

NSK Linear Guides™

NH/NS Models

With high durability, a full range of interchangeable slides and rails, and support for NSK K1-L™ lubrication units for maintenance-free operation, NH/NS models offer unmatched ease of use across applications.

Patented



With NSK's latest technologies, NH/NS models define the modern standard.

NH/NS model linear guides build upon proven LH/LS models with significantly improved durability. The user-friendly lineup features interchangeable rails/slides and support for NSK K1-L lubrication units for long-term, maintenance-free operation ideal for general purpose applications.

Features of NH and NS Models

1. Excellent durability

Super-long life twice that of conventional models

NH/NS models achieve a load rating 1.3x greater and a lifespan 2x longer than conventional LH/LS linear guides*1. This expands design options, allowing machines to have a longer life and for equipment downsizing.

*1: Based on representative values for the lineup.

Support for maintenance-free operation

Installing the optional NSK K1-L™ lubrication unit enables the linear guide to operate for a long period without maintenance. Proven in a wide range of fields, the K1-L unit helps to both save maintenance costs and protect the environment.

What is the NSK K1-L™ lubrication unit?

The NSK K1-L unit features a porous resin with abundant lubricating oil. Oil gradually seeps out from the resin to supply fresh lubricant to the linear guide over a long period.

2. A user-friendly standard

Interchangeable lineup

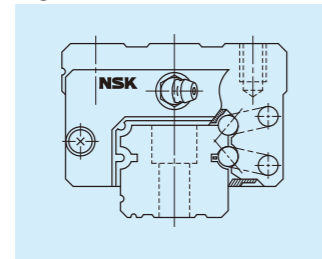
Rails and ball slides for the entire lineup can be freely matched to suit the application. Interchangeable rails and slides can be delivered quickly, all while maintaining proper accuracy and preload when combined.

Robust design that absorbs mounting errors

Thanks to a similar contact structure as DF arrangements of rolling bearings, the contact lines converge inward to reduce moment rigidity (Fig. 1).

This increases the capacity of the guides to compensate for errors in installation and makes it easy for users to mount the guides for best performance.

Fig. 1



Abundant options

With various options available, including NSK K1-L lubrication units, double seals, protectors, specialized surface treatments, and more, we can offer the configuration best suited to your needs.

Mounting dimensions identical to LH/LS models

Mounting dimensions (assembled dimensions), such as height, width, mounting hole screw diameter/pitch, etc. are the same as those of LH/LS models. As such, NH and NS models can easily be used in existing machines without design changes.

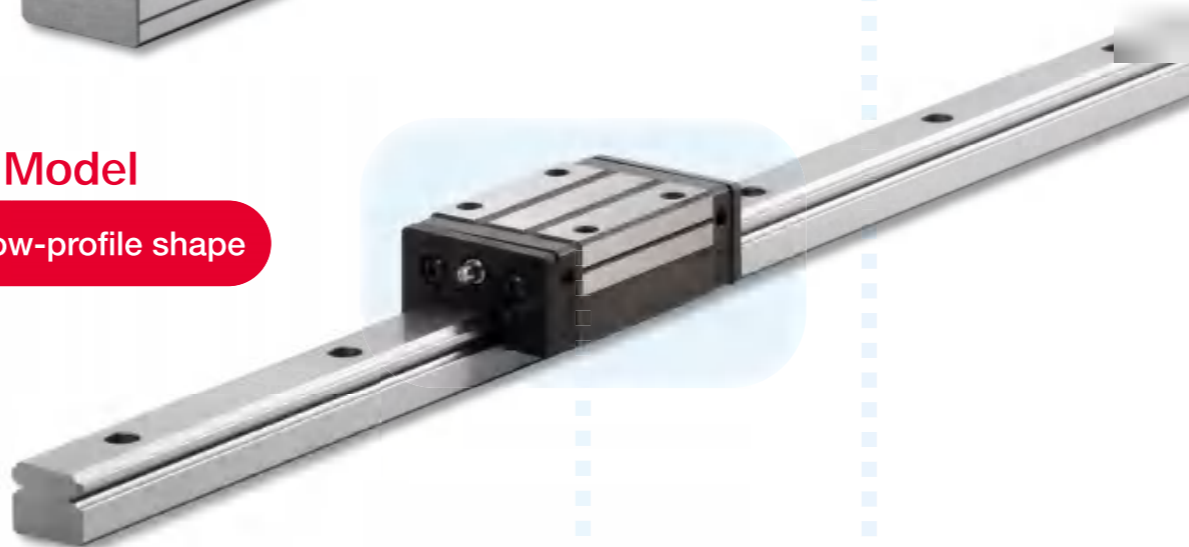
NH Model

Larger ball diameter
Larger load rating capacity



NS Model

Compact, low-profile shape

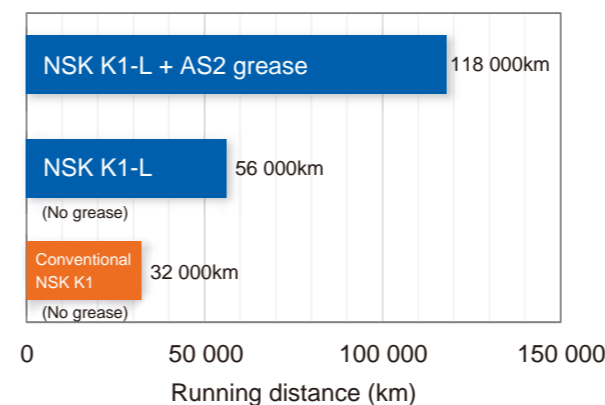


Realize extended maintenance-free operation with the optional NSK K1-L lubrication unit¹⁾

The NSK K1-L unit alone achieves a running distance over 50 000 km—nearly double that of the NSK K1. When used with an initial grease fill, the running distance soars to well over 100 000 km—all the while with no need for lubrication maintenance.²⁾

Endurance test

Model : NH25
Preload : Slight preload
Feed speed : 3.2 m/s
External load : None
Lubrication : Lubrication unit (two per slide)



Notes: 1) For details on NSK K1-L, please see the "NSK K1-L Lubrication Unit" catalog (CAT No. 3335).

2) Assuming a light load application in a normal environment. Lubrication performance is influenced significantly by the operating environment. There is no guarantee of values/performance in actual equipment.

Note that using a NSK K1-L unit alone (without grease or oil) is not possible in normal operation.

Standard linear guides produced through state-of-the-art technology

NH/NS models are based on LH/LS models, a lineup with an excellent track record across applications since their debut in 1989. As a standard lineup, NH/NS linear guides are the focal point for NSK's newest design and manufacturing technologies.

Reliable and proven LH/LS models

+

NSK's state-of-the-art design/manufacturing technologies

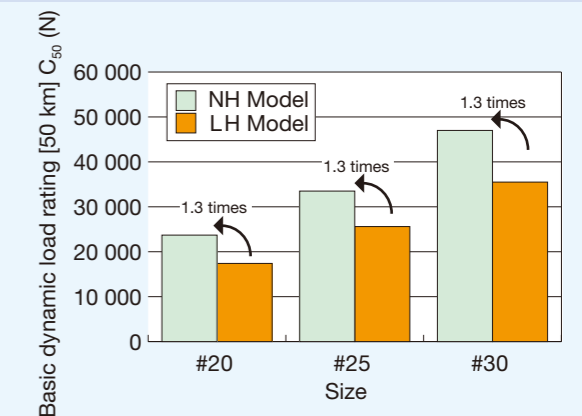
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New standard linear guides:
NH and NS models

Long-life ball groove geometry

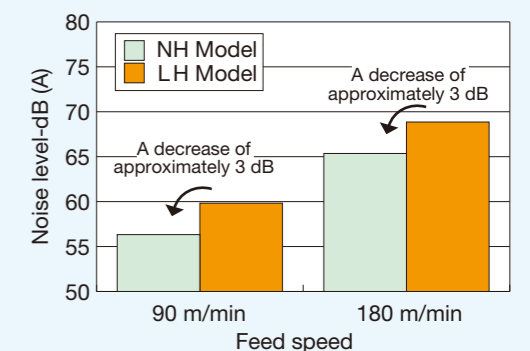
A ball groove geometry developed with NSK's exclusive tribology and analysis technologies optimizes the distribution of contact surface pressure, dramatically increasing rating life. Compared to LH/LS models, NH/NS models offer 1.3x the load rating capacity and double the life*1.

*1: Based on representative values for the lineup.



Low noise at high speeds

We achieved smoother ball circulation and reduced noise by refining the design of the ball circulation path, making NH/NS models well-suited to high-speed applications.



*Measurement results obtained from a size #25 linear guide alone.

Microphone position: 500 mm above the top of the specimen.

The noise level varies depending on the microphone position.

Specifications

1. Ball Slide Shape

- Two types of ball slides are available: A square type with tapped holes and a flanged type for mounting.
- A compact, low-profile square model is also available.
- Flanged types with mounting holes may be mounted from either the top or bottom. The holes consist of a tapped section used for fixing the ball slide from the top and a minor diameter section for bolt hole mounting from the bottom.
- Three ball slide lengths are available: standard/high load, long/super-high load, and short/medium load. The ball slide length you can use differs depending on the type. Please refer to the dimension tables for details.

Fig. 2 Ball slide shape

Ball slide shape code	Shape/installation method	Type (Upper row: Rating; Lower row: Ball slide length)		
		High-load Standard	Super-high-load Long	Medium-load Short
AN BN		AN 	BN 	
AL BL CL		AL 	BL 	CL
EM GM JM		EM 	GM 	JM

2. Maximum Rail Length

- Table 1 shows the limitations of rail length (maximum length).
- Depending on the required accuracy grade, the available maximum rail length might be shorter than shown in Table 1.

Table 1 Length limitations of rails

Model	Material	Size	Unit: mm							
			15	20	25	30	35	45	55	65
NH	Special high carbon steel		2 980	3 960	3 960	4 000	4 000	3 990	3 960	3 900
	Stainless steel		1 800	3 500	3 500	3 500				
NS	Special high carbon steel		2 920	3 960	3 960	4 000	4 000			
	Stainless steel		1 800	3 500	3 500	3 500	3 500			

Note: Rails can be butted if user requirements exceed the rail length shown in the table. Please consult NSK for details.

3. Accuracy

- The preloaded assembly has five accuracy grades; Ultra precision P3, Super precision P4, High precision P5, Precision P6 and Normal PN grades, while the interchangeable type has High precision PH and Normal PC grades.

