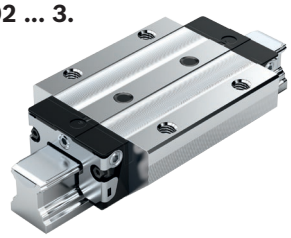
- Since Resist NR is not a coating, all of the dimensions and tolerances, dynamic characteristic, load capacities, rigidities and moments are identical with the standard steel version.
  Refer to the next page for the material numbers.
- For all SNS/SNO ball guide rails.
- Ball runner block body made of corrosion-resistant steel according to DIN EN 10088. Rexroth recommends this version for applications requiring corrosion protection. Fast delivery.
- Pre-lubricated

Overview of formats

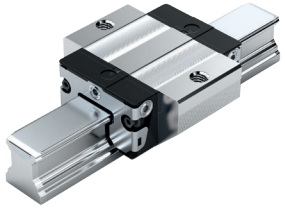
FNS
R2001 ... 3.



FLS
R2002 ... 3.



FKS
R2000 ... 3.



SNS
R2011 ... 3.

SLS
R2012 ... 3.

SKS
R2010 ... 3.

Definition of ball runner block format

Criterion	Designation	Abbreviation (example)		
		F	**N**	**S**
Width	**F**lange	F		
	Slimline	S		
	Wide	B		
	Compact	C		
Length	**N**ormal		N	
	Long		L	
	Short		K	
Height	**S**tandard height			S
	High			H
	Low			N

Ball chain (optional)

- Optimizes noise levels

FNS, FLS, FKS, SNS, SLS, SKS

Design style	Size	Ball runner block with size	Preload class		Accuracy class	Seal with ball runner blocks 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

FNS order example

Options:

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

Part number: R2001 713 30

Note

For dimensions, dimension drawing, load capacities, rigidities 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-lipped seal

Key
Gray digits
= No preferred variant/ combination
(Some delivery times may be longer)

Product description

Characteristic features

Resist NR II ball rail systems made of corrosion-resistant steel[1)] have been used in particular in conjunction with water-based media, highly dilute acids, alkali or salt solutions. These guides are particularly suitable for use in relative humidities above 70 % and temperatures above 30 °C.
Conditions like these are found above all in cleaning systems, galvanization and pickling lines, steam degreasing systems, and also cooling equipment.
Since no additional corrosion protection is needed, Resist NR II ball rail systems are particularly suitable for use in clean rooms, general PCB production. There are other potential uses in the general packaging industry.

General information about Resist NR II ball runner blocks

- For all SNS ball guide rails that are not initially greased and not preserved
- Refer to the appropriate steel ball runner block for the dimensions

Highlights

- All metal parts made of corrosion-resistant steel
- Available in five common sizes
- Excellent dynamic characteristics:
  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, up to several years
- Minimum quantity lubrication system with integrated reservoir for oil lubrication
- Lube ports with metal threads on all sides
- Available with ball chain as an option

1) Resist NR II:
Ball runner block body or ball guide rail and all steel components made of corrosion-resistant steel according to DIN EN 10088

General notes

- Refer to the ball rail system catalog NRFG R310DE2226 (2011.04) for ball rail systems for uses in areas of the food industry
- Combining different accuracy classes When you combine ball guide rails and ball runner blocks of different accuracy classes, the tolerances change for dimensions H and A3. See “Accuracy classes and their tolerances”
- Combining different materials
  When you combine ball guide rails and ball runner blocks of different materials, the load capacities, permissible loads and load moments change. You must use the lower value in each case.

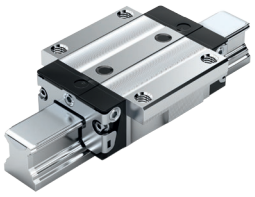
Further highlights

- Limitless interchangeability; all ball guide rail versions can be combined at will with all ball runner block versions within each accuracy class (including those made of steel, aluminum, Resist NR and Resist CR)
- Optimum system rigidity through preloaded O-arrangement
- Existing range of accessories fully utilizable
- Attachments on the ball runner block for mounting from above and below[2)]
- Increase in rigidity with lift-off and lateral loading by means of additional screw connections on two holes in the middle of the ball runner block[2)]
- Mounting threads provided on end faces for fixing of all add-on elements
- High rigidity in all load directions – permits applications with just one runner block per rail
- Integrated all-round sealing
- Optimized entry-zone geometry and high number of balls per track minimizes variation in elastic deflection
- Smooth, light running thanks to optimized ball recirculation and ball or ball chain guidance
- Ball guide rails Resist NR II are available with or without cover strip and for mounting from above or below
- Ball runner blocks also available with chrome-plated guide rails

2) Type-dependent

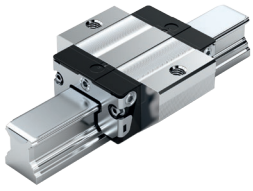
Overview of formats

FNS R2001 ... 0.



FLS R2002 ... 0.

FKS R2000 ... 0.



SNS R2011 ... 0.

SLS R2012 ... 0.

SKS R2010 ... 0.

Definition of ball runner block format

Criterion	Designation	Abbreviation (example)		
		F	**N**	**S**
Width	**F**lange	F		
	Slimline	S		
	Wide	B		
	Compact	C		
Length	**N**ormal		N	
	Long		L	
	Short		K	
Height	**S**tandard height			S
	High			H
	Low			N

Ball chain (optional)

- Optimizes noise levels

FNS, FLS, FKS, SNS, SLS, SKS

Size	Ball runner block with size	Preload class			Accuracy class			Seal with ball runner blocks						Weight (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	5 100	9 300	63	90	34	49
			1		4	3	2	04	05	–	06	07	–							
				2	–	3	2	04	–	–	06	–	–							
20	R2001 8	9			4	3	–	04	05	–	06	07	–	0.45	12 300	16 900	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	15 000	21 000	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	20 800	28 700	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	27 600	37 500	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	8 500	14 000	82	132	64	104
			1		4	3	2	04	05	–	06	07	–							
				2	–	3	2	04	–	–	06	–	–							
20	R2002 8	9			4	3	–	04	05	–	06	07	–	0.55	16 000	24 400	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	20 000	31 600	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	26 300	40 100	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	36 500	56 200	1 025	1 210	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	4 500	5 600	44	55	16	19
			1		4	3	–	04	05	–	06	07	–							
				–	–	–	–	–	–	–	–	–	–							
20	R2000 8	9			4	3	–	04	05	–	06	07	–	0.30	8 200	9 400	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	10 500	12 600	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	17 200	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	19 300	22 400	545	485	170	150
			1		4	3	–	04	05	0X	06	07	0W							
				–	–	–	–	–	–	–	–	–	–							

Order example

Options:

- Resist NR II SKS ball runner blocks BSHP
- 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-lipped seal

Key

Gray digits
= No preferred variant/ combination
(Some delivery times may be longer)

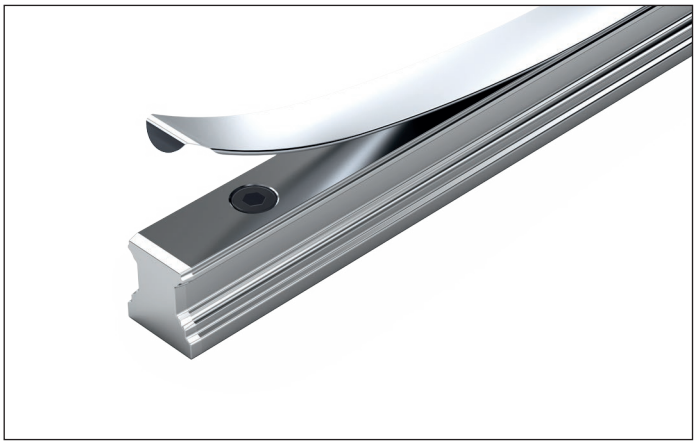
Product description

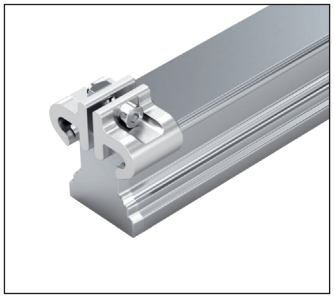
Characteristic features

- Top rigidity in all load directions
- High torque load capacity

Proven cover strip for ball guide rail mounting holes

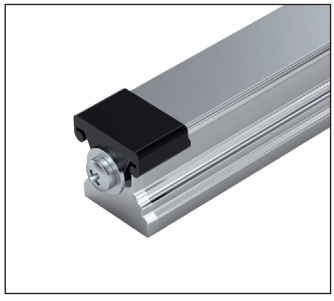
- **One** cover for all the holes saves time and costs
- Made of corrosion-resistant spring steel per EN 10088
- Easy, secure mounting
- Clip on and fasten





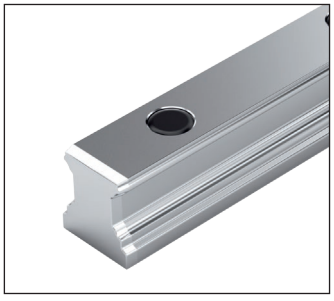
Ball guide rails with aluminum cover strip and strip clamps

- Without threaded holes at the end faces (not required)

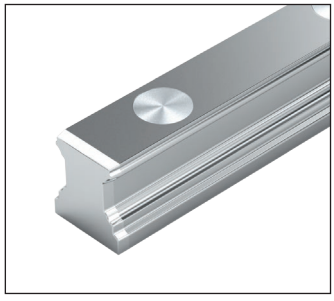


Ball guide rails with cover strip and screwed down plastic protective caps

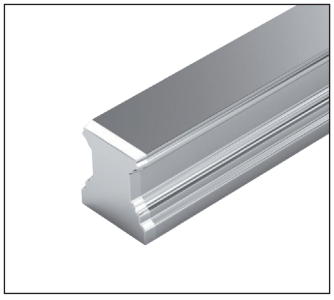
- With threaded holes at the end faces



Ball guide rails with plastic mounting hole plugs



Ball guide rails with steel mounting hole plugs



Ball guide rails for mounting from below

Definition of ball guide rail format

Criterion	Designation	Code (example)		
		S	**N**	**S**
Width	**S**limline	S		
	Wide	B		
Length	**N**ormal		N	
Height	**S**tandard height			S
	No base groove			O

Ordering guide rails with the recommended lengths

Ordering ball guide rails in recommended lengths

The procedure shown in the following ordering examples applies to all ball guide rails. Recommended rail lengths are more cost effective.

Options and part numbers

Size	Ball guide rail with size	Accuracy class					Number of sections, rail length L (mm), ...		Pitch T (mm)	Recommended rail length in accordance with formula $L = n_B \cdot T - 4$ mm
		N	H	P	SP	UP	One-piece	Composite		Maximum number of holes n_B
15	R1605 13	4	3	2	1	9	31, ...	3., ...	60	64
20	R1605 83	4	3	2	1	9	31, ...	3., ...	60	64
25	R1605 23	4	3	2	1	9	31, ...	3., ...	60	64
30	R1605 73	4	3	2	1	9	31, ...	3., ...	80	48
35	R1605 33	4	3	2	1	9	61, ...	6., ...	80	48
45	R1605 43	4	3	2	1	9	61, ...	6., ...	105	36
55	R1605 53	4	3	2	1	9	61, ...	6., ...	120	32
65	R1605 63	4	3	2	1	9	61, ...	6., ...	150	25
e.g.	R1605 73		3				31, 1676			

Excerpt from table with part numbers and recommended rail lengths for ordering example

From the desired length to the recommended length

$$L = \left(\frac{L_W}{T}\right)^{*} \cdot T - 4$$

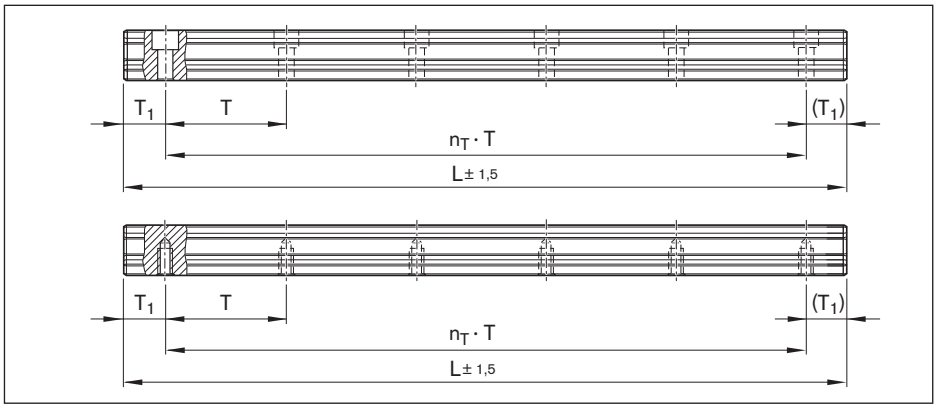
* Round up quotient L_W/T to the nearest whole number!

