

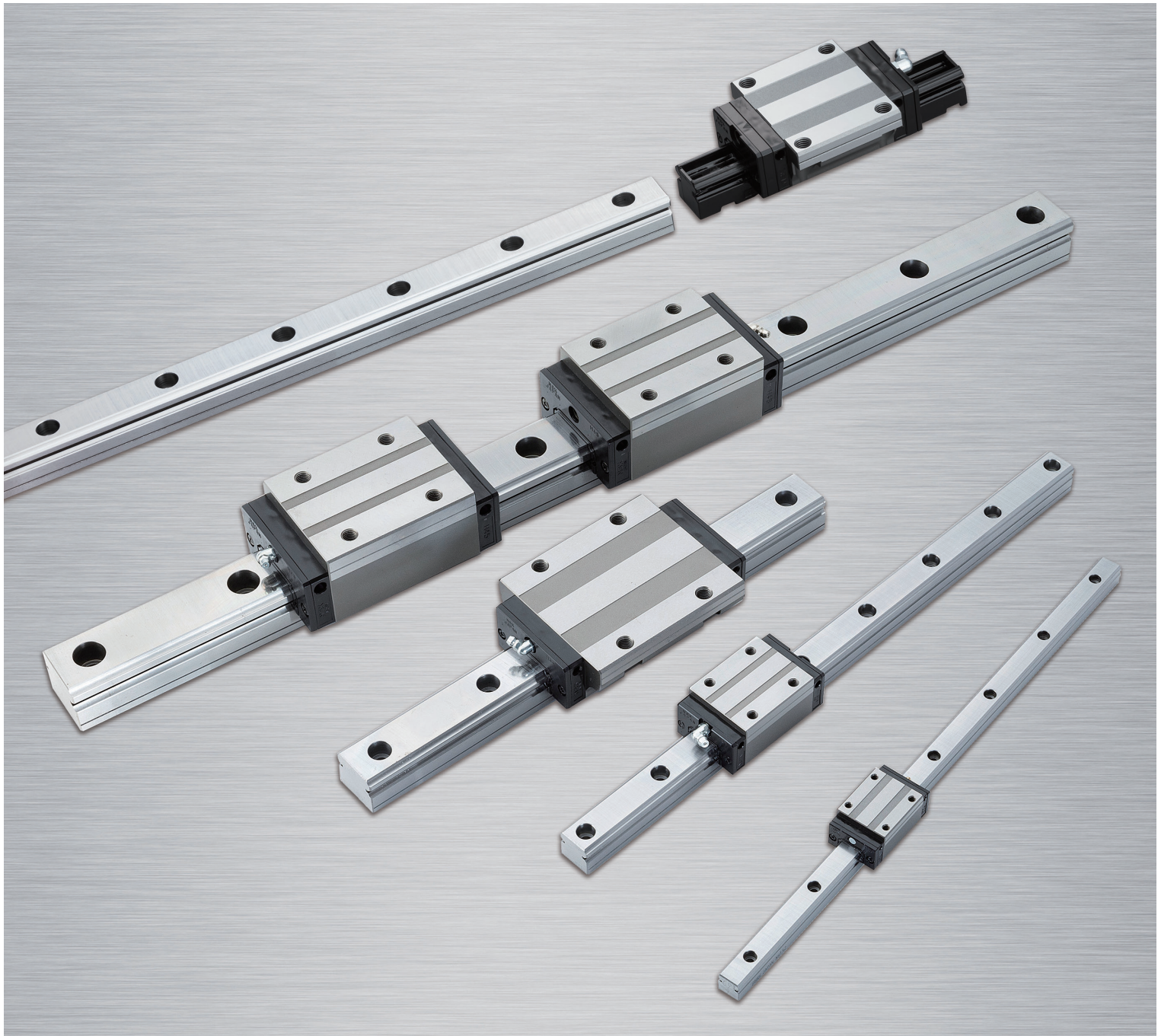
# NSK Linear Guides™

## Long-Life Series: DH/DS Models

Thanks to NSK's exclusive heat treatment technology, DH/DS linear guides build upon our proven, highly reliable standard NH/NS models to realize an even higher level of reliability. In addition to options such as highly dust-resistant end seals (DV model) and NSK K1-L™ lubrication units, interchangeable types are now supported.