Table 2 Tolerance of preloaded assembly

Characteristics	Accuracy grade	Ultra precision P3	Super precision P4	High precision P5	Precision grade P6	Normal grade PN
		Mounting height H Variation of H (All ball slides on a set of rails)	±8 3	±10 5	±20 7	±40 15
Mounting width W ₂ or W ₃ Variation of W ₂ or W ₃ (All ball slides on reference rail)	±10 3	±15 7	±25 10	±50 20	±100 30	
Running parallelism of surface C to surface A Running parallelism of surface D to surface B		Refer to Fig. 3 and Table 4.				

Unit: μm

Table 3 Tolerance of interchangeable type

Characteristics	Accuracy grade	High precision grade PH		Normal grade PC		
		Model No.	NH15,20,25,30,35 NS15,20,25,30,35	NH45,55,65	NH15,20,25,30,35 NS15,20,25,30,35	NH45,55,65
Mounting height H			±20	±30	±20	±30
Variation of mounting height H			15	20	15	20
Mounting width W ₂ or W ₃			±30	±35	±30	±35
Variation of mounting width W ₂ or W ₃			20	20	25	30
Running parallelism of surface C to surface A Running parallelism of surface D to surface B		Refer to Fig. 3 and Table 4.				

Unit: μm

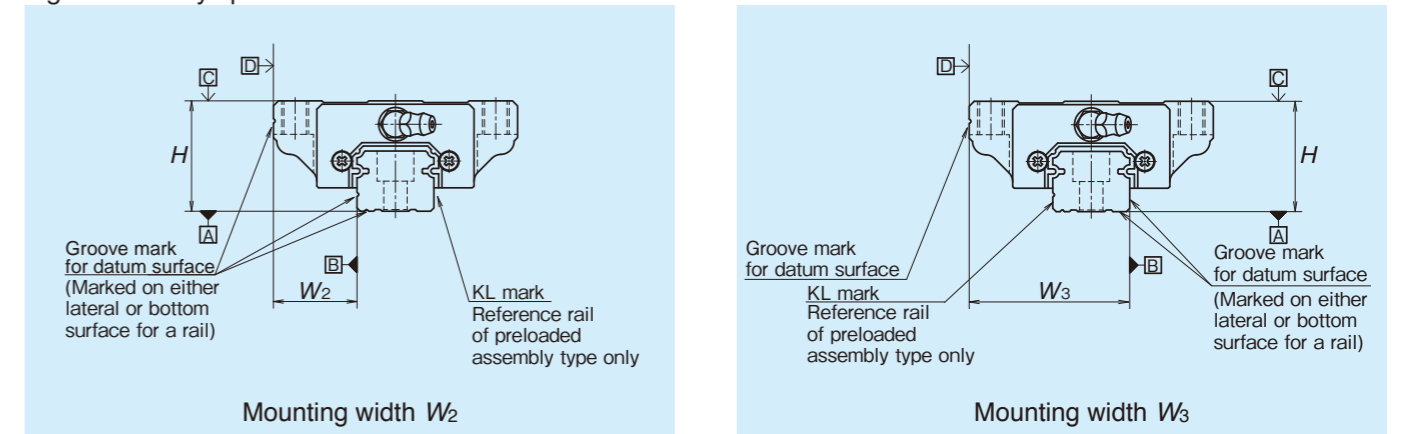
Note: Variation in interchangeable types refers to the variation among values taken at the same position on the same rail.

Table 4 Running parallelism of ball slide

Rail length (mm)	Preloaded assembly					Interchangeable type	
	Ultra precision P3	Super precision P4	High precision P5	Precision grade P6	Normal grade PN	High precision PH	Normal grade PC
Over - 50 or less	2	2	2	4	5	2	5
50 - 80	2	2	3	4	5	3	5
80 - 125	2	2	3	4	5	3	5
125 - 200	2	2	3.5	5	6	3.5	6
200 - 250	2	2.5	4.5	6	7.5	4.5	7.5
250 - 315	2	2.5	5	6.5	8.5	5	8.5
315 - 400	2	3	5.5	7	9.5	5.5	9.5
400 - 500	2	3	6	7.5	11	6	11
500 - 630	2	3.5	6.5	8.5	12	6.5	12
630 - 800	2	4	7	9.5	13	7	13
800 - 1 000	2.5	4.5	7.5	10	15	7.5	15
1 000 - 1 250	3	5	8.5	12	16	8.5	16
1 250 - 1 600	3.5	5.5	9.5	13	17	9.5	17
1 600 - 2 000	4	6.5	11	14	19	11	19
2 000 - 2 500	4.5	7.5	12	16	21	12	21
2 500 - 3 150	5.5	8.5	13	18	23	13	23
3 150 - 4 000	6	9.5	14	19	25	14	25

Unit: μm

Fig. 3 Accuracy specifications



4. Preload and Rigidity

- Slight preload Z1, Medium preload Z3, and Fine clearance Z0 are available for preloaded types, while interchangeable types offer Medium preload ZH, Slight preload ZZ, and Fine clearance ZT.
- Possible combinations of accuracy and preload grades are shown in Table 9.

Table 5 Preload and rigidity of preloaded assembly (1) NH Model

Model No.	Preload (N)		Rigidity (N/μm)			
			Vertical direction		Lateral direction	
	Slight preload Z1	Medium preload Z3	Slight preload Z1	Medium preload Z3	Slight preload Z1	Medium preload Z3
NH15 AN, EM	78	490	137	226	98	186
NH20 AN, EM	147	835	186	335	137	245
NH25 AL, AN, EM	196	1 270	206	380	147	284
NH30 AL, AN	245	1 570	216	400	157	294
NH30 EM	294	1 770	265	480	186	355
NH35 AL, AN, EM	390	2 350	305	560	216	390
NH45 AL, AN, EM	635	3 900	400	745	284	540
NH55 AL, AN, EM	980	5 900	490	910	345	645
NH65 AN, EM	1 470	8 900	580	1 070	400	755
NH15 BN, GM	98	685	196	345	137	284
NH20 BN, GM	196	1 080	265	480	196	355
NH25 BL, BN, GM	245	1 570	294	560	216	400
NH30 BL, BN, GM	390	2 260	360	665	265	480
NH35 BL, BN, GM	490	2 940	430	795	305	570
NH45 BL, BN, GM	785	4 800	520	960	370	695
NH55 BL, BN, GM	1 180	7 050	635	1 170	440	835
NH65 BN, GM	1 860	11 300	805	1 480	550	1 040

Note: Clearance for Fine clearance Z0 is 0 to 3 μm. Therefore, preload is zero. However, Z0 of PN grade is 0 to 15 μm.

Table 7 Preload and rigidity of preloaded assembly (2) NS Model

Model No.	Preload (N)		Rigidity (N/μm)			
			Vertical direction		Lateral direction	
	Slight preload Z1	Medium preload Z3	Slight preload Z1	Medium preload Z3	Slight preload Z1	Medium preload Z3
NS15 AL, EM	69	390	127	226	88	167
NS20 AL, EM	88	540	147	284	108	206
NS25 AL, EM	147	880	206	370	147	275
NS30 AL, EM	245	1 370	255	460	186	345
NS35 AL, EM	345	1 960	305	550	216	400
NS15 CL, JM	49	294	78	147	59	108
NS20 CL, JM	69	390	108	186	78	137
NS25 CL, JM	98	635	127	235	88	177
NS30 CL, JM	147	980	147	275	108	206
NS35 CL, JM	245	1 370	186	335	137	245

Note: Clearance for Fine clearance Z0 is 0 to 3 μm. Therefore, preload is zero. However, Z0 of PN grade is 0 to 15 μm.

Table 9 Combinations of accuracy and preload

	Accuracy grade						
	Ultra precision	Super precision	High precision	Precision grade	Normal grade	High precision	Normal grade
	P3	P4	P5	P6	PN	PH	PC
Without NSK K1-L lubrication unit	P3	P4	P5	P6	PN	PH	PC
With NSK K1-L lubrication unit	L3	L4	L5	L6	LN	LH	LC
With NSK K1 for food and medical equipment	F3	F4	F5	F6	FN	FH	FC
Preload	Fine clearance Z0	○	○	○	○	—	—
	Slight preload Z1	○	○	○	○	—	—
	Medium preload Z3	○	○	○	○	—	—
	Interchangeable type with fine clearance ZT	—	—	—	—	—	○
	Interchangeable type with slight preload ZZ	—	—	—	—	—	○
Interchangeable type with medium preload ZH	—	—	—	—	—	○	

Table 6 Clearance and preload of interchangeable type (1) NH Model

Model No.	Unit: μm		
	Fine clearance ZT	Slight preload ZZ	Medium preload ZH
NH15	-4~15	-4~0	-3~-7
NH20		-5~0	-3~-8
NH25		-5~0	-4~-9
NH30		-7~0	-5~-12
NH35	-5~15	-7~0	-5~-12
NH45		-7~0	-7~-14
NH55		-9~0	-9~-18
NH65		-9~0	-10~-19

Note: Minus sign denotes a value is an amount of preload (elastic deformation of balls).

Table 8 Clearance and preload of interchangeable type (2) NS Model

Model No.	Unit: μm		
	Fine clearance ZT	Slight preload ZZ	Medium preload ZH
NS15	-4~15	-4~0	-3~-7
NS20	-4~15	-4~0	-3~-7
NS25	-5~15	-5~0	-4~-9
NS30	-5~15	-5~0	-4~-9
NS35	-5~15	-6~0	-4~-10

Note: Minus sign denotes a value of preload (elastic deformation of balls).

5. Basic Load Rating and Rating Life

The basic load rating used to express the load capacity of linear guides is determined by ISO standards (ISO 14728-1, 14728-2). Load ratings for NSK Linear Guides are based on these ISO standards.

The basic dynamic load rating refers to a non-fluctuating load that acts on the center of the ball slide from above so that the rated fatigue life is 100 km or 50 km. When the ball slide receives only load F in a vertical direction, the slide's rated fatigue life L can be calculated using the following equation where C₁₀₀ refers to the basic dynamic load rating for 100 km rated fatigue life and C₅₀ refers to the basic dynamic load rating for 50 km rated fatigue life.

The basic static load rating refers to a static load that generates a contact stress of 4 200 MPa at the center of the contact area between the rolling element subjected to the maximum stress and the raceway surface. In this most heavily stressed contact area, the sum of the permanent deformation of the rolling element and that of the raceway is nearly 0.0001 times the rolling element's diameter.

Values for basic load ratings are listed in the dimension tables. In NH/NS models, the contact angle is set at 50 degrees, thus increasing load carrying capacity in the upward direction. Basic load ratings by direction are shown in Table 11.