Calculation example

$$L = \left(\frac{1660}{80\ \text{mm}}\right) \cdot 80\ \text{mm} - 4\ \text{mm}$$

$$L = 21 \cdot 80\ \text{mm} - 4\ \text{mm}$$

$$L = 1676\ \text{mm}$$



Basis: Number of holes

$$L = n_B \cdot T - 4\ \text{mm}$$

Basis: Number of pitches

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

L	=	Recommended rail length	(mm)
L_W	=	Desired length of rail	(mm)
T	=	Pitch	(mm)
T_{1S}	=	Preferred dimension	(mm)
n_B	=	Number of holes	(–)
n_B	=	Number of pitches	(–)

Notes on ordering examples

If preferred dimension T_{1S} is not used, it is possible to choose between:

- End space T_1 between T_{1S} and $T_{1\ min.}$
- As an alternative, it is possible to choose end spaces T_1 to $T_{1\ max.}$

Ordering example 1 (to L_{max})

- Ball guide rail SNS size 30 with cover strip and strip clamps
- Accuracy class H
- Calculated rail length 1676 mm, (20 · T, preferred dimension T_{1S} = 38 mm; number of holes n_B = 21)

Ordering data

Material number, rail length (mm)

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

R1605 733 31, 1676 mm

38 / 20 · 80 / 38 mm

Ordering example 2 (above L_{max})

- Ball guide rail SNS size 30 with cover strip and strip clamps
- Accuracy class H
- Calculated rail length 5116 mm, 2 sections (63 · T, preferred dimension T_{1S} = 38 mm; number of holes n_B = 64)

Ordering data

Material number with number of sections, rail length (mm)

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

R1605 733 32, 5116 mm

38 / 63 · 80 / 38 mm

In the case of rail lengths above L_{max}, sections approved by Rexroth are joined together.

SNS/SNO with cover strip and strip clamps

R1605 .3. ../ R1605 .B. ..

For mounting from above, with cover strip made of corrosion-resistant spring steel per EN 10088 and strip clamps made of aluminum (without threaded mounting holes on end face)

Notes

- Secure the cover strip!
- Strip clamps are supplied.
- Follow the mounting instructions!
  Send for the publications “Mounting Instructions for Ball Rail Systems” and “Mounting Instructions for the Cover Strip.”
- Composite guide rails also available.

Further SNS/SNO ball guide rails and accessories are available.

- Cover strip, protective caps (see accessories for ball guide rails)

SNO R1605 .B. ball guide rails .. with flat underside for mounting on components made of cast mineral materials

- In size 25 – 45 and accuracy class P and SP available on request.

Options and part numbers

Size	Ball guide rail with size	Accuracy class					Number of sections, rail length L (mm), ...		Pitch T (mm)	Recommended rail length in accordance with formula $L = n_B \cdot T - 4$ mm
		N	H	P	SP	UP	One-piece	Composite		Maximum number of holes n_B
15	R1605 13	4	3	2	1	9	31, ...	3., ...	60	64
20	R1605 83	4	3	2	1	9	31, ...	3., ...	60	64
25	R1605 23	4	3	2	1	9	31, ...	3., ...	60	64
30	R1605 73	4	3	2	1	9	31, ...	3., ...	80	48
35	R1605 33	4	3	2	1	9	61, ...	6., ...	80	48
45	R1605 43	4	3	2	1	9	61, ...	6., ...	105	36
55	R1605 53	4	3	2	1	9	61, ...	6., ...	120	32
65	R1605 63	4	3	2	1	9	61, ...	6., ...	150	25
e.g.	R1605 73		3				31, 1676			

Ordering example 1
(to L_{max})
Options:

- Ball guide rail SNS
- Size 30
- Accuracy class H
- One-piece
- Rail length
  L = 1676 mm

Part number:
R1605 733 31, 1676 mm

Ordering example 2
(above L_{max})
Options:

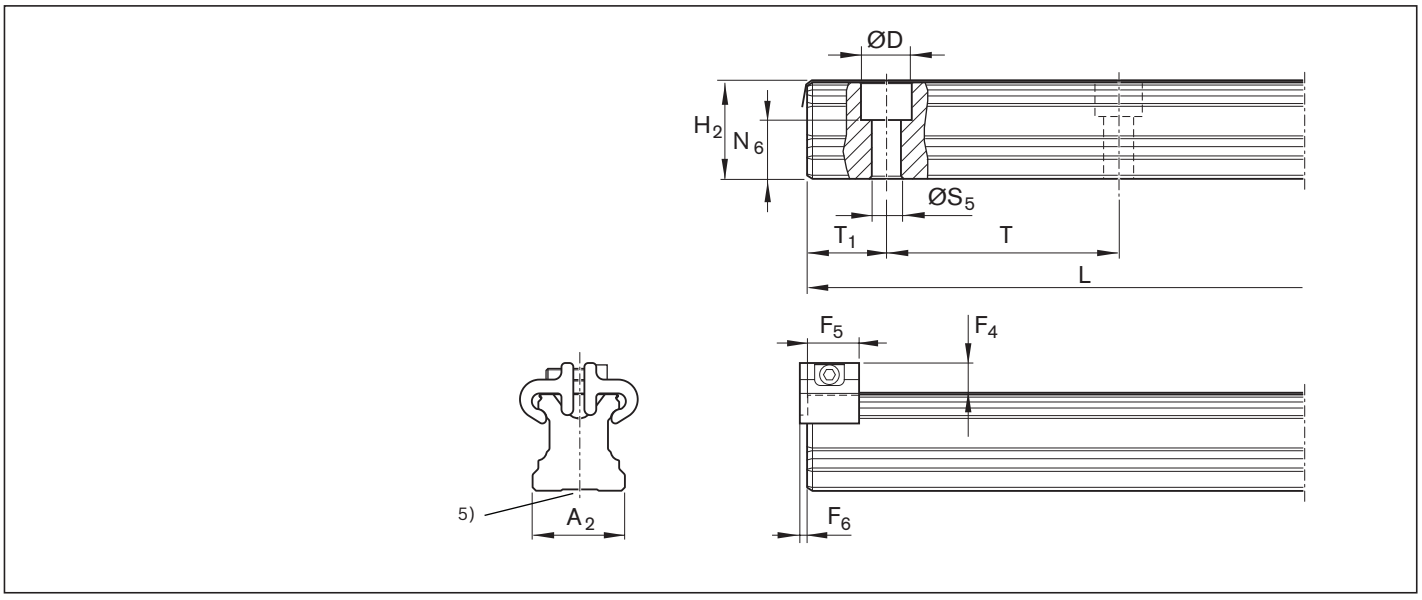
- Ball guide rail SNS
- Size 30
- Accuracy class H
- **2 sections**
- Rail length
  L = 5116 mm

Part number:
R1605 733 3**2**, 5116 mm

Ordering example 3
(to L_{max} , with smooth base surface)
Options:

- SNO ball guide rail
- Size 30
- Accuracy class H
- One-piece
- Rail length
  L = 1676 mm

Part number:
R1605 7**B**3 31, 1676 mm



Size	Dimensions (mm)													Weight m
	A_2	D	F_4 3)	F_5	F_6	H_2 1)	L_{max} 2)	$N_6^{\pm 0.5}$	S_5	T	$T_{1\ min}$	T_{1S} 4)	$T_{1\ max}$	(kg/m)
15	15	7.4	7.3	12	2.0	16.30	3 836	10.3	4.5	60	12	28.0	50	1.4
20	20	9.4	7.1	12	2.0	20.75	3 836	13.2	6.0	60	13	28.0	50	2.4
25	23	11.0	8.2	13	2.0	24.45	3 836	15.2	7.0	60	13	28.0	50	3.2
30	28	15.0	8.7	13	2.0	28.55	3 836	17.0	9.0	80	16	38.0	68	5.0
35	34	15.0	11.7	16	2.2	32.15	3 836	20.5	9.0	80	16	38.0	68	6.8
45	45	20.0	12.5	18	2.2	40.15	3 776	23.5	14.0	105	18	50.5	89	10.5
55	53	24.0	14.0	17	3.2	48.15	3 836	29.0	16.0	120	20	58.0	102	16.2
65	63	26.0	15.0	17	3.2	60.15	3 746	38.5	18.0	150	21	73.0	130	22.4

1) Dimension H_2 with cover strip
Size 15 with 0.1 mm cover strip
Size 20 – 30 with 0.2 mm cover strip
Size 35 – 65 with 0.3 mm cover strip

2) One-piece ball guide rails are available for size 20 – 45 in accuracy classes N, H and P with size 20 – 25 up to 5816 mm being available on request.
Size 30 – 35 up to 5836 mm available on request.
Size 45 up to 5771 mm available on request.

3) Dimension F_4 with cover strip

4) Preferred dimension T_{1S} with tolerances ± 0.75 is recommended.

5) SNO ball guide rails with smooth base surface (without base groove).

SNS/SNO with cover strip and protective caps

R1605 .6. ../ R1605 .D. ..

For mounting from above, with cover strip made of corrosion-resistant spring steel per EN 10088 and screw-down plastic protective end caps (with threaded mounting holes on end face)

Notes

- Secure the cover strip!
- Protective caps with screws and washers included in scope of supply.
- Follow the mounting instructions!
  Send for the publications “Mounting Instructions for Ball Rail Systems” and “Mounting Instructions for the Cover Strip.”
- Composite guide rails also available.

Further SNS/SNO ball guide rails and accessories

- Cover strip, protective caps (see accessories for ball guide rails)

SNO R1605 .D. ball guide rails .. with flat underside for mounting on components made of cast mineral materials

- In size 25 – 45 and accuracy class P and SP available on request.

Options and part numbers

Size	Ball guide rail with size	Accuracy class					Number of sections, rail length L (mm), ...		Hole spacing T (mm)	Recommended rail length in accordance with formula $L = n_B \cdot T - 4$ mm
		N	H	P	SP	UP	One-piece	Composite		Maximum number of holes n_B
15	R1605 16	4	3	2	1	9	31, ...	3., ...	60	64
20	R1605 86	4	3	2	1	9	31, ...	3., ...	60	64
25	R1605 26	4	3	2	1	9	31, ...	3., ...	60	64
30	R1605 76	4	3	2	1	9	31, ...	3., ...	80	48
35	R1605 36	4	3	2	1	9	61, ...	6., ...	80	48
45	R1605 46	4	3	2	1	9	61, ...	6., ...	105	36
55	R1605 56	4	3	2	1	9	61, ...	6., ...	120	32
65	R1605 66	4	3	2	1	9	61, ...	6., ...	150	25
e.g.	R1605 76		3				31, 1676			

Ordering example 1
(to L_{max})
Options:

- Ball guide rail SNS
- Size 30
- Accuracy class H
- One-piece
- Rail length
  L = 1676 mm

Part number:
R1605 763 31, 1676 mm

Ordering example 2
(above L_{max})
Options:

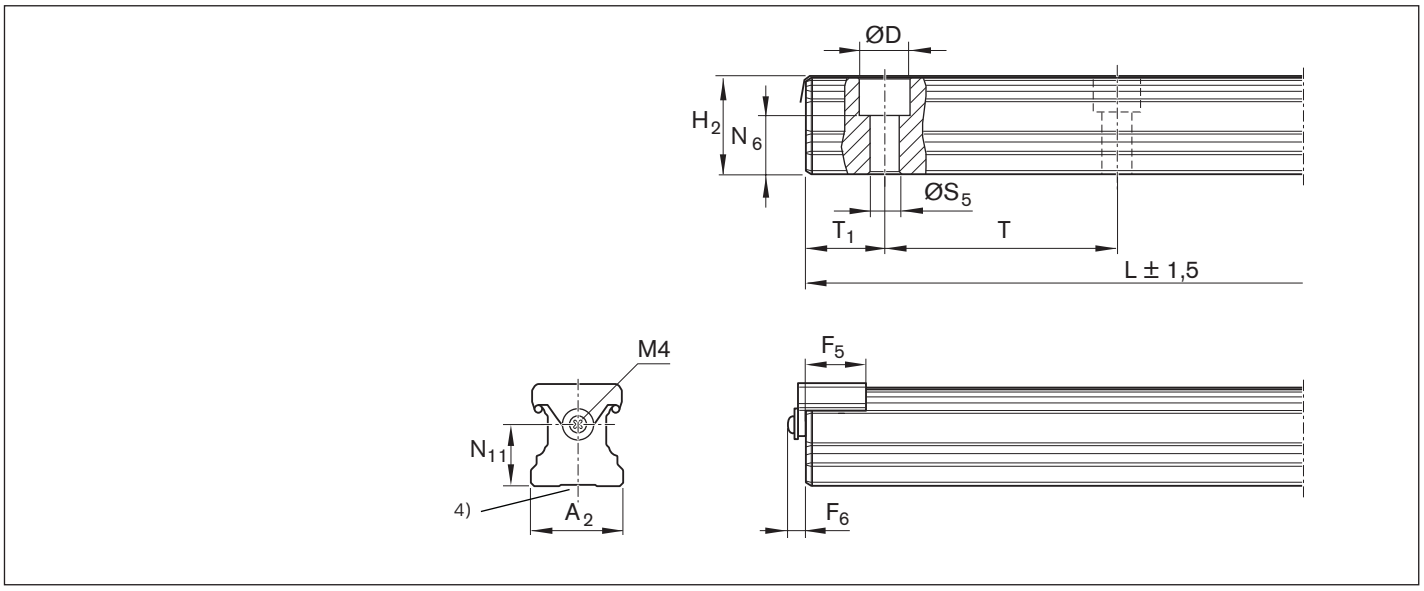
- Ball guide rail SNS
- Size 30
- Accuracy class H
- **2 sections**
- Rail length
  L = 5116 mm

