Standard Ball Guide Rails made of steel

Product Description, Ball Guide Rails SNS

Characteristic features

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

Proven cover strip for ball guide rail mounting holes
– A single cover for all holes – saves time and money
– Made of corrosion-resistant spring steel per EN 10088
– Easy, secure mounting
– Clip on and fasten

Ball guide rails with cover strip and aluminum strip clamps
– Without threaded holes at the end faces (not required)

Ball guide rails with cover strip and plastic screw-down protective end 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 Ball guide rail design style		Code (example)		
		S	N	S
Width	Slimline	S		
	Wide			
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	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	31, ...	3., ...	80	48
45	R1605 46	4	3	2	1	9	31, ...	3., ...	105	36
55	R1605 56	4	3	2	1	9	31, ...	3., ...	120	32
65	R1605 66	4	3	2	1	9	31, ...	3., ...	150	25
e.g.	R1605 76		3				31, 1676			

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

From the desired length to the recommended length

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

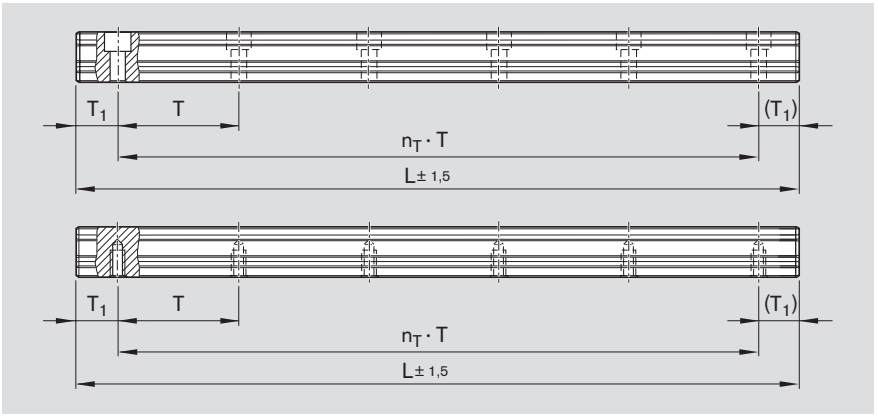
* Round up the quotient L_W/T to the next whole number.

W = desired length
T = hole spacing

Calculation example

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

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



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

Basis: number of holes

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

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

Ordering data

Part 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 (over L_{max})

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

Ordering data

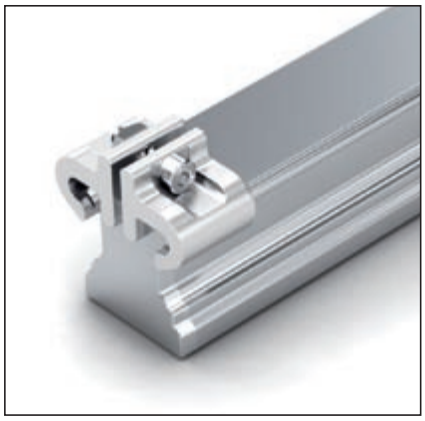
Part number and number of sections, rail length (mm)
T_1 / $n_T \cdot T$ / T_1 (mm)

R1605 733 32, 5116 mm
38 / 63 · 80 / 38 mm
For rail lengths greater than L_{max}, Rexroth provides matching rail sections for end to end mounting.

Standard Ball Guide Rails made of steel

SNS 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)

Note on installation
- Secure the cover strip!
- Strip clamps are included in the supply scope.
- 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 Ball Guide Rails SNS and accessories
- Corrosion-resistant Ball Guide Rails Resist NR ☞🗎 132
  Resist CR ☞🗎 134
- Cover strip ☞🗎 176
- Strip clamps ☞🗎 178

Ball guide rail R1605 .B. .. 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 according to 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:
(up 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

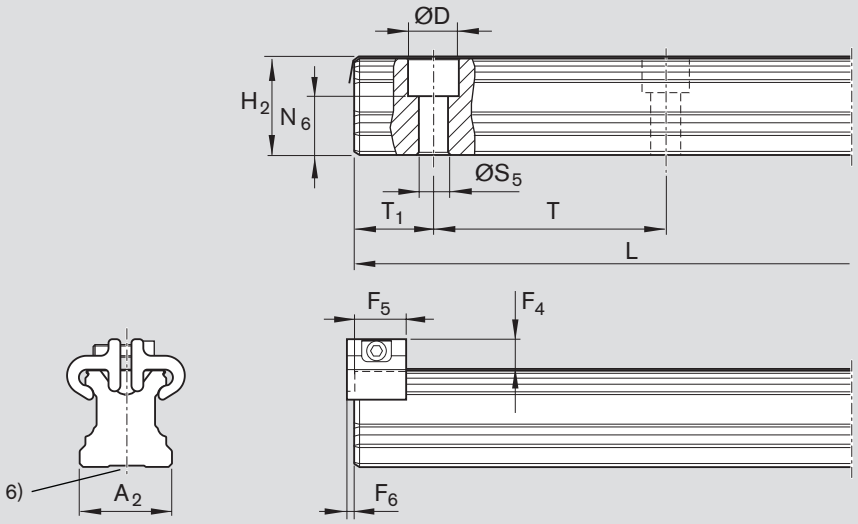
Ordering example 2:
(over L_{max})
Options:
- Ball Guide Rail SNS
- Size 30
- Accuracy class H
- **2 sections**
- Rail length L = 5116 mm

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

Ordering example 3:
(up to L_{max}, with flat underside)
Options:
- Ball Guide Rail SNS
- Size 30
- Accuracy class H
- One-piece
- Rail length L = 1676 mm

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

Ball Guide Rails SNS



Size	Dimensions (mm)													Weight
	A_2	D	F_4 3)	F_5	F_6	H_2 1)	L_{max} 2)	$N_6^{\pm 0.5}$	S_5	T	$T_{1\ min}$ 4)	T_{1S} 5)	$T_{1\ max}$	(kg/m)
15	15	7.4	7.3	12	2.0	16.30	3 836	10.3	4.4	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) For size 20 - 45 in accuracy class N, H and P, one-piece guide rails are available on request up to the following lengths:
   Size 20 - 25: up to 5816 mm
   Size 30 - 35: up to 5836 mm
   Size 45: up to 5771 mm
3) Dimension F_4 with cover strip
4) For end spaces below T_{1min}, no threaded holes in end faces possible. Cover strip fastening ☞ 178.
5) Recommended: preferred dimension T_{1S} with tolerances ± 0.75.
6) For manufacturing reasons, ball guide rails may have a flat underside (without groove).

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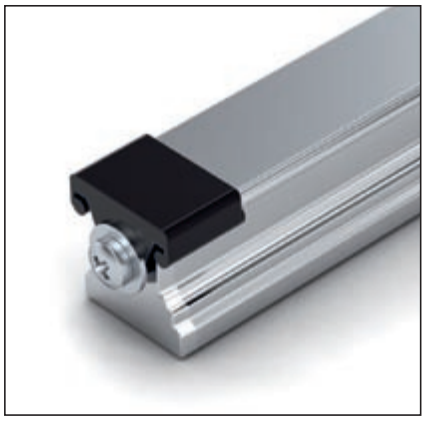
SNS with Cover Strip and Protective End Caps

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)

Note on installation
- 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 Ball Guide Rails SNS and accessories
- Cover strip ☞🗎 176
- Protective caps ☞🗎 178

Ball guide rail R1605 .B. .. 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 according to 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:
(up 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

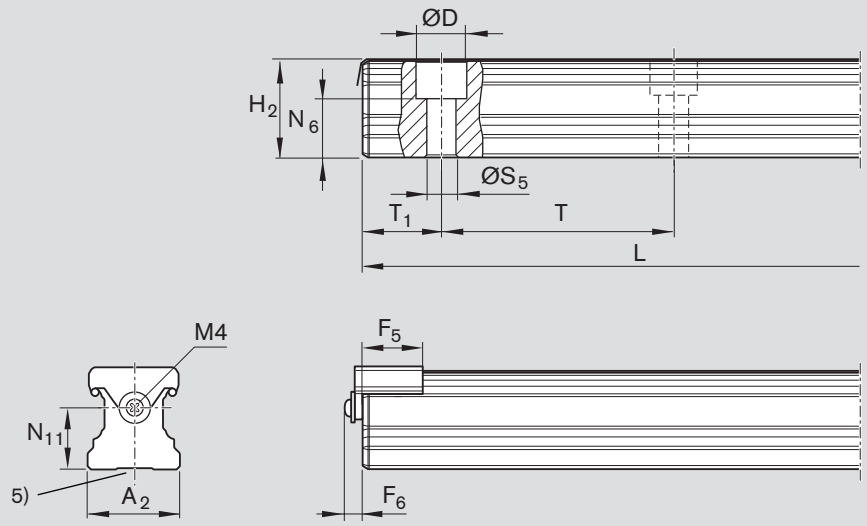
Ordering example 2:
(over L_{max})
Options:
- Ball Guide Rail SNS
- Size 30
- Accuracy class H
- **2 sections**
- Rail length L = 5116 mm

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

Ordering example 3:
(up to L_{max}, with flat underside)
Options:
- Ball Guide Rail SNS
- Size 30
- Accuracy class H
- One-piece
- Rail length L = 1676 mm

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

Ball Guide Rails SNS



Size	Dimensions (mm)													Weight
	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} 4)	$T_{1\ max}$	(kg/m)
15	15	7.4	14.0	6.5	16.30	3 836	10.3	9.8	4.4	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) For size 20 - 45 in accuracy class N, H and P, one-piece guide rails are available on request up to the following lengths:
   Size 20 - 25: up to 5816 mm
   Size 30 - 35: up to 5836 mm
   Size 45: up to 5771 mm
3) For end spaces below T_{1min}, no threaded holes in end faces possible. Cover strip fastening ☞ 178.
4) Recommended: preferred dimension T_{1S} with tolerances ± 0.75.
5) For manufacturing reasons, ball guide rails may have a flat underside (without groove).

Standard Ball Guide Rails made of steel

SNS with Plastic Mounting Hole Plugs

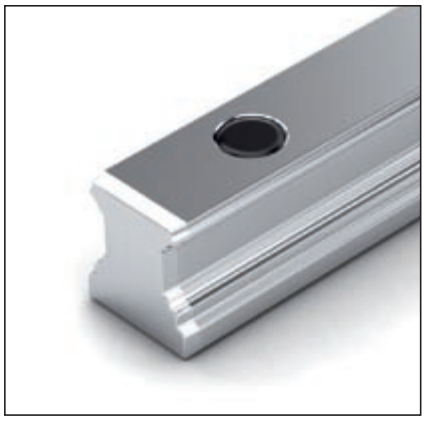
R1605 .0. ../ R1605 .C. ..

For mounting from above, with plastic mounting hole plugs

Note on installation
- 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 SNS and accessories
- Corrosion-resistant Ball Guide Rails Resist NR ☞ 133
  Resist CR ☞ 135
- Plastic Mounting Hole Plugs ☞ 179

Ball guide rail R1605 .B. .. 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 according to 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:
(up 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

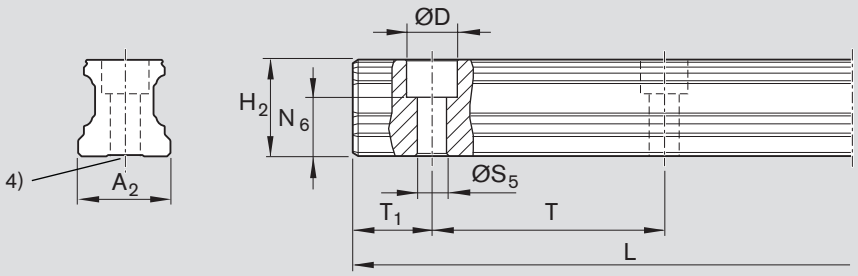
Ordering example 2:
(over L_{max})
Options:
- Ball Guide Rail SNS
- Size 30
- Accuracy class H
- **2 sections**
- Rail length L = 5116 mm

