Wide Ball Rail Systems made of steel and Resist CR

Product Description, Ball Runner Blocks BNS, CNS

Characteristic features

- Limitless interchangeability; all ball guide rail versions can be combined at will with all ball runner block versions within each accuracy class
- Due to very high torsional moment load capacity and torsional rigidity, particularly suitable for single rail applications
- High torque load capacity
- Same load capability in all four main load directions
- Integrated all-round sealing
- Low noise level and best travel performance
- Excellent dynamic characteristics:
  Travel speed: v_{max} up to 5 m/s [1)]
  Acceleration: a_{max} up to 500 m/s^2 [1)]
- Long-term lubrication, up to several years
- Minimum quantity lubrication system with integrated reservoir for oil lubrication[1)]
- Lube ports with metal threads on all sides[1)]
- Optimum system rigidity through preloaded O-arrangement
- Extensive range of accessories

Note

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

Further highlights

- Optimized entry-zone geometry and high number of balls per track minimizes variation in elastic deflection
- Mounting threads provided on end faces for fixing of all add-on elements
- Guide with low clearance or slight preload
- Smooth, light running thanks to optimized ball recirculation and ball or ball chain guidance[1)]
- Attachments can be bolted to ball runner blocks from above or 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 runner block
- Ball runner blocks pre-lubricated in factory[1)]
- Available with ball chain as an option[1)]

Corrosion protection (optional)

- Resist CR:
  Ball runner block body and ball guide rail made of steel with matte-silver hard-chrome plated corrosion-resistant coating

1) depends on type

Overview of Wide Ball Runner Block models

BNS[1)]

New in sizes 20/40 and 25/70:
- Now also with ball chain
- Pre-lubricated
- Further sizes in preparation

BNS

Size 35/90

CNS[1)]

New in sizes 20/40 and 25/70:
- With ball chain
- Pre-lubricated
- Further sizes in preparation

1) Ball chain (optional)
- Optimizes noise levels

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

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			

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

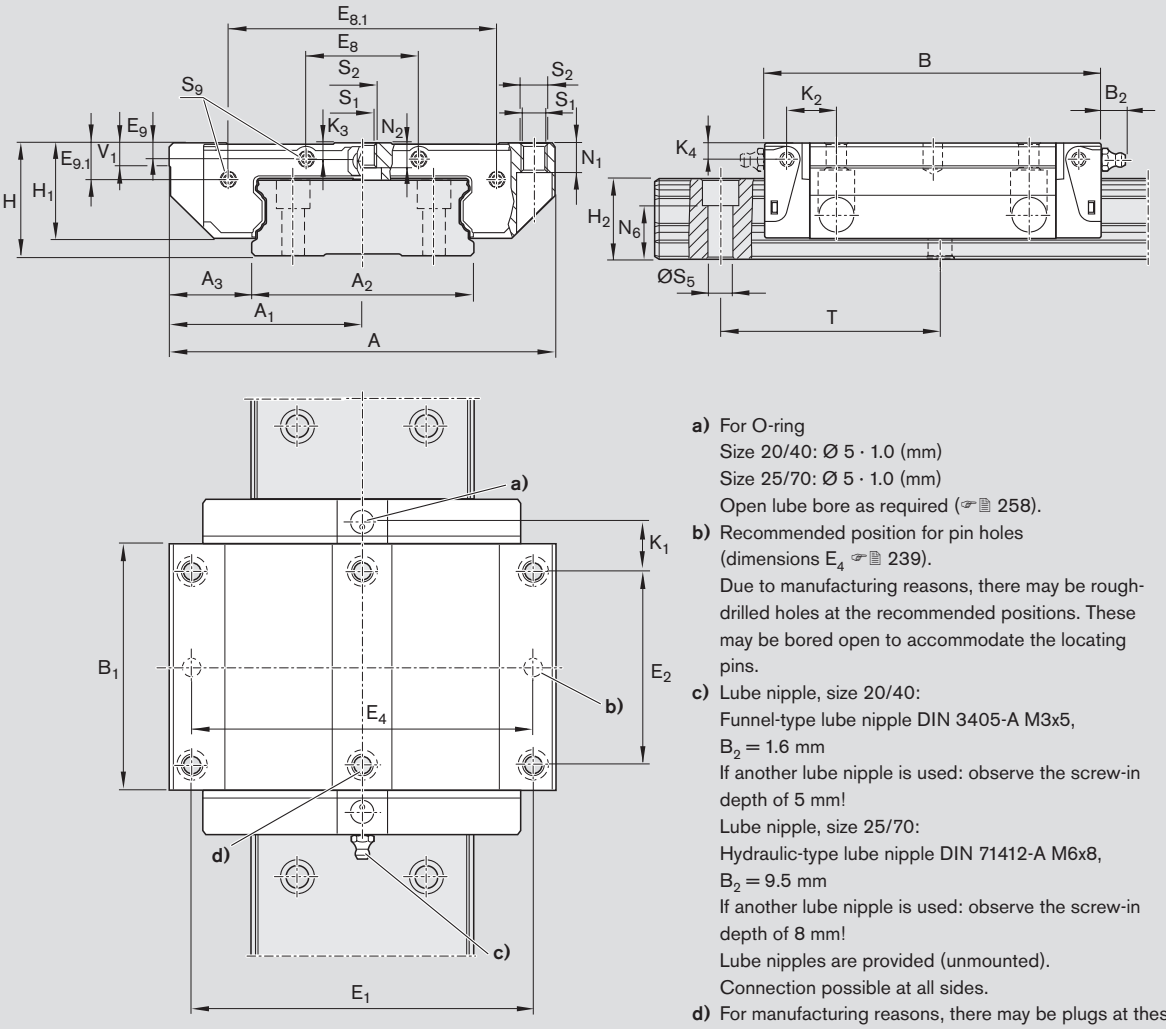
Ordering example
Options:
– Ball Runner Block BNS
– Size 25/70
– Preload class C0
– Accuracy class H
– With standard seal, without ball chain
Part number: R1671 293 70

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.

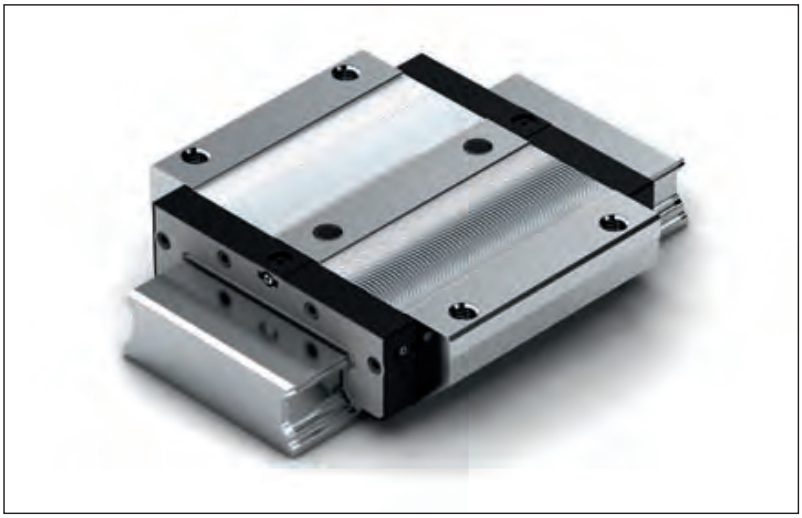
Dynamic characteristics
Travel speed: $v_{max} = 3$ m/s
Acceleration: $a_{max} = 250$ m/s^2
(If $F_{comb} > 2.8 \cdot F_{pr}$: $a_{max} = 50$ m/s^2)

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

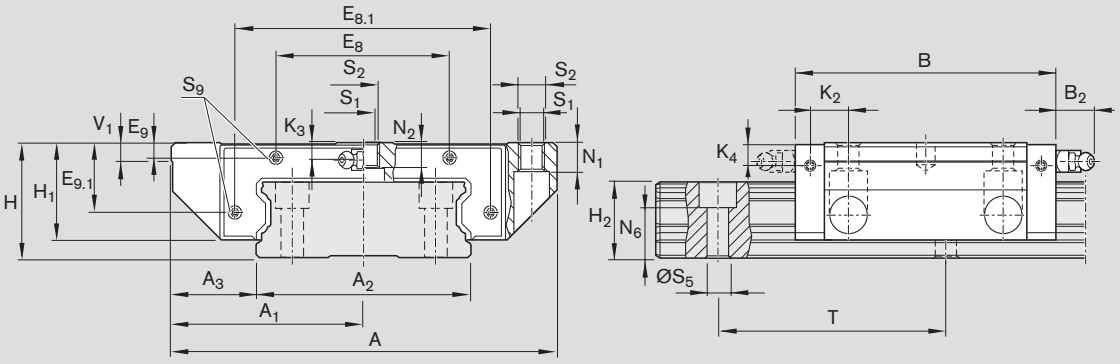
Options and part numbers

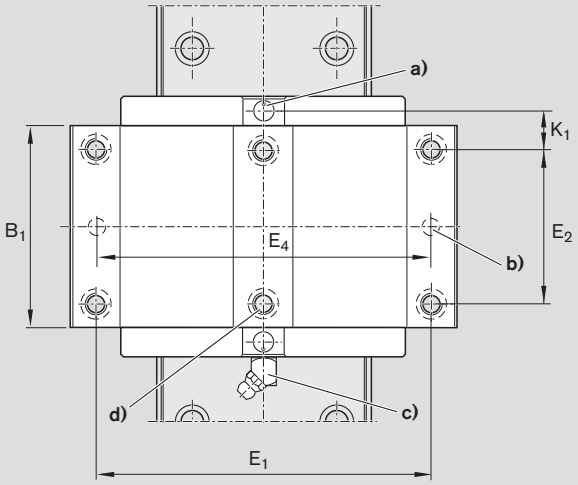
Size	Ball runner block with size	Preload class C0	Preload class C1	Accuracy class H	Seal for ball runner block without ball chain SS
35/90	R1671 3	9	1	3	60
e.g.	R1671 3		1	3	60

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/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 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			

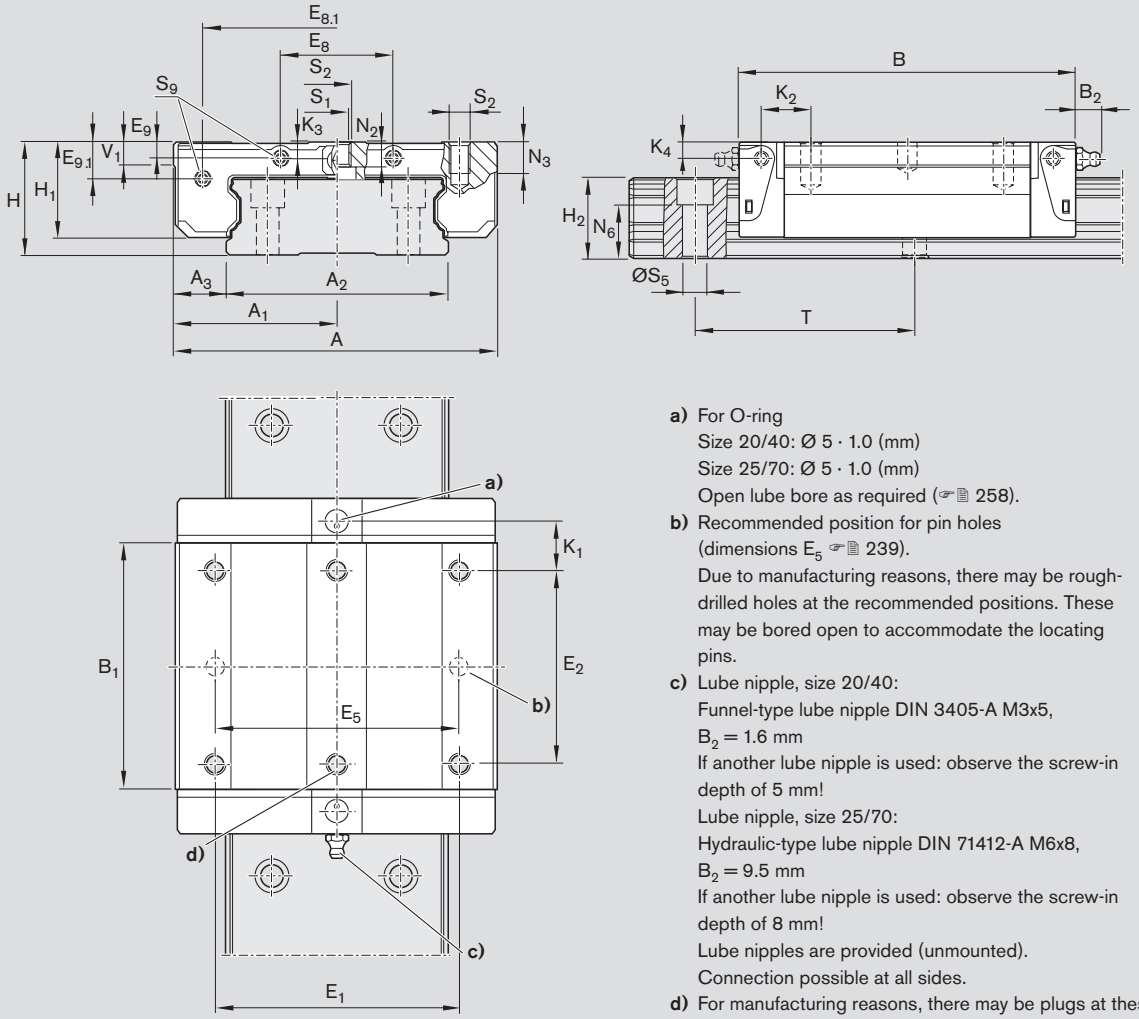
1) **Note:** New Ball Runner Block not combinable with existing Ball Guide Rail R167. 8.. ..!
2) In preparation

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

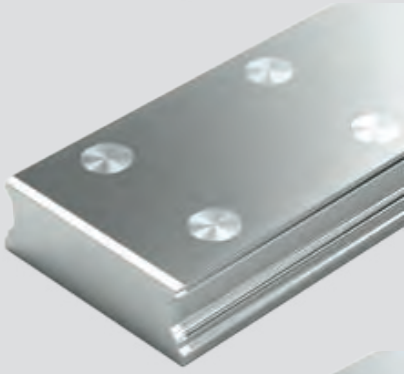
Characteristic features

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

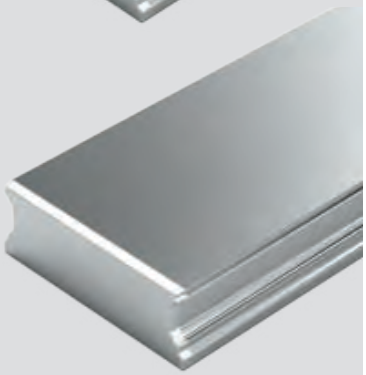
Corrosion protection (optional)
- Resist CR:
  Ball guide rail made of steel with matte-silver hard-chrome plated corrosion-resistant coating in accuracy class H

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 N	H	P	Number of sections ., Rail length L (mm), ... One-piece	Composite	Hole spacing T (mm)	Recommended rail length according to formula $L = n_B \cdot T - 4$ mm 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

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

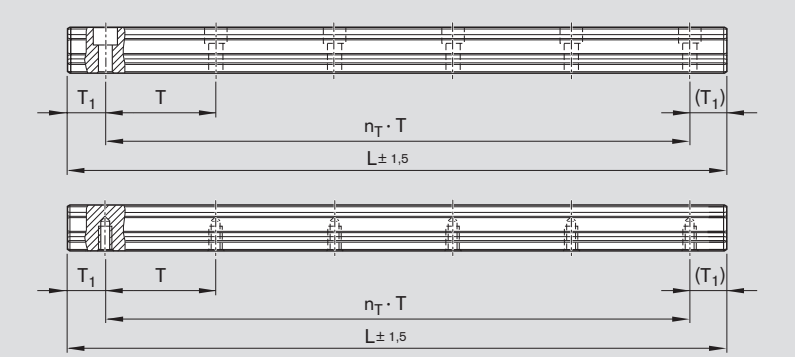
* Round up the quotient L_W/T to the next whole number.

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.. ..!

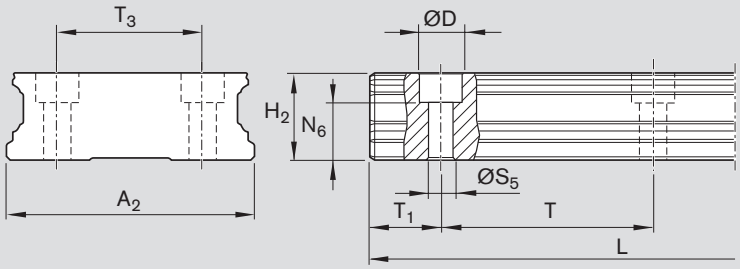
Ordering example 1 (up to L_{max})
Options:
- Ball Guide Rail BNS
- Size 35/90
- Accuracy class H
- One-piece
- Uncoated end faces
- Rail length L = 1676 mm

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			

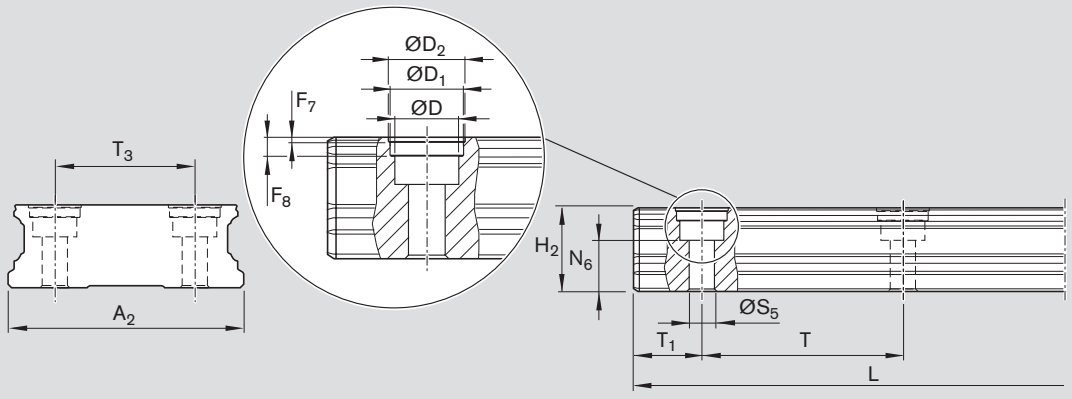
Ordering example 1 (up to L_{max})
Options:
- Ball Guide Rail BNS
- Size 35/90
- Accuracy class H
- One-piece
- Rail length L = 1676 mm

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 3**2**, 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

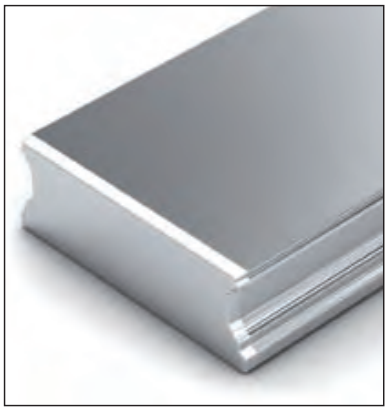
1) Dimension H_2 without cover strip

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.. ..!

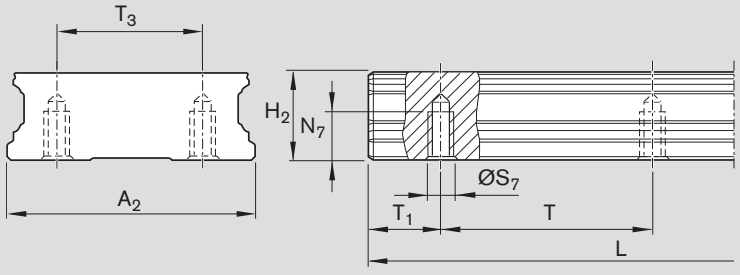
Ordering example 1 (up to L_{max})
Options:
- Ball Guide Rail BNS
- Size 35/90
- Accuracy class H
- One-piece
- Rail length L = 1676 mm

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.