Part number:
R1605 763 3**2**, 5116 mm

Ordering example 3
(to L_{max}, with smooth base surface)
Options:

- SNO ball guide rail
- Size 30
- Accuracy class H
- One-piece
- Rail length
  L = 1676 mm

Part number:
R1605 7**D**3 31, 1676 mm



Size	Dimensions (mm)													Weight m
	A_2	D	F_5	F_6	H_2 1)	L_{max} 2)	$N_6^{\pm 0.5}$	N_{11}	S_5	T	$T_{1\ min}$ 3)	T_{1S}	$T_{1\ max}$	(kg/m)
15	15	7.4	14.0	6.5	16.30	3 836	10.3	9.8	4.5	60	12	28.0	50	1.4
20	20	9.4	14.0	6.5	20.75	3 836	13.2	13.0	6.0	60	13	28.0	50	2.4
25	23	11.0	15.2	6.5	24.45	3 836	15.2	15.0	7.0	60	13	28.0	50	3.2
30	28	15.0	15.2	7.0	28.55	3 836	17.0	18.0	9.0	80	16	38.0	68	5.0
35	34	15.0	18.0	7.0	32.15	3 836	20.5	22.0	9.0	80	16	38.0	68	6.8
45	45	20.0	20.0	7.0	40.15	3 776	23.5	30.0	14.0	105	18	50.5	89	10.5
55	53	24.0	20.0	7.0	48.15	3 836	29.0	30.0	16.0	120	20	58.0	102	16.2
65	63	26.0	20.0	7.0	60.15	3 746	38.5	40.0	18.0	150	21	73.0	130	22.4

1) Dimension H_2 with cover strip
Size 15 with 0.1 mm cover strip
Size 20 – 30 with 0.2 mm cover strip
Size 35 – 65 with 0.3 mm cover strip

2) One-piece ball guide rails are available for size 20 – 45 in accuracy classes N, H and P with size 20 – 25 up to 5816 mm being available on request.
Size 30 – 35 up to 5836 mm available on request.
Size 45 up to 5771 mm available on request.

3) If T_{1min} is fallen short of, no thread is possible on the end face. Secure the cover strip.

4) SNO ball guide rails with smooth base surface (without base groove).

SNS/SNO with plastic protective caps

R1605 .0. ../ R1605 .C. ..

For mounting from above with plastic caps

Notes

- Plastic mounting hole plugs included in scope of supply.
- Follow the mounting instructions!
  Please ask for the “Mounting Instructions for Ball Rail Systems”.
- Composite guide rails also available.

Further ball guide rails SNS and accessories

- Corrosion-resistant Resist NR and Resist CR ball guide rails
- For plastic caps, refer to the accessories for ball guide rails

SNO R1605 .C. ball guide rails .. with flat underside for mounting on components made of cast mineral materials

- In size 25 – 45 and accuracy class P and SP available on request.

Options and part numbers

Size	Ball guide rail with size	Accuracy class					Number of sections, rail length L (mm), ...		Hole spacing T (mm)	Recommended rail length in accordance with formula $L = n_B \cdot T - 4$ mm
		N	H	P	SP	UP	One-piece	Composite		Maximum number of holes n_B
15	R1605 10	4	3	2	1	9	31, ...	3., ...	60	64
20	R1605 80	4	3	2	1	9	31, ...	3., ...	60	64
25	R1605 20	4	3	2	1	9	31, ...	3., ...	60	64
30	R1605 70	4	3	2	1	9	31, ...	3., ...	80	48
35	R1605 30	4	3	2	1	9	31, ...	3., ...	80	48
45	R1605 40	4	3	2	1	9	31, ...	3., ...	105	36
55	R1605 50	4	3	2	1	9	31, ...	3., ...	120	32
65	R1605 60	4	3	2	1	9	31, ...	3., ...	150	25
e.g.	R1605 70		3				31, 1676			

Ordering example 1 (to L_{max})

Options:

- Ball guide rail SNS
- Size 30
- Accuracy class H
- One-piece
- Rail length
  L = 1676 mm

Part number:

R1605 703 31, 1676 mm

Ordering example 2 (above L_{max})

Options:

- Ball guide rail SNS
- Size 30
- Accuracy class H
- **2 sections**
- Rail length
  L = 5116 mm

Part number:

R1605 703 3**2**, 5116 mm

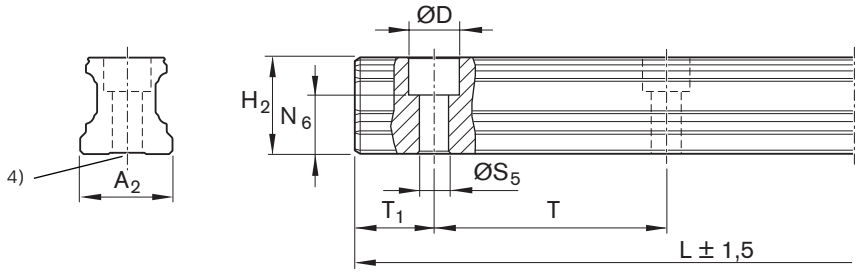
Ordering example 3 (to L_{max}, with smooth base surface)

Options:

- SNO ball guide rail
- Size 30
- Accuracy class H
- One-piece
- Rail length
  L = 1676 mm

Part number:

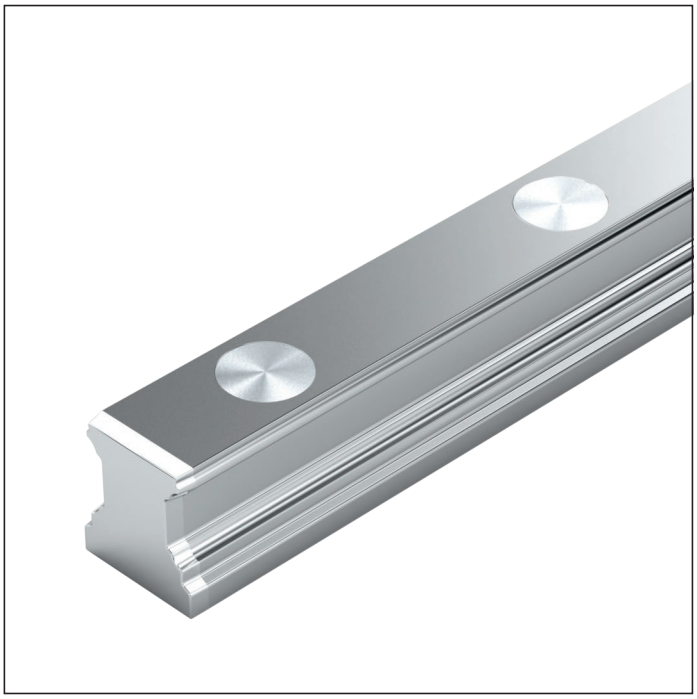
R1605 7**C**3 31, 1676 mm



Size	Dimensions (mm)										Weight m
	A_2	D	H_2 1)	L_{max} 2)	$N_6^{\pm 0.5}$	S_5	T	$T_{1\ min}$	T_{1S} 3)	$T_{1\ max}$	(kg/m)
15	15	7.4	16.20	3 836	10.3	4.5	60	10	28.0	50	1.4
20	20	9.4	20.55	3 836	13.2	6.0	60	10	28.0	50	2.4
25	23	11.0	24.25	3 836	15.2	7.0	60	10	28.0	50	3.2
30	28	15.0	28.35	3 836	17.0	9.0	80	12	38.0	68	5.0
35	34	15.0	31.85	3 836	20.5	9.0	80	12	38.0	68	6.8
45	45	20.0	39.85	3 776	23.5	14.0	105	16	50.5	89	10.5
55	53	24.0	47.85	3 836	29.0	16.0	120	18	58.0	102	16.2
65	63	26.0	59.85	3 746	38.5	18.0	150	20	73.0	130	22.4

1) Dimension H_2 without cover strip
2) One-piece ball guide rails are available for
size 20 – 45 in accuracy classes N, H and P with
size 20 – 25 up to 5816 mm being available on request.
Size 30 – 35 up to 5836 mm available on request.
Size 45 up to 5771 mm available on request.
3) Preferred dimension T_{1S} with tolerances ± 0.75 is recommended.
4) SNO ball guide rails with smooth base surface (without base groove).

SNS with steel mounting hole plugs



R1606 .5. ..

For mounting from above for steel caps

Notes

- Steel mounting hole plugs not included in scope of supply.
- Follow the mounting instructions!
  Please ask for the “Mounting Instructions for Ball Rail Systems”.
- Composite guide rails also available.

Further ball guide rails SNS and accessories

- For steel caps and mounting device for steel caps, see accessories for ball guide rails

Options and part numbers

Size	Ball guide rail with size	Accuracy class				Number of sections, rail length L (mm), ...		Hole spacing T (mm)	Recommended rail length in accordance with formula $L = n_B \cdot T - 4$ mm
		N	H	P	SP	One-piece	Composite		Maximum number of holes n_B
25	R1606 25	4	3	2	1	31, ...	3., ...	60	64
30	R1606 75	4	3	2	1	31, ...	3., ...	80	48
35	R1606 35	4	3	2	1	31, ...	3., ...	80	48
45	R1606 45	4	3	2	1	31, ...	3., ...	105	36
55	R1606 55	4	3	2	1	31, ...	3., ...	120	32
65	R1606 65	4	3	2	1	31, ...	3., ...	150	25
e.g.	R1606 75		3			31, 1676			

Ordering example 1 (to L_{max})

Options:

- Ball guide rail SNS
- Size 30
- Accuracy class H
- One-piece
- Rail length
  L = 1676 mm

Part number:

R1606 753 31, 1676 mm

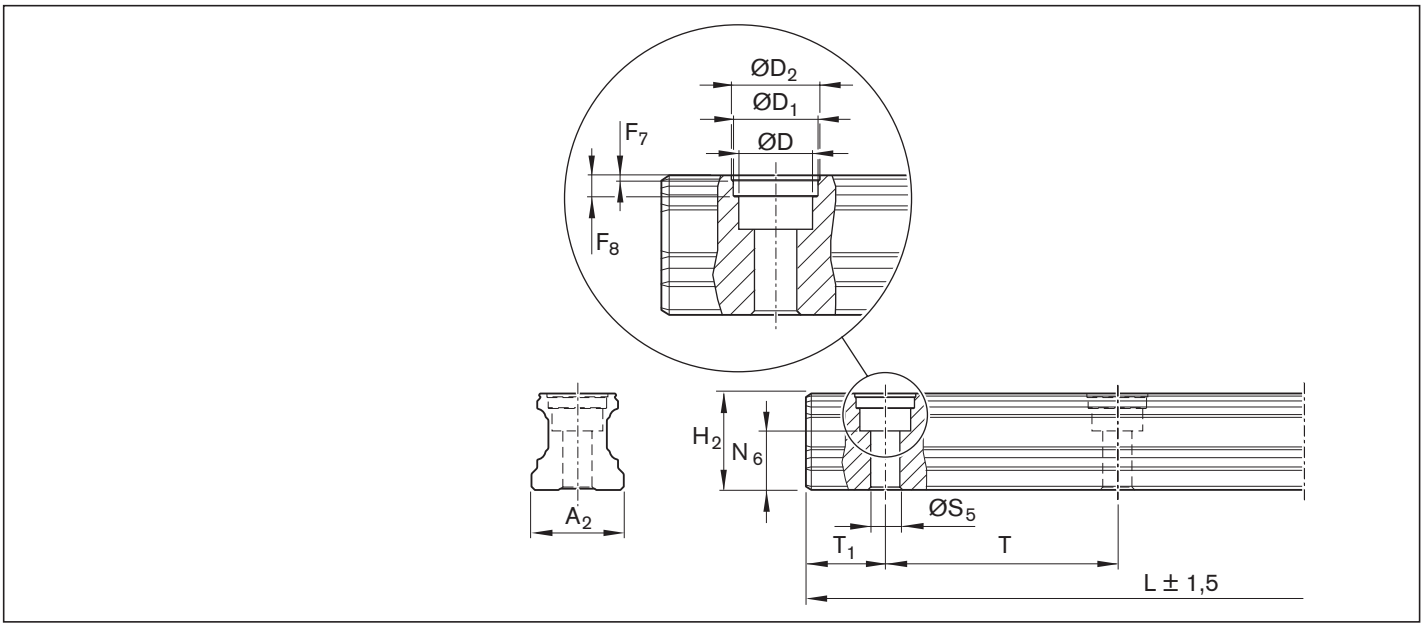
Ordering example 2 (above L_{max})