Part number:
R1605 703 3**2**, 5116 mm

Ordering example 3:
(up to L_{max}, with flat underside)
Options:
- Ball Guide Rail SNS
- Size 30
- Accuracy class H
- One-piece
- Rail length L = 1676 mm

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

Ball Guide Rails SNS



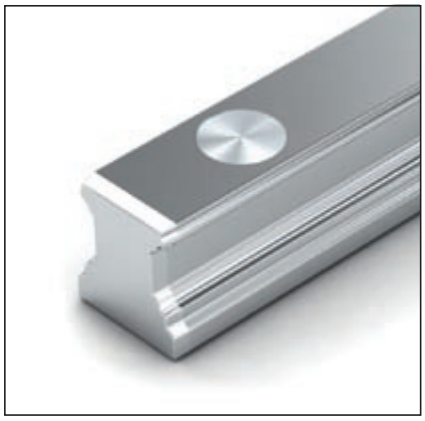
Size	Dimensions (mm)										Weight
	A_2	D	H_2 1)	L_{max} 2)	$N_6^{\pm 0.5}$	S_5	T	$T_{1\,min}$	T_{1S} 3)	$T_{1\,max}$	(kg/m)
15	15	7.4	16.20	3 836	10.3	4.4	60	10	28.0	50	1.4
20	20	9.4	20.55	3 836	13.2	6.0	60	10	28.0	50	2.4
25	23	11.0	24.25	3 836	15.2	7.0	60	10	28.0	50	3.2
30	28	15.0	28.35	3 836	17.0	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) For size 20 - 45 in accuracy class N, H and P, one-piece guide rails are available on request up to the following lengths:
   Size 20 - 25: up to 5816 mm
   Size 30 - 35: up to 5836 mm
   Size 45: up to 5771 mm
3) Recommended: preferred dimension T_{1S} with tolerances ± 0.75.
4) For manufacturing reasons, ball guide rails may have a flat underside (without groove).

Standard Ball Guide Rails made of steel

SNS with Steel Mounting Hole Plugs

R1606 .5. ..



For mounting from above, for steel mounting hole plugs

Note on installation
- 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.

Further Ball Guide Rails SNS and 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	SP	UP	One-piece	Composite		Maximum number of holes n_B
25	R1606 25	4	3	2	1	9	31, ...	3., ...	60	64
30	R1606 75	4	3	2	1	9	31, ...	3., ...	80	48
35	R1606 35	4	3	2	1	9	31, ...	3., ...	80	48
45	R1606 45	4	3	2	1	9	31, ...	3., ...	105	36
55	R1606 55	4	3	2	1	9	31, ...	3., ...	120	32
65	R1606 65	4	3	2	1	9	31, ...	3., ...	150	25
e.g.	R1606 75		3				31, 1676			

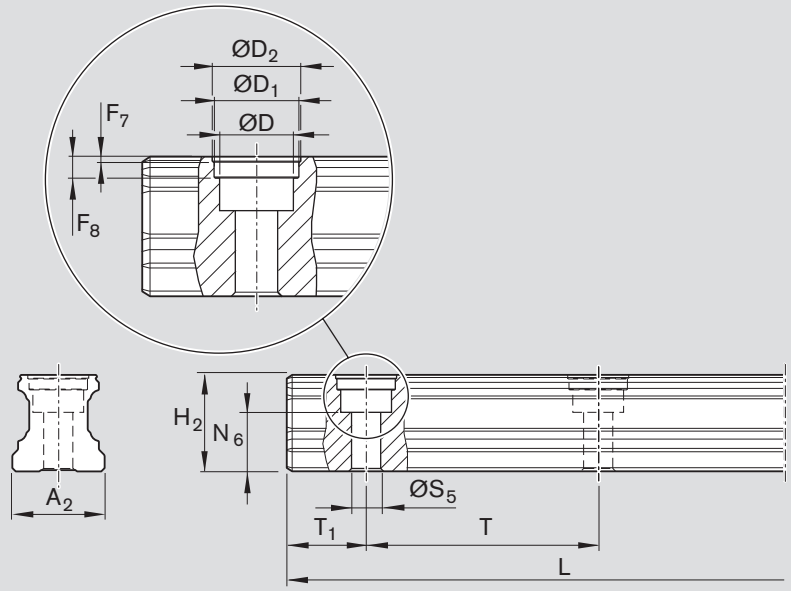
Ordering example 1: (up to L_{max})
Options:
- Ball Guide Rail SNS
- Size 30
- Accuracy class H
- One-piece
- Rail length L = 1676 mm

Part number:
R1606 753 31, 1676 mm

Ordering example 2: (over 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

Ball Guide Rails SNS



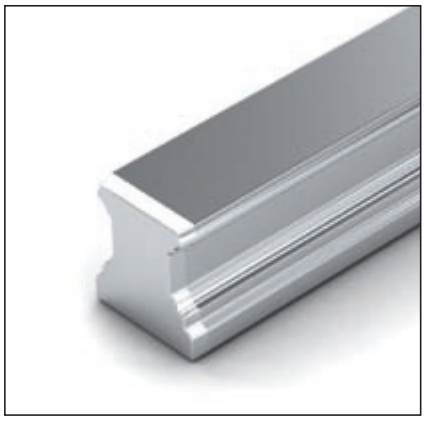
Size	Dimensions (mm)														Weight
	A_2	D	D_1	D_2	F_7	F_8	H_2 1)	L_{max} 2)	$N_6^{\pm 0.5}$	S_5	T	$T_{1\,min}$	T_{1S} 3)	$T_{1\,max}$	(kg/m)
25	23	11.0	12.55	13.0	0.90	3.7	24.25	3 836	15.2	7.0	60	13	28.0	50	3.2
30	28	15.0	17.55	18.0	0.90	3.6	28.35	3 836	17.0	9.0	80	16	38.0	68	5.0
35	34	15.0	17.55	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) For size 25 - 45 in accuracy class N, H and P, one-piece guide rails are available on request up to the following lengths:
   Size 25: up to 5816 mm
   Size 30 - 35: up to 5836 mm
   Size 45: up to 5771 mm
3) Recommended: preferred dimension T_{1S} with tolerances ± 0.75.

Standard Ball Guide Rails made of steel

SNS for mounting from below

R1607 .0. ..



For mounting from below

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

Further Ball Guide Rails SNS and accessories
- Corrosion-resistant Ball Guide Rails
  Resist NR ☞ 133
  Resist CR ☞ 135

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	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			

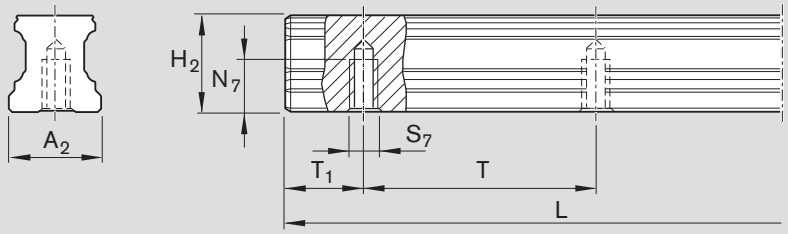
Ordering example 1:
(up to L_{max})
Options:
- Ball Guide Rail SNS
- Size 30
- Accuracy class H
- One-piece
- Rail length L = 1676 mm

Part number:
R1607 703 31, 1676 mm

Ordering example 2:
(over 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

Ball Guide Rails SNS



Size	Dimensions (mm)									Weight
	A_2	H_2 1)	L_{max} 2)	N_7	S_7	T	T_{1min}	T_{1S} 3)	$T_{1\ max}$	(kg/m)
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) For size 20 - 45 in accuracy class N, H and P, one-piece guide rails are available on request up to the following lengths:
   Size 20 - 25: up to 5816 mm
   Size 30 - 35: up to 5836 mm
   Size 45: up to 5771 mm
3) Recommended: preferred dimension T_{1S} with tolerances ± 0.75.

Corrosion-Resistant Ball Guide Rails

Product Description, Resist NR II

General notes on Ball Guide Rails in Resist NR II

For part numbers, see the following pages. For recommended rail lengths, dimensions and weights, please refer to the corresponding standard steel guide rails ☞ 122 – 131.
Follow the mounting instructions! Send for the publications “Mounting Instructions for Ball Rail Systems” and “Mounting Instructions for the Cover Strip.”

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 environments with a relative humidity of over 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 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.

Recommended runner blocks for Ball Guide Rails Resist NR II

– Ball Runner Blocks, Resist NR II ☞ 104

Combinations of different accuracy classes

⚠
Combining ball guide rails and runner blocks of different accuracy classes results in different tolerances for dimensions H and A_3.
(“Accuracy classes and their tolerances” ☞ 26)

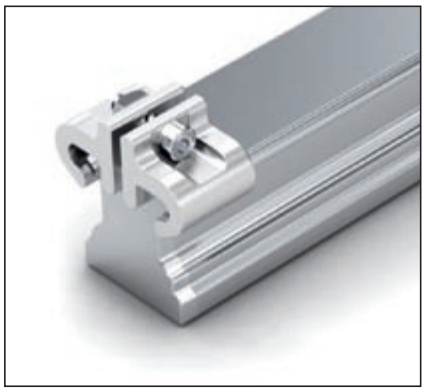
Ball Guide Rails, Resist NR II

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



Note on installation
- Secure the cover strip!
- Strip clamps are included in the supply scope.
- Composite guide rails also available.

Recommended rail lengths, dimension drawing, dimensions and weights
☞ 122 – 123.

Accessories
- Cover strip ☞ 176
- Strip clamps ☞ 178

Ordering example 1 (up to L_{max})
Options:
- Ball Guide Rail NR II, SNS
- Size 30
- Accuracy class H
- One-piece
- Rail length L = 1676 mm

Part number:
R2045 733 31, 1676 mm

Ordering example 2 (over L_{max})
Options:
- Ball Guide Rail NR II, SNS
- Size 30
- Accuracy class H
- **2 sections**
- Rail length L = 5116 mm

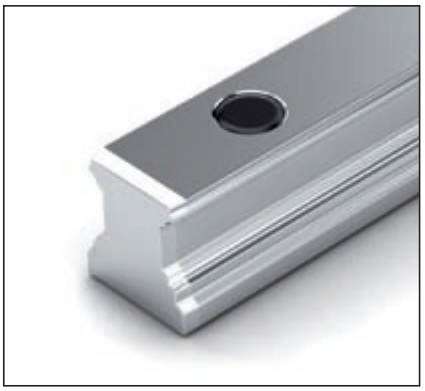
Part number:
R2045 733 3**2**, 5116 mm

Ball Guide Rails, Resist NR II

R2045 .0. .., SNS for mounting from above, with plastic mounting hole plugs

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	



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

Accessories
- Plastic mounting hole plugs
☞ 179

Recommended rail lengths, dimension drawing, dimensions and weights
☞ 126 – 127.

Ordering example 1 (up to L_{max})
Options:
- Ball Guide Rail NR II, SNS
- Size 30
- Accuracy class H
- One-piece
- Rail length L = 1676 mm

Part number:
R2045 703 31, 1676 mm

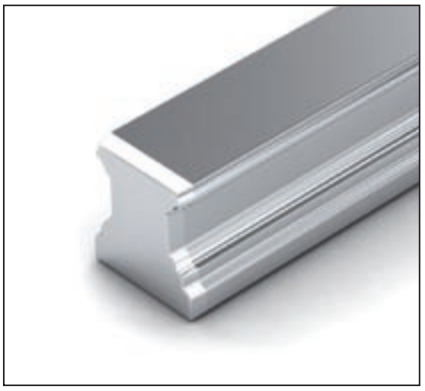
Ordering example 2 (over L_{max})
Options:
- Ball Guide Rail NR II, SNS
- Size 30
- Accuracy class H
- **2 sections**
- Rail length L = 5116 mm

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

Note on installation
- Composite guide rails also available.