Patent pending



# NSK's latest technologies combine to realize long-life linear guides with top-class reliability.

DH/DS linear guides combine NSK's exclusive TF heat treatment technology with the proven standard of our NH/NS models to significantly improve durability. For even longer maintenance-free performance, DH/DS models are compatible with the NSK K1-L™ lubrication unit, while DV models offer highly dust-resistant end seals that contribute to improved machine reliability. Furthermore, interchangeable types are now supported.

## Features of long-life DH/DS models

### 1. Excellent durability

#### Double the life of standard linear guides

DH/DS models are based on our proven, highly reliable standard NH/NS models that feature an optimized groove shape. Applying our special TF heat treatment achieves even longer life, expanding design possibilities for more compact and longer-lasting machines.

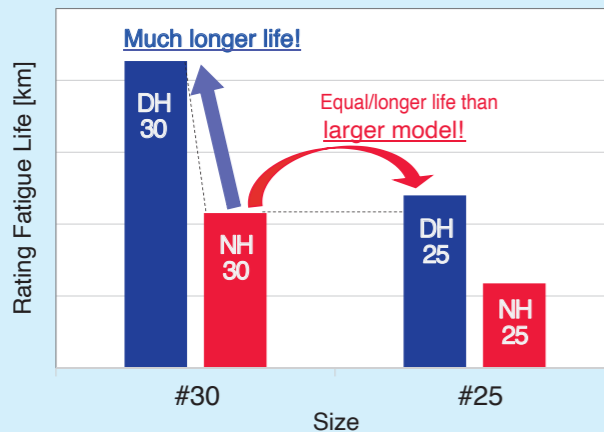
#### What is TF (Tough) Technology?

NSK's TF technology is an exclusive heat treatment developed and cultivated over years of experience with rolling bearings and materials. TF technology helps suppress surface flaking on the raceway. Deploying this technology in linear guides achieves double the life of standard models.

### Advantages of DH/DS models

Load ratings are 1.25 times higher and service life is doubled compared to conventional NH/NS models\*1. DH/DS linear guides offer greatly improved life at the same size and equal or longer life to the next smallest conventional model, allowing for equipment downsizing.

\*1: Representative values for model.



With TF Technology  
Long-Life DH/DS models  
Highly Dust-Resistant  
DV model

Optimized  
Ball Groove Design  
Standard NH/NS models  
Highly Dust-Resistant  
VH model

Longer life

NSK Linear Guides™

## 2. Fully compatible with standard NH/NS models

### Identical mounting dimensions

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

### 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. 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.

### Extensive lineup

Since release, we've expanded our lineup of long-life DH/DS models alongside the growing achievements of standard NH/NS models in the field. Interchangeable DH/DS models are now supported. Rails and ball slides for the entire lineup can be freely matched to suit the application.