Options:

- Ball guide rail SNS
- Size 30
- Accuracy class H
- **2 sections**
- Rail length
  L = 5116 mm

Part number:

R1606 753 3**2**, 5116 mm



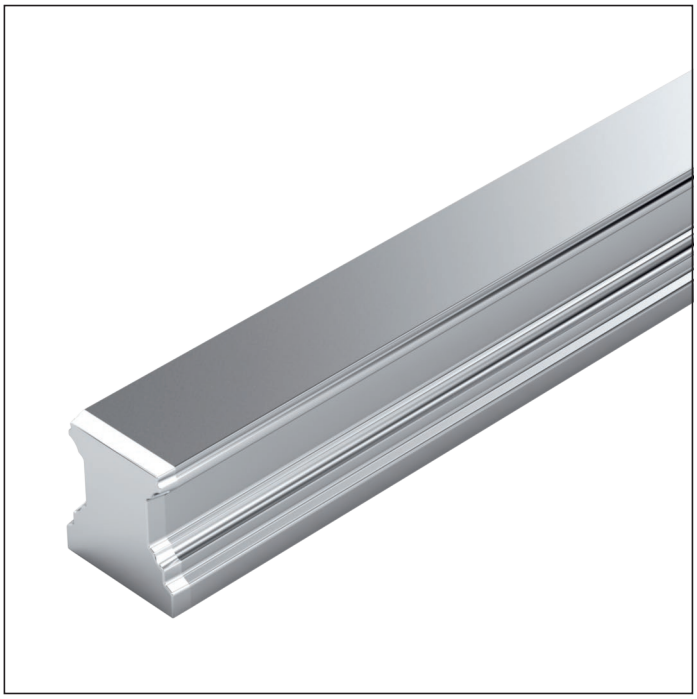
Size	Dimensions (mm)														Weight m
	A_2	D	D_1	D_2	F_7	F_8	H_2 1)	L_{max} 2)	$N_6^{\pm 0.5}$	S_5	T	$T_{1\,min}$	T_{1S} 3)	$T_{1\,max}$	(kg/m)
25	23	11.0	12.55	13.0	0.90	3.7	24.25	3 836	15.2	7.0	60	13	28.0	50	3.2
30	28	15.0	17.55	18.0	0.90	3.6	28.35	3 836	17.0	9.0	80	16	38.0	68	5.0
35	34	15.0	17.55	18.0	0.90	3.6	31.85	3 836	20.5	9.0	80	16	38.0	68	6.8
45	45	20.0	22.55	23.0	1.45	8.0	39.85	3 776	23.5	14.0	105	18	50.5	89	10.5
55	53	24.0	27.55	28.0	1.45	8.0	47.85	3 836	29.0	16.0	120	20	58.0	102	16.2
65	63	26.0	29.55	30.0	1.45	8.0	59.85	3 746	38.5	18.0	150	21	73.0	130	22.4

1) Dimension H_2 without cover strip

2) One-piece ball guide rails are available for size 25 – 45 in accuracy classes N, H and P with size 25 up to 5816 mm being available on request.
Size 30 – 35 up to 5836 mm available on request.
Size 45 up to 5771 mm available on request.

3) Preferred dimension T_{1S} with tolerances ± 0.75 is recommended.

SNS for mounting from below



R1607 .0. ..

For mounting from below

Notes

- Follow the mounting instructions!
  Please ask for the “Mounting Instructions for Ball Rail Systems”.
- Composite guide rails also available.

Further ball guide rails SNS and accessories

- Corrosion-resistant Resist NR and Resist CR ball guide rails

Options and part numbers

Size	Ball guide rail with size	Accuracy class					Number of sections, rail length L (mm), ...		Hole spacing T (mm)	Recommended rail length in accordance with formula $L = n_B \cdot T - 4$ mm
		N	H	P	SP	UP	One-piece	Composite		Maximum number of holes n_B
15	R1607 10	4	3	2	1	9	31, ...	3., ...	60	64
20	R1607 80	4	3	2	1	9	31, ...	3., ...	60	64
25	R1607 20	4	3	2	1	9	31, ...	3., ...	60	64
30	R1607 70	4	3	2	1	9	31, ...	3., ...	80	48
35	R1607 30	4	3	2	1	9	31, ...	3., ...	80	48
45	R1607 40	4	3	2	1	9	31, ...	3., ...	105	36
55	R1607 50	4	3	2	1	9	31, ...	3., ...	120	32
65	R1607 60	4	3	2	1	9	31, ...	3., ...	150	25
e.g.	R1607 70		3				31, 1676			

Ordering example 1 (to L_{max})

Options:

- Ball guide rail SNS
- Size 30
- Accuracy class H
- One-piece
- Rail length
  L = 1676 mm

Part number:

R1607 703 31, 1676 mm

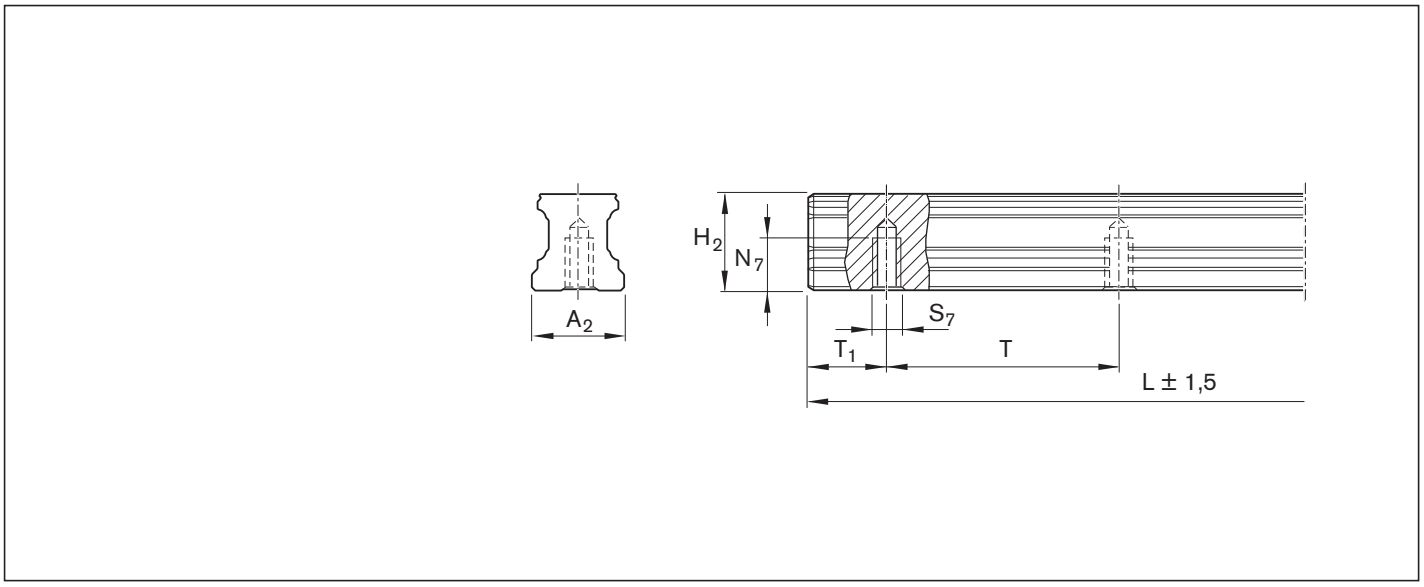
Ordering example 2 (above L_{max})

Options:

- Ball guide rail SNS
- Size 30
- Accuracy class H
- **2 sections**
- Rail length
  L = 5116 mm

Part number:

R1607 703 3**2**, 5116 mm



Size	**Dimensions** (mm)									**Weight** **m** (kg/m)
	A_2	**H_2**[1)]	**L_{max}**[2)]	**N_7**	**S_7**	**T**	**T_{1min}**	**T_{1S}**[3)]	**$T_{1\ max}$**	
15	15	16.20	3 836	7.5	M5	60	10	28.0	50	1.4
20	20	20.55	3 836	9.0	M6	60	10	28.0	50	2.4
25	23	24.25	3 836	12.0	M6	60	10	28.0	50	3.2
30	28	28.35	3 836	15.0	M8	80	12	38.0	68	5.0
35	34	31.85	3 836	15.0	M8	80	12	38.0	68	6.8
45	45	39.85	3 776	19.0	M12	105	16	50.5	89	10.5
55	53	47.85	3 836	22.0	M14	120	18	58.0	102	16.2
65	63	59.85	3 746	25.0	M16	150	20	73.0	130	22.4

1) Dimension H_2 without cover strip

2) One-piece ball guide rails are available for size 20 – 45 in accuracy classes N, H and P with size 20 – 25 up to 5816 mm being available on request.
Size 30 – 35 up to 5836 mm available on request.
Size 45 up to 5771 mm available on request.

3) Preferred dimension T_{1S} with tolerances ± 0.75 is recommended.

Product description

General information about Resist NR II ball guide rails

Refer to the next few pages for the material numbers. For the recommended rail lengths, dimensions and weights, refer to the corresponding standard steel ball guide rails. Observe the chapter entitled “Mounting Information”!

Send for the publications “Mounting Instructions for Ball Rail Systems” and “Mounting Instructions for the Cover Strip.”

Accessories: For cover strips, strip clamps and caps ... for ball guide rails, see the “Accessories for ball guide rails” chapter.

Corrosion resistance and conditions of use

Ball guide rails Resist NR II and all steel parts are made of corrosion-resistant steel per EN 10088, with aluminum strip clamps. They are specifically intended for use in applications involving aqueous media, very dilute acids, alkalis or salt solutions. These guides are particularly suitable for use in relative humidities above 70 % and temperatures above 30 °C. These conditions can be found in particular in cleaning systems, electroplating and pickling plants, steam degreasing plants and in refrigerating machines. Since they have built-in corrosion protection, ball rail systems Resist NR II are also ideal for use in clean rooms and for general printed circuit board assembly. Other application areas include the pharmaceuticals and food industries.

For the recommended ball runner blocks for Resist NR II ball guide rails, see the “Resist NR II ball runner blocks” **chapter**

Combining different accuracy classes

When you combine ball guide rails and ball runner blocks of different accuracy classes, the tolerances change for dimensions H and A3 (see “Accuracy classes and their tolerances.”)

Ball guide rails, Resist NR II

R2045 .3. .., SNS for mounting from above with cover strip and strip clamps

Options and part numbers

Size	Ball guide rail with size	Accuracy class			Number of sections, rail length L (mm), ...	
		N	H	P	One-piece	Composite
15[1)]	R2045 13	4	3	2	31, ...	3., ...
20	R2045 83	4	3	2	31, ...	3., ...
25	R2045 23	4	3	2	31, ...	3., ...
30	R2045 73	4	3	2	31, ...	3., ...
35	R2045 33	4	3	2	61, ...	6., ...
e.g.	R2045 73		3		31, 1676	

1) Maximum rail length 1856 mm, maximum number of holes n_B 30

Installation information

- Secure the cover strip!
- Strip clamps are supplied.
- Composite guide rails also available.

Ordering example 1 (to L_{max})

Options:

- NR II, SNS ball guide rail
- Size 30
- Accuracy class H
- One-piece
- Rail length
  L = 1676 mm

Part number:

R2045 733 31, 1676 mm

Ordering example 2 (above L_{max})

Options:

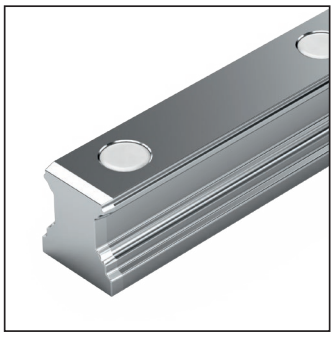
- NR II, SNS ball guide rail
- Size 30
- Accuracy class H
- **2 sections**
- Rail length
  L = 5116 mm

Part number:

R2045 733 3**2**, 5116 mm

Ball guide rails, Resist NR II

R2045 .0. .., SNS for mounting from above with plastic caps



Options and part numbers

Size	Ball guide rail with size	Accuracy class			Number of sections, rail length L (mm), ...	
		N	H	P	One-piece	Composite
15[1)]	R2045 10	4	3	2	31, ...	3., ...
20	R2045 80	4	3	2	31, ...	3., ...
25	R2045 20	4	3	2	31, ...	3., ...
30	R2045 70	4	3	2	31, ...	3., ...
35	R2045 30	4	3	2	31, ...	3., ...
e.g.	R2045 70		3		31, 1676	

1) Maximum rail length 1856 mm, maximum number of holes n_B 30

Installation information

- Plastic mounting hole plugs included in scope of supply.
- Composite guide rails also available.

Ordering example 1 (to L_{max})

Options:

- NR II, SNS ball guide rail
- Size 30
- Accuracy class H
- One-piece
- Rail length
  L = 1676 mm

Part number:
R2045 703 31, 1676 mm

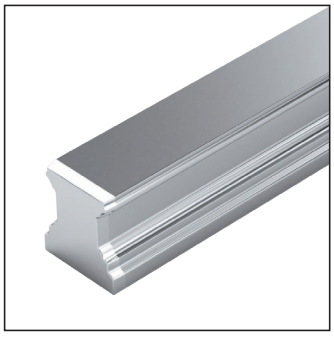
Ordering example 2 (above L_{max})

Options:

- NR II, SNS ball guide rail
- Size 30
- Accuracy class H
- **2 sections**
- Rail length
  L = 5116 mm

Part number:
R2045 703 3**2**, 5116 mm

R2047 .0. .., SNS for mounting from below



Options and part numbers

Size	Ball guide rail with size	Accuracy class			Number of sections, rail length L (mm), ...	
		N	H	P	One-piece	Composite
15[1)]	R2047 10	4	3	2	31, ...	3., ...
20	R2047 80	4	3	2	31, ...	3., ...
25	R2047 20	4	3	2	31, ...	3., ...
30	R2047 70	4	3	2	31, ...	3., ...
35	R2047 30	4	3	2	31, ...	3., ...
e.g.	R2047 70		3			32, 5116

1) Maximum rail length 1856 mm, maximum number of holes n_B 30

Installation information

- Composite guide rails also available.

Ordering example 1 (to L_{max})

Options:

- NR II, SNS ball guide rail
- Size 30
- Accuracy class H
- One-piece
- Rail length
  L = 1676 mm

Part number:
R2047 703 31, 1676 mm

Ordering example 2 (above L_{max})

Options:

- NR II, SNS ball guide rail
- Size 30
- Accuracy class H
- **2 sections**
- Rail length
  L = 5116 mm

Part number:
R2047 703 3**2**, 5116 mm

Product description

General notes on ball guide rails in Resist CR

Refer to the next few pages for the material numbers. For the recommended rail lengths, dimensions and weights, refer to the corresponding standard steel ball guide rails. Observe the chapter entitled “Mounting Information”!

Send for the publications “Mounting Instructions for Ball Rail Systems” and “Mounting Instructions for the Cover Strip.”

Accessories: For cover strips, strip clamps and caps ... for ball guide rails, see the “Accessories for ball guide rails” chapter

Corrosion-resistant coating Resist CR

Ball guide rail made of steel with matte-silver hard-chrome plated corrosion-resistant coating.

Ball guide rails with coated end faces

- End faces, chamfers and thread on the end face coated; material numbers: – R16.. ... 41 or R16.. ... 71
- Composite ball guide rails are chamfered on both sides at the joints.

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

Size 15 – 65: Accuracy class H, preload class C0

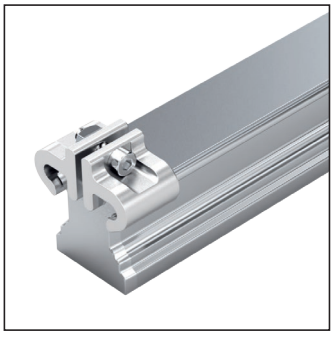
Size 30 – 65: Accuracy class H, preload class C1

Combining different accuracy classes

When you combine ball guide rails and ball runner blocks of different accuracy classes, the tolerances change for dimensions H and A3 (see the chapter entitled “Accuracy classes and their tolerances.”)

Ball guide rails, Resist CR

R1645 .3. .., SNS for mounting from above with cover strip and strip clamps



Options and part numbers

Size	Ball guide rail with size	Accuracy class	Number of sections, rail length L (mm), ...	
			One-piece	Composite
		H	Coated end faces	Coated end faces
15	R1645 13	3	41, ...	4., ...
20	R1645 83	3	41, ...	4., ...
25	R1645 23	3	41, ...	4., ...
30	R1645 73	3	41, ...	4., ...
35	R1645 33	3	71, ...	7., ...
45	R1645 43	3	71, ...	7., ...
55	R1645 53	3	71, ...	7., ...
65	R1645 63	3	71, ...	7., ...
e.g.	R1645 73	3	31, 1676	

Installation information

- Secure the cover strip!
- Strip clamps are supplied.
- Composite guide rails also available.

Ordering example 1 (to L_{max})

Options:

- Ball guide rail CR, SNS
- Size 30
- Accuracy class H
- One-piece
- Coated end faces
- Rail length
  L = 1676 mm

Part number:

R1645 733 41, 1676 mm

Ordering example 2 (above L_{max})

Options:

- Ball guide rail CR, SNS
- Size 30
- Accuracy class H
- **2 sections**
- Coated end faces
- Rail length
  L = 5116 mm

Part number:

R1645 733 4**2**, 5116 mm

Ball guide rails, Resist CR

R1645 .0. .., SNS for mounting from above with plastic caps

Options and part numbers

Size	Ball guide rail with size	Accuracy class	Number of sections, rail length L (mm), ...	
			One-piece	Composite
		H	Coated end faces	Coated end faces
15	R1645 10	3	41, ...	4., ...
20	R1645 80	3	41, ...	4., ...
25	R1645 20	3	41, ...	4., ...
30	R1645 70	3	41, ...	4., ...
35	R1645 30	3	41, ...	4., ...
45	R1645 40	3	41, ...	4., ...
55	R1645 50	3	41, ...	4., ...
65	R1645 60	3	41, ...	4., ...
e.g.	R1645 70	3	31, 1676	

Installation information

- Plastic mounting hole plugs included in scope of supply.
- Composite guide rails also available.

Ordering example 1 (to L_{max})

Options:

- Ball guide rail CR, SNS
- Size 30
- Accuracy class H
- One-piece
- Coated end faces
- Rail length
  L = 1676 mm

Part number:
R1645 703 41, 1676 mm

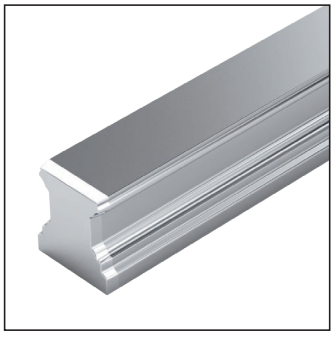
Ordering example 2 (above L_{max})

Options:

- Ball guide rail CR, SNS
- Size 30
- Accuracy class H
- **2 sections**
- Coated end faces
- Rail length
  L = 5116 mm

Part number:
R1645 703 4**2**, 5116 mm

R1647 .0. .., SNS for mounting from below



Options and part numbers

Size	Ball guide rail with size	Accuracy class	Number of sections, rail length L (mm), ...	
			One-piece	Composite
		H	Coated end faces	Coated end faces
15	R1647 10	3	41, ...	4., ...
20	R1647 80	3	41, ...	4., ...
25	R1647 20	3	41, ...	4., ...
30	R1647 70	3	41, ...	4., ...
35	R1647 30	3	41, ...	4., ...
45	R1647 40	3	41, ...	4., ...
55	R1647 50	3	41, ...	4., ...
65	R1647 60	3	41, ...	4., ...
e.g.	R1647 70	3		42, 5116

Installation information

- Composite guide rails also available.

Ordering example 1 (to L_{max})

Options:

- Ball guide rail CR, SNS
- Size 30
- Accuracy class H
- One-piece
- Coated end faces
- Rail length
  L = 1676 mm

Part number:
R1647 703 41, 1676 mm

Ordering example 2 (above L_{max})

Options:

- Ball guide rail CR, SNS
- Size 30
- Accuracy class H
- **2 sections**
- Coated end faces
- Rail length
  L = 5116 mm

Part number:
R1647 703 4**2**, 5116 mm

Wide Ball Rail Systems made of steel and Resist CR

BNS – Wide, normal, standard height

Ball Runner Blocks made of steel R1671 … 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

Further Ball Runner Blocks BNS
– See below for corrosion-resistant ball runner blocks

Note
Can be used on all Ball Guide Rails BNS.

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	P	SS	DS	SS	DS
20/40[1]	R1671 5	9		4	3	–	20	–	22	–
			1	4	3	2	20	2Z	22	2Y
25/70	R1671 2	9		4	3	–	20	–	22	–
			1	4	3	2	20	2Z	22	2Y
e.g.	R1671 2		1		3		20			

Ordering example
Options:
– Ball Runner Block BNS
– Size 25/70
– Preload class C1
– Accuracy class H
– With standard seal, without ball chain
Part number: R1671 213 20

Ball Runner Blocks, Resist CR R1671 … 7.

Note on lubrication
– Pre-lubricated

Note
Can be used on all Ball Guide Rails BNS.

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	H	SS	DS	SS	DS
20/40[1]	R1671 5	9	3	70	7Z	72	7Y
25/70	R1671 2	9	3	70	7Z	72	7Y
e.g.	R1671 2	9	3	70			

Ordering example
Options:
– Ball Runner Block BNS
– Size 25/70
– Preload class C0
– Accuracy class H
– With standard seal, without ball chain
Part number: R1671 293 70

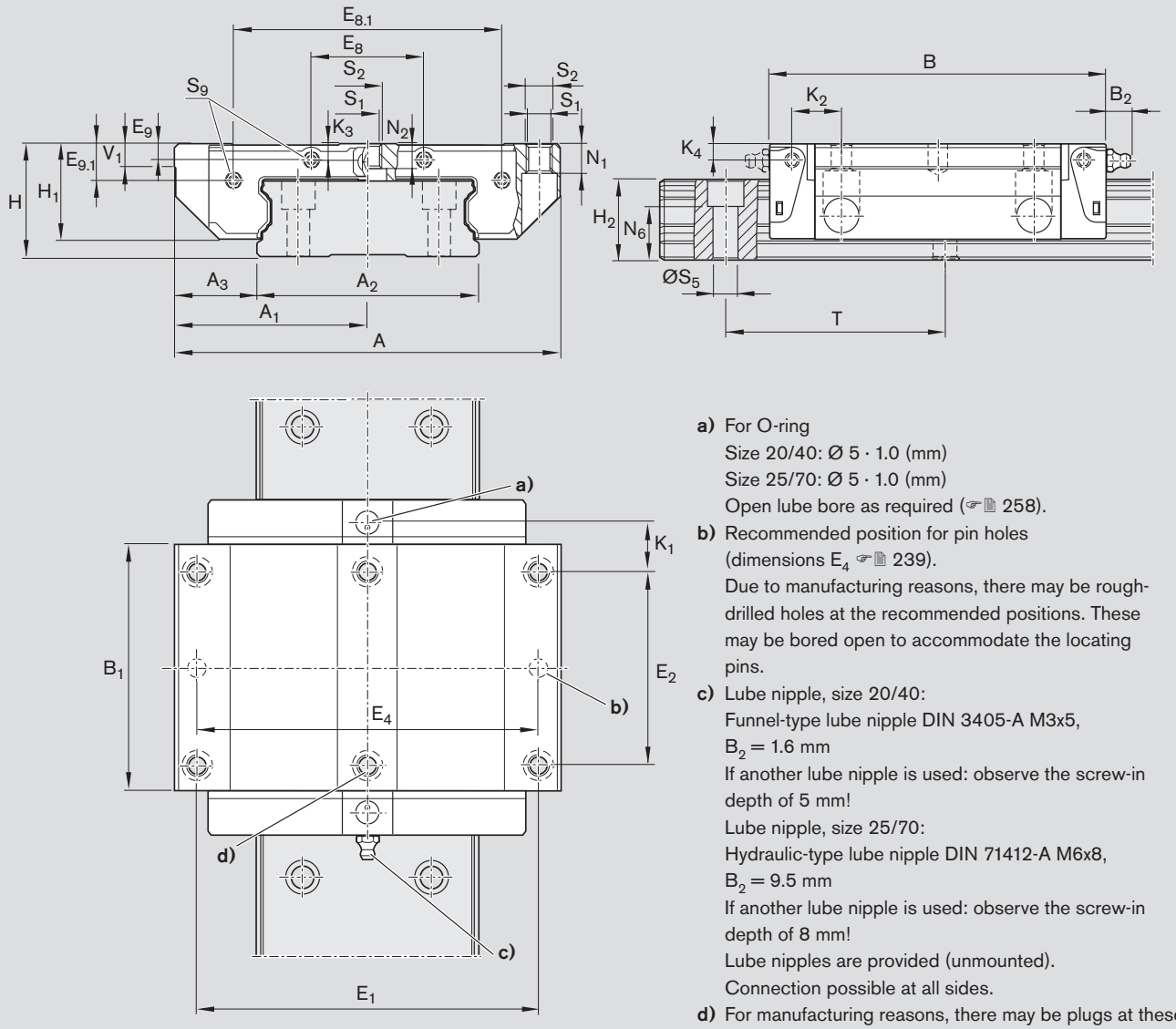
1) **Note:** New Ball Runner Block not combinable with existing Ball Guide Rail R167. 8.. ..!

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

Seals
SS = standard seal
DS = double-lipped seal

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

Ball Runner Blocks BNS



a) For O-ring
Size 20/40: Ø 5 · 1.0 (mm)
Size 25/70: Ø 5 · 1.0 (mm)
Open lube bore as required (☞ 258).

b) Recommended position for pin holes (dimensions E_4 ☞ 239).
Due to manufacturing reasons, there may be rough-drilled holes at the recommended positions. These may be bored open to accommodate the locating pins.

c) Lube nipple, size 20/40:
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 25/70:
Hydraulic-type lube nipple DIN 71412-A 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_8	$E_{8.1}$	E_9	$E_{9.1}$	H	H_1	H_2	K_1	K_2	K_3	K_4
20/40	80	40	42	19.0	73	51.3	70	40	18	53.4	3.4	8.1	27	22.50	18.30	10.6	11.0	3.5	3.5
25/70	120	60	69	25.5	105	76.5	107	60	35	83.5	4.9	11.3	35	29.75	23.55	14.3	15.5	5.2	5.2

Size	Dimensions (mm)									Weight (kg)	Load capacities[1] (N)		Load moments[1] (Nm)			
	N_1	N_2	$N_6^{\pm 0.5}$	S_1	S_2	S_5	S_9	T	V_1		C	C_0	M_t	M_{t0}	M_L	M_{L0}
20/40	7.70	3.70	12.5	5.3	M6	4.4	M2.5x1.5^{+3}	60	6.0	0.45	13 650	19 675	310	450	95	135
25/70	9.35	7.05	14.4	6.7	M8	7.0	M3x2$^{+4.5}$	80	7.5	1.70	29 000	42 500	1 080	1 580	305	450

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.

Wide Ball Rail Systems made of steel and Resist CR

BNS – Wide, normal, standard height

Ball Runner Blocks made of steel R1671 … 1.

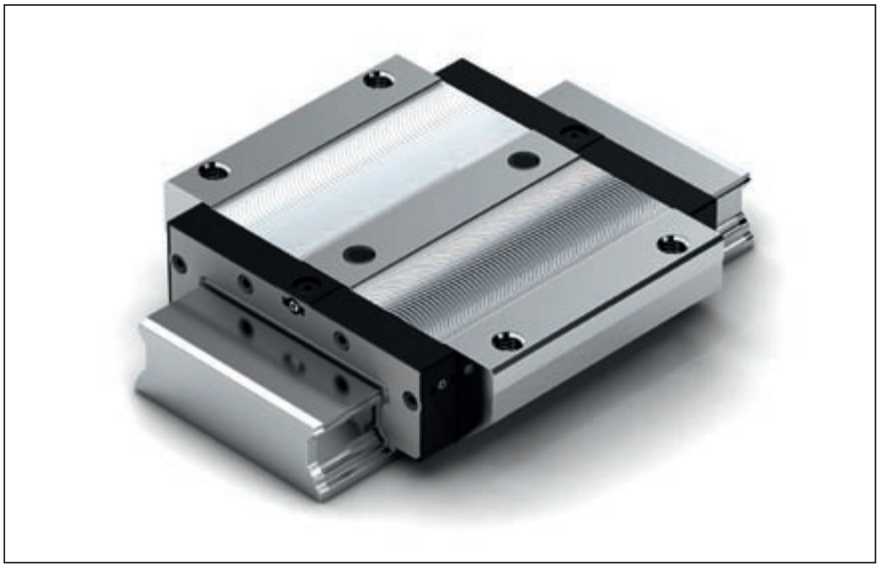
Dynamic characteristics
Travel speed: $v_{max} = 3$ m/s
Acceleration: $a_{max} = 250$ m/s^2
(If $F_{comb} > 2.8 \cdot F_{pr}$: $a_{max} = 50$ m/s^2)

Note on lubrication
– Not pre-lubricated

Further Ball Runner Blocks BNS
– See below for corrosion-resistant ball runner blocks

Note
Can be used on all Ball Guide Rails BNS.

Ordering example
Options:
– Ball Runner Block BNS
– Size 35/90
– Preload class C1
– Accuracy class H
– With standard seal, without ball chain
Part number: R1671 313 10



Options and part numbers

Size	Ball runner block with size	Preload class C0	Preload class C1	Accuracy class H			Seal for ball runner block without ball chain SS
35/90	R1671 3	9		4	3	–	10
			1	4	3	2	10
e.g.	R1671 3		1		3		10

Ball Runner Blocks, Resist CR R1671 … 6.

Note on lubrication
– Not pre-lubricated

Note
Can be used on all Ball Guide Rails BNS.

Ordering example
Options:
– Ball Runner Block BNS
– Size 35/90
– Preload class C1
– Accuracy class H
– With standard seal, without ball chain
Part number: R1671 313 60

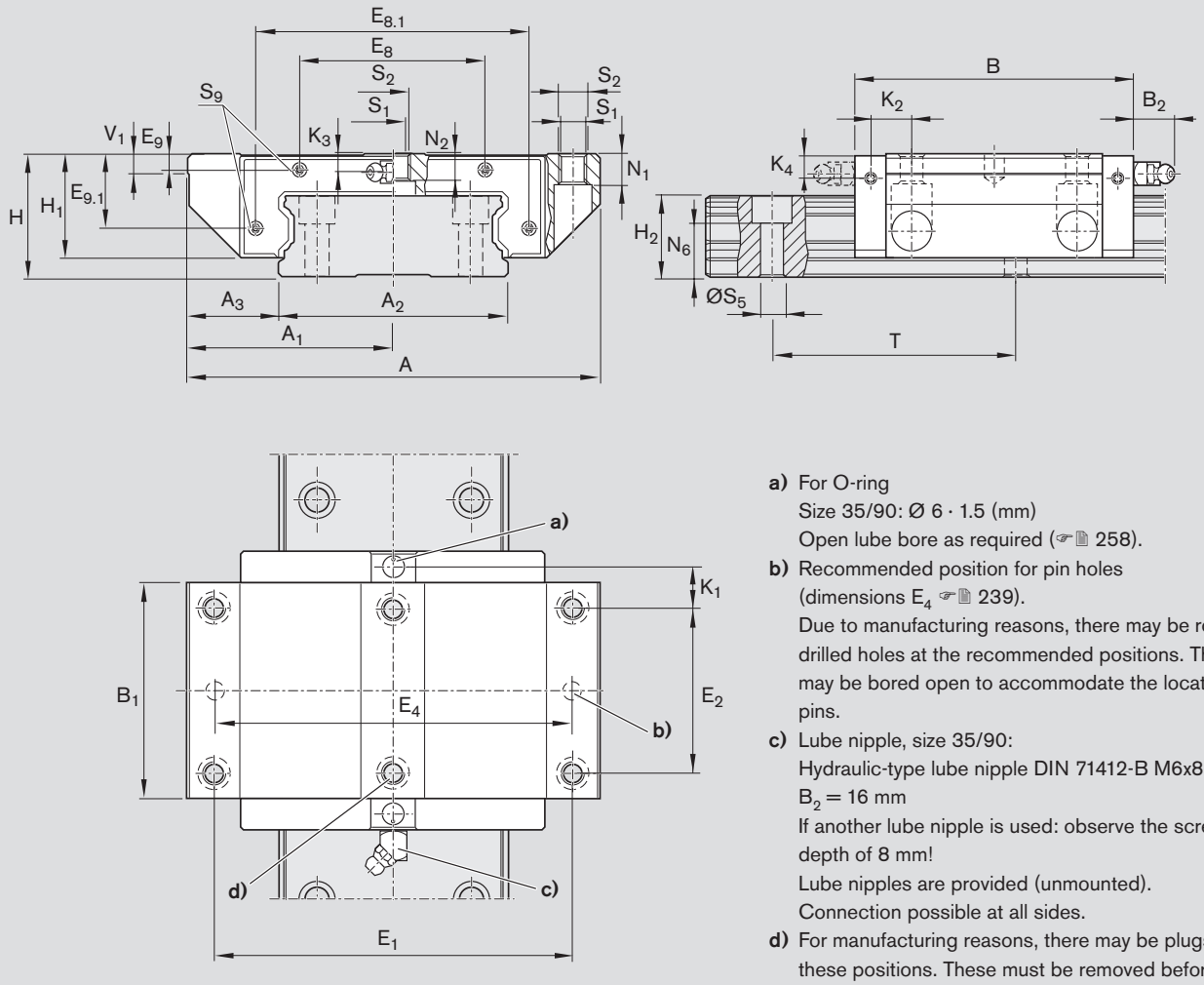
Options and part numbers

Size	Ball runner block with size	Preload class C0	Preload class C1	Accuracy class H	Seal for ball runner block without ball chain SS
35/90	R1671 3	9	1	3	60
e.g.	R1671 3		1	3	60

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

Seals
SS = standard seal

Ball Runner Blocks BNS



a) For O-ring
Size 35/90: Ø 6 · 1.5 (mm)
Open lube bore as required (☞ 258).

b) Recommended position for pin holes (dimensions E_4 ☞ 239).
Due to manufacturing reasons, there may be rough-drilled holes at the recommended positions. These may be bored open to accommodate the locating pins.

c) Lube nipple, size 35/90:
Hydraulic-type lube nipple DIN 71412-B M6x8, $B_2 = 16$ 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_8	$E_{8.1}$	E_9	$E_{9.1}$	H	H_1	H_2	K_1	K_2
35/90	162	81	90	36	142	113.6	144	80	79	116	6.8	29.9	50	42.5	31.85	22.8	24.8

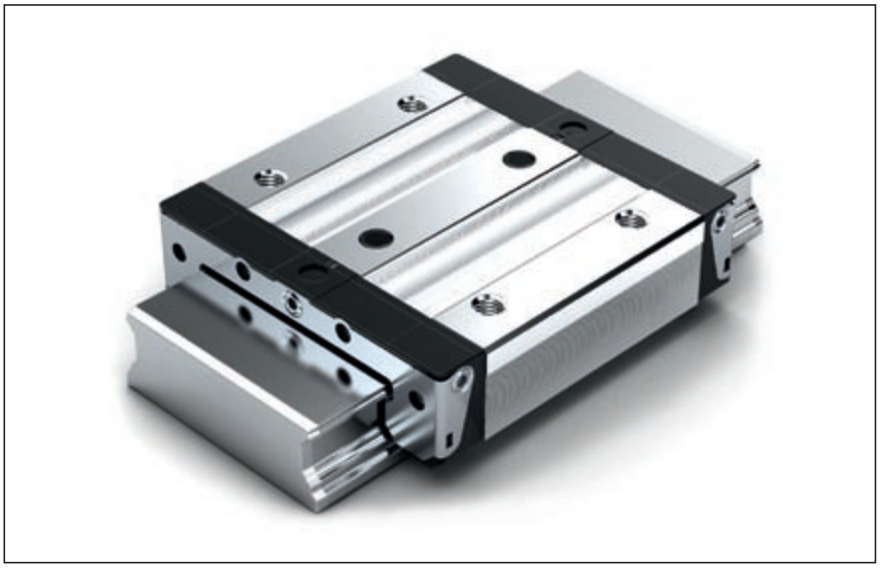
Size	Dimensions (mm)											Weight (kg)	Load capacities[1] (N)		Load moments[1] (Nm)			
	K_3	K_4	N_1	N_2	$N_6^{\pm 0.5}$	S_1	S_2	S_5	S_9	T	V_1		C	C_0	M_t	M_{t0}	M_L	M_{L0}
35/90	9	9	14	12	20.5	8.4	M10	9	M3x5	80	8.0	3.70	58 200	86 300	2 880	4 270	920	1 370

1) Load capacities and moments for Ball Runner Block **without** ball chain.
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.