- Please note that the equation used here for calculating life differs from that used for linear guides with rollers as the rolling elements.
- The load factor is expressed as f_w. Select the most suitable load factor from the values given in Table 10 according to potential vibration or impact loads on the machine onto which the linear guide will be mounted.

$$L = 100 \times \left(\frac{C_{100}}{f_w \cdot F} \right)^3 \text{ or } L = 50 \times \left(\frac{C_{50}}{f_w \cdot F} \right)^3 \text{ [km]}$$

Various loads may be applied to the linear guide (i.e., ball slide loads), including vertical, lateral, and moment loads. Sometimes, more than one type of load will be applied simultaneously or the volume and direction of the load may vary. Variable loads cannot be used for life calculations of linear guides as they are. Therefore, it is necessary to use an applied hypothetical constant load that would generate a fatigue life equivalent to the actual fatigue life. This is called the dynamic equivalent load. To calculate dynamic equivalent load, use the values provided in Table 12.

Table 12 Loads by linear guide arrangement

Pattern	Arrangement of linear guide	Loads necessary to calculate dynamic equivalent load					Dynamic equivalent load
		Load		Moment load			
		Up/down (vertical)	Right/left (lateral)	Rolling	Pitching	Yawing	
1		Fr	Fs	Mr	Mp	My	$F_r = F_r$ $F_{se} = F_s \cdot \tan \alpha$ $F_{re} = \varepsilon_r \cdot M_r$ $F_{pe} = \varepsilon_p \cdot M_p$ $F_{ye} = \varepsilon_y \cdot M_y$ α : Contact angle (=50°) Dynamic equivalent coefficients ε_r : Rolling direction ε_p : Pitching direction ε_y : Yawing direction
2		Fr	Fs	Mr			
3		Fr	Fs		Mp	My	
4		Fr	Fs				

Full dynamic equivalent load can be obtained using the proper coefficients. These formulas are determined by the relationship of load to volume.

After obtaining the dynamic equivalent coefficient in Table 9, the full dynamic equivalent load can be calculated using the appropriate equation below as determined by the magnitude of the load:

- When F_r is the largest load: $F_e = F_r + 0.5F_{se} + 0.5F_{re} + 0.5F_{pe} + 0.5F_{ye}$
- When F_{se} is the largest load: $F_e = 0.5F_r + F_{se} + 0.5F_{re} + 0.5F_{pe} + 0.5F_{ye}$
- When F_{re} is the largest load: $F_e = 0.5F_r + 0.5F_{se} + F_{re} + 0.5F_{pe} + 0.5F_{ye}$
- When F_{pe} is the largest load: $F_e = 0.5F_r + 0.5F_{se} + 0.5F_{re} + F_{pe} + 0.5F_{ye}$
- When F_{ye} is the largest load: $F_e = 0.5F_r + 0.5F_{se} + 0.5F_{re} + 0.5F_{pe} + F_{ye}$

The values for dynamic equivalent load in the formulas above should be absolute values that disregard load directions.

Table 10 Load factor f_w

Impact/vibration	Load factor
No external impact/vibration	1.0 to 1.5
There is impact/vibration from outside.	1.5 to 2.0
There is significant impact/vibration.	2.0 to 3.0

Table 11 Basic load rating by load direction

Load rating	Direction		
	Downward	Upward	Lateral
Basic dynamic load rating	C	C	0.84C
Basic static load rating	C ₀	0.78C ₀	0.65C ₀

Fig. 4 Load directions

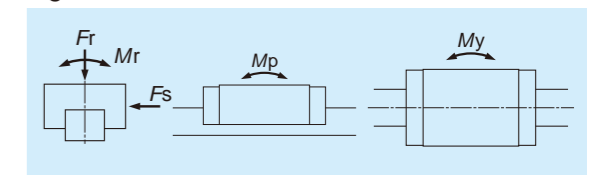


Table 13 Dynamic equivalent coefficients

Model	Dynamic equivalent coefficients (1/m)		
	ε _r	ε _p	ε _y
NH15AN, EM	188	111	132
NH15BN, GM	188	72	86
NH20AN, EM	142	81	97
NH20BN, GM	142	57	68
NH25AL, AN, EM	123	68	81
NH25BL, BN, GM	123	51	61
NH30AL, AN	98	70	83
NH30EM	98	58	69
NH30BL, BN, GM	98	44	52
NH35AL, AN, EM	78	51	61
NH35BL, BN, GM	78	36	43
NH45AL, AN, EM	60	38	45
NH45BL, BN, GM	60	30	36
NH55AL, AN, EM	51	31	37
NH55BL, BN, GM	51	25	30
NH65AN, EM	43	27	32
NH65BN, GM	43	20	24
NS15AL, EM	177	116	138
NS15CL, JM	177	174	208
NS20AL, EM	127	94	112
NS20CL, JM	127	136	162
NS25AL, EM	111	70	83
NS25CL, JM	111	108	129
NS30AL, EM	94	63	75
NS30CL, JM	94	102	121
NS35AL, EM	76	54	64
NS35CL, JM	76	87	104

6. Dust-resistant parts and Lubrication accessories

(1) Standard specification

- Under normal applications, NH/NS models can be used without modification thanks to their dust resistance. These ball slides come standard with an end seal on both ends, and bottom seals underneath.
- Table 14 shows options available for higher dust resistance. Select the options that best suit your operation environment.

Table 14 Optional parts for dust resistance

Name	Purpose
Double seal	Combines two end seals for enhanced seal effectiveness.
Protector	Protects the end seal from hot and hard contaminants.
Rail cap	Prevents foreign matter, such as swarf generated in cutting operation from clogging the rail-mounting holes.
Inner seal	Installed inside the slide to prevent foreign matter from entering and affecting the rolling contact surface.
Bellows	Covers the linear guide.

Note: Inner seals can be selected for NH20-65. Not available for NS models.

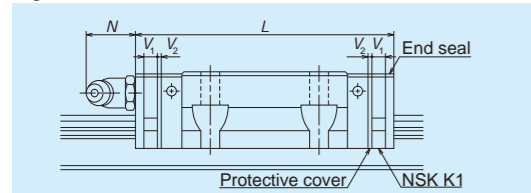
(2) Mounting position for lubrication accessories

- The standard position for grease fittings is at the end face of the ball slide. We can mount them on the side of the end cap as an option (Fig. 5).
- Please consult NSK for the installation of grease or tube fittings to the ball slide body or side of end cap.

(3) NSK K1-L lubrication unit/ NSK K1 for food processing/medical equipment

NSK K1/K1-L lubrication units are installed on the inner side of the end seal and contain a porous synthetic resin with abundant lubricating oil. The oil gradually seeps out from the resin to lubricate the linear guide over a long period. Table 15 shows dimensions when equipped to linear guides.

Fig. 7



7. Rust Prevention

(1) Stainless steel

For improved rust prevention, stainless steel is available for parts typically made of carbon steel in models NH15 to NS30 and NS15 to NS35. However, interchangeable types with high precision (PH) accuracy and medium preload (ZH) cannot use stainless steel.

(2) Surface treatment

NSK recommends low-temperature chrome plating or fluoride low-temperature chrome plating as the surface treatment. Please consult NSK regarding other surface treatments.

Table 16 Material/surface treatment code

Code	Description
C	Special high carbon steel (NSK standard)
K	Stainless steel
D	Special high carbon steel with surface treatment
H	Stainless steel with surface treatment
Z	Other, special

Fig. 5

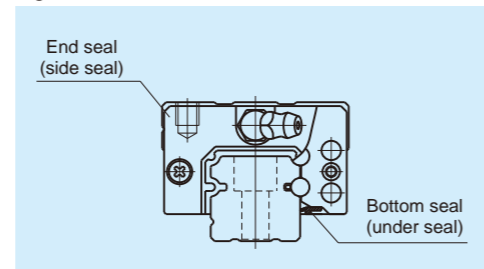


Fig. 6 Mounting position of lubrication accessories

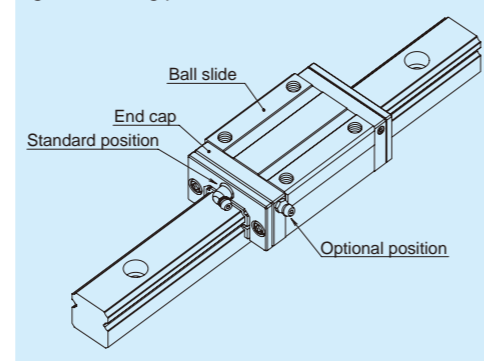


Table 15 Dimensions of linear guides equipped with NSK K1-L/NSK K1 for food processing/medical equipment

Model No.	Standard ball slide length	Ball slide length with two NSK K1-L or NSK K1 for food processing/medical equipment L	NSK K1-L			Protrusion of grease fitting N	
			Thickness of single NSK K1-L unit V ₁	Thickness of single NSK K1 unit V ₂	Thickness of protective cover V ₃		
NH15	AN, EM	55	65.6	5.3	4.5	0.8	(5)
	BN, GM	74	84.6				
NH20	AN, EM	69.8	80.4	5.3	4.5	0.8	(14)
	BN, GM	91.8	102.4				
NH25	AL, AN, EM	79	90.6	5.8	5	0.8	(14)
	BL, BN, GM	107	118.6				
NH30	AL, AN	85.6	97.6	6	5	1	(14)
	BL, BN, GM	124.6	136.6				
NH35	AL, AN, EM	109	122	6.5	5.5	1	(14)
	BL, BN, GM	143	156				
NH45	AL, AN, EM	139	154	7.5	-	-	(15)
	BL, BN, GM	171	186				
NH55	AL, AN, EM	163	178	7.5	-	-	(15)
	BL, BN, GM	201	216				
NH65	AN, EM	193	211	9	-	-	(16)
	BN, GM	253	271				
NS15	AL, EM	56.8	66.4	4.8	4	0.8	(5)
	CL, JM	40.4	50				
NS20	AL, EM	65.2	75.8	5.3	4.5	0.8	(14)
	CL, JM	47.2	57.8				
NS25	AL, EM	81.6	92.2	5.3	4.5	0.8	(14)
	CL, JM	59.6	70.2				
NS30	AL, EM	96.4	108.4	6	5	1	(14)
	CL, JM	67.4	79.4				
NS35	AL, EM	108	121	6.5	5.5	1	(14)
	CL, JM	77	90				

Notes: 1) Slide length when equipped with NSK K1-L = (standard ball slide length) + (V₁ thickness of single NSK K1-L unit) x (number of K1-L units).
2) NSK K1 lubrication units for food processing machinery/medical equipment are available for NH15 to NH35 and NS15 to NS35.
When using these NSK K1 units, the slide length = (standard ball slide length) + (V₂ thickness of single NSK K1 unit x number of K1 units) + (V₃ thickness of protective cover x 2).

8. Installation

(1) Permissible values of mounting error

Improper mounting results in harmful effects such as shortened operating life, deterioration of motion accuracy, and friction variation. Permissible mounting error is shown in Tables 17 and 18, with representative errors shown in Figs. 8 and 9.

Fig. 8

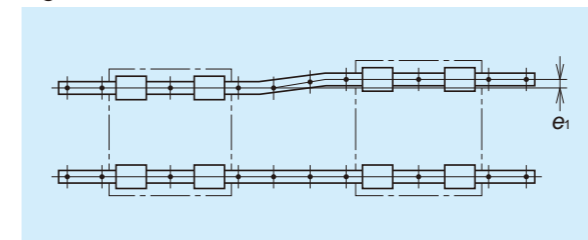


Fig. 9

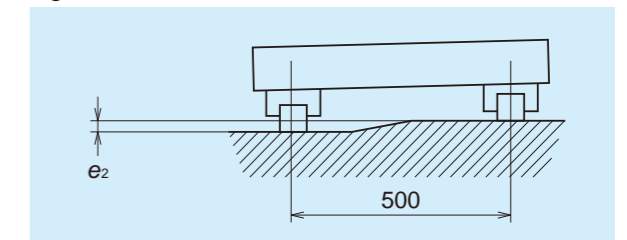


Table 17

Value	Preload	Model No.								
		NH15	NH20	NH25	NH30	NH35	NH45	NH55	NH65	
Permissible values for parallelism error of two rails e ₁	Z0, ZT	22	30	40	45	55	65	80	110	
	Z1, ZZ	18	20	25	30	35	45	55	70	
	Z3, ZH	13	15	20	25	30	40	45	60	
Permissible values for height error of two rails e ₂	Z0, ZT	375μm/500mm								
	Z1, ZZ, Z3, ZH	330μm/500mm								

Table 18

Value	Preload	Model No.				
		NS15	NS20	NS25	NS30	NS35
Permissible values for parallelism error of two rails e ₁	Z0, ZT	20	22	30	35	40
	Z1, ZZ	15	17	20	25	30
	Z3, ZH	12	15	15	20	25
Permissible values for height error of two rails e ₂	Z0, ZT	375μm/500mm				
	Z1, ZZ, Z3, ZH	330μm/500mm				

(2) Shoulder height and corner radius of the mounting surface

When horizontally fixing a rail or ball slide by pushing it onto the shoulder (the risen portion of the mounting surface) of the bed or table, refer to the shoulder height and corner radius specified in Figs. 10 and 11 and Table 19.

Shoulder height of the mounting surface and corner radius r

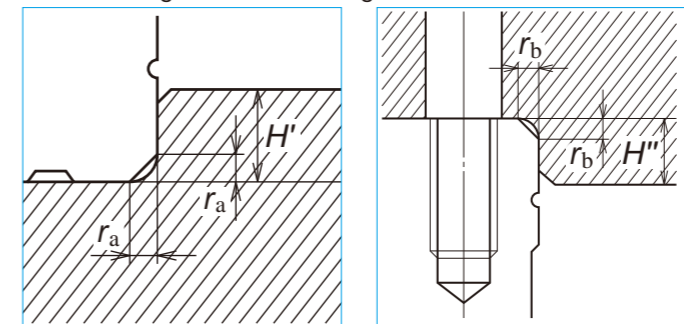


Fig. 10 Shoulder for the rail datum surface

Fig. 11 Shoulder for the ball slide datum surface

Table 19

Model No.	Corner radius (maximum)		Shoulder height	
	r _a	r _b	H'	H''
NH15	0.5	0.5	4	4
NH20	0.5	0.5	4.5	5
NH25	0.5	0.5	5	5
NH30	0.5	0.5	6	6
NH35	0.5	0.5	6	6
NH45	0.7	0.7	8	8
NH55	0.7	0.7	10	10
NH65	1	1	11	11
NS15	0.5	0.5	4	4
NS20	0.5	0.5	4.5	5
NS25	0.5	0.5	5	5
NS30	0.5	0.5	6	6
NS35	0.5	0.5	6	6

9. Maximum allowable speed

Table 20 shows the standard maximum allowable speed for 10 000 km operation under normal conditions. However, the maximum allowable speed can be affected by the accuracy of the installation, operating temperature, external load, etc. If operation will exceed the permissible distance and speed, please contact NSK.

Table 20 Maximum allowable speed

Model	Size	Unit: m/min							
		15	20	25	30	35	45	55	65
NH				300			200		150
NS				300					

10. Handling Precautions

- Bumping or hitting the slide may cause damage.
- Operating temperature should be less than 80°C. If this temperature is exceeded, the plastic parts may be damaged.
- If using NSK K1-L, the maximum operating temperature is 50°C (momentary maximum temperature: 80°C). Do not expose the NSK K1-L lubrication unit to organic solvents that remove oil such as hexane and do not leave it in contact with white kerosene or rust preventive oils that contain white kerosene.
- Note the following regarding interchangeable slides:
 - Interchangeable slides are delivered on a provisional rail (an assembly tool).
 - Always use a provisional rail when transferring interchangeable slides onto/from a rail.
 - Do not remove the slide from the provisional rail except when transferring to a rail.

11. Dimensions

NH-AN (High-load/standard, square type)

NH-BN (Super-high-load/long, square type)

(1) Reference number for preloaded assembly

NH 30 1200 ANC 2 -** P5 3															
Model												Preload code (refer to Table 9 on page 5)			
Size												Accuracy code (refer to Table 9 on page 5)			
Rail length (mm)												Design serial number			
Ball slide shape code (refer to Fig. 2 on page 3)												Added to the reference number			
Material/surface treatment code (refer to Table 16 on page 7)												Number of ball slides per rail			
C: Special high carbon steel (NSK standard); K: Stainless steel															

(2) Reference number for interchangeable type

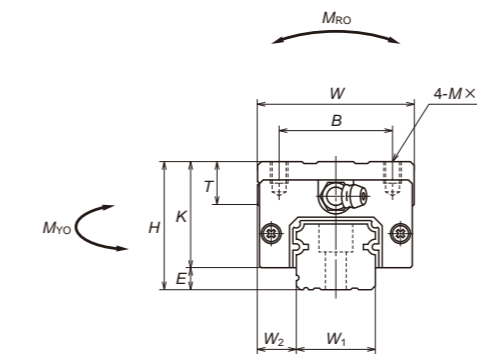
NAH 30 ANSZ -L															
Ball slide												Option code			
Interchangeable ball slide model code												-L: Equipped with NSK K1-L			
NAH: NH model interchangeable ball slide												-F: Fluoride low temperature chrome plating + AS2 grease			
Size												-F50: Fluoride low temperature chrome plating + LG2 grease			
Ball slide shape code (refer to Fig. 2 on page 3)												Preload code			
											No code: Fine clearance, Z: Slight preload, H: Medium preload				
											Material code				
											No code: Special high carbon steel (NSK standard), S: Stainless steel				

N1H 30 1200 LCN -** PC Z															
Rail												Preload code			
Interchangeable rail model code												T: Fine clearance, Z: Slight preload (common rail for slight or medium preload) (refer to Table 9 on page 5)			
N1H: NH model interchangeable rail												Accuracy code			
Size												PH: High precision grade interchangeable type			
Rail length (mm)												PC: Normal grade interchangeable type			
Rail shape code: L												Design serial number			
L: Standard												Added to the reference number			
Material/surface treatment code (refer to Table 16 on page 7)												Butting rail specification*			
											N: Non-butting; L: Butting specification				
*Please consult with NSK for butting rail specification.															

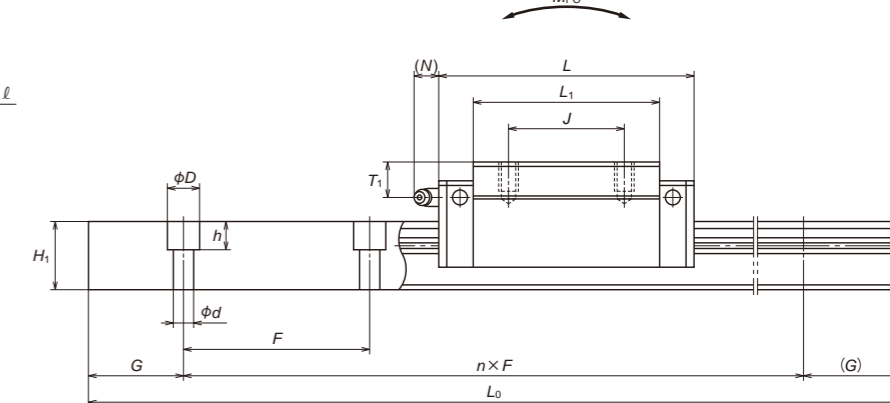
The Click!Speedy™ NSK Linear Guide Quick Delivery System uses a different numbering system. For details, please refer to the Click!Speedy general catalog CAT. No. E3191.

Assembly (Preloaded assembly or assembled interchangeable slide/rail.)

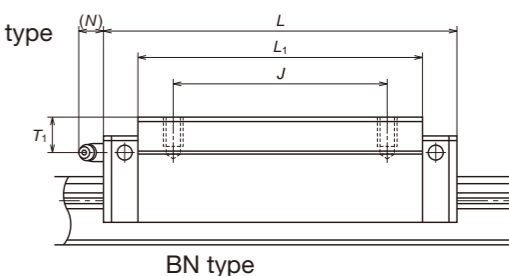
Front view of AN and BN types



Side view of AN type

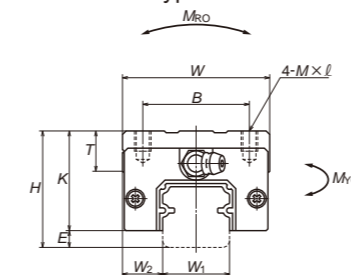


Side view of BN type

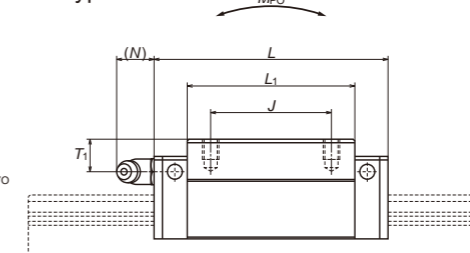


Ball slide of interchangeable type

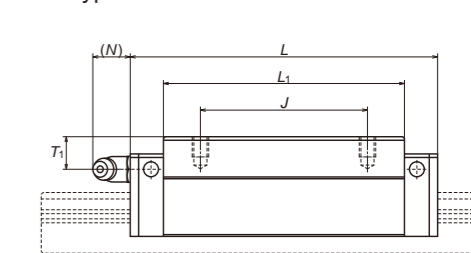
AN and BN types



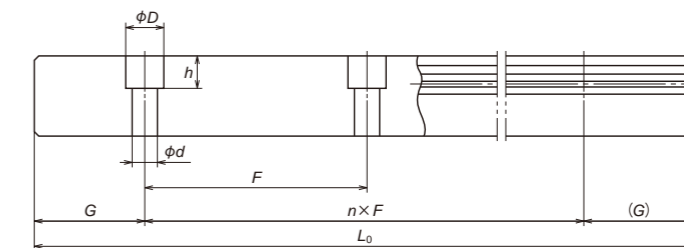
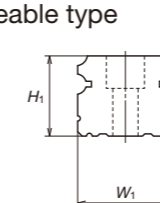
AN type



BN type



Rail of interchangeable type



Model No.	Assembly			Ball slide										Width	Height	
	Height	Width	Length	Mounting hole			Grease fitting				Width	Height				
				H	E	W ₂	W	L	B	J			M×Pitch×l			L ₁
NH15AN NH15BN	28	4.6	9.5	34	55 74	26	26	M4×0.7×6	39 58	23.4	8	φ3	8.5	3.3	15	15
NH20AN NH20BN	30	5	12	44	69.8 91.8	32	36 50	M5×0.8×6	50 72	25	12	M6×0.75	5	11	20	18
NH25AN NH25BN	40	7	12.5	48	79 107	35	35 50	M6×1×9	58 86	33	12	M6×0.75	10	11	23	22
NH30AN NH30BN	45	9	16	60	85.6 124.6	40	40 60	M8×1.25×10	59 98	36	14	M6×0.75	10	11	28	26
NH35AN NH35BN	55	9.5	18	70	109 143	50	50 72	M8×1.25×12	80 114	45.5	15	M6×0.75	15	11	34	29
NH45AN NH45BN	70	14	20.5	86	139 171	60	60 80	M10×1.5×17	105 137	56	17	Rc1/8	20	13	45	38
NH55AN NH55BN	80	15	23.5	100	163 201	75	75 95	M12×1.75×18	126 164	65	18	Rc1/8	21	13	53	44
NH65AN NH65BN	90	16	31.5	126	193 253	76	70 120	M16×2×20	147 207	74	23	Rc1/8	19	13	63	53

Notes: 1) The external appearance of stainless steel ball slides differs slightly from of carbon steel ball slides.

Pitch	Rail		G	Max. length L _{0max} (l for stainless)	Basic load rating						Weight		
	Mounting bolt hole d×D×h	F			2) Dynamic		Static C ₀ (N)	Static moment (N·m)				Ball slide (kg)	Rail (kg/m)
					[50km] C ₅₀ (N)	[100km] C ₁₀₀ (N)		M _{RO}	M _{PO}		M _{YO}		
60	4.5×7.5×5.3	20	2 980 (1 800)	14 200 18 100	11 300 14 400	20 700 32 000	108 166	94.5 216	575 1 150	79.5 181	480 965	0.18 0.26	1.6
60	6×9.5×8.5	20	3 960 (3 500)	23 700 30 000	18 800 24 000	32 500 50 500	219 340	185 420	1 140 2 230	155 355	955 1 870	0.33 0.48	2.6
60	7×11×9	20	3 960 (3 500)	33 500 45 500	26 800 36 500	46 000 71 000	360 555	320 725	1 840 3 700	267 610	1 540 3 100	0.55 0.82	3.6
80	9×14×12	20	4 000 (3 500)	41 000 61 000	32 500 48 500	51 500 91 500	490 870	350 1 030	2 290 5 600	292 865	1 920 4 700	0.77 1.3	5.2
80	9×14×12	20	4 000	62 500 81 000	49 500 64 500	80 500 117 000	950 1 380	755 1 530	4 500 8 350	630 1 280	3 800 7 000	1.5 2.1	7.2
105	14×20×17	22.5	3 990	107 000 131 000	84 500 104 000	140 000 187 000	2 140 2 860	1 740 3 000	9 750 15 600	1 460 2 520	8 150 13 100	3.0 3.9	12.3
120	16×23×20	30	3 960	158 000 193 000	125 000 153 000	198 000 264 000	3 600 4 850	3 000 5 150	16 300 26 300	2 510 4 350	13 700 22 100	4.7 6.1	16.9
150	18×26×22	35	3 900	239 000 310 000	190 000 246 000	281 000 410 000	6 150 8 950	4 950 10 100	27 900 51 500	4 150 8 450	23 400 43 500	7.7 10.8	24.3

2) The basic load ratings comply with ISO standards. (ISO14728-1 and ISO14728-2)
C₅₀: basic dynamic load rating for 50 km rated fatigue life, C₁₀₀: basic dynamic load rating for 100 km rated fatigue life

NH-AL (High-load/standard, square type)
 NH-BL (Super-high-load/long, square type)

(1) Reference number for preloaded assembly

NH 30 1200 AL C 2 -** P5 3																
Model												Preload code (refer to Table 9 on page 5)				0 : Z0, 1 : Z1, 3 : Z3, T : ZT, Z : ZZ, H : ZH
Size												Accuracy code (refer to Table 9 on page 5)				
Rail length (mm)												Design serial number				Added to the reference number
Ball slide shape code (refer to Fig. 2 on page 3)												Material/surface treatment code (refer to Table 16 on page 7)				Number of ball slides per rail
C: Special high carbon steel (NSK standard); K: Stainless steel																

(2) Reference number for interchangeable type

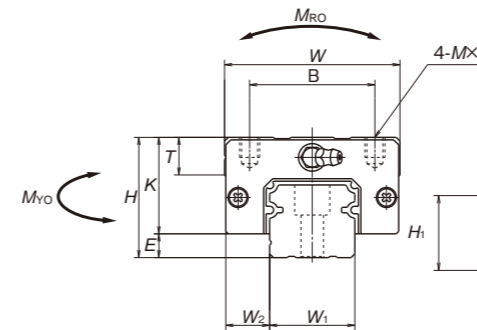
NAH 30 AL SZ -L																
Ball slide												Option code				
Interchangeable ball slide model code												-L: Equipped with NSK K1-L				
NAH: NH model interchangeable ball slide																
Size												-F: Fluoride low temperature chrome plating + AS2 grease				
-F50: Fluoride low temperature chrome plating + LG2 grease																
Ball slide shape code (refer to Fig. 2 on page 3)												Preload code				No code: Fine clearance, Z: Slight preload, H: Medium preload
Material code																
No code: Special high carbon steel (NSK standard), S: Stainless steel																

N1H 30 1200 LCN -** PC Z																
Rail												Preload code				
Interchangeable rail model code												T: Fine clearance, Z: Slight preload (common rail for slight or medium preload) (refer to Table 9 on page 5)				
N1H: NH model interchangeable rail																
Size												Accuracy code				PH: High precision grade interchangeable type PC: Normal grade interchangeable type
Rail length (mm)												Design serial number				Added to the reference number
Rail shape code: L												Butting rail specification*				N: Non-butting; L: Butting specification
*Please consult with NSK for butting rail specification.																

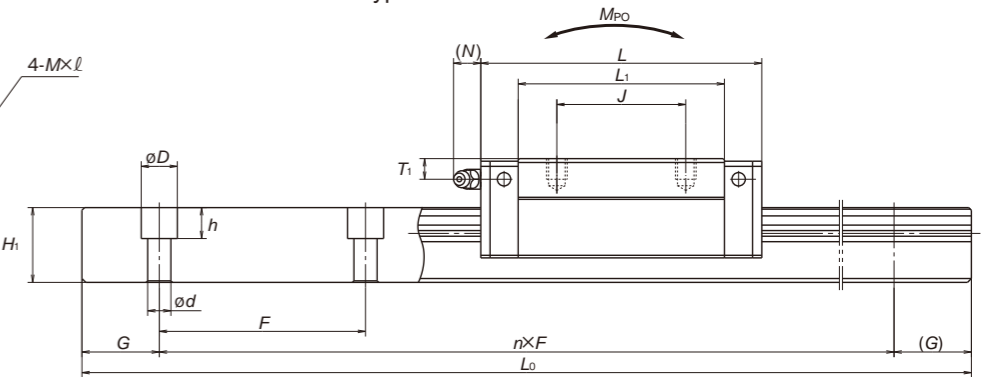
The Click!Speedy™ NSK Linear Guide Quick Delivery System uses a different numbering system. For details, please refer to the Click!Speedy general catalog CAT. No. E3191.

Assembly (Preloaded assembly or assembled interchangeable slide/rail.)

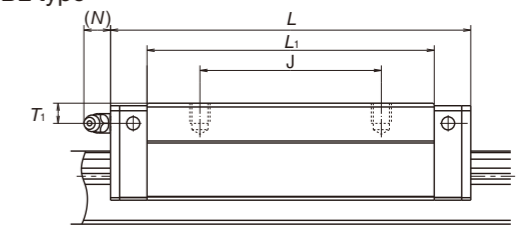
Front view of AL and BL types



Side view of AL type

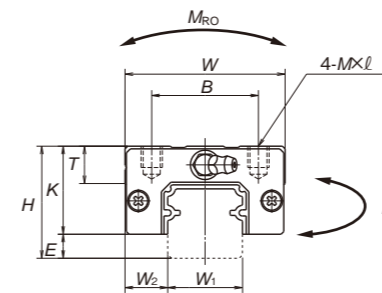


Side view of BL type

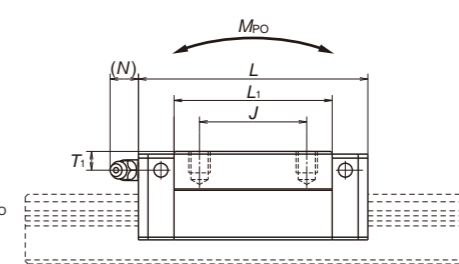


Ball slide of interchangeable type

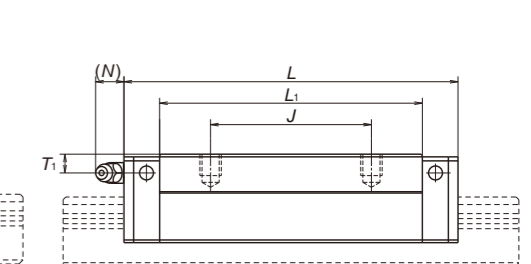
AL and BL types



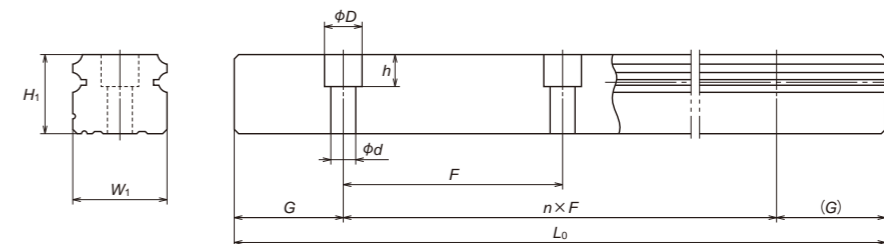
AL type



BL type



Rail of interchangeable type



Model No.	Assembly			Ball slide								Grease fitting			Width W ₁	Height H ₁
	Height H	E	W ₂	Width W	Length L	Mounting hole			L ₁	K	T	Hole size	T ₁	N		
						B	J	M×Pitch×ℓ								
NH25AL NH25BL	36	7	12.5	48	79 107	35	35 50	M6×1×6	58 86	29	12	M6×0.75	6	11	23	22
NH30AL NH30BL	42	9	16	60	85.6 124.6	40	40 60	M8×1.25×8	59 98	33	14	M6×0.75	7	11	28	26
NH35AL NH35BL	48	9.5	18	70	109 143	50	50 72	M8×1.25×8	80 114	38.5	15	M6×0.75	8	11	34	29
NH45AL NH45BL	60	14	20.5	86	139 171	60	60 80	M10×1.5×10	105 137	46	17	Rc1/8	10	13	45	38
NH55AL NH55BL	70	15	23.5	100	163 201	75	75 95	M12×1.75×13	126 164	55	15	Rc1/8	11	13	53	44

Notes: 1) The external appearance of stainless steel ball slides differs slightly from of carbon steel ball slides.