Recommended rail lengths, dimension drawing, dimensions and weights
☞ 130 – 131.

Ordering example 1 (up to L_{max})
Options:
- Ball Guide Rail NR II, SNS
- Size 30
- Accuracy class H
- One-piece
- Rail length L = 1676 mm

Part number:
R2047 703 31, 1676 mm

Ordering example 2 (over L_{max})
Options:
- Ball Guide Rail NR II, SNS
- Size 30
- Accuracy class H
- **2 sections**
- Rail length L = 5116 mm

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

Corrosion-Resistant Ball Guide Rails

Product Description, Resist CR

General notes on Ball Guide Rails in Resist CR

For part numbers, see the following pages. For recommended rail lengths, dimensions and weights, please refer to the corresponding standard steel guide rails ☞ 122 – 131.
Follow the mounting instructions! Send for the publications “Mounting Instructions for Ball Rail Systems” and “Mounting Instructions for the Cover Strip.”

Corrosion-resistant coating Resist CR

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

One-piece guide rails with uncoated or coated end faces

- End faces **uncoated**

  Part numbers:
  – R16.. ... 31 or R16.. ... 61

- End faces, chamfers and end-face threads **coated**
  Part numbers:
  – R16.. ... 41 or R16.. ... 71

Composite guide rails with coated end faces

- End faces, chamfers and end-face threads coated, part 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 guide rails in accuracy class H for preload classes C0 and C1

Size 15 - 65
- Accuracy class H
- **Preload class C0** = without preload

Size 30 - 65
- Accuracy class H
- **Preload class C1** = 2% C

Combinations of different accuracy classes

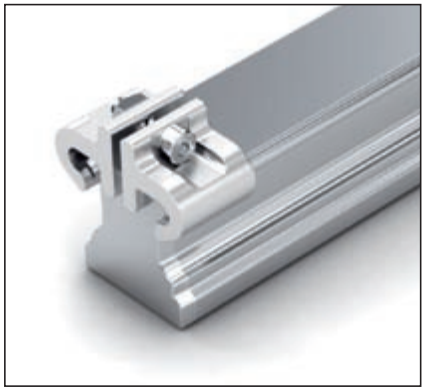
⚠
Combining ball guide rails and runner blocks of different accuracy classes results in different tolerances for dimensions H and A_3.
(“Accuracy classes and their tolerances” ☞ 26)

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 H	Number of sections ., Rail length L (mm), ... One-piece Uncoated end faces	One-piece Coated end faces	Composite Coated end faces
15	R1645 13	3	31, ...	41, ...	4., ...
20	R1645 83	3	31, ...	41, ...	4., ...
25	R1645 23	3	31, ...	41, ...	4., ...
30	R1645 73	3	31, ...	41, ...	4., ...
35	R1645 33	3	61, ...	71, ...	7., ...
45	R1645 43	3	61, ...	71, ...	7., ...
55	R1645 53	3	61, ...	71, ...	7., ...
65	R1645 63	3	61, ...	71, ...	7., ...
e.g.	R1645 73	3	31, 1676		



Note on installation
- Secure the cover strip!
- Strip clamps are included in scope of supply.
- Composite guide rails also available.

Recommended rail lengths, dimension drawing, dimensions and weights
☞ 122 – 123.

Accessories
- Cover strip ☞ 176
- Strip clamps ☞ 178

Ordering example 1 (up to L_{max})
Options:
- Ball Guide Rail CR, SNS
- Size 30
- Accuracy class H
- One-piece
- Uncoated end faces
- Rail length L = 1676 mm

Part number:
R1645 733 31, 1676 mm

Ordering example 2 (over L_{max})
Options:
- Ball Guide Rail CR, SNS
- Size 30
- Accuracy class H
- **2 sections**
- Coated end faces
- Rail length L = 5116 mm

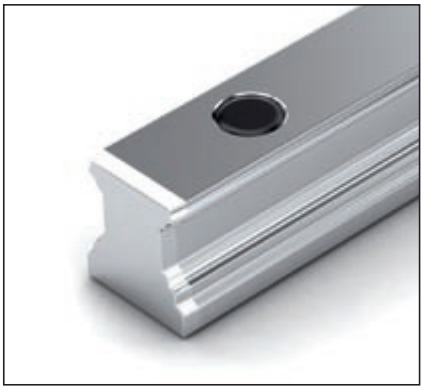
Part number:
R1645 733 4**2**, 5116 mm

Ball Guide Rails, Resist CR

R1645 .0. .., SNS for mounting from above, with plastic mounting hole plugs

Options and part numbers

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



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

Recommended rail lengths, dimension drawing, dimensions and weights
☞ 126 – 127.

Accessories
- Plastic mounting hole plugs
☞ 179

Ordering example 1 (up to L_{max})
Options:
- Ball Guide Rail CR, SNS
- Size 30
- Accuracy class H
- One-piece
- Uncoated end faces
- Rail length L = 1676 mm

Part number:
R1645 703 31, 1676 mm

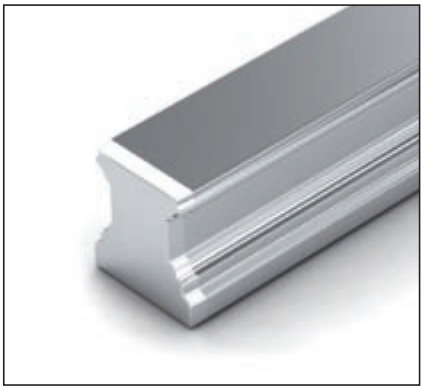
Ordering example 2 (over L_{max})
Options:
- Ball Guide Rail CR, SNS
- Size 30
- Accuracy class H
- **2 sections**
- Coated end faces
- Rail length L = 5116 mm

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 H	Number of sections ., Rail length L (mm), ... One-piece Uncoated end faces	One-piece Coated end faces	Composite Coated end faces
15	R1647 10	3	31, ...	41, ...	4., ...
20	R1647 80	3	31, ...	41, ...	4., ...
25	R1647 20	3	31, ...	41, ...	4., ...
30	R1647 70	3	31, ...	41, ...	4., ...
35	R1647 30	3	31, ...	41, ...	4., ...
45	R1647 40	3	31, ...	41, ...	4., ...
55	R1647 50	3	31, ...	41, ...	4., ...
65	R1647 60	3	31, ...	41, ...	4., ...
e.g.	R1647 70	3			42, 5116



Note on installation
- Composite guide rails also available.

Recommended rail lengths, dimension drawing, dimensions and weights
☞ 130 – 131

Ordering example 1 (up to L_{max})
Options:
- Ball Guide Rail CR, SNS
- Size 30
- Accuracy class H
- One-piece
- Uncoated end faces
- Rail length L = 1676 mm

Part number:
R1647 703 31, 1676 mm

Ordering example 2 (over 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

V-Guide Rails

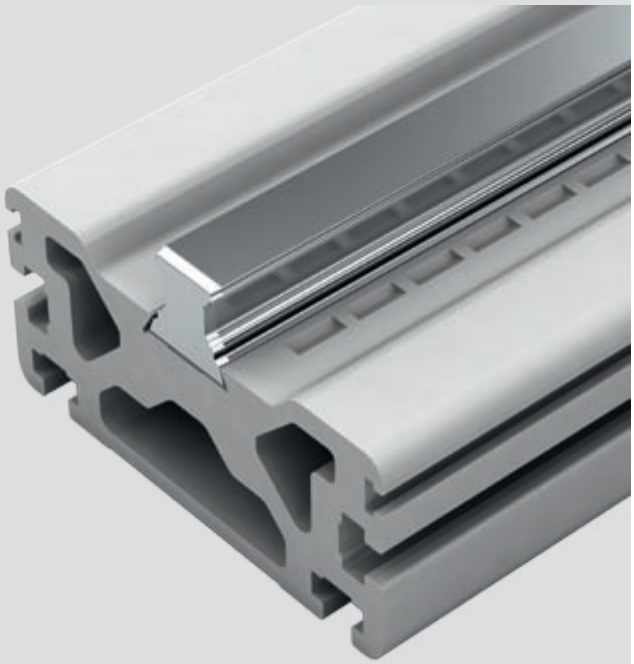
Product Description, V-Guide Rail SNS

Characteristic features

Thanks to their mounting style, V-Guide Rails for Ball Rail Systems offer the following advantages:

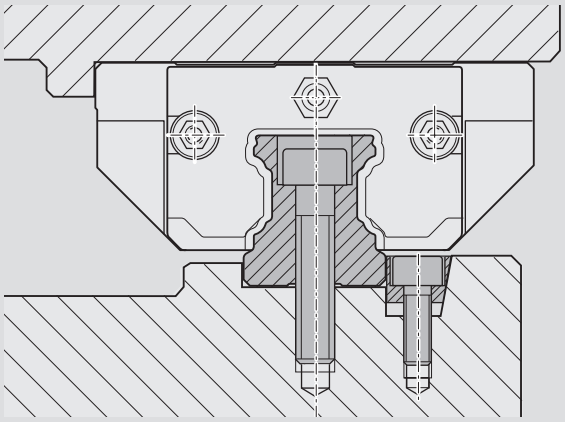
- Reduced geometric variations in runner block travel, since there are no mounting holes in the guide rail
- Freely selectable ball guide rail length (not dependent on mounting holes)
- No need to drill and tap holes in the mounting base
- V-Guide Rails are especially suited for single-rail applications (mounting in aluminum profiles)
- Rail mounting recess can be designed into aluminum profiles – no extra effort required
- Rail mounting recess can be machined with standard profile milling tools
- Improved rail straightness due to absence of mounting holes
- No need for mounting hole plugs or covers
- V-Guide Rails can be mounted at lower cost
- Smooth rail surface for optimal sealing action
- Multiple-rail applications require milling of parallel rail seating

Thanks to Rexroth's proven policy of interchangeability, the entire range of ball runner blocks and accessories can be used.

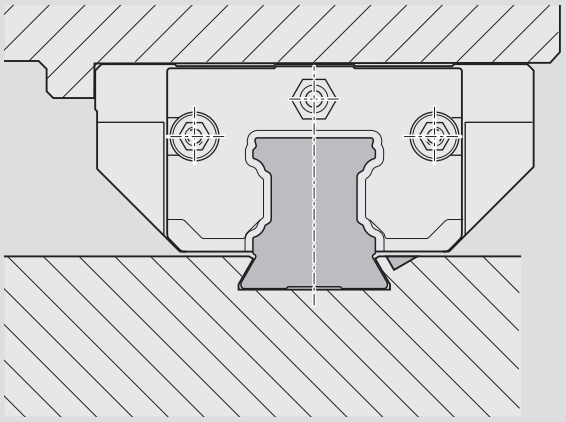


Comparison of Mounting Styles

Ball rail system with standard ball guide rail



Ball rail system with V-guide rail



Mounting of standard guide rail

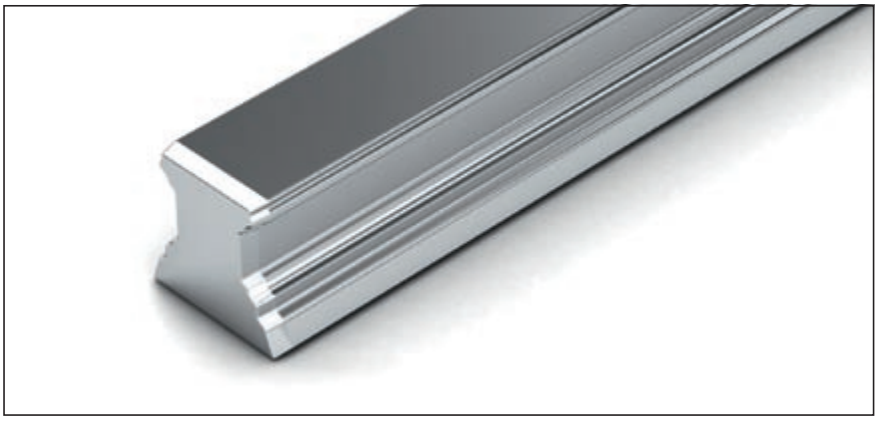
The standard guide rail is pressed against the reference edge using clamping strips or wedge profiles to align it. The rail is screwed into place from above or below. Mounting holes in the standard guide rail are closed with a cover strip or plugs.
Two rows of holes are needed in the machine bed for each standard guide rail.

Mounting of V-guide rail

The V-guide rail for ball rail systems has no mounting holes. It is installed by press-fitting it into mounting base.
The mating cavity for the rail can be produced using a standard contour milling machine.
It is not necessary to drill any holes.

SNS without Mounting Holes

R1608 .1. ..



Without mounting holes
Press-fit mounting

Note on installation
- Composite ball guide rails also available.
- Combinable with all ball runner blocks.

Options and part numbers

Size	Ball guide rail with size	Accuracy class	Number of sections ., Rail length L (mm), ...		Rail length freely selectable up to L_{max}
		N	One-piece	Composite	L_{max} (mm)
15	R1608 11	4	31, ...	3., ...	3836
20	R1608 81	4	31, ...	3., ...	3836
25	R1608 21	4	31, ...	3., ...	3836
e.g.	R1608 21	4	31, 1676		

Ordering example 1 (up to L_{max})
Options:
- Ball Guide Rail SNS
- Size 25
- Accuracy class N
- One-piece
- Rail length L = 1676 mm

Part number:
R1608 214 31, 1676 mm

Ordering example 2 (over L_{max})
Options:
- Ball Guide Rail SNS
- Size 25
- Accuracy class N
- **2 sections**
- Rail length L = 5116 mm

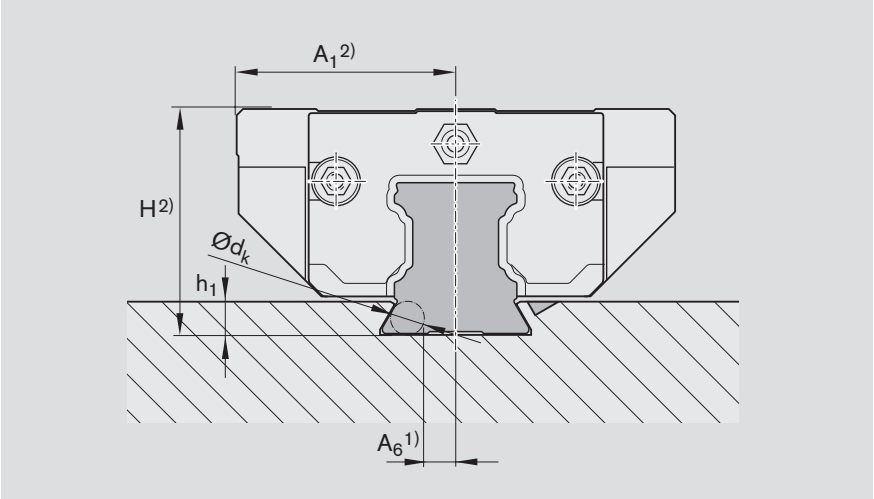
Part number:
R1608 214 3**2**, 5116 mm

V-Guide Rails

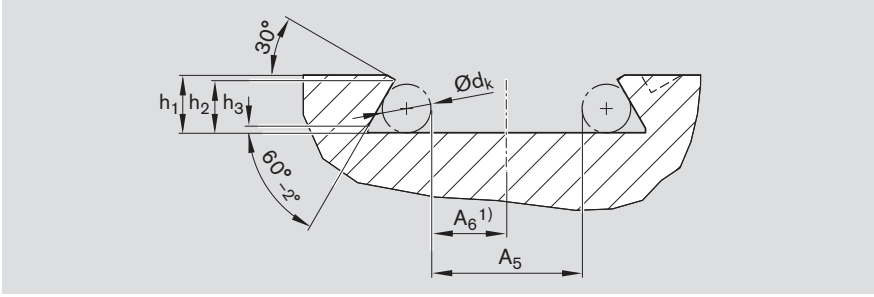
Mounting and Installation Tolerances

Single-rail applications

For details regarding straightness and parallelism of the guide rail mounting surface, ☞ 26.



Structural design of the rail mounting recess
Material recommended by Rexroth:
Wrought aluminum alloy F22 to F27

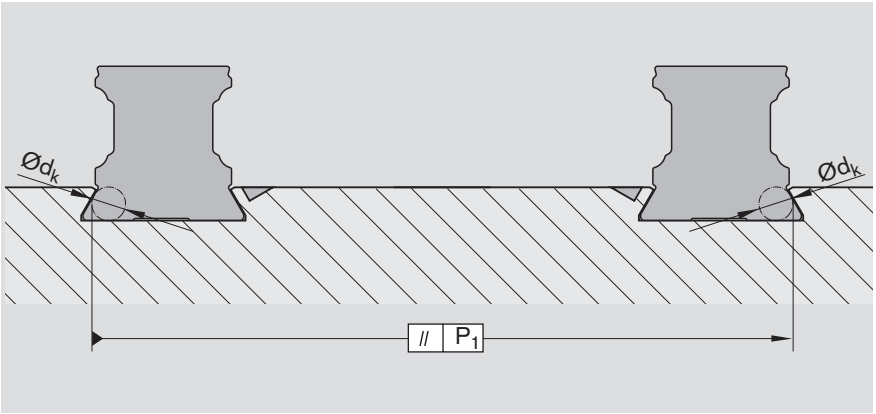


Size	Dimensions (mm)					
	$A_5^{\pm 0.2}$	A_6 1)	$h_1^{\pm 0.15}$	$h_2^{\pm 0.1}$	$h_{3-0.2}$	$Ød_k$
15	8.6	4.2	3.5	3.0	0.5	3.0
20	13.4	6.6	4.0	3.6	0.5	3.0
25	14.0	6.9	5.0	4.6	0.5	4.0