### DH model

Larger ball diameter  
Higher load rating  
capacity



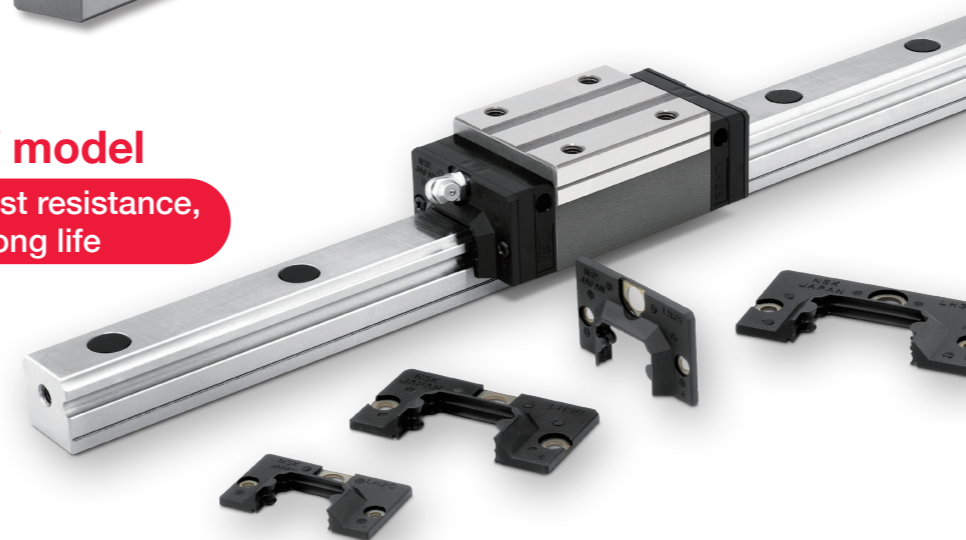
### DS model

Compact, low-profile  
shape



### DV model

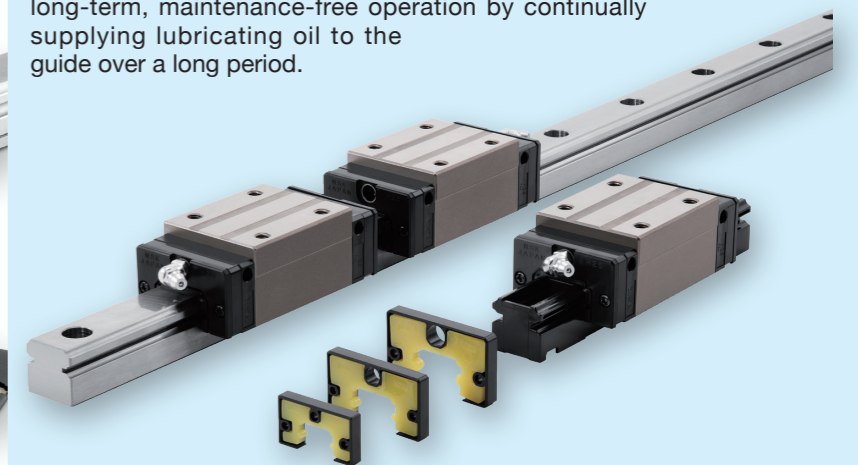
High dust resistance,  
long life



## 3. Abundant options

A wide variety of options are available to suit your needs and specifications, including the NSK K1-L lubrication unit, highly dust-resistant end seals (DV model), double seals, protectors, and surface treatments.

The NSK K1-L lubrication unit offers large improvements over our revolutionary K1 unit. NSK K1-L units support long-term, maintenance-free operation by continually supplying lubricating oil to the guide over a long period.



NSK K1-L™ Lubrication Unit

The DV model features highly dust-resistant end seals with a multi-lip structure that dramatically reduces the amount of foreign matter entry.

(Mounting dimensions match those of DH models.)

## 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.

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 

Fig. 1 Ball slide shape

### 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

Unit: mm

Model	Size	15	20	25	30	35	45	55	65
DH		2 980	3 960	3 960	4 000	4 000	3 990	3 960	3 900
DS		2 920	3 960	3 960	4 000	4 000			
DV		2 000	3 960	3 960	4 000	4 000	3 990	3 960	

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. (Interchangeable DV models support the PC grade only)

Table 2 Tolerance of preloaded assembly

Unit:  $\mu\text{m}$

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)		$\pm 8$ 3	$\pm 10$ 5	$\pm 20$ 7	$\pm 40$ 15	$\pm 80$ 25
Mounting width $W_2$ or $W_3$ Variation of $W_2$ or $W_3$ (All ball slides on reference rail)		$\pm 10$ 3	$\pm 15$ 7	$\pm 25$ 10	$\pm 50$ 20	$\pm 100$ 30
Running parallelism of surface C to surface A Running parallelism of surface D to surface B		Refer to Fig. 2 and Table 4.				

Table 3 Tolerance of interchangeable type

Unit:  $\mu\text{m}$

Characteristics	Accuracy grade	High precision grade PH		Normal grade PC		
		Model No.	DH15, 20, 25, 30, 35 DS15, 20, 25, 30, 35	DH45, 55, 65	DH15, 20, 25, 30, 35 DS15, 20, 25, 30, 35 DV15, 20, 25, 30, 35	DH45, 55, 65 DV45, 55
Mounting height H			$\pm 20$	$\pm 30$	$\pm 20$	$\pm 30$
Variation of mounting height H			15	20	15	20
Mounting width $W_2$ or $W_3$			$\pm 30$	$\pm 35$	$\pm 30$	$\pm 35$
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. 2 and Table 4.				

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

Unit:  $\mu\text{m}$

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

Note: Interchangeable DV models support the PC grade only.