Pitch F	Rail		G	Max. length L _{0max} (for stainless)	Basic load rating								Weight	
	Mounting bolt hole d×D×h	reference)			2) Dynamic		Static C ₀ (N)	Static moment (N·m)				Ball slide (kg)	Rail (kg/m)	
					[50km] C ₅₀ (N)	[100km] C ₁₀₀ (N)		M _{RO}	M _{PO}		M _{VO}			
									(One slide)	(Two slides)	(One slide)			(Two slides)
60	7×11×9	20	3 960 (3 500)	33 500 45 500	26 800 36 500	46 000 71 000	360 555	320 725	1 840 3 700	267 610	1 540 3 100	0.46 0.69	3.6	
80	9×14×12	20	4 000 (3 500)	41 000 61 000	32 500 48 500	51 500 91 500	490 870	350 1 030	2 290 5 600	292 865	1 920 4 700	0.69 1.16	5.2	
80	9×14×12	20	4 000	62 500 81 000	49 500 64 500	80 500 117 000	950 1 380	755 1 530	4 500 8 350	630 1 280	3 800 7 000	1.2 1.7	7.2	
105	14×20×17	22.5	3 990	107 000 131 000	84 500 104 000	140 000 187 000	2 140 2 860	1 740 3 000	9 750 15 600	1 460 2 520	8 150 13 100	2.2 2.9	12.3	
120	16×23×20	30	3 960	158 000 193 000	125 000 153 000	198 000 264 000	3 600 4 850	3 000 5 150	16 300 26 300	2 510 4 350	13 700 22 100	3.7 4.7	16.9	

2) The basic load ratings comply with ISO standards. (ISO14728-1 and ISO14728-2)
 C₅₀: basic dynamic load rating for 50 km rated fatigue life, C₁₀₀: basic dynamic load rating for 100 km rated fatigue life

Unit: mm

NH-EM (High-load/standard, square type)

NH-GM (Super-high-load/long, square type)

(1) Reference number for preloaded assembly

NH 30 1200EMC 2 -** P5 3	
Model	Preload code (refer to Table 9 on page 5) 0 : Z0, 1 : Z1, 3 : Z3, T : ZT, Z : ZZ, H : ZH
Size	Accuracy code (refer to Table 9 on page 5)
Rail length (mm)	Design serial number Added to the reference number
Ball slide shape code (refer to Fig. 2 on page 3)	Number of ball slides per rail
Material/surface treatment code (refer to Table 16 on page 7) C: Special high carbon steel (NSK standard); K: Stainless steel	

(2) Reference number for interchangeable type

NAH 30 EMSZ -L	
Interchangeable ball slide model code NAH: NH model interchangeable ball slide	Option code -L: Equipped with NSK K1-L -F: Fluoride low temperature chrome plating + AS2 grease -F50: Fluoride low temperature chrome plating + LG2 grease
Size	Preload code No code: Fine clearance, Z: Slight preload, H: Medium preload
Ball slide shape code (refer to Fig. 2 on page 3)	Material code No code: Special high carbon steel (NSK standard), S: Stainless steel

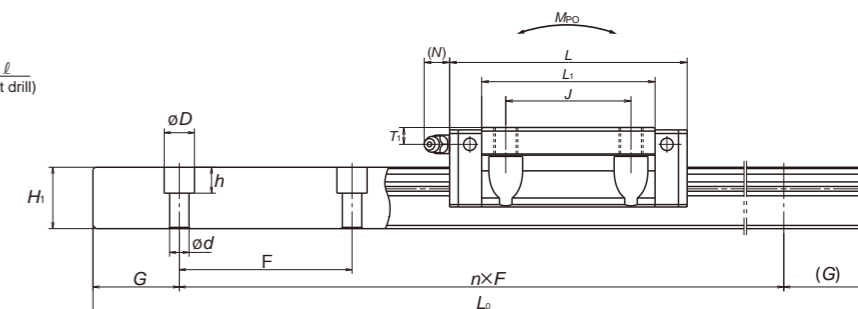
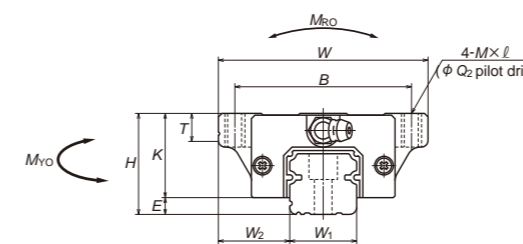
N1H 30 1200 LCN -** PC Z	
Interchangeable rail model code N1H: NH model interchangeable rail	Preload code T: Fine clearance, Z: Slight preload (common rail for slight or medium preload) (refer to Table 9 on page 5)
Size	Accuracy code PH: High precision grade interchangeable type PC: Normal grade interchangeable type
Rail length (mm)	Design serial number Added to the reference number
Rail shape code: L L: Standard	Butting rail specification* N: Non-butting; L: Butting specification
Material/surface treatment code (refer to Table 16 on page 7)	*Please consult with NSK for butting rail specification.

The Click!Speedy™ NSK Linear Guide Quick Delivery System uses a different numbering system. For details, please refer to the Click!Speedy general catalog CAT. No. E3191.

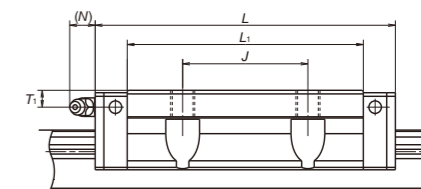
Assembly (Preloaded assembly or assembled interchangeable slide/rail.)

Front view of EM and GM types

Side view of EM type



Side view of GM type

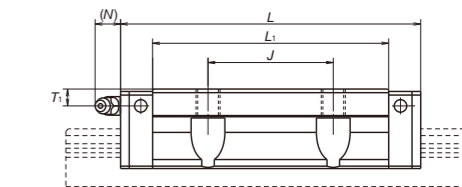
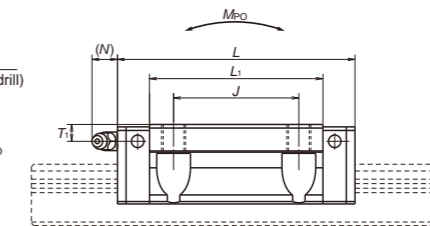
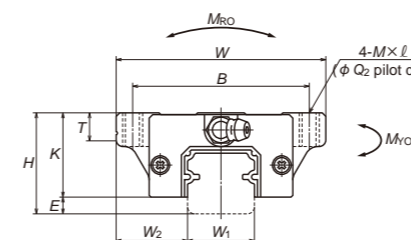


Ball slide of interchangeable type

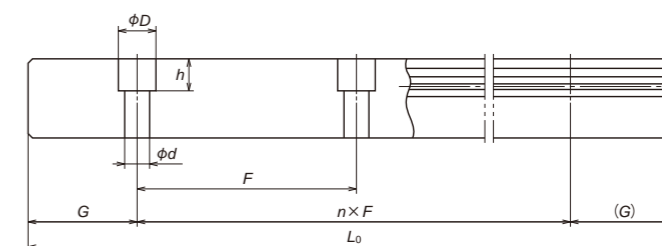
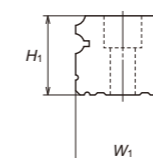
EM and GM types

EM type

GM type



Rail of interchangeable type



Model No.	Assembly			Ball slide										Width	Height		
	Height	Width	Length	Mounting hole						Grease fitting			Width			Height	
				B	J	M×Pitch×ℓ	Q2	L1	K	T	Hole size	T1					N
NH15EM NH15GM	24	4.6	16	47	55 74	38	30	M5×0.8×7	4.4	39 58	19.4	8	φ3	4.5	3.3	15	15
NH20EM NH20GM	30	5	21.5	63	69.8 91.8	53	40	M6×1×9.5	5.3	50 72	25	10	M6×0.75	5	11	20	18
NH25EM NH25GM	36	7	23.5	70	79 107	57	45	M8×1.25×10 (M8×1.25×11.5)	6.8	58 86	29	11 (12)	M6×0.75	6	11	23	22
NH30EM NH30GM	42	9	31	90	98.6 124.6	72	52	M10×1.5×12 (M10×1.5×14.5)	8.6	72 98	33	11 (15)	M6×0.75	7	11	28	26
NH35EM NH35GM	48	9.5	33	100	109 143	82	62	M10×1.5×13	8.6	80 114	38.5	12	M6×0.75	8	11	34	29
NH45EM NH45GM	60	14	37.5	120	139 171	100	80	M12×1.75×15	10.5	105 137	46	13	Rc1/8	10	13	45	38
NH55EM NH55GM	70	15	43.5	140	163 201	116	95	M14×2×18	12.5	126 164	55	15	Rc1/8	11	13	53	44
NH65EM NH65GM	90	16	53.5	170	193 253	142	110	M16×2×24	14.6	147 207	74	23	Rc1/8	19	13	63	53

Notes: 1) Parenthesized dimensions are for items made of stainless steel.
2) The external appearance of stainless steel ball slides differs slightly from of carbon steel ball slides.

Pitch	Mounting bolt hole d×D×h	G	Max. length L0max (for stainless)	2) Dynamic		Static C0 (N)	Basic load rating				Weight		
				[50km] C50 (N)	[100km] C100 (N)		MRO	Static moment (N·m)		Ball slide (kg)	Rail (kg/m)		
								MPO (One slide)	MPO (Two slides)			MRO (One slide)	MRO (Two slides)
60	4.5×7.5×5.3	20	2 980 (1 800)	14 200 18 100	11 300 14 400	20 700 32 000	108 166	94.5 216	575 1 150	79.5 181	480 965	0.17 0.25	1.6
60	6×9.5×8.5	20	3 960 (3 500)	23 700 30 000	18 800 24 000	32 500 50 500	219 340	185 420	1 140 2 230	155 355	955 1 870	0.45 0.65	2.6
60	7×11×9	20	3 960 (3 500)	33 500 45 500	26 800 36 500	46 000 71 000	360 555	320 725	1 840 3 700	267 610	1 540 3 100	0.63 0.93	3.6
80	9×14×12	20	4 000 (3 500)	47 000 61 000	37 500 48 500	63 000 91 500	600 870	505 1 030	3 150 5 600	425 865	2 650 4 700	1.2 1.6	5.2
80	9×14×12	20	4 000	62 500 81 000	49 500 64 500	80 500 117 000	950 1 380	755 1 530	4 500 8 350	630 1 280	3 800 7 000	1.7 2.4	7.2
105	14×20×17	22.5	3 990	107 000 131 000	84 500 104 000	140 000 187 000	2 140 2 860	1 740 3 000	9 750 15 600	1 460 2 520	8 150 13 100	3 3.9	12.3
120	16×23×20	30	3 960	158 000 193 000	125 000 153 000	198 000 264 000	3 600 4 850	3 000 5 150	16 300 26 300	2 510 4 350	13 700 22 100	5 6.5	16.9
150	18×26×22	35	3 900	239 000 310 000	190 000 246 000	281 000 410 000	6 150 8 950	4 950 10 100	27 900 51 500	4 150 8 450	23 400 43 500	10 14.1	24.3

3) The basic load ratings comply with ISO standards. (ISO14728-1 and ISO14728-2)
C50: basic dynamic load rating for 50 km rated fatigue life, C100: basic dynamic load rating for 100 km rated fatigue life

Unit: mm

NS-CL (High-load/standard, square type)
NS-AL (Super-high-load/long, square type)

(1) Reference number for preloaded assembly

NS 30 1200 AL C 2 -** P5 3	
Model	Preload code (refer to Table 9 on page 5) 0 : Z0, 1 : Z1, 3 : Z3, T : ZT, Z : ZZ, H : ZH
Size	Accuracy code (refer to Table 9 on page 5)
Rail length (mm)	Design serial number Added to the reference number
Ball slide shape code (refer to Fig. 2 on page 3)	Number of ball slides per rail
Material/surface treatment code (refer to Table 16 on page 7) C: Special high carbon steel (NSK standard); K: Stainless steel	

(2) Reference number for interchangeable type

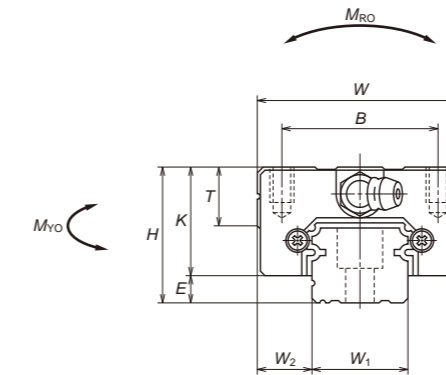
NAS 30 AL SZ -L	
Ball slide	Option code
Interchangeable ball slide model code NAS: NS model interchangeable ball slide	-L: Equipped with NSK K1-L -F: Fluoride low temperature chrome plating + AS2 grease -F50: Fluoride low temperature chrome plating + LG2 grease
Size	Preload code No code: Fine clearance, Z: Slight preload, H: Medium preload
Ball slide shape code (refer to Fig. 2 on page 3)	Material code No code: Special high carbon steel (NSK standard), S: Stainless steel

N1S 30 1200 LCN -** PC Z	
Rail	Preload code
Interchangeable rail model code N1S: NS model interchangeable rail	T: Fine clearance, Z: Slight preload (common rail for slight or medium preload) (refer to Table 9 on page 5)
Size	Accuracy code PH: High precision grade interchangeable type PC: Normal grade interchangeable type
Rail length (mm)	Design serial number Added to the reference number
Rail shape code: L L: Standard	Butting rail specification* N: Non-butting; L: Butting specification
Material/surface treatment code (refer to Table 16 on page 7)	*Please consult with NSK for butting rail specification.

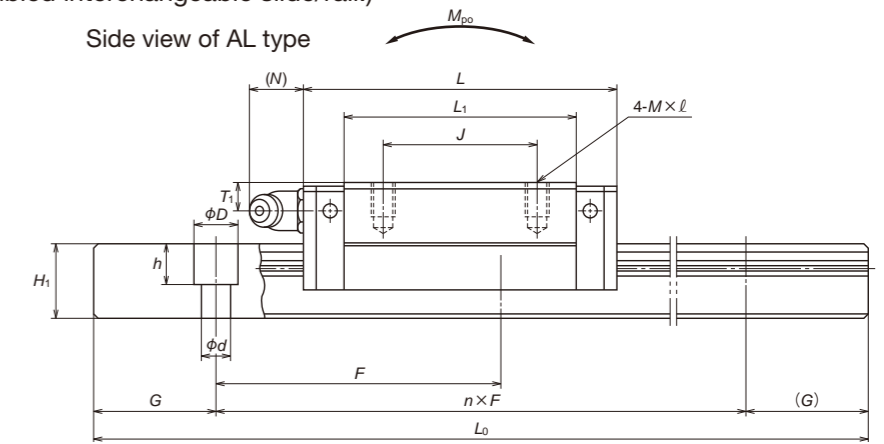
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Assembly (Preloaded assembly or assembled interchangeable slide/rail.)

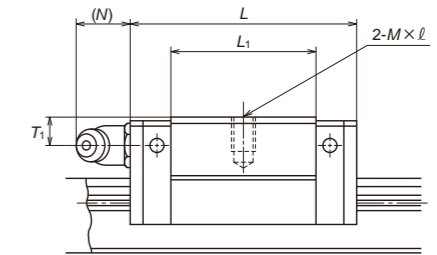
Front view of AL and CL types



Side view of AL type

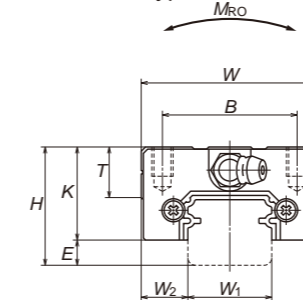


Side view of CL type

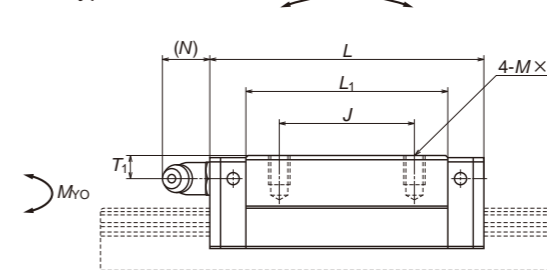


Ball slide of interchangeable type

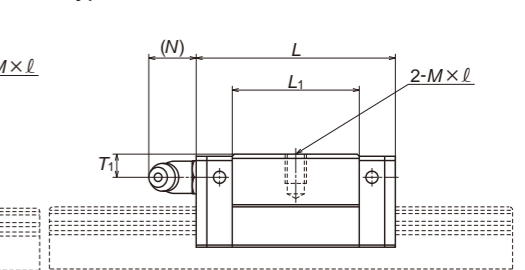
AL and CL types



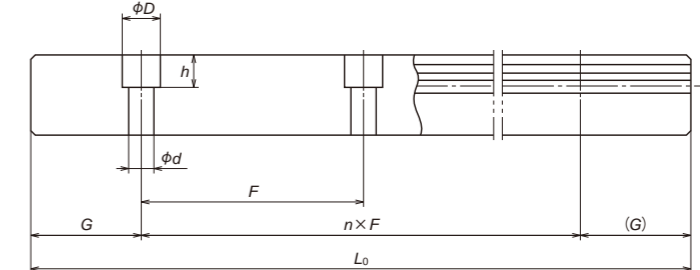
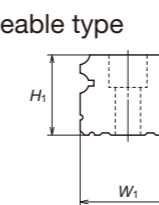
AL type



CL type



Rail of interchangeable type



Model No.	Assembly			Ball slide												
	Height H	E	W ₂	Width W	Length L	Mounting hole			L ₁	K	T	Grease fitting			Width W ₁	Height H ₁
						B	J	M×Pitch×l				Hole size	T ₁	N		
NS15CL NS15AL	24	4.6	9.5	34	40.4 56.8	26	— 26	M4×0.7×6	23.6 40	19.4	10	φ3	6	3	15	12.5
NS20CL NS20AL	28	6	11	42	47.2 65.2	32	— 32	M5×0.8×7	30 48	22	12	M6×0.75	5.5	11	20	15.5
NS25CL NS25AL	33	7	12.5	48	59.6 81.6	35	— 35	M6×1×9	38 60	26	12	M6×0.75	7	11	23	18
NS30CL NS30AL	42	9	16	60	67.4 96.4	40	— 40	M8×1.25×12	42 71	33	13	M6×0.75	8	11	28	23
NS35CL NS35AL	48	10.5	18	70	77 108	50	— 50	M8×1.25×12	49 80	37.5	14	M6×0.75	8.5	11	34	27.5

Notes: 1) The external appearance of stainless steel ball slides differs slightly from of carbon steel ball slides.
2) The basic load ratings comply with ISO standards. (ISO14728-1 and ISO14728-2)
C₅₀: basic dynamic load rating for 50 km rated fatigue life, C₁₀₀: basic dynamic load rating for 100 km rated fatigue life

Pitch F	Rail		G (reference)	Max. length L _{0max} (l for stainless)	2) Dynamic		Static C ₀ (N)	Basic load rating				Weight	
	Mounting bolt hole d×D×h	G			[50km]	[100km]		M _{RO}	Static moment (N·m)		M _{KO}	Ball slide (kg)	Rail (kg/m)
					C ₅₀ (N)	C ₁₀₀ (N)			(One slide)	(Two slides)			
60	*4.5×7.5×5.3 3.5×6×4.5	20	2 920 (1 800)	7 250 11 200	5 750 8 850	9 100 16 900	45.5 84.5	24.5 77	196 470	20.5 64.5	165 395	0.14 0.20	1.4
60	6×9.5×8.5	20	3 960 (3 500)	10 600 15 600	8 400 12 400	13 400 23 500	91.5 160	46.5 133	330 755	39 111	279 630	0.19 0.28	2.3
60	7×11×9	20	3 960 (3 500)	17 700 26 100	14 000 20 700	20 800 36 500	164 286	91 258	655 1 470	76 217	550 1 230	0.34 0.51	3.1
80	7×11×9	20	4 000 (3 500)	24 700 38 000	19 600 30 000	29 600 55 000	282 520	139 435	1 080 2 650	116 365	905 2 220	0.58 0.85	4.8
80	9×14×12	20	4 000 (3 500)	34 500 52 500	27 300 42 000	40 000 74 500	465 865	220 695	1 670 4 000	185 580	1 400 3 350	0.86 1.3	7.0

*1) For NS15, M4 (4.5 x 7.5 x 5.3) rail mounting bolt holes are standard. Please contact NSK to request M3 holes (3.5 x 6 x 4.5).

Unit: mm

NS-JM (High-load/standard, square type)
NS-EM (Super-high-load/long, square type)

(1) Reference number for preloaded assembly

NS 30 1200 EMC 2 -** P5 3	
Model	Preload code (refer to Table 9 on page 5) 0 : Z0, 1 : Z1, 3 : Z3, T : ZT, Z : ZZ, H : ZH
Size	Accuracy code (refer to Table 9 on page 5)
Rail length (mm)	Design serial number Added to the reference number
Ball slide shape code (refer to Fig. 2 on page 3)	Number of ball slides per rail
Material/surface treatment code (refer to Table 16 on page 7) C: Special high carbon steel (NSK standard); K: Stainless steel	

(2) Reference number for interchangeable type

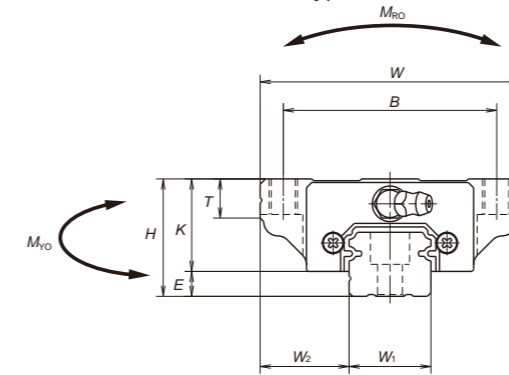
NAS 30 EMSZ -L	
Interchangeable ball slide model code NAS: NS model interchangeable ball slide	Option code
Size	-L: Equipped with NSK K1-L -F: Fluoride low temperature chrome plating + AS2 grease -F50: Fluoride low temperature chrome plating + LG2 grease
Ball slide shape code (refer to Fig. 2 on page 3)	Preload code No code: Fine clearance, Z: Slight preload, H: Medium preload
	Material code No code: Special high carbon steel (NSK standard), S: Stainless steel

N1S 30 1200 LCN -** PC Z	
Interchangeable rail model code N1S: NS model interchangeable rail	Preload code
Size	Accuracy code PH: High precision grade interchangeable type PC: Normal grade interchangeable type
Rail length (mm)	Design serial number Added to the reference number
Rail shape code: L L: Standard	Butting rail specification* N: Non-butting; L: Butting specification
Material/surface treatment code (refer to Table 16 on page 7)	*Please consult with NSK for butting rail specification.

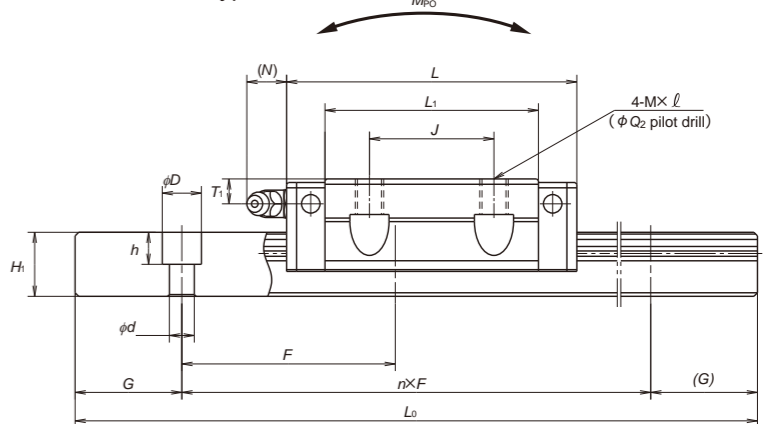
The Click!Speedy™ NSK Linear Guide Quick Delivery System uses a different numbering system. For details, please refer to the Click!Speedy general catalog CAT. No. E3191.

Assembly (Preloaded assembly or assembled interchangeable slide/rail.)

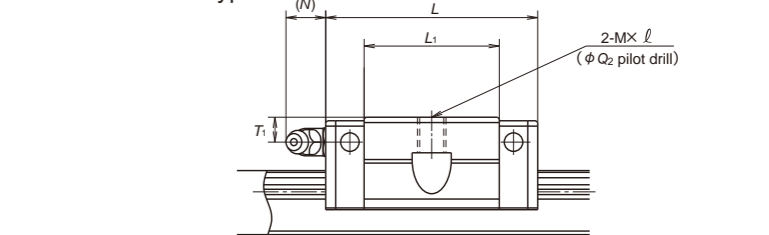
Front view of EM and JM types



Side view of EM type

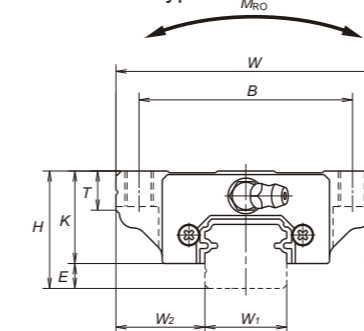


Side view of JM type

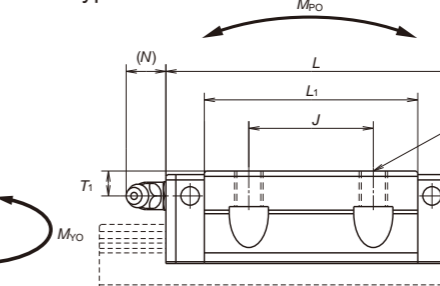


Ball slide of interchangeable type

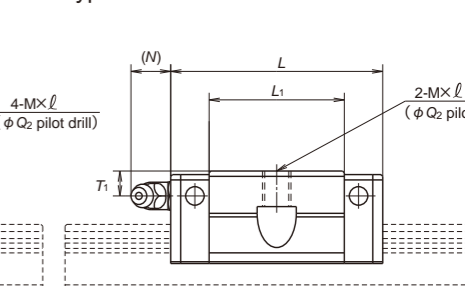
EM and JM types



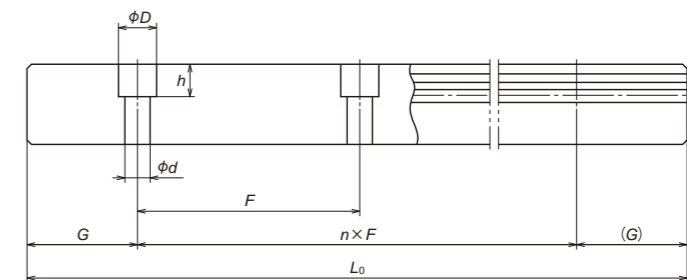
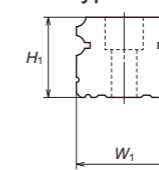
EM type



JM type



Rail of interchangeable type



Model No.	Assembly			Ball slide										Width	Height		
	Height	Width	Length	Mounting hole					Grease fitting			Width	Height				
				B	J	M×Pitch×l	Q2	L1	K	T	Hole size					T1	N
NS15JM NS15EM	24	4.6	18.5	52	40.4 56.8	41	—	M5×0.8×7	4.4	23.6 40	19.4	8	phi 3	6	3	15	12.5
NS20JM NS20EM	28	6	19.5	59	47.2 65.2	49	—	M6×1×9 (M6×1×9.5)	5.3	30 48	22	10	M6×0.75	5.5	11	20	15.5
NS25JM NS25EM	33	7	25	73	59.6 81.6	60	—	M8×1.25×10 (M8×1.25×11.5)	6.8	38 60	26	11 (12)	M6×0.75	7	11	23	18
NS30JM NS30EM	42	9	31	90	67.4 96.4	72	—	M10×1.5×12 (M10×1.5×14.5)	8.6	42 71	33	11 (15)	M6×0.75	8	11	28	23
NS35JM NS35EM	48	10.5	33	100	77 108	82	—	M10×1.5×13 (M10×1.5×14.5)	8.6	49 80	37.5	12 (15)	M6×0.75	8.5	11	34	27.5

Notes: 1) The external appearance of stainless steel ball slides differs slightly from of carbon steel ball slides.
2) Parenthesized dimensions are for items made of stainless steel.

Rail		Basic load rating										Weight	
Pitch	Mounting bolt hole d×D×h	G	Max. length L0max (l for stainless)	3) Dynamic		Static C0 (N)	MRO	Static moment (N·m)				Ball slide (kg)	Rail (kg/m)
				[50km] C50(N)	[100km] C100(N)			MPO		MRO			
60	*4.5×7.5×5.3 3.5×6×4.5	20	2 920 (1 800)	7 250 11 200	5 750 8 850	9 100 16 900	45.5 84.5	24.5 77	196 470	20.5 64.5	165 395	0.17 0.26	1.4
60	6×9.5×8.5	20	3 960 (3 500)	10 600 15 600	8 400 12 400	13 400 23 500	91.5 160	46.5 133	330 755	39 111	279 630	0.24 0.35	2.3
60	7×11×9	20	3 960 (3 500)	17 700 26 100	14 000 20 700	20 800 36 500	164 286	91 258	655 1 470	76 217	550 1 230	0.44 0.66	3.1
80	7×11×9	20	4 000 (3 500)	24 700 38 000	19 600 30 000	29 600 55 000	282 520	139 435	1 080 2 650	116 365	905 2 220	0.76 1.2	4.8
80	9×14×12	20	4 000 (3 500)	34 500 52 500	27 300 42 000	40 000 74 500	465 865	220 695	1 670 4 000	185 580	1 400 3 350	1.2 1.7	7

3) The basic load ratings comply with ISO standards. (ISO14728-1 and ISO14728-2)
C50: basic dynamic load rated for 50 km rating fatigue life, C100: basic dynamic load rating for 100 km rated fatigue life.
*) For NS15, M4 (4.5 x 7.5 x 5.3) rail mounting bolt holes are standard.
Please contact NSK to request M3 holes (3.5 x 6 x 4.5).

Unit: mm

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< As of July 2022 >

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www.nsk.com

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