

eLINE Profiled Rail Systems with Ball and Cam Roller Runner Blocks

R310EN 2211 (2008.04)

The Drive & Control Company

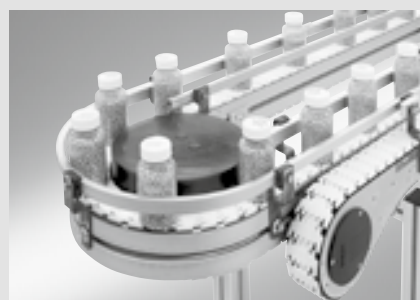
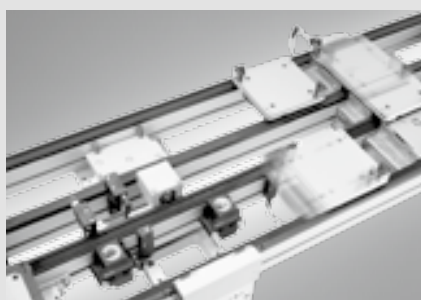
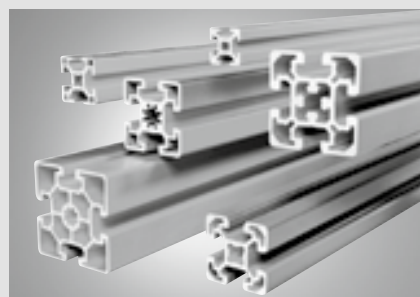
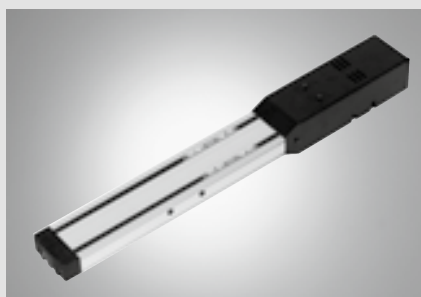
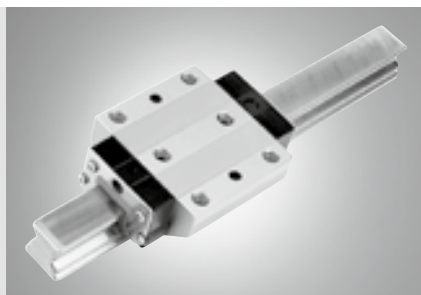
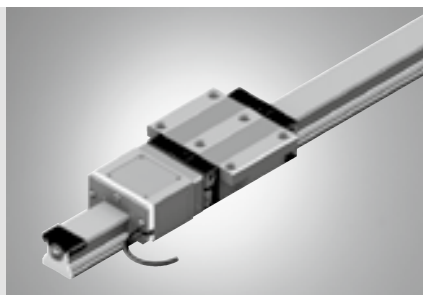


Linear Motion and Assembly Technologies

Ball Rail Systems
Roller Rail Systems
Linear Bushings and Shafts

Ball Screw Drives
Linear Motion Systems

Basic Mechanical Elements
Manual Production Systems
Transfer Systems



eLINE Profiled Rail Systems

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Product Overview

Product background

Profiled rail systems have firmly established themselves as standard linear motion solutions. They were developed for precision applications calling for highly accurate guidance and high rigidity, e.g. in machine tools. In the meantime, a great variety of other applications for rail systems have emerged where high rigidity and accuracy are frequently not the most important considerations.

Rexroth's eLINE range of profiled rail systems was developed for applications of this kind, especially for light machinery and for handling and positioning movements where the main emphasis is on economy and durability.

Made of wrought aluminum alloy with running tracks of hardened antifriction bearing steel, the runner blocks and guide rails are characterized by their low weight, compact design, and equal load bearing capacity in all four main directions of loading.

Application areas

Food and packaging industry, light machinery, handling technology, jigs and fixtures, assembly technology, positioning units, manual displacement systems, machine enclosures, door and window construction, building services technology, trade show and shop construction, woodworking machinery, DIY equipment, and many more.

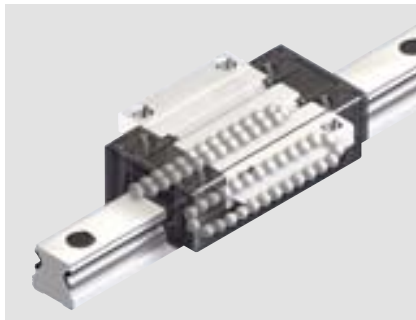
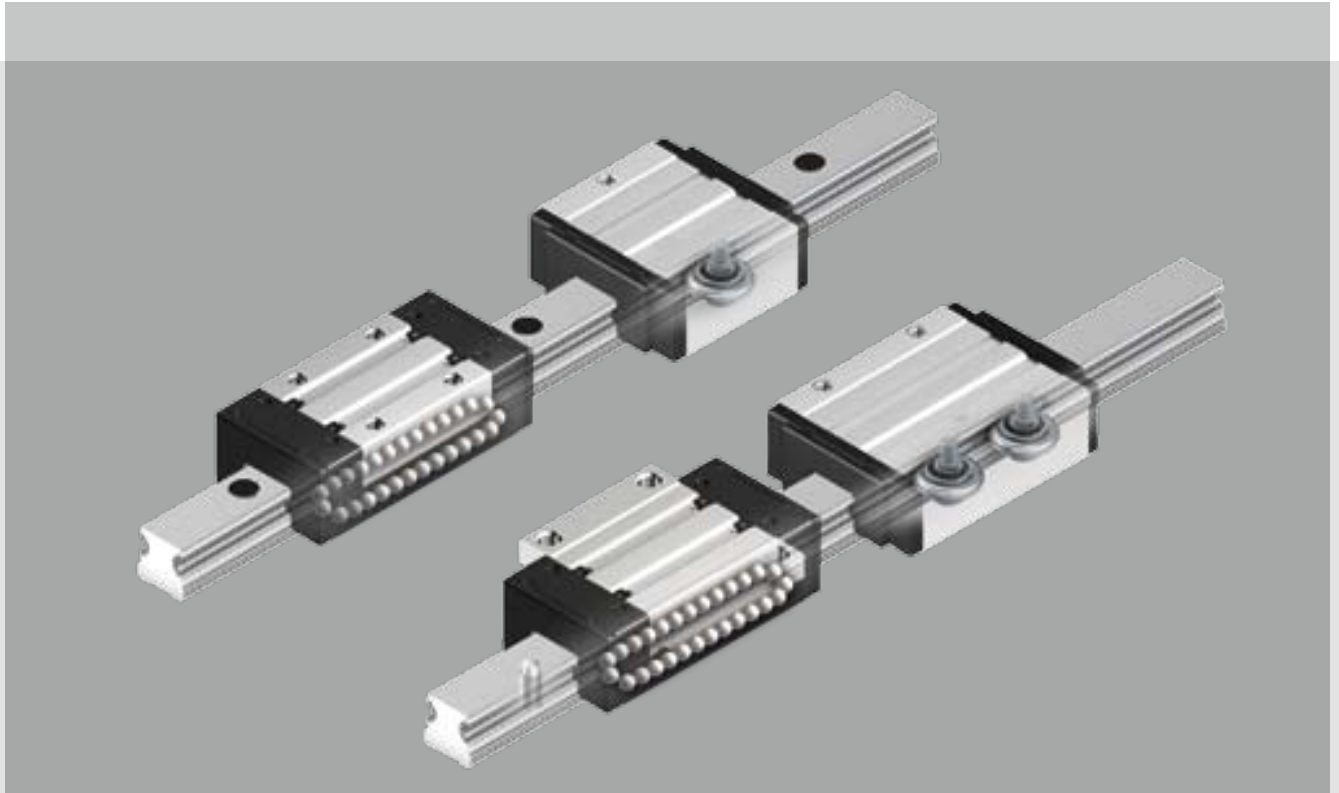
Special features of the new eLINE Profiled Rail Systems:

- Available in the three most common sizes per DIN 645-1
- Structural design allows for much greater parallelism and height offsets of the mounting bases.
- Can be mounted even on unmachined mounting surfaces, depending on the application.
- Especially compact, lightweight design; 60% weight saving versus steel versions.
- Significantly better corrosion resistance compared with the steel versions.



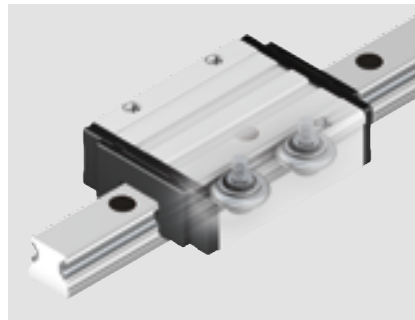
- Lubrication concept
Runner blocks initially greased in-factory, therefore provided with long-term lubrication.
- Ball runner blocks available in two accuracy classes and two preload classes.
- Ball retainers in the runner blocks allow them to be removed from the rail without any loss of balls.
- All eLINE runner blocks are delivered with ready-mounted seal units.
- Guide rails with reference edge on both sides.
- Guide rails also available in corrosion-resistant versions
(Running tracks made from hardened corrosion-resistant antifriction bearing steel per EN 10088)
- All accuracy classes can be combined with one another.
- Interchangeability allows individual stocking of runner blocks and guide rails – top logistics unequalled anywhere in the world.
- Same connection dimensions as steel ball rail systems.
- Same guide rails for both ball and cam roller runner blocks.

For additional information on the Ball Rail Systems and Cam Roller Guides ranges, see the respective main catalogs.



Ball Runner Blocks, flanged version

- Standard height
- Low profile (size 25)



Cam Roller Runner Blocks, standard

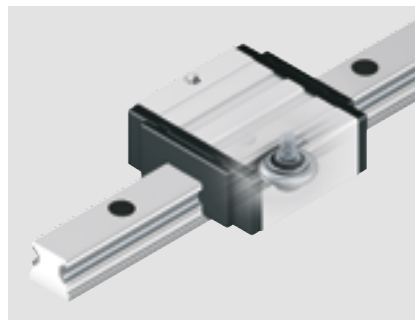


Lube unit with sealing function for eLINE ball and cam roller runner blocks (accessories)



Ball Runner Blocks, slimline version

- Standard height
- Low profile (size 25)



Cam Roller Runner Blocks, short



Manual clamping unit

Technical Data, Design Notes, Mounting Instructions, Lubrication

General Technical Data and Calculations

Travel speed

$$v_{\max} = 2 \text{ m/s (with eLINE ball runner blocks)}$$

$$v_{\max} = 12 \text{ m/s (with eLINE cam roller runner blocks)}$$

Acceleration

$$a_{\max} = 30 \text{ m/s}^2 \text{ (with eLINE ball runner blocks)}$$

$$a_{\max} = 50 \text{ m/s}^2 \text{ (with eLINE cam roller runner blocks)}$$

Temperature resistance

$$\vartheta = 0 - 60 \text{ }^{\circ}\text{C}$$

Sealing

All eLINE runner blocks are delivered with ready-mounted seal units.

Definition of dynamic load capacity C

The radial loading of constant magnitude and direction which a linear rolling bearing can theoretically endure for a nominal life of 100 km distance traveled (per ISO 14728 Part 1).

Note on maximum load $F_{\max}$

Because of the weight-optimized design of eLINE Profiled Rail Systems, the maximum permissible forces for static and dynamic loads must not be exceeded.

Definition and calculation of the nominal life

The calculated service life which an individual linear rolling bearing, or a group of apparently identical rolling element bearings operating under the same conditions, can attain with a 90% probability, with contemporary, commonly used materials and manufacturing quality under conventional operating conditions (per ISO 14728 Part 1) and optimal installation conditions.

Nominal life at constant speed

Calculate the nominal life L or L_h according to formula (1) or (2):

$(1) \quad L = \left(\frac{C}{F}\right)^3 \cdot 10^5$	L = nominal life (m) L_h = nominal life (h) C = dynamic load capacity (N) F = equivalent load (N) s = length of stroke* (m) n_s = stroke repetition rate (full cycles) (min^{-1})
$(2) \quad L_h = \frac{L}{2 \cdot s \cdot n_s \cdot 60}$	

* For a stroke length $< 2 \times$ runner block length, the load capacities will be reduced. Please consult us.

General Mounting Instructions

Parallelism of the installed rails measured at the guide rails and at the runner blocks

The parallelism offset P_1 causes a slight increase in preload on one side of the assembly.

As long as the values specified in the table are met, the effect of parallelism offsets on the service life can generally be neglected.

⚠ eLINE profiled rail systems allow substantially higher installation tolerances compared to steel rail systems.

Vertical offset

Provided the vertical offset is kept within the stated tolerances for S_1 and S_2 , its influence on the service life can generally be neglected.

The tolerance for dimension H , as given in the table with accuracy classes in the "Technical Data" section, must be deducted from the permissible vertical offset S_1 of the guide rails.

Permissible vertical offset in the transverse direction S_1

$$S_1 = a \cdot Y$$

S_1 = permissible vertical offset (mm)
 a = distance between guide rails (mm)
 Y = calculation factor

Calculation factor	for preload class		
	Ball runner blocks	Cam roller runner blocks	
	C0	C1	C1
Y	$1.2 \cdot 10^{-3}$	$7.5 \cdot 10^{-4}$	$1.5 \cdot 10^{-3}$

Permissible vertical offset in the longitudinal direction S_2

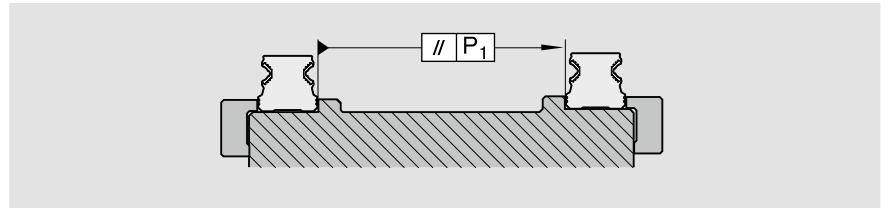
The tolerance "max. difference in dimension H on the same rail", as given in the table with accuracy classes in the "Technical Data" section, must be deducted from the permissible vertical offset S_2 of the runner blocks.

$$S_2 = b \cdot X$$

S_2 = permissible vertical offset (mm)
 b = distance between runner blocks (mm)
 X = calculation factor

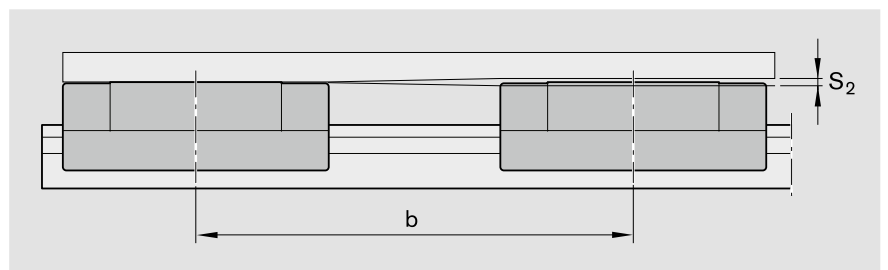
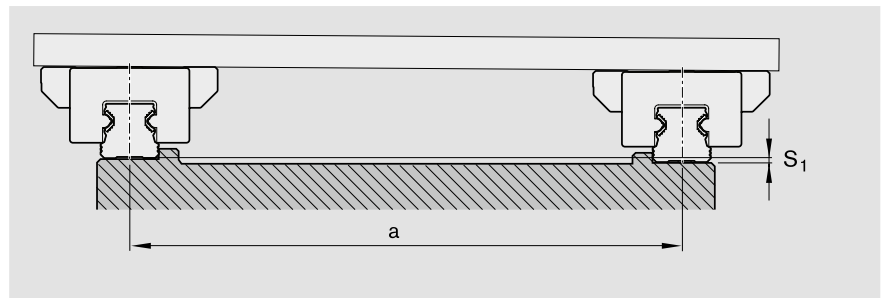
Calculation factor	for preload class		
	Ball runner blocks	Cam roller runner blocks	
	C0	C1	C1
X	$6 \cdot 10^{-4}$	$2.1 \cdot 10^{-4}$	$6.5 \cdot 10^{-4}$

Preload classes
 C0 = without preload
 C1 = with preload



Size	Parallelism offset P_1 (mm) for preload class			
	Ball runner blocks		Cam roller runner blocks	
	C0	C1	C1	
15	(0.015) 0.027	0.018	0.034	
20	(0.018) 0.031	0.021	0.040	
25	(0.019) 0.034	0.022	0.042	

(Values in parentheses are those for standard Ball Rail Systems)



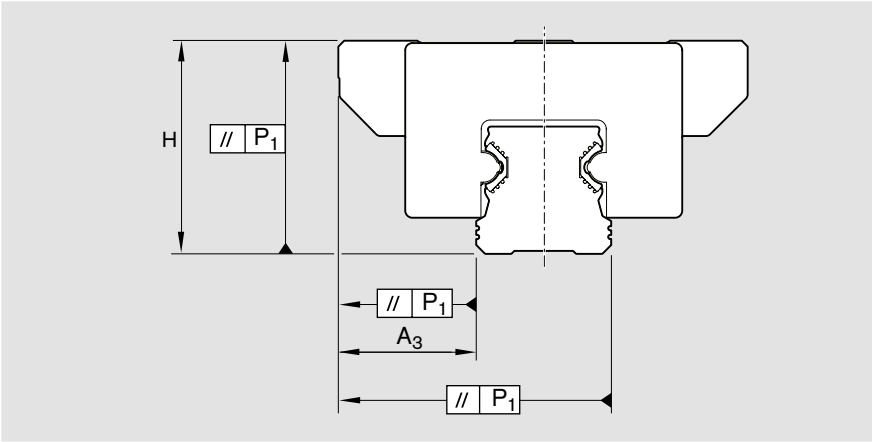
Technical Data, Design Notes, Mounting Instructions, Lubrication

General Technical Data and Calculations

Selection of Accuracy Classes

Accuracy classes and their tolerances

eLINE Ball Rail Systems are available in two different accuracy classes, eLINE Cam Roller Guide Systems in accuracy class E only.



Built-in interchangeability through precision machining

Rexroth manufactures its guide rails and runner blocks with such high precision, especially in the running track zone, that each individual component element can be replaced by another at any time. For example, different runner blocks can be used without problems on one and the same guide rail of the same size.

Accuracy classes	Tolerances for dimension H and A ₃ (μm)		Max. difference in dimension H and A ₃ on one guide rail ΔH, ΔA ₃ (μm)
	H	A ₃	
N	±100	±40	30
E	±120	±70	60

Measured at middle of runner block:

For any runner block/rail combination at any position on rail

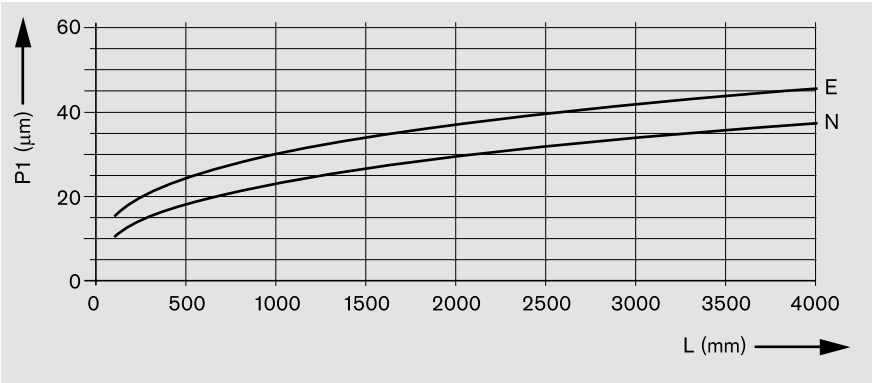
For different runner blocks at same position on rail

Parallelism offset P₁ of the rail system in service

Measured at middle of runner block

Key to illustration

P₁ = parallelism offset
 L = rail length



Combination of Accuracy Classes

Runner block		Rails	
		N (μm)	E (μm)
N	Tolerance dimension H	+/- 100	+/- 110
	Tolerance dimension A_3	+/- 40	+/- 60
	Max. diff. in dims. H and A_3 on one rail	30	30
E	Tolerance dimension H	+/- 115	+/- 120
	Tolerance dimension A_3	+/- 50	+/- 70
	Max. diff. in dims. H and A_3 on one rail	60	60

Recommendations for combining accuracy classes

Recommended for short strokes and close spacing of runner blocks:
Runner blocks in higher accuracy class than guide rail.

Recommended for long strokes and larger runner block spacing:
Guide rail in higher accuracy class than runner blocks.

Selection of System Preload

Selection of the preload class
In versions without preload there will be a slight clearance between the runner block and the rail. With two rails and use of more than one runner block per rail, this clearance is usually equalized by parallelism tolerances.

Code	Version	Application area
C0	without preload	For particularly smooth running guide systems with the lowest possible friction and a minimum of external influences, and for mounting bases with low accuracy.
C1	with preload	For more accurate guide systems with low external loads.

Technical Data, Design Notes, Mounting Instructions, Lubrication

Load-Dependent Size Selection Do not exceed the maximum loading of the screw connections!

Determination of the runner block size

- 1 Determine F_{comb}
- 2 Pre-select the runner block
- 3 Calculate the ratio of the dynamic load capacity C of the selected runner block relative to F_{comb} . (F_{comb} divided by C)

If $F_{comb}/C > 0.4$: runner block is sized too small.

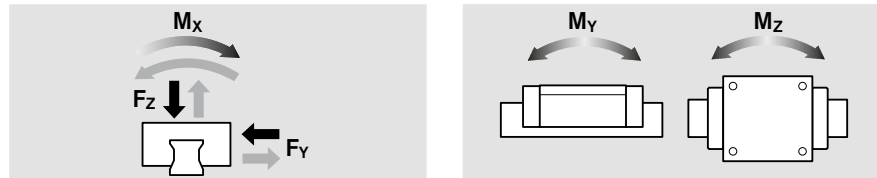
Select the next largest size of runner block and repeat the calculation (step 3).

The ratio must always be $F_{comb}/C \leq 0.4$, otherwise F_{max} of the selected runner block will be exceeded.

Note

The load ratio F_{comb}/C is the quotient of the equivalent dynamic load on the bearing divided by the dynamic load capacity C (see "General Technical Data and Calculations").

Calculation of load on bearing for a runner block



$$F_{comb} = k_f \cdot (|F_Z| + |F_Y| + C \cdot \frac{|M_X|}{M_t} + C \cdot \frac{|M_Y|}{M_L} + C \cdot \frac{|M_Z|}{M_L})$$

F_{comb} = combined equivalent load (N)

F_Y, F_Z = Dynamic loads (N)

M_X = Moment about the X-axis ¹⁾ (Nm)

M_Y = Moment about the Y-axis ²⁾ (Nm)

M_Z = Moment about the Z-axis ²⁾ (Nm)

M_t = dynamic torsional moment load capacity (Nm)

For values, see runner blocks

M_L = dynamic longitudinal moment load capacity (Nm)

For values, see runner blocks

k_f = Operating factor For values, see table

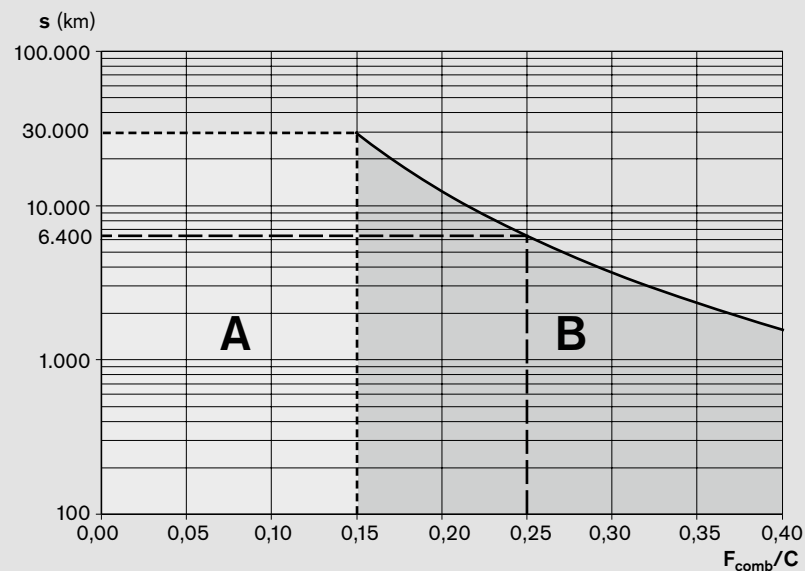
1) The moment M_X will only be fully effective in an application with only one guide rail. For all other cases, see "Information on moment load calculation."

2) The moment M_Y or M_Z will only be effective when only one runner block is mounted on a guide rail. For all other cases, see "Information on moment load calculation."

Recommended operating factors k_f

Operating factors		Application
Ball runner blocks	Cam roller runner blocks	
0.8	0.8	Linear motion guide with manual drive
1.0	1.0	Door guides, seat adjustment, slide units for lamps, guidance of protective wire meshes, general laboratory applications, slide units for measuring devices
1.2	1.1	Application in a linear motion axis with ball screw drive
1.3	1.2	Application in a linear motion axis with rack and pinion drive
1.5	1.2	Application in a linear motion axis with toothed belt drive
2.0	1.5	Auxiliary axis of machine tool not subject to dirt
4.0	4.0	Application in a linear motion axis with pneumatic drive
7.0	5.0	Application in a linear motion axis with linear motor drive
9.0	9.0	Application in very dirty environments
Not for use in applications like		Main axis of a machine tool; aggressive wood dust environment; oscillating conveyors. Ball runner blocks: $\vartheta > 60^\circ\text{C}$, $a > 30\text{ m/s}^2$, $v > 2\text{ m/s}$ Cam roller runner blocks: $\vartheta > 60^\circ\text{C}$, $a > 50\text{ m/s}^2$, $v > 12\text{ m/s}$ Danger to life and limb (e.g. unsecured overhead installation)

Lubrication



Lubrication concept



from Rexroth means that the eLINE Profiled Rail Systems (eLINE ball and cam roller runner blocks) are lubed for life. Applies only to a ratio $F_{\text{comb}}/C \leq 0.15$ (values from table 1) (Zone A in the graph)

For $F_{\text{comb}} > 0.15C$ and $\leq 0.4C$ (values from table 1), zone B in the graph applies; relubrication is necessary.

Example:

For $F_{\text{comb}} = 0.25$, zone B in the graph applies. Relubrication required after a distance traveled $s = 6,400$ km.

(To calculate F_{comb} , see "Calculation of load on bearing for a runner block")

Size	Ball runner blocks $F_{0.15C}$ (N)	Cam roller runner blocks R2041 $F_{0.15C}$ (N)
15	750	140
20	1700	390
25	2500	400

Table 1

s	=	distance traveled	(km)
C	=	dynamic load capacity	(N)
F	=	equivalent dynamic load	(N)

The following conditions apply:

- Initial greasing with Dynalub 510
- With Seal Unit (DE)
- Maximum speed:
 $v_{\text{max}} = 2$ m/s
- No exposure to metalworking fluids
- Ambient temperature:
 $T = 20 - 30$ °C

⚠ Take account of the general service life of lubricants!

⚠ If other lubricants are used, this may lead to a reduction in the relubrication intervals, the achievable travel in short-stroke applications, and the load capacities. Possible chemical interactions between the plastic materials, lubricants and preservative oils must also be taken into account.

⚠ Do not use greases containing solid particles (e.g., graphite or MoS_2)!

⚠ If your application involves more demanding environmental requirements (such as clean room, vacuum, food industry environment, increased exposure to fluids or aggressive media, extreme temperatures), please consult us. These situations must be investigated on a case by case basis and may require the use of a special lubricant. Be sure to have all the information concerning your application at hand when contacting us.

eLINE Ball Runner Blocks

Ball runner block

FNS R2031

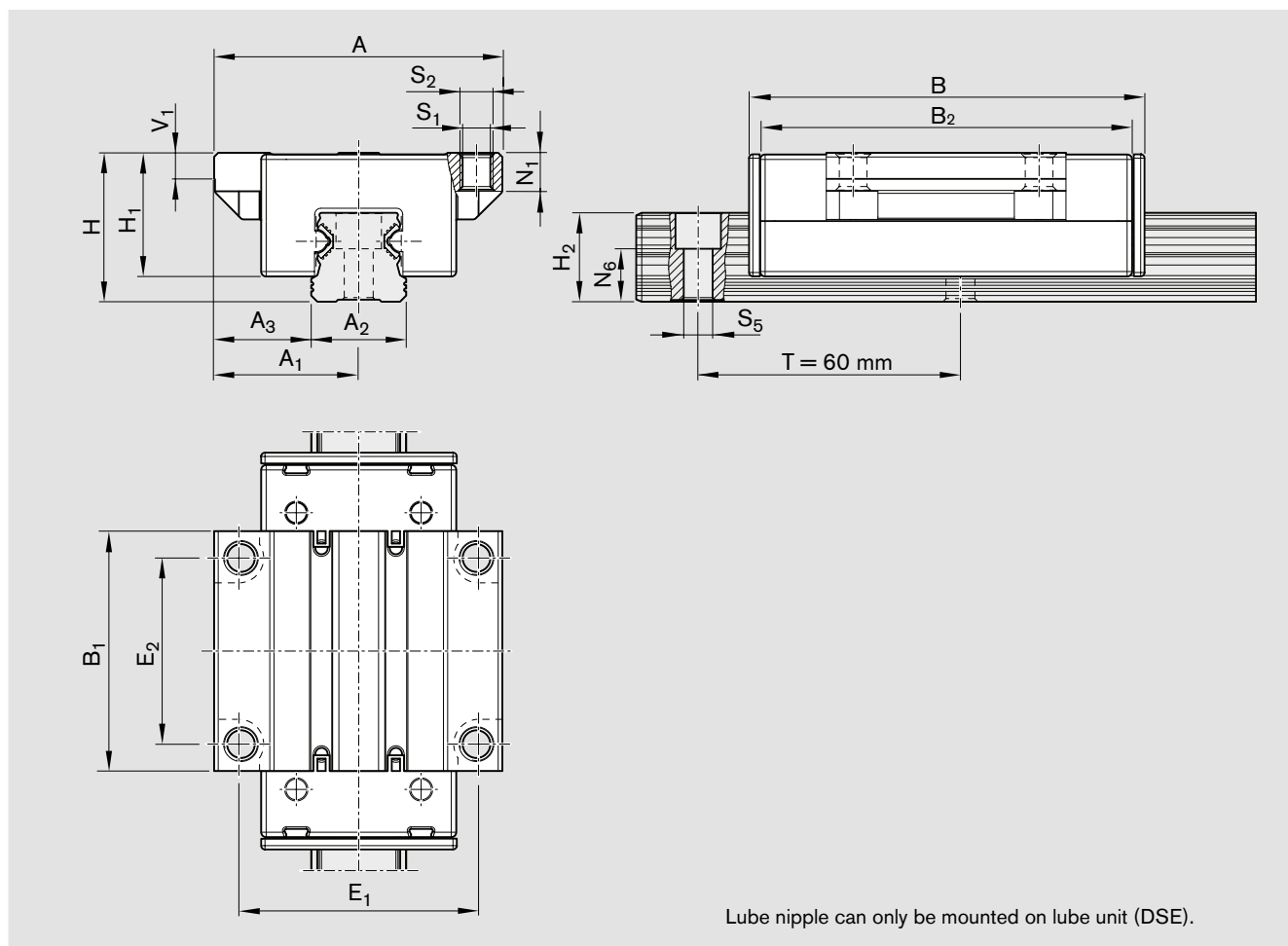
Flanged, normal, standard height

- Runner block body made from wrought aluminum alloy
- Hardened steel running tracks
- Steel balls per DIN 5401
- With Seal Unit (DE)
- Initial greasing with Dynalub 510

- Lubrication concept



Size	Accuracy class	Part numbers	
		C0	C1
15	N	R2031 194 10	R2031 114 10
	E	R2031 195 10	–
20	N	R2031 894 10	R2031 814 10
	E	R2031 895 10	–
25	N	R2031 294 10	R2031 214 10
	E	R2031 295 10	–



Size	Dimensions (mm)																		Weight ¹⁾ (kg)
	A	A ₁	A ₂	A ₃	B	B ₁	B ₂	H	H ₁	H ₂	V ₁	E ₁	E ₂	N ₁	N ₆ ^{±0.5}	S ₁	S ₂	S ₅	
15	47	23.5	15	16.0	64.0	37.8	59.0	24	19.8	14.0	4.1	38	30	6.0	8.1	4.3	M5	4.4	0.08
20	63	31.5	20	21.5	85.9	51.5	80.3	30	24.7	19.0	5.5	53	40	8.0	11.6	5.3	M6	6.0	0.18
25	70	35.0	23	23.5	96.0	58.0	90.0	36	29.9	21.8	6.4	57	45	9.3	12.9	6.7	M8	7.0	0.26

Load capacities ²⁾ (N)				Moments (Nm)			
Size	C	F _{max}		M _t	M _{tmax}	M _L	M _{Lmax}
15	5000	2000		36	14	29	12
20	11000	4400		101	40	89	35
25	16000	6400		165	66	147	59

1) Please note the low weight of the runner block.

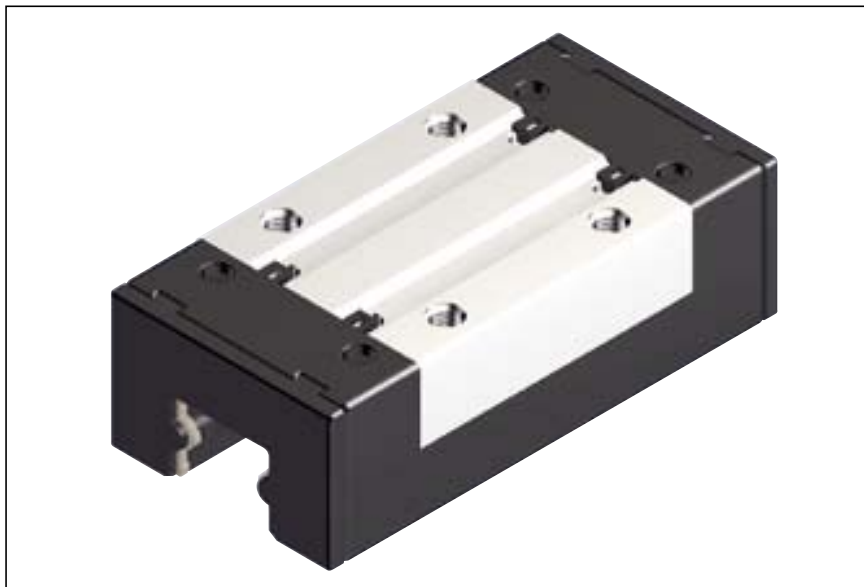
2) Determination of the dynamic load capacities and moments is based on a travel life of 100,000 m. Often only 50,000 m are actually stipulated.
For comparison: Multiply values C, M_t and M_L from the table by 1.26.

eLINE Ball Runner Blocks

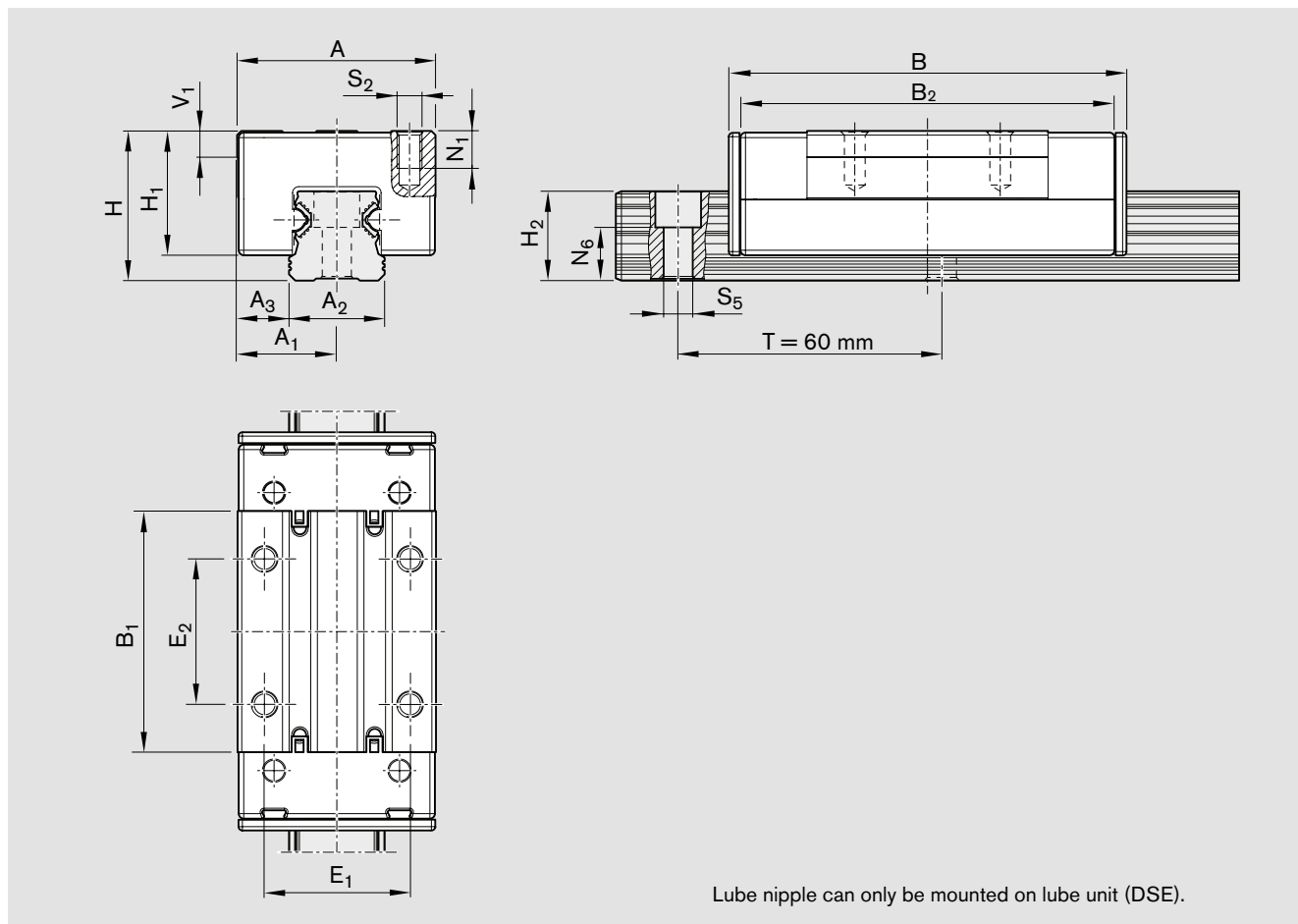
Ball runner block SNS R2032 Slimline, normal, standard height

- Runner block body made from wrought aluminum alloy
- Hardened steel running tracks
- Steel balls per DIN 5401
- With Seal Unit (DE)
- Initial greasing with Dynalub 510

- Lubrication concept



Size	Accuracy class	Part numbers	
		C0	C1
15	N	R2032 194 10	R2032 114 10
	E	R2032 195 10	–
20	N	R2032 894 10	R2032 814 10
	E	R2032 895 10	–
25	N	R2032 294 10	R2032 214 10
	E	R2032 295 10	–



Size	Dimensions (mm)																	Weight ¹⁾ (kg)
	A	A ₁	A ₂	A ₃	B	B ₁	B ₂	H	H ₁	H ₂	V ₁	E ₁	E ₂	N ₁	N ₆ ^{±0.5}	S ₂	S ₅	
15	34	17	15	9.5	64.0	37.8	59.0	24	19.8	14.0	4.1	26	26	6.0	8.1	M4	4.4	0.07
20	44	22	20	12.0	85.9	51.5	80.3	30	24.7	19.0	5.5	32	36	7.5	11.6	M5	6.0	0.15
25	48	24	23	12.5	96.0	58.0	90.0	36	29.9	21.8	6.4	35	35	9.0	12.9	M6	7.0	0.22

Load capacities ²⁾ (N)				Moments (Nm)			
Size	C	F _{max}		M _t	M _{tmax}	M _L	M _{Lmax}
15	5000	2000		36	14	29	12
20	11000	4400		101	40	89	35
25	16000	6400		165	66	147	59

1) Please note the low weight of the runner block.

2) Determination of the dynamic load capacities and moments is based on a travel life of 100,000 m. Often only 50,000 m are actually stipulated.
For comparison: Multiply values C, M_t and M_L from the table by 1.26.

eLINE Ball Runner Blocks

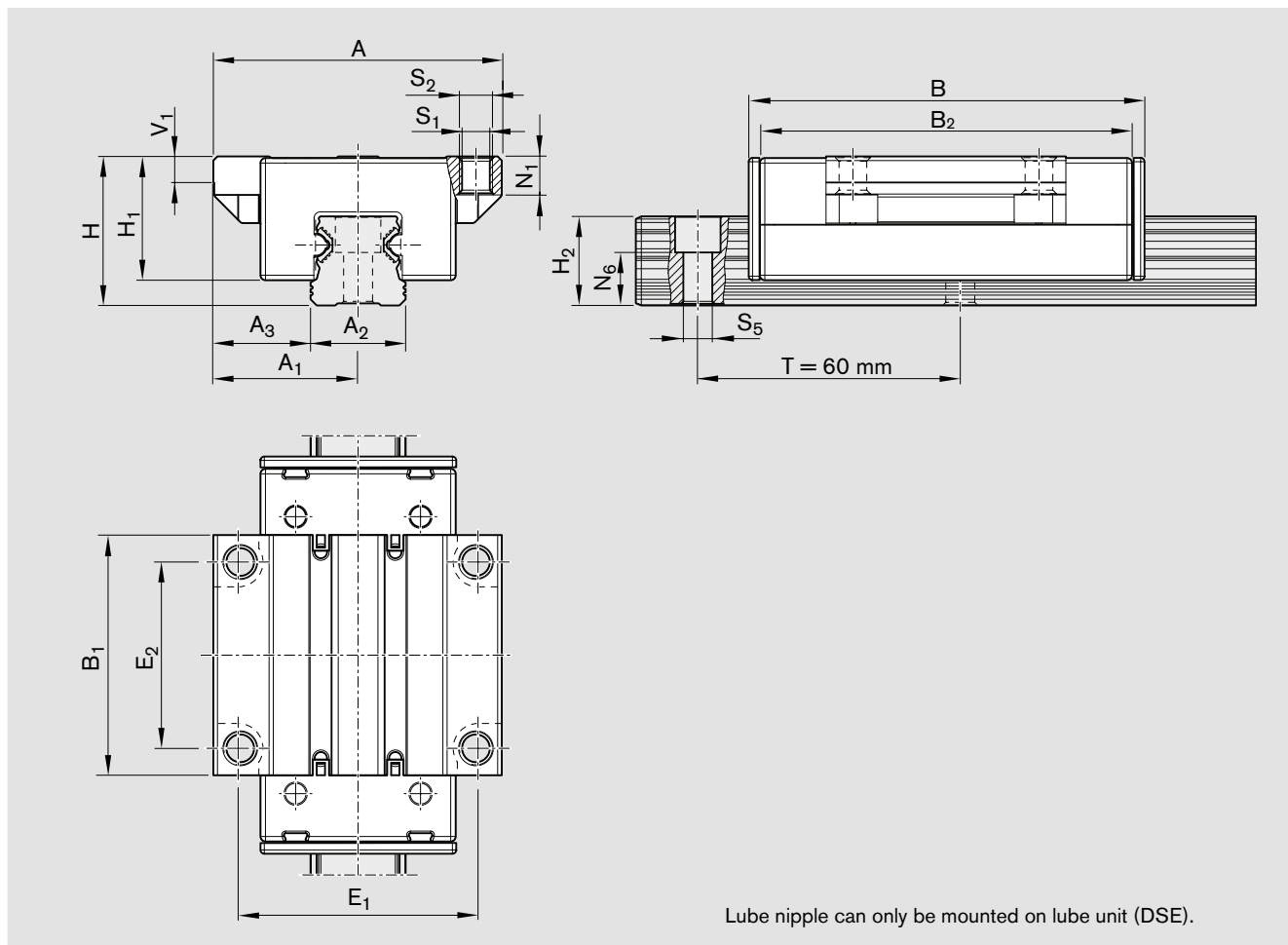
Ball runner block
FNN R2033
Flanged, normal, low profile

- Runner block body made from wrought aluminum alloy
- Hardened steel running tracks
- Steel balls per DIN 5401
- With Seal Unit (DE)
- Initial greasing with Dynalub 510

- Lubrication concept 



Size	Accuracy class	Part numbers	
		C0	C1
25	N	R2033 294 10	R2033 214 10
	E	R2033 295 10	-



Size	Dimensions (mm)																		Weight ¹⁾ (kg)
	A	A ₁	A ₂	A ₃	B	B ₁	B ₂	H	H ₁	H ₂	V ₁	E ₁	E ₂	N ₁	N ₆ ^{±0.5}	S ₁	S ₂	S ₅	
25	73	36.5	23	25	96.0	58.0	90.0	33	26.9	21.8	6.4	60	35	9.3	12.9	6.7	M8	7.0	0.24

Load capacities ²⁾ (N)			Moments (Nm)			
Size	C	F _{max}	M _t	M _{tmax}	M _L	M _{Lmax}
25	16000	6400	165	66	147	59

1) Please note the low weight of the runner block.

2) Determination of the dynamic load capacities and moments is based on a travel life of 100,000 m. Often only 50,000 m are actually stipulated.
For comparison: Multiply values C, M_t and M_L from the table by 1.26.

eLINE Ball Runner Blocks

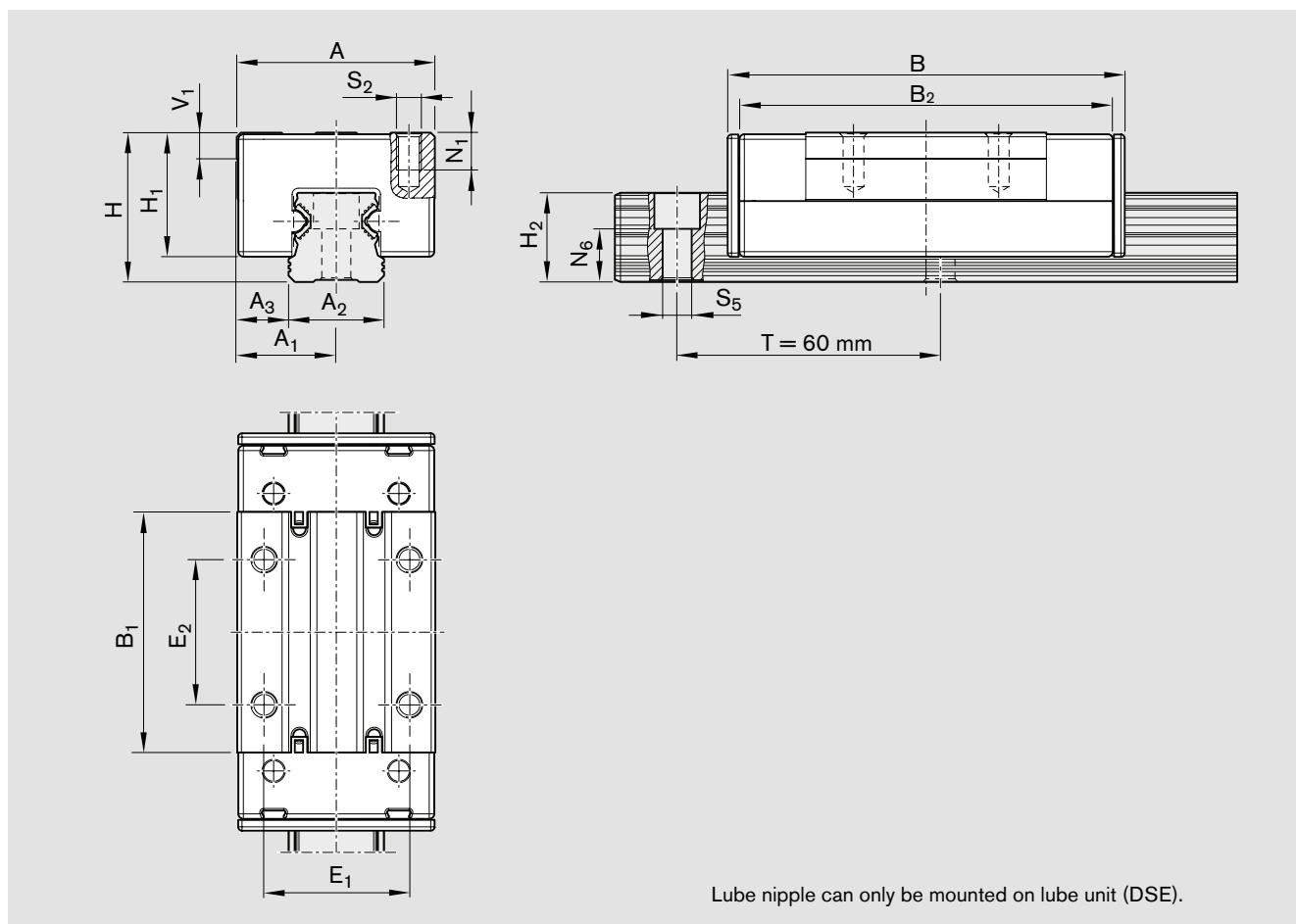
Ball runner block
SNN R2034
Slimline, normal, low profile

- Runner block body made from wrought aluminum alloy
- Hardened steel running tracks
- Steel balls per DIN 5401
- With Seal Unit (DE)
- Initial greasing with Dynalub 510

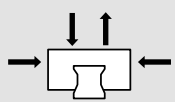
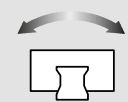
- Lubrication concept 



Size	Accuracy class	Part numbers	
		C0	C1
25	N	R2034 294 10	R2034 214 10
	E	R2034 295 10	-



Size	Dimensions (mm)																Weight ¹⁾	
	A	A ₁	A ₂	A ₃	B	B ₁	B ₂	H	H ₁	H ₂	V ₁	E ₁	E ₂	N ₁	N ₆ ^{±0.5}	S ₂	S ₅	(kg)
25	48	24	23	12.5	96.0	58.0	90.0	33	26.9	21.8	6.4	35	35	9.0	12.9	M6	7.0	0.20

Load capacities ²⁾ (N)			Moments (Nm)			
						
Size	C	F _{max}	M _t	M _{tmax}	M _L	M _{Lmax}
25	16000	6400	165	66	147	59

1) Please note the low weight of the runner block.

2) Determination of the dynamic load capacities and moments is based on a travel life of 100,000 m. Often only 50,000 m are actually stipulated.
For comparison: Multiply values C, M_t and M_L from the table by 1.26.

eLINE Cam Roller Runner Blocks, Corrosion-Resistant

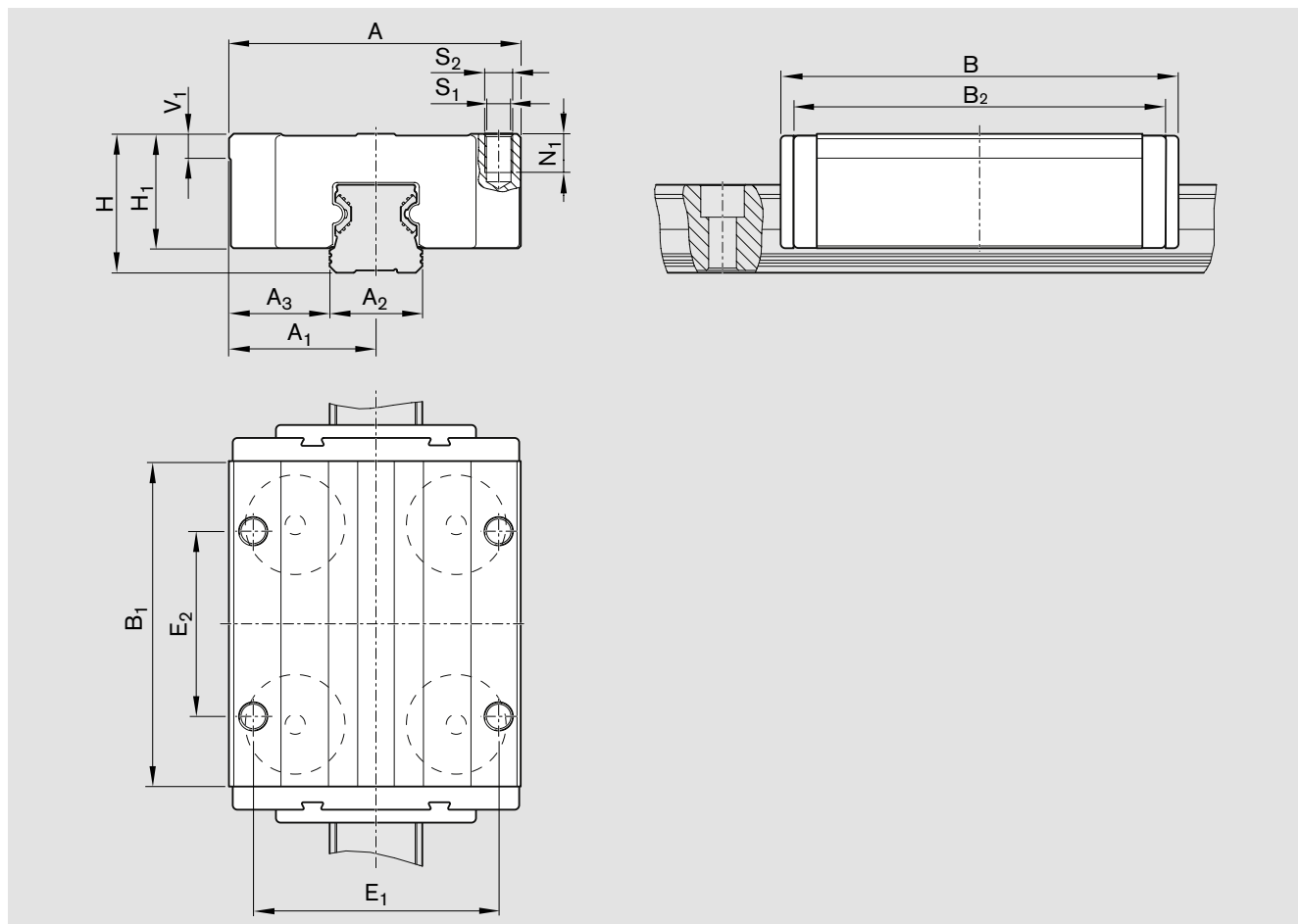
Cam Roller Runner Blocks, standard R2041

- Travel speed up to 12 m/s
- Runner block body made from wrought aluminum alloy
- 4 corrosion-resistant cam rollers per EN 10088
- With Seal Unit (DE)
- Same dimensions and mounting hole pattern as ball runner block R 2031
- Lube unit with sealing function DSE as an option
- Can be used on all eLINE guide rails of corresponding size
- Reference edge for precise alignment

- Lubrication concept 



Size	Accuracy class	Part numbers C1
15	E	R2041 115 10
20	E	R2041 815 10
25	E	R2041 215 10



Size	Dimensions (mm)															Weight ¹⁾ (kg)
	A	A ₁	A ₂	A ₃	B	B ₁	B ₂	H	H ₁	V ₁	E ₁	E ₂	N ₁	S ₁	S ₂	
15	47	23.5	15	16.0	64.0	51.0	59.0	24	19.8	3.3	38	30	8.0	4.3	M5	0.11
20	63	31.5	20	21.5	85.9	70.3	80.3	30	24.7	4.7	53	40	8.0	5.3	M6	0.24
25	70	35.0	23	23.5	96.0	78.0	90.0	36	29.9	5.6	57	45	12.0	6.7	M8	0.33

Size	Load capacities ²⁾ (N)					Moments (Nm)			
	C	F _y max / F _{y0} max	F _z max	F _{z0} max		M _t	M _t max	M _L	M _L max
15	940	320	120	200		7	1.1	11.5	1.8
20	2620	800	440	735		24	3.6	42	6.2
25	2700	800	440	735		28	3.9	50	7.2

1) Please note the low weight of the runner block.

2) Determination of the dynamic load capacities and moments is based on a travel life of 100,000 m. Often only 50,000 m are actually stipulated. For comparison: Multiply values C, M_t and M_L from the table by 1.26.

eLINE Cam Roller Runner Blocks, Corrosion-Resistant

Cam Roller Runner Blocks, short R2042

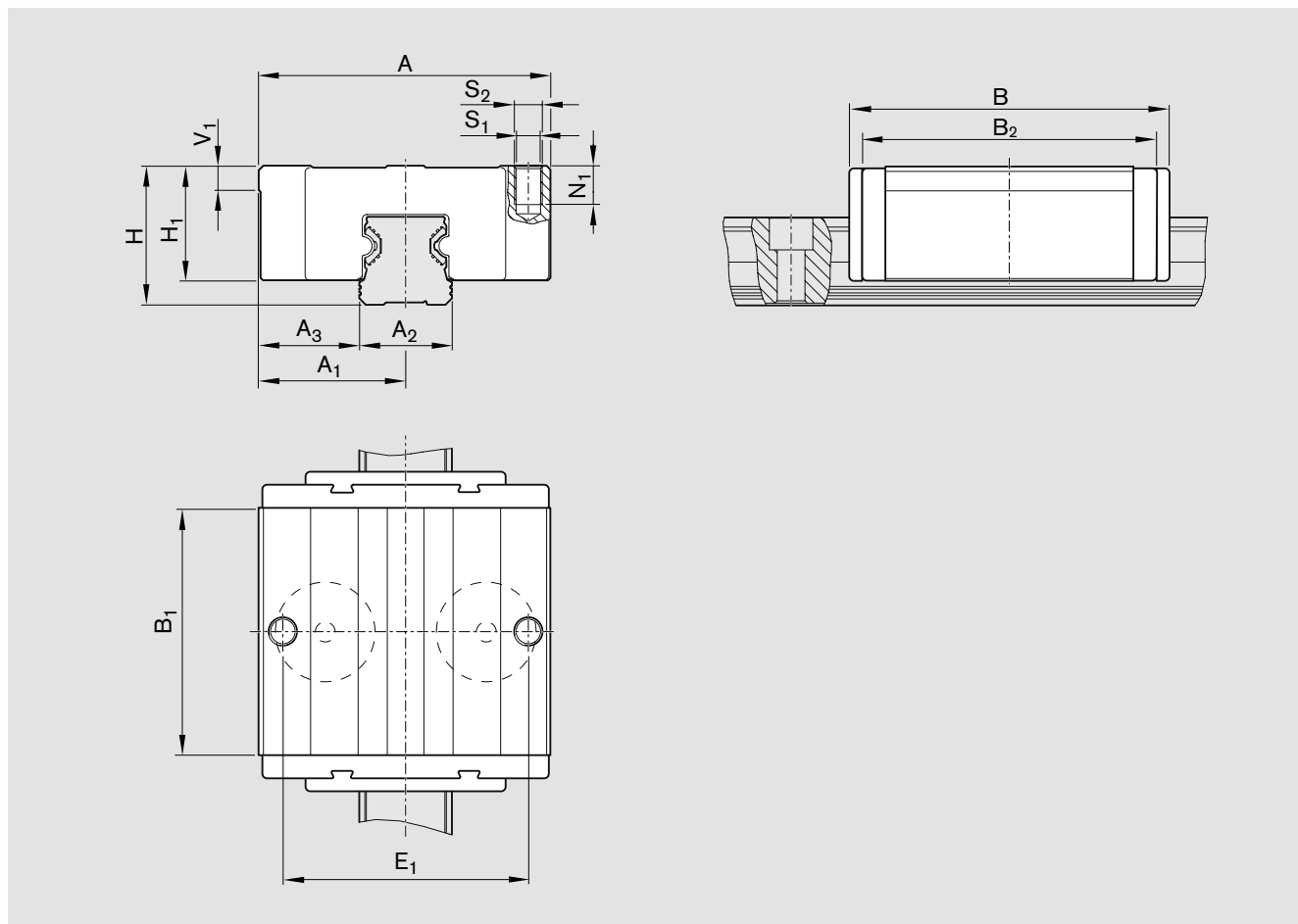
Requires at least 2 cam roller runner blocks per guide rail.

- Travel speed up to 12 m/s
- Runner block body made from wrought aluminum alloy
- 2 corrosion-resistant cam rollers per EN 10088
- With Seal Unit (DE)
- Lube unit with sealing function DSE as an option
- Can be used on all eLINE guide rails of corresponding size
- Reference edge for precise alignment
- Especially suited for guidance using two rails

- Lubrication concept



Size	Accuracy class	Part numbers C1
15	E	R2042 115 10
20	E	R2042 815 10
25	E	R2042 215 10



Size	Dimensions (mm)														Weight ¹⁾ (kg)
	A	A ₁	A ₂	A ₃	B	B ₁	B ₂	H	H ₁	V ₁	E ₁	N ₁	S ₁	S ₂	
15	47	23.5	15	16.0	49.7	36.7	44.7	24	19.8	3.3	38	8.0	4.3	M5	0.08
20	63	31.5	20	21.5	62.9	47.3	57.3	30	24.7	4.7	53	8.0	5.3	M6	0.16
25	70	35.0	23	23.5	73.0	55.0	67.0	36	29.9	5.6	57	12.0	6.7	M8	0.23

Size	Load capacities ²⁾ (N)			Moments (Nm)	
	C	F _{y0max}	F _{z0max}	M _t	M _{tmax}
15	470	160	100	3.5	0.5
20	1310	400	365	12	1.8
25	1350	400	365	14	2

1) Please note the low weight of the runner block.

2) Determination of the dynamic load capacities and moments is based on a travel life of 100,000 m. Often only 50,000 m are actually stipulated. For comparison: Multiply values C, M_t and M_L from the table by 1.26.

eLINE Guide Rails

Guide rails for mounting from above R2035

With plastic mounting hole plugs
(provided)

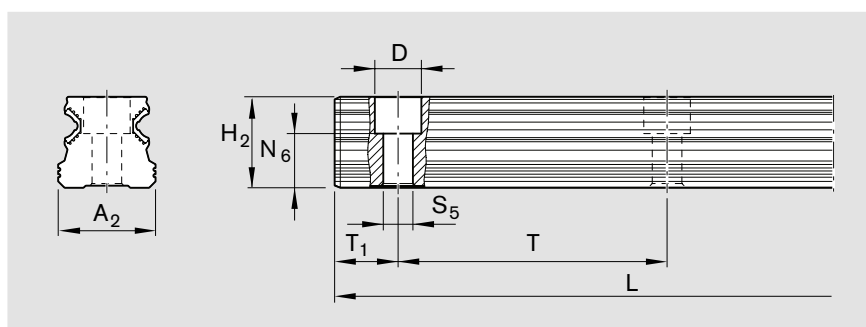
- For ball and cam roller runner blocks
- Rail body made from wrought aluminum alloy, anodized
- Running tracks made from hardened antifriction bearing steel



Part numbers and rail lengths

Size	Accuracy class	Part numbers		Recommended rail length, one-piece	Spacing T (mm)	Number of holes n_B /Rail length L (mm)					
		One-piece Rail length L (mm)	Composite Number of sections, Rail length L (mm)								
15	N	R2035 104 31,....	R2035 104 3,....	60		2/80	2/90	2/100	2/116	3/176	4/236
	E	R2035 105 31,....				5/296	6/356	7/416	8/476	9/536	10/596
20	N	R2035 804 31,....	R2035 804 3,....			11/656	12/716	13/776	14/836	15/896	16/956
	E	R2035 805 31,....				17/1016	18/1076	19/1136	20/1196	21/1256	22/1316
25	N	R2035 204 31,....	R2035 204 3,....			23/1376	24/1436	25/1496	26/1556	27/1616	28/1676
	E	R2035 205 31,....				29/1736	30/1796	31/1856	32/1916	33/1976	34/2036
						35/2096	36/2156	37/2216	38/2276	39/2336	40/2396
						41/2456	42/2516	43/2576	44/2636	45/2696	46/2756
						47/2816	48/2876	49/2936	50/2996	51/3056	52/3116
						53/3176	54/3236	55/3296	56/3356	57/3416	58/3476
						59/3536	60/3596	61/3656	62/3716	63/3776	64/3836
						65/3896	66/3956	67/4016			

Dimensions and weights



Size	Dimensions (mm)									Weight ²⁾ (kg/m)
	A ₂	H ₂	N ₆ ^{±0.5}	D	S ₅	T _{1S} ^{±0.5}	T _{1min}	T	L _{max} ¹⁾	
15	15	14.0	8.1	7.4	4.4	28.0	10	60	4016	0.57
20	20	19.0	11.6	9.4	6.0	28.0	10	60	4016	0.98
25	23	21.8	12.9	11.0	7.0	28.0	10	60	4016	1.25

1) One-piece guide rails

2) Please note the low weight per meter of the guide rail.

Guide Rails for mounting from below R2037

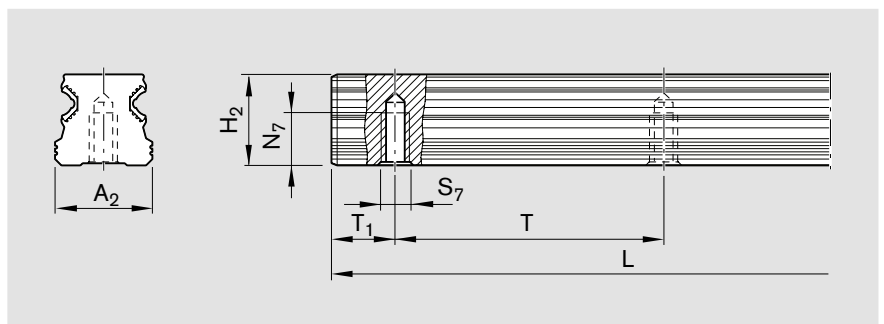
- For ball and cam roller runner blocks
- Rail body made from wrought aluminum alloy, anodized
- Running tracks made from hardened antifriction bearing steel
- Especially suitable for mounting on e.g. metal plates, plastics, or wood with through-holes



Part numbers and rail lengths

Size	Accuracy class	Part numbers		Recommended rail length, one-piece						
		One-piece Rail length L (mm)	Composite Number of sections, Rail length L (mm)	Spacing T (mm)	Number of holes n _B /Rail length L (mm)					
15	N	R2037 104 31,....	R2037 104 3,....	60	2/80	2/90	2/100	2/116	3/176	4/236
	E	R2037 105 31,....			5/296	6/356	7/416	8/476	9/536	10/596
20	N	R2037 804 31,....	R2037 804 3,....		11/656	12/716	13/776	14/836	15/896	16/956
	E	R2037 805 31,....			17/1016	18/1076	19/1136	20/1196	21/1256	22/1316
25	N	R2037 204 31,....	R2037 204 3,....		23/1376	24/1436	25/1496	26/1556	27/1616	28/1676
	E	R2037 205 31,....			29/1736	30/1796	31/1856	32/1916	33/1976	34/2036
					35/2096	36/2156	37/2216	38/2276	39/2336	40/2396
					41/2456	42/2516	43/2576	44/2636	45/2696	46/2756
					47/2816	48/2876	49/2936	50/2996	51/3056	52/3116
					53/3176	54/3236	55/3296	56/3356	57/3416	58/3476
					59/3536	60/3596	61/3656	62/3716	63/3776	64/3836
					65/3896	66/3956	67/4016			

Dimensions and weights



Size	Dimensions (mm)								Weight ²⁾ (kg/m)
	A ₂	H ₂	N ₇	S ₇	T _{1S} ^{±0.5}	T _{1min}	T	L _{max} ¹⁾	
15	15	14.0	7.5	M5	28.0	10	60	4016	0.57
20	20	19.0	9.0	M6	28.0	10	60	4016	0.98
25	23	21.8	12.0	M6	28.0	10	60	4016	1.25

1) One-piece guide rails

2) Please note the low weight per meter of the guide rail.

eLINE Guide Rails, Corrosion-Resistant

Guide Rails corrosion-resistant, for mounting from above R2035

With plastic mounting hole plugs
(provided)

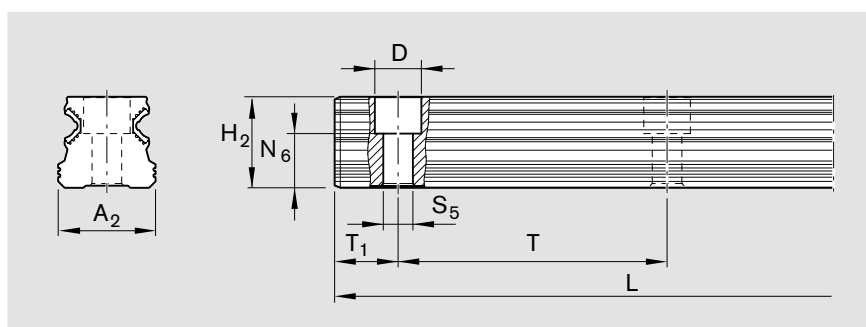
- For ball and cam roller runner blocks
- Rail body made from wrought aluminum alloy, anodized
- Running tracks made from hardened corrosion-resistant antifriction bearing steel per EN 10088



Part numbers and rail lengths

Size	Accuracy class	Part numbers		Recommended rail length, one-piece Spacing T (mm)	Number of holes n_B /Rail length L (mm)					
		One-piece Rail length L (mm)	Composite Number of sections, Rail length L (mm)							
15	N	R2035 124 31,....	R2035 124 3,....	60	2/80	2/90	2/100	2/116	3/176	4/236
	E	R2035 125 31,....			5/296	6/356	7/416	8/476	9/536	10/596
20	N	R2035 824 31,....	R2035 824 3,....		11/656	12/716	13/776	14/836	15/896	16/956
	E	R2035 825 31,....			17/1016	18/1076	19/1136	20/1196	21/1256	22/1316
25	N	R2035 224 31,....	R2035 224 3,....		23/1376	24/1436	25/1496	26/1556	27/1616	28/1676
	E	R2035 225 31,....			29/1736	30/1796	31/1856	32/1916	33/1976	34/2036
					35/2096	36/2156	37/2216	38/2276	39/2336	40/2396
					41/2456	42/2516	43/2576	44/2636	45/2696	46/2756
					47/2816	48/2876	49/2936	50/2996	51/3056	52/3116
					53/3176	54/3236	55/3296	56/3356	57/3416	58/3476
					59/3536	60/3596	61/3656	62/3716	63/3776	64/3836
					65/3896	66/3956	67/4016			

Dimensions and weights



Size	Dimensions (mm)									Weight ²⁾ (kg/m)
	A ₂	H ₂	N ₆ ^{±0.5}	D	S ₅	T _{1S} ^{±0.5}	T _{1min}	T	L _{max} ¹⁾	
15	15	14.0	8.1	7.4	4.4	28.0	10	60	4016	0.57
20	20	19.0	11.6	9.4	6.0	28.0	10	60	4016	0.98
25	23	21.8	12.9	11.0	7.0	28.0	10	60	4016	1.25

1) One-piece guide rails

2) Please note the low weight per meter of the guide rail.

Guide Rails corrosion-resistant, for mounting from below R2037

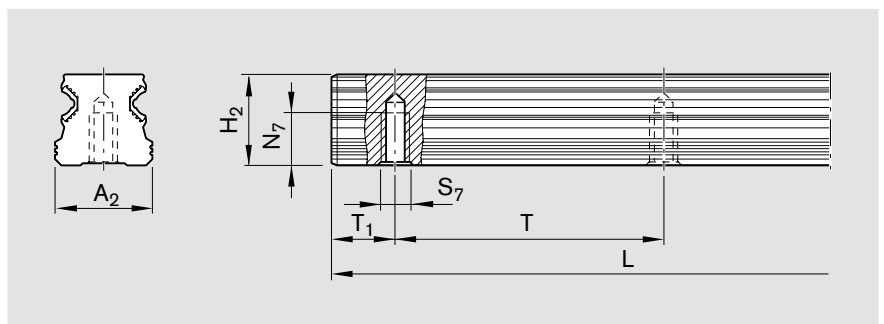
- For ball and cam roller runner blocks
- Rail body made from wrought aluminum alloy, anodized
- Running tracks made from hardened corrosion-resistant antifriction bearing steel per EN 10088
- Especially suitable for mounting on e.g. metal plates, plastics, or wood with through-holes



Part numbers and rail lengths

Size	Accuracy class	Part numbers		Recommended rail length, one-piece						
		One-piece Rail length L (mm)	Composite Number of sections, Rail length L (mm)	Spacing T (mm)	Number of holes n _B /Rail length L (mm)					
15	N	R2037 124 31,....	R2037 124 3,....	60	2/80	2/90	2/100	2/116	3/176	4/236
	E	R2037 125 31,....			5/296	6/356	7/416	8/476	9/536	10/596
20	N	R2037 824 31,....	R2037 824 3,....		11/656	12/716	13/776	14/836	15/896	16/956
	E	R2037 825 31,....			17/1016	18/1076	19/1136	20/1196	21/1256	22/1316
25	N	R2037 224 31,....	R2037 224 3,....		23/1376	24/1436	25/1496	26/1556	27/1616	28/1676
	E	R2037 225 31,....			29/1736	30/1796	31/1856	32/1916	33/1976	34/2036
					35/2096	36/2156	37/2216	38/2276	39/2336	40/2396
					41/2456	42/2516	43/2576	44/2636	45/2696	46/2756
					47/2816	48/2876	49/2936	50/2996	51/3056	52/3116
					53/3176	54/3236	55/3296	56/3356	57/3416	58/3476
					59/3536	60/3596	61/3656	62/3716	63/3776	64/3836
					65/3896	66/3956	67/4016			

Dimensions and weights



Size	Dimensions (mm)								Weight ²⁾ (kg/m)
	A ₂	H ₂	N ₇	S ₇	T _{1S} ^{±0.5}	T _{1min}	T	L _{max} ¹⁾	
15	15	14.0	7.5	M5	28.0	10	60	4016	0.57
20	20	19.0	9.0	M6	28.0	10	60	4016	0.98
25	23	21.8	12.0	M6	28.0	10	60	4016	1.25

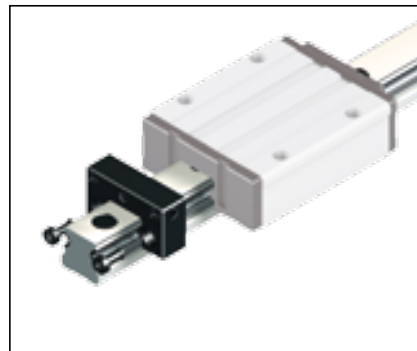
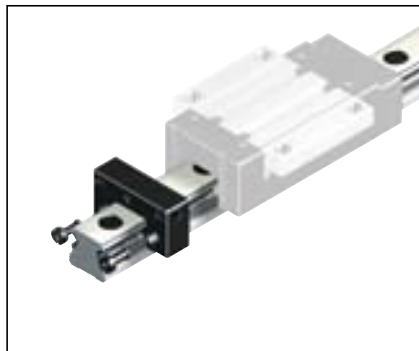
1) One-piece guide rails

2) Please note the low weight per meter of the guide rail.

Accessories

Lube unit with sealing function DSE

- For ball and cam roller runner blocks
- Material: special polymer
- Acts as an end seal
- Relubricatable

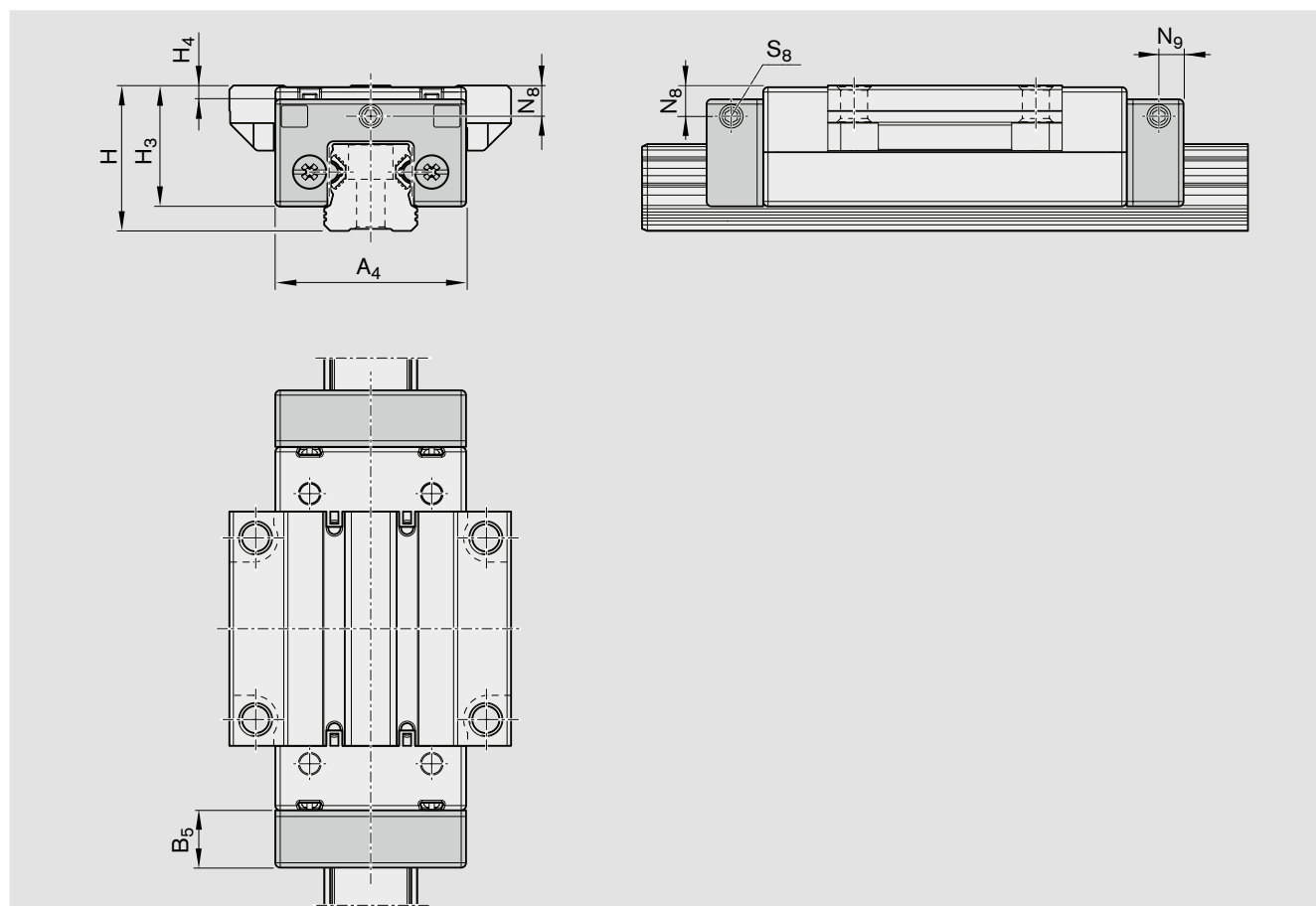


Mounting instructions:

⚠ Before mounting the DSE, remove the seal unit by pulling it upward.

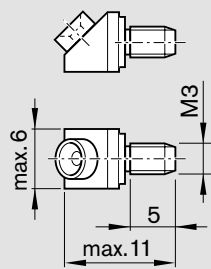
The required fastening elements are supplied along with the unit.
Please order the lube nipple separately.
The lube units are prefilled with ISO VG 1000 oil and therefore ready for mounting.

- Push the lube unit onto the guide rail and fasten it to the runner block.

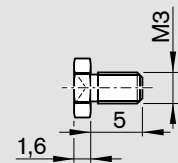


Size	Part number	Dimensions (mm)								Oil (cm ³)
		A ₄	B ₅	H	H ₃	H ₄	N ₈	N ₉	S ₈	
15	R2030 125 00	31.7	11.5	24	19.4	0.4	4.5	5.0	M3	0.65
20	R2030 825 00	43.2	13.0	30	24.3	0.4	5.0	5.0	M6	1.35
25	R2030 226 00	47.2	14.0	36	30.0	3.4	7.6	6.1	M6	1.7

Funnel-type lube nipple for size 15



Part number
R3417 004 09

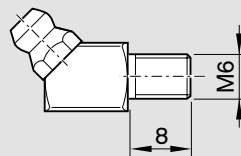


Part number
R3417 029 09

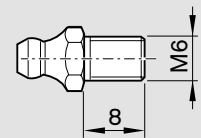
Hydraulic-type lube nipple for size 20 and 25

Notes for mounting:

The lube nipples can only be mounted on the lube unit DSE.



Part number
R3417 007 02



Part number
R3417 008 02

Seal unit DE

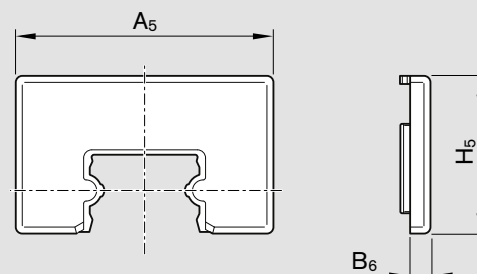
- For ball and cam roller runner blocks
- All eLINE runner blocks are delivered with ready-mounted seal units
- Pre-oiled before shipment

Material: POM

Notes for mounting:

⚠ The seal unit cannot be mounted when the runner block is on the guide rail.

- Remove old seals by pulling them upward.
- Slide the seal unit (1) from above into the grooves on the end face of the runner block.
- Mount the runner block, pushing it off the mounting arbor (2) and onto the guide rail. The seal unit will align itself vertically relative to the guide rail.



Size	Part number	Dimensions (mm)			Quantity per pack
		A ₅	B ₆	H ₅	
15	R2030 110 00	31.7	2.5	19.4	20
20	R2030 810 00	43.2	2.8	24.3	
25	R2030 211 00	47.2	3.0	26.5	

Accessories

Cam roller with spigot

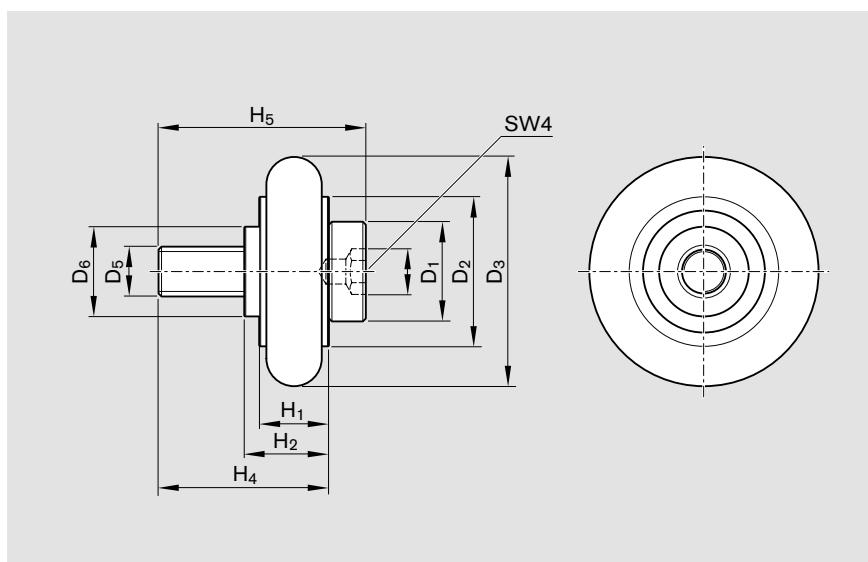
Cam rollers with central spigots R2040

For mounting customer-built carriages, with central spigot for zero clearance adjustment to the guide rail.
For applications where even the versatile standard range does not offer the optimum solution to your problem.

- Travel speed up to 12 m/s
- Corrosion-resistant cam rollers per EN 10088



Size	Part number	Load capacities (N)				Max. permissible loads (N)			
		Radial load		Axial load		Radial	Axial		
		C	C ₀	C	C ₀	F _{max}	F _{0max}		
15	R2040 100 00	470	275	235	138	160	30		
20	R2040 800 00	1310	750	655	375	400	110		
25	R2040 200 00	1340	750	670	375	400	110		



Size	Dimensions (mm)										Weight (g)
	D ₁	D ₂	D ₃	D ₅	D ₆	H ₁	H ₂	H ₄	H ₅	SW4	
15	8	11	15	M4	6.2	5	6	13.9	16.5	3	9
20	10	15	21.5	M5	9	7	8.5	16.0	19.5	4	19
25	10	15	23	M5	9	7	8.5	16.0	19.5	4	20

SW = width across flats (WAF)

Cam rollers with eccentric spigot R2040

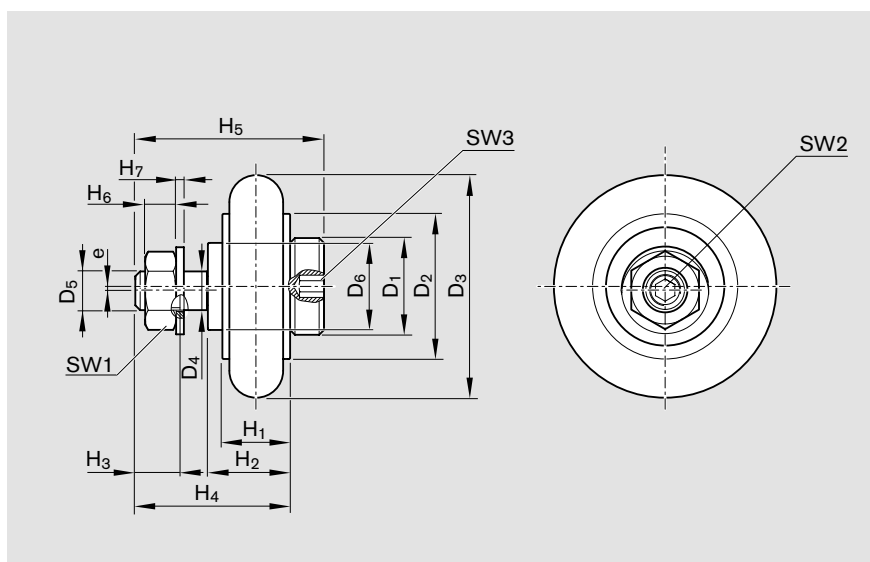
For mounting customer-built carriages, with eccentric spigot for zero clearance adjustment to the guide rail.
For applications where even the versatile standard range does not offer the optimum solution to your problem.

- Travel speed up to 12 m/s
- Corrosion-resistant cam rollers per EN 10088

Nut and washer included in the delivery.



Size	Part number	Load capacities (N)				Max. permissible loads (N)		
		Radial load		Axial load		Radial	Axial	
		C	C ₀	C	C ₀	F _{max}	F _{0max}	
15	R2040 100 01	470	275	235	138	160	30	
20	R2040 800 01	1310	750	655	375	400	110	
25	R2040 200 01	1340	750	670	375	400	110	



Size	Dimensions (mm)																	Weight g
	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	H ₁	H ₂	H ₃	H ₄	H ₅	H ₆	H ₇	SW1	SW2	SW3	e	
15	8	11	15	2.95	M3	6.2	5	6	6.0	13.9	16.5	2.4	0.5	5.5	1.5	2	0.45	9
20	10	15	21.5	4	M4	9	7	8.5	4.6	16.0	19.5	3.2	0.8	7	2	4	0.45	19
25	10	15	23	4	M4	9	7	8.5	4.6	16.0	19.5	3.2	0.8	7	2	4	0.45	20

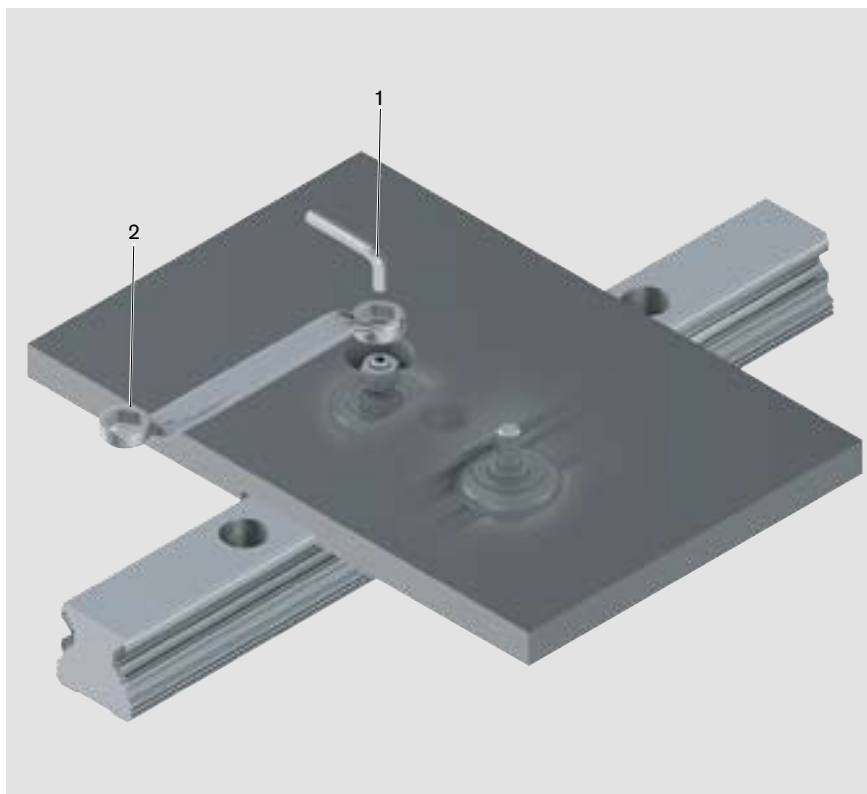
SW = width across flats (WAF)

Accessories

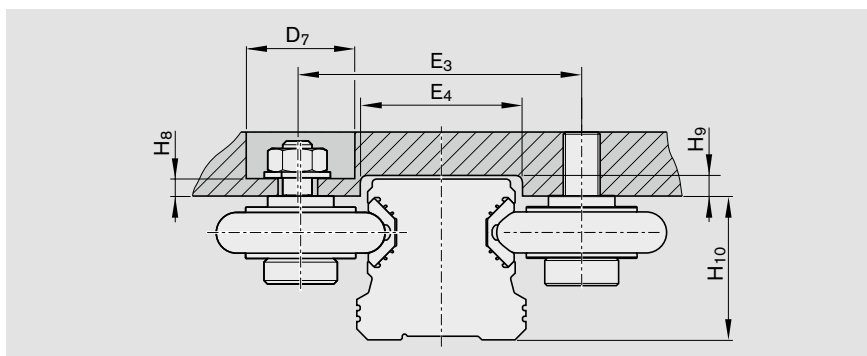
Notes for mounting

- Using an Allen key (1), adjust cam rollers with eccentric spigot until you can feel that zero clearance has been reached.
- Tighten the hex nut to torque (see table for torque values) using a hex wrench (2), while using an Allen key (1) to prevent the spigot from turning.

Size	$M_{\max}$ (Nm)
15	1.5
20	2.0
25	2.0



Mounting example

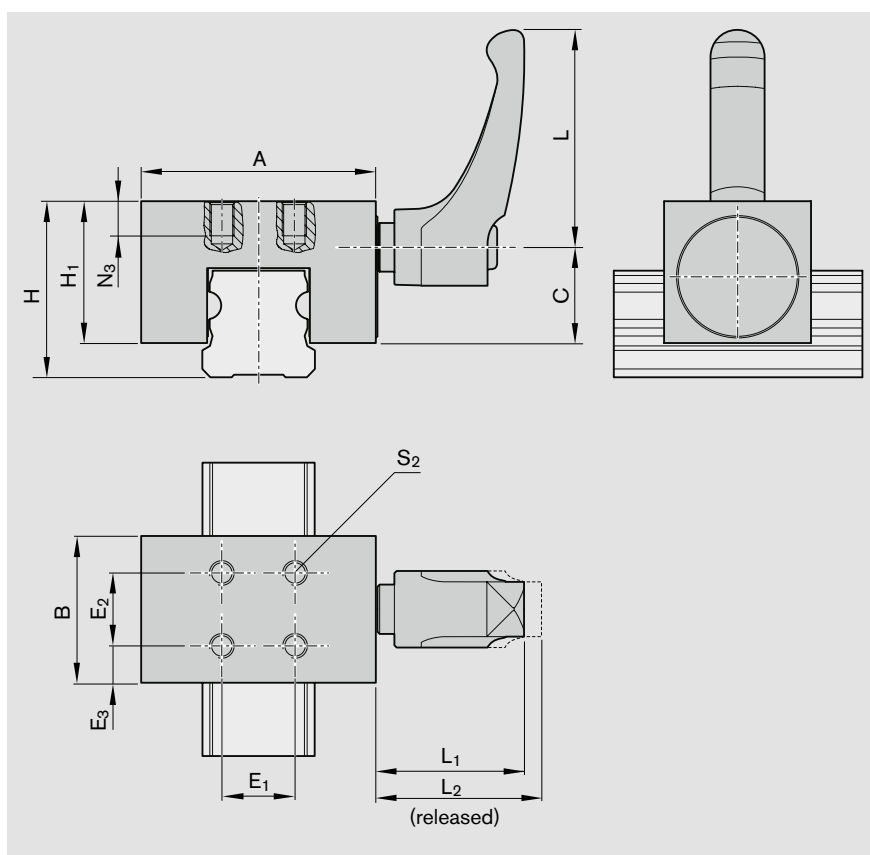


Size	Dimensions (mm)					
	$E_3 \pm 0.2$	$E_4 \pm 0.2$	D_7	H_8	H_9	$H_{10} \pm 0.05$
15	25.65	14.4	13	4.0	2.5	13.0
20	34.65	19.7	15	3.0	3.0	17.7
25	37.80	24.2	15	3.0	4.0	19.6

Manual clamping unit HK R2030 for eLINE profiled rail systems

Matching guide rails

- R2035
- R2037



Size	Part number	Holding force	Dimensions (mm)												
			A	B	C	H	H ₁	E ₁	E ₂	E ₃	L	L ₁	L ₂	N ₃ ¹⁾	S ₂
15	R2030 142 82	130 N / 3 Nm	34	20	12.9	24	19.8	10	10	5.0	40	29.9	33.3	6	M3
20	R2030 842 82	250 N / 3 Nm	44	24	16.0	30	24.0	12	12	6.0	40	29.9	33.4	6	M4
25	R2030 242 82	330 N / 3 Nm	48	30	19.6	36	29.0	15	15	7.5	44	29.8	33.3	7	M6

1) Thread depth checked with screw

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