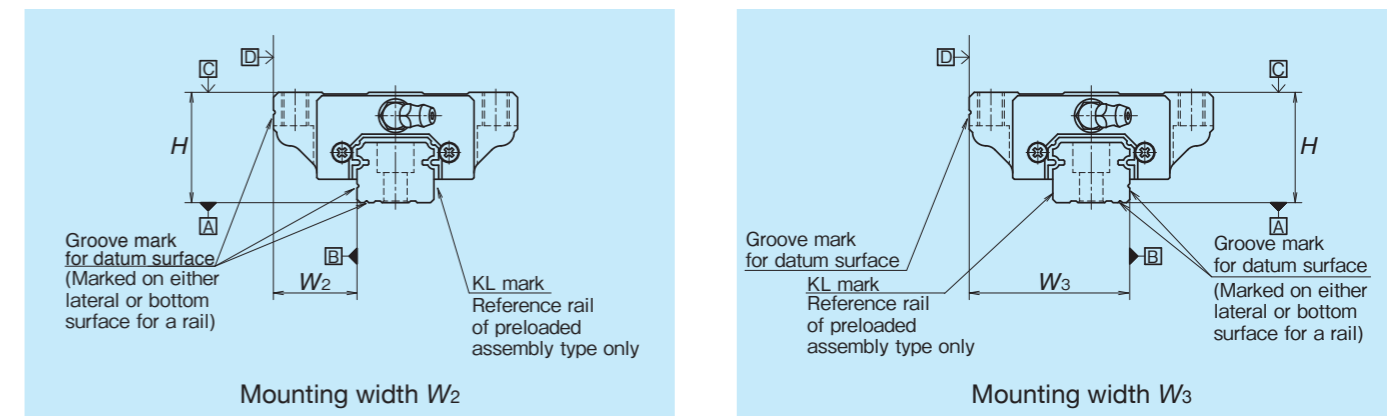


Fig. 2 Accuracy specifications

### 4. Preload and Rigidity

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

Table 5 Preload and rigidity

Model No.	Preload (N)		Rigidity (N/μm)			
	Slight preload Z1	Medium preload Z3	Vertical direction		Lateral direction	
			Slight preload Z1	Medium preload Z3	Slight preload Z1	Medium preload Z3
DH15 AN, EM	78	490	137	226	98	186
DH20 AN, EM	147	835	186	335	137	245
DH25 AL, AN, EM	196	1 270	206	380	147	284
DH30 AL, AN	245	1 570	216	400	157	294
DH30 EM	294	1 770	265	480	186	355
DH35 AL, AN, EM	390	2 350	305	560	216	390
DH45 AL, AN, EM	635	3 900	400	745	284	540
DH55 AL, AN, EM	980	5 900	490	910	345	645
DH65 AN, EM	1 470	8 900	580	1 070	400	755
DH15 BN, GM	98	685	196	345	137	284
DH20 BN, GM	196	1 080	265	480	196	355
DH25 BL, BN, GM	245	1 570	294	560	216	400
DH30 BL, BN, GM	390	2 260	360	665	265	480
DH35 BL, BN, GM	490	2 940	430	795	305	570
DH45 BL, BN, GM	785	4 800	520	960	370	695
DH55 BL, BN, GM	1 180	7 050	635	1 170	440	835
DH65 BN, GM	1 860	11 300	805	1 480	550	1 040

Notes: 1) Clearance for Fine clearance Z0 is 0 to 3 μm. Therefore, preload is zero. However, Z0 of PN grade is 0 to 15 μm.

2) Preload and rigidity of DV models is identical to that of DH models.

Table 7 Preload and rigidity

Model No.	Preload (N)		Rigidity (N/μm)			
	Slight preload Z1	Medium preload Z3	Vertical direction		Lateral direction	
			Slight preload Z1	Medium preload Z3	Slight preload Z1	Medium preload Z3
DS15 AL, EM	69	390	127	226	88	167
DS20 AL, EM	88	540	147	284	108	206
DS25 AL, EM	147	880	206	370	147	275
DS30 AL, EM	245	1 370	255	460	186	345
DS35 AL, EM	345	1 960	305	550	216	400
DS15 CL, JM	49	294	78	147	59	108
DS20 CL, JM	69	390	108	186	78	137
DS25 CL, JM	98	635	127	235	88	177
DS30 CL, JM	147	980	147	275	108	206
DS35 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							
	Preloaded assembly						Interchangeable type	
	Ultra precision	Super precision	High precision	Precision grade	Normal grade	High precision	Normal grade	
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	—	—	—	—	—	○		

Note: DV models come standard with K1-L. High precision PH and medium preload ZH are not supported.

Table 6 Clearance and preload of interchangeable type

DH Model / DV Model		Unit: μm	
Model No.	Fine clearance ZT	Slight preload ZZ	Medium preload ZH
DH15	-4 to 15	-4 to 0	-7 to -3
DH20		-5 to 0	-8 to -3
DH25		-5 to 0	-9 to -4
DH30		-7 to 0	-12 to -5
DH35	-5 to 15	-7 to 0	-12 to -5
DH45		-7 to 0	-14 to -7
DH55		-9 to 0	-18 to -9
DH65		-9 to 0	-19 to -10

Notes: 1) Negative (-) values indicate preload (elastic deformation of the balls).  
 2) The clearance / preload of DV models is the same as that of DH models.  
 3) DV models support fine clearance ZT and slight preload ZZ.