Wide Ball Rail Systems made of steel and Resist CR

CNS – Compact, normal, standard height

Ball Runner Blocks made of steel[2] R1672 … 2.



Dynamic characteristics
Travel speed: $v_{max} = 5$ m/s
Acceleration: $a_{max} = 500$ m/s²
(If $F_{comb} > 2.8 \cdot F_{pr}$: $a_{max} = 50$ m/s²)

Note on lubrication
– Pre-lubricated

Further Ball Runner Blocks CNS
– See below for corrosion-resistant ball runner blocks

Note
Can be used on all Ball Guide Rails BNS.

Ordering example
Options:
– Ball Runner Block CNS
– Size 25/70
– Preload class C1
– Accuracy class H
– With standard seal, without ball chain
Part number: R1672 213 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	P	SS	DS	SS	DS
20/40[1]	R1672 5	9		4	3	–	20	–	22	–
			1	4	3	–	20	2Z	22	2Y
25/70	R1672 2	9		4	3	–	20	–	22	–
			1	4	3	–	20	2Z	22	2Y
e.g.	R1672 2		1		3		20			

Ball Runner Blocks, Resist CR[2] R1672 … 7.

Note on lubrication
– Pre-lubricated

Note
Can be used on all Ball Guide Rails BNS.

Ordering example
Options:
– Ball Runner Block CNS
– Size 25/70
– Preload class C0
– Accuracy class H
– With standard seal, without ball chain
Part number: R1672 293 70

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	H	SS	DS	SS	DS
20/40[1]	R1672 5	9	3	70	7Z	72	7Y
25/70	R1672 2	9	3	70	7Z	72	7Y
e.g.	R1672 2	9	3	70			

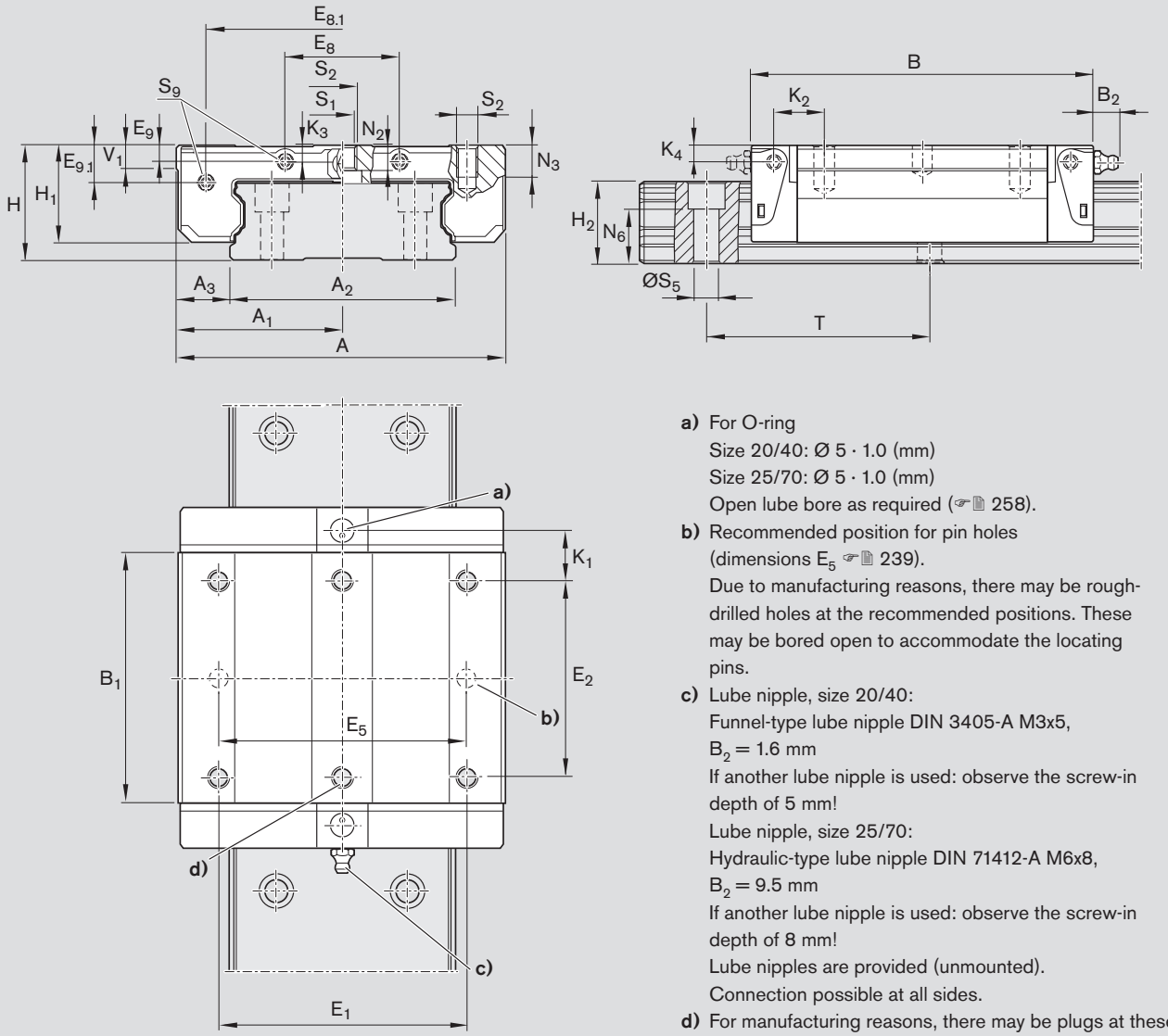
1) **Note:** New Ball Runner Block not combinable with existing Ball Guide Rail R167. 8.. ..!
2) In preparation

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

Seals
SS = standard seal
DS = double-lipped seal

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

Ball Runner Blocks CNS



a) For O-ring
Size 20/40: Ø 5 · 1.0 (mm)
Size 25/70: Ø 5 · 1.0 (mm)
Open lube bore as required (☞ 258).

b) Recommended position for pin holes (dimensions E_5 ☞ 239).
Due to manufacturing reasons, there may be rough-drilled holes at the recommended positions. These may be bored open to accommodate the locating pins.

c) Lube nipple, size 20/40:
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 25/70:
Hydraulic-type lube nipple DIN 71412-A 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_8	$E_{8.1}$	E_9	$E_{9.1}$	H	H_1	H_2	K_1	K_2	K_3	K_4
20/40	62	31	42	10.0	73.0	51.3	46	32	18	53.4	3.4	8.1	27	22.50	18.30	14.6	15.00	3.5	3.5
25/70	100	50	69	15.5	104.7	76.5	76	50	35	83.5	4.9	11.3	35	29.75	23.55	19.3	20.45	5.2	5.2

Size	Dimensions (mm)									Weight (kg)	Load capacities[1] (N)		Load moments[1] (Nm)			
	N_2	N_3	$N_6^{\pm 0.5}$	S_1	S_2	S_5	S_9	T	V_1		C	C_0	M_t	M_{t0}	M_L	M_{L0}
20/40	3.70	6	12.5	5.3	M6	4.4	M2.5x1.5^{+3}	60	6.0	0.35	13 650	19 675	310	450	95	135
25/70	7.05	8	14.4	6.7	M8	7.0	M3x2$^{+4.5}$	80	7.5	1.50	29 000	42 500	1 080	1 580	305	450

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.

Wide Ball Rail Systems made of steel and Resist CR

Product Description, Ball Guide Rails BNS

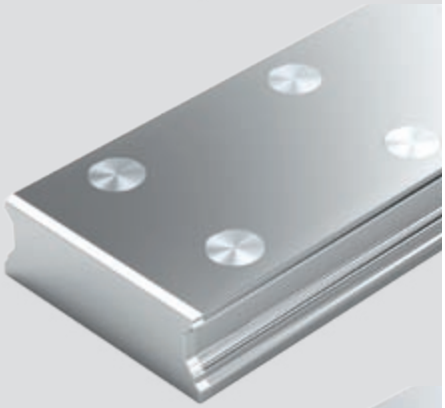
Characteristic features

- Top rigidity in all load directions
- Top torque load capacity

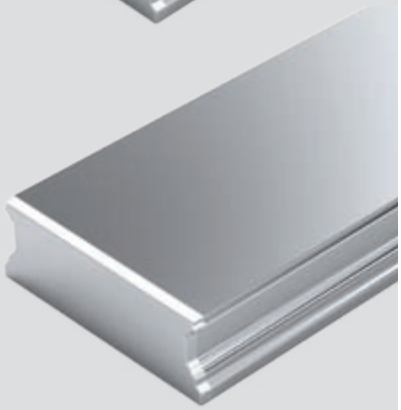
Corrosion protection (optional)
- Resist CR:
  Ball guide rail made of steel with matte-silver hard-chrome plated corrosion-resistant coating in accuracy class H

Ball guide rails with plastic mounting hole plugs

Ball guide rails with steel mounting hole plugs



Ball guide rails for mounting from below



Note
- Size 20/40:
  New Ball Rail Systems with different ball diameters. Not interchangeable with previous size 20/40 versions!

Definition Ball guide rail design style		Code (example)		
		B	N	S
Width	Slimline			
	Wide	B		
Length	Normal		N	
Height	Standard height			S

Ordering Examples

Ordering ball guide rails in recommended lengths

The procedure shown in the following ordering examples applies to all ball guide rails. Recommended rail lengths are more cost effective.

Options and part numbers

Size	Ball guide rail with size	Accuracy class			Number of sections ., Rail length L (mm), ...		Hole spacing T (mm)	Recommended rail length according to formula $L = n_B \cdot T - 4$ mm
		N	H	P	One-piece	Composite		Maximum number of holes per row n_B
20/40[1)]	R1675 50	4	3	2	31, ...	3., ...	60	64
25/70	R1675 20	4	3	2	31, ...	3., ...	80	48
35/90	R1675 30	4	3	2	31, ...	3., ...	80	48
e.g.	R1675 30		3		31, 1676			

Excerpt from table with part numbers and recommended rail lengths for ordering example

From the desired length to the recommended length

$$L = \left(\frac{L_W}{T}\right)^{*} \cdot T - 4$$

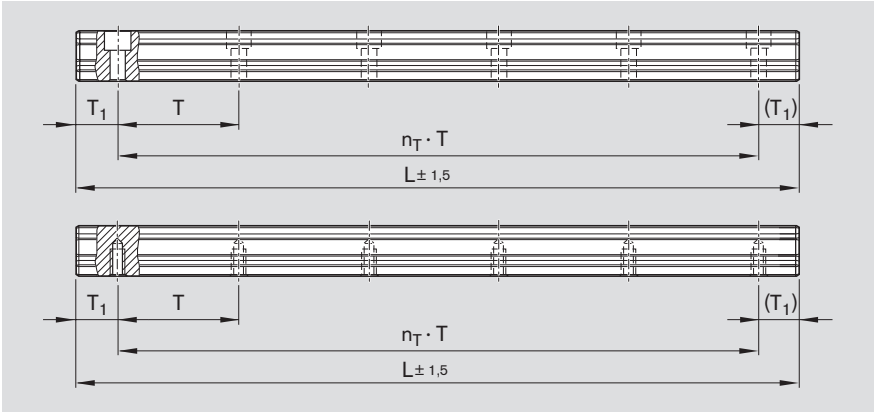
* Round up the quotient L_W/T to the next whole number.

W = desired length
T = hole spacing

Calculation example

$$L = \left(\frac{1660\ \text{mm}}{80\ \text{mm}}\right) \cdot 80\ \text{mm} - 4\ \text{mm}$$

$L = 21 \cdot 80\ \text{mm} - 4\ \text{mm}$
$L = 1676\ \text{mm}$



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

Basis: number of holes per row

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

Basis: number of spaces between holes

L	=	recommended rail length	(mm)
L_W	=	desired rail length	(mm)
T	=	hole spacing[1)]	(mm)
T_{1S}	=	preferred dimension[1)]	(mm)
n_B	=	number of holes per row	(–)
n_T	=	no. of spaces between holes	(–)

1) For values, see dimensions table at dimension drawing.

Notes on ordering examples

If the preferred dimension T_{1S} cannot be used:
- Select an end space T_1 between T_{1S} and $T_{1\ min}$.
- Alternatively, select an end space between T_1 and T_{1max}.

Ordering example 1 (up to L_{max})

- Ball guide rail BNS size 35/90 with plastic mounting hole plugs
- Accuracy class H
- Calculated rail length 1676 mm, (20 · T, preferred dimension $T_{1S} = 38$ mm; number of holes per row $n_B = 21$)

Ordering data
Part number, rail length (mm)
T_1 / $n_T \cdot T$ / T_1 (mm)

R1675 303 31, 1676 mm
38 / 20 · 80 / 38 mm

Ordering example 2 (over L_{max})

- Ball guide rail BNS size 35/90 with plastic mounting hole plugs
- Accuracy class H
- Calculated rail length 5116 mm, 2 sections (63 · T, preferred dimension $T_{1S} = 38$ mm; number of holes per row $n_B = 64$)

Ordering data
Part number and number of sections, rail length (mm)
T_1 / $n_T \cdot T$ / T_1 (mm)

R1675 303 32, 5116 mm
38 / 63 · 80 / 38 mm

Rail lengths greater than L_{max} are made up of matching rail sections mounted end to end.

Wide Ball Rail Systems made of steel and Resist CR

BNS with Plastic Mounting Hole Plugs

Ball Guide Rails made of steel R1675 .0. ..

With two-row mounting hole pattern, for mounting from above, with plastic mounting hole plugs

Notes for mounting
- Plastic mounting hole plugs included in scope of supply.
- Follow the mounting instructions!
- Send for the publication “Mounting Instructions for Ball Rail Systems.”
- Composite guide rails also available.

Further Ball Guide Rails BNS and accessories
- See below for corrosion-resistant ball guide rails
- Plastic Mounting Hole Plugs, part numbers ☞ 179

Options and part numbers

Size	Ball guide rail with size	Accuracy class			Number of sections ., Rail length L (mm), ...		Hole spacing T (mm)	Recommended rail length according to formula $L = n_B \cdot T - 4$ mm
		N	H	P	One-piece	Composite		Maximum number of holes per row n_B
20/40[1]	R1675 50	4	3	2	31, ...	3., ...	60	64
25/70	R1675 20	4	3	2	31, ...	3., ...	80	48
35/90	R1675 30	4	3	2	31, ...	3., ...	80	48
e.g.	R1675 30		3		31, 1676			

Ball Guide Rails, Resist CR R1673 .0. ..

With two-row mounting hole pattern, for mounting from above, with plastic mounting hole plugs

Options and part numbers

Size	Ball guide rail with size	Accuracy class	Number of sections ., Rail length L (mm), ...			Hole spacing T (mm)	Recommended rail length according to formula $L = n_B \cdot T - 4$ mm
			One-piece		Composite		
		H	Uncoated end faces	Coated end faces	Coated end faces		Maximum number of holes per row n_B
20/40[1]	R1673 50	3	31, ...	41, ...	4., ...	60	64
25/70	R1673 20	3	31, ...	41, ...	4., ...	80	48
35/90	R1673 30	3	31, ...	41, ...	4., ...	80	48
e.g.	R1673 30	3			42, 5116		

1) **Note:** New Ball Guide Rail not combinable with existing Ball Runner Block R1671. 8.. ..!

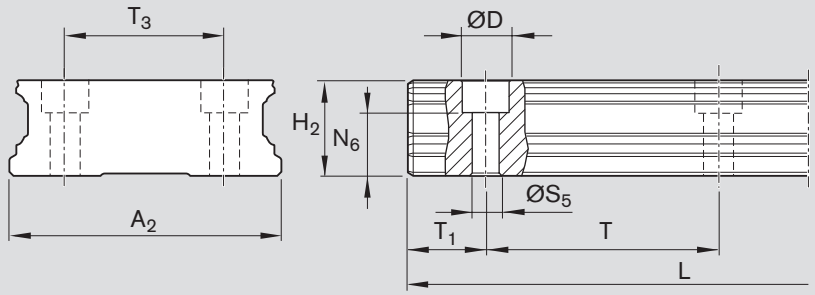
Ordering example 1 (up to L_{max})
Options:
- Ball Guide Rail BNS
- Size 35/90
- Accuracy class H
- One-piece
- Uncoated end faces
- Rail length L = 1676 mm

Part number:
R1675 303 31, 1676 mm

Ordering example 2 (over L_{max})
Options:
- Ball Guide Rail CR, BNS
- Size 35/90
- Accuracy class H
- **2 sections**
- Coated end faces
- Rail length L = 5116 mm

Part number:
R1673 303 4**2**, 5116 mm

Ball Guide Rails BNS



Size	Dimensions (mm)										Weight
	A_2	D	H_2 1)	L_{max}	$N_6^{\pm 0.5}$	S_5	T	$T_{1\ min}$	T_{1S} 2)	$T_{1\ max}$	T_3	(kg/m)
20/40	42	7.4	18.30	3 836	12.45	4.4	60	10	28	50	24	5.3
25/70	69	11.0	23.55	3 836	14.50	7.0	80	10	38	70	40	11.6
35/90	90	15.0	31.85	3 836	20.50	9.0	80	12	38	68	60	21.0

1) Dimension H_2 without cover strip

2) Recommended: preferred dimension T_{1S} with tolerances ±0.75.

Wide Ball Rail Systems made of steel and Resist CR

BNS with Steel Mounting Hole Plugs

Ball Guide Rails made of steel R1676 .5. ..

With two-row mounting hole pattern, for mounting from above, with steel mounting hole plugs

Notes for mounting
- Steel mounting hole plugs not included in scope of supply.
- Follow the mounting instructions!
- Send for the publication “Mounting Instructions for Ball Rail Systems.”
- Composite guide rails also available.

Accessories
- Steel mounting hole plugs ☞ 179
- Mounting tool for steel mounting hole plugs ☞ 179

Options and part numbers

Size	Ball guide rail with size	Accuracy class			Number of sections ., Rail length L (mm), ...		Hole spacing T (mm)	Recommended rail length according to formula $L = n_B \cdot T - 4$ mm
		N	H	P	One-piece	Composite		
25/70	R1676 25	4	3	2	31, ...	3., ...	80	48
35/90	R1676 35	4	3	2	31, ...	3., ...	80	48
e.g.	R1676 35		3		31, 1676			

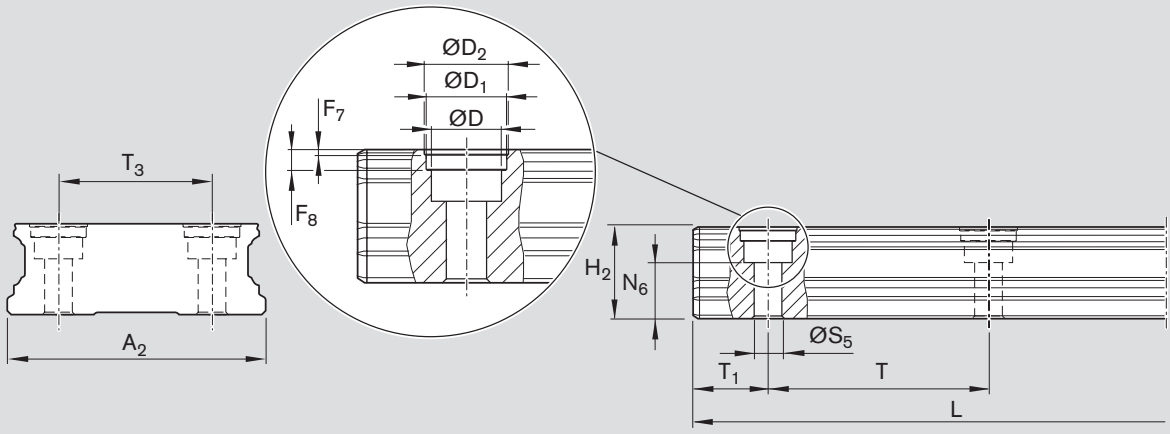
Ordering example 1 (up to L_{max})
Options:
- Ball Guide Rail BNS
- Size 35/90
- Accuracy class H
- One-piece
- Rail length L = 1676 mm

Part number:
R1676 353 31, 1676 mm

Ordering example 2 (over L_{max})
Options:
- Ball Guide Rail BNS
- Size 35/90
- Accuracy class H
- **2 sections**
- Rail length L = 5116 mm

Part number:
R1676 353 **32**, 5116 mm

Ball Guide Rails BNS



Size	Dimensions (mm)															Weight
	A_2	D	D_1	D_2	F_7	F_8	H_2 1)	L_{max}	$N_6^{\pm 0.5}$	S_5	T	$T_{1\,min}$	T_{1S} 2)	$T_{1\,max}$	T_3	(kg/m)
25/70	69	11.0	12.55	13	0.9	3.7	23.55	3 836	14.5	7.0	80	10	38	70	40	11.6
35/90	90	15.0	17.55	18	0.9	3.6	31.85	3 836	20.5	9.0	80	12	38	68	60	21.0

1) Dimension H_2 without cover strip

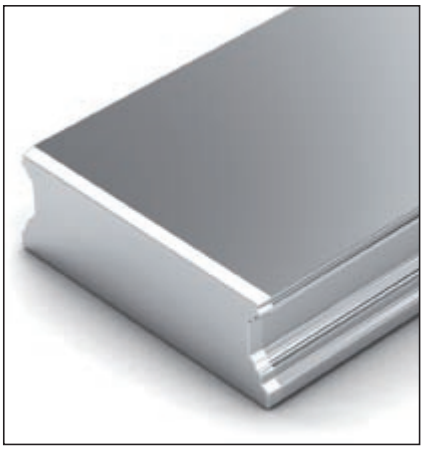
2) Recommended: preferred dimension T_{1S} with tolerances ±0.75.

BNS for mounting from below

Ball Guide Rails made of steel R1677 .0. ..

With two-row mounting hole pattern, for mounting from below

Notes for mounting
- Follow the mounting instructions! Send for the publication “Mounting Instructions for Ball Rail Systems.”
- Composite guide rails also available.



Options and part numbers

Size	Ball guide rail with size	Accuracy class			Number of sections ., Rail length L (mm), ...		Hole spacing T (mm)	Recommended rail length according to formula $L = n_B \cdot T - 4$ mm
		N	H	P	One-piece	Composite		
20/40[1)]	R1677 50	4	3	2	31, ...	3., ...	60	64
25/70	R1677 20	4	3	2	31, ...	3., ...	80	48
35/90	R1677 30	4	3	2	31, ...	3., ...	80	48
e.g.	R1677 30		3		31, 1676			

1) **Note**: New Ball Guide Rail not combinable with existing Ball Runner Block R1671. 8.. ..!

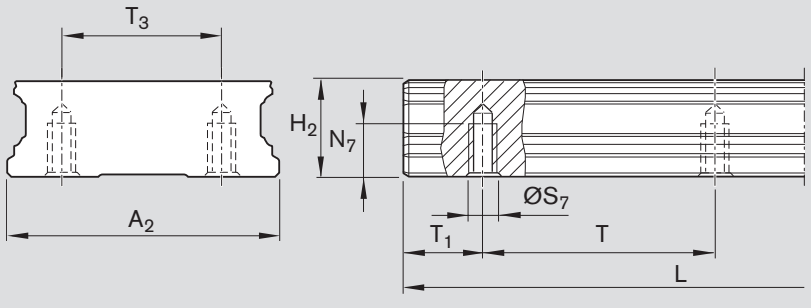
Ordering example 1 (up to L_{max})
Options:
- Ball Guide Rail BNS
- Size 35/90
- Accuracy class H
- One-piece
- Rail length L = 1676 mm

Part number:
R1677 303 31, 1676 mm

Ordering example 2 (over L_{max})
Options:
- Ball Guide Rail BNS
- Size 35/90
- Accuracy class H
- **2 sections**
- Rail length L = 5116 mm

Part number:
R1677 303 **32**, 5116 mm

Ball Guide Rails BNS



Size	Dimensions (mm)										Weight
	A_2	H_2[1)]	L_{max}	N_7	S_7	T	$T_{1\,min}$	T_{1S}[2)]	$T_{1\,max}$	T_3	(kg/m)
20/40	42	18.30	3 836	7.5	M5	60	10	28	50	24	5.3
25/70	69	23.55	3 836	12.0	M6	80	10	38	70	40	11.6
35/90	90	31.85	3 836	15.0	M8	80	12	38	68	60	21.0

1) Dimension H_2 without cover strip
2) Recommended: preferred dimension T_{1S} with tolerances ±0.75.