1) Tolerances of $A_6 \triangleq A_3$ ☞ 26
2) For dimensions and tolerances, see the sections on Ball Runner Blocks

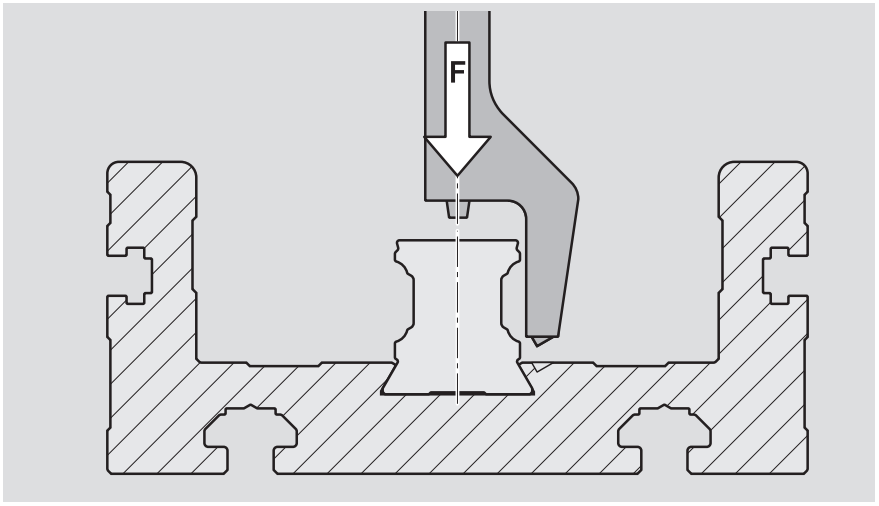
Multiple-rail applications

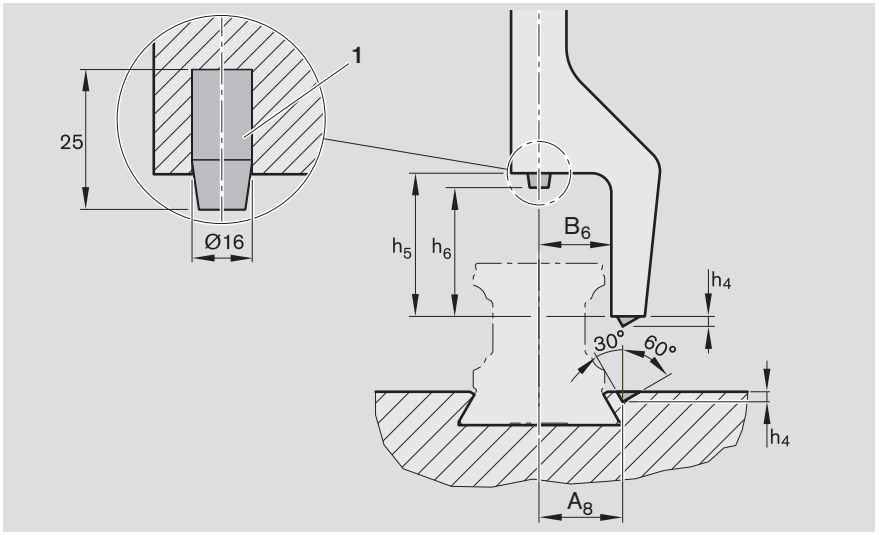
For multiple-rail applications the rail seating must be machined into the mounting base.
For details regarding vertical offset and parallelism of the guide rail mounting surfaces, ☞ 240 – 242.



Recommended installation procedure

⚠ **Do not press in manually!**

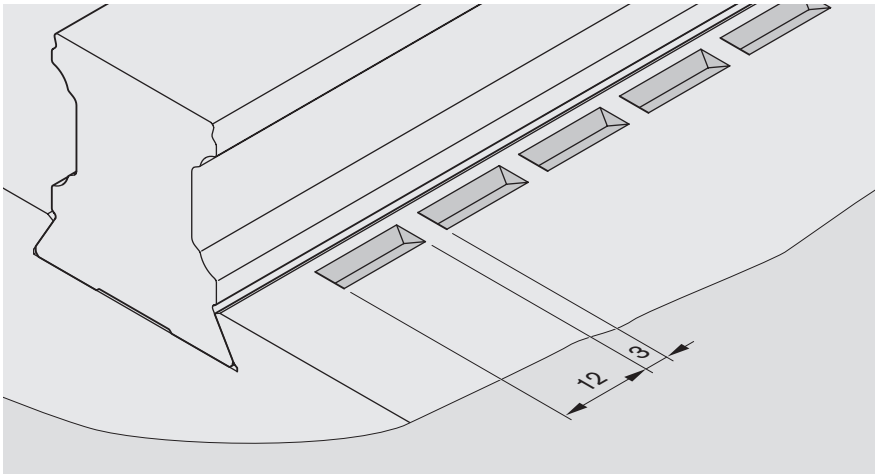




1) Example: Use rubber buffers as contact points while pressing the guide rail in.
   Material: PUR
   Hardness: 90±5 Shore A

Size	Dimensions (mm)					Pressing force
	A_8	B_6	h_4	h_5	h_6	(kN)
15	9.5	8	1.3	14	9.5	27
20	12.0	10	1.8	18	12.8	30
25	14.0	11	2.0	21	15.3	33

Recommended values for all sizes



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