Table 8 Clearance and preload of interchangeable type

DS Model		Unit: μm	
Model No.	Fine clearance ZT	Slight preload ZZ	Medium preload ZH
DS15	-4 to 15	-4 to 0	-7 to -3
DS20	-4 to 15	-4 to 0	-7 to -3
DS25	-5 to 15	-5 to 0	-9 to -4
DS30	-5 to 15	-5 to 0	-9 to -4
DS35	-5 to 15	-6 to 0	-10 to -4

Note: Negative (-) values indicate preload (elastic deformation of the balls).

### 5. Basic Load Ratings and Rated Life

The basic load rating used to express the load capacity of linear guides is determined by ISO standards (ISO 14728-1, 14728-2). For long-life series DH/DS models, the rated load based on the ISO standard is multiplied by a coefficient that reflects the effect of life improvement technologies.

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 C<sub>100</sub> refers to the basic dynamic load rating for 100 km rated fatigue life and C<sub>50</sub> 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.

Basic load rating values are described in the dimension tables. In DH/DS 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 at 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<sub>w</sub>. 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.

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

Various loads may be applied to the linear guide (i.e., ball slide loads), including vertical loads, lateral loads, 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.

Please adjust your selection if life calculation results for DH/DS models are extremely short (less than 6,000 km) as this indicates very high surface pressure in the contact area between the rolling elements and raceway.

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 <sub>0</sub>	0.78C <sub>0</sub>	0.65C <sub>0</sub>

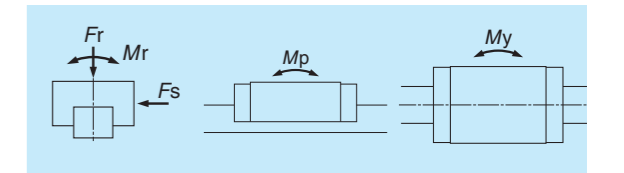


Fig. 3 Load directions

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		F <sub>r</sub>	F <sub>s</sub>	M <sub>r</sub>	M <sub>p</sub>	M <sub>y</sub>	$F_e = F_r$ $F_{se} = F_s \cdot \tan \alpha$ $F_{re} = \epsilon_r \cdot M_r$ $F_{pe} = \epsilon_p \cdot M_p$ $F_{ye} = \epsilon_y \cdot M_y$
2		F <sub>r</sub>	F <sub>s</sub>	M <sub>r</sub>			
3		F <sub>r</sub>	F <sub>s</sub>		M <sub>p</sub>	M <sub>y</sub>	$\alpha$ : Contact angle (=50°) Dynamic equivalent coefficients $\epsilon_r$ : Rolling direction $\epsilon_p$ : Pitching direction $\epsilon_y$ : Yawing direction
4		F <sub>r</sub>	F <sub>s</sub>				

The formula is determined by the relationship of loads in terms of volume. A full dynamic equivalent load can be easily obtained by using each coefficient.

After obtaining the dynamic equivalent coefficient in Table 13, the full dynamic equivalent load can be obtained using the appropriate equation below as determined by the magnitude of the load:

- When F<sub>r</sub> is the largest load:  $F_e = F_r + 0.5F_{se} + 0.5F_{re} + 0.5F_{pe} + 0.5F_{ye}$
- When F<sub>se</sub> is the largest load:  $F_e = 0.5F_r + F_{se} + 0.5F_{re} + 0.5F_{pe} + 0.5F_{ye}$
- When F<sub>re</sub> is the largest load:  $F_e = 0.5F_r + 0.5F_{se} + F_{re} + 0.5F_{pe} + 0.5F_{ye}$
- When F<sub>pe</sub> is the largest load:  $F_e = 0.5F_r + 0.5F_{se} + 0.5F_{re} + F_{pe} + 0.5F_{ye}$
- When F<sub>ye</sub> 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 13 Dynamic equivalent coefficients

Model	Dynamic equivalent coefficients (1/m)		
	ε <sub>r</sub>	ε <sub>p</sub>	ε <sub>y</sub>
DH15AN, EM	188	111	132
DH15BN, GM	188	72	86
DH20AN, EM	142	81	97
DH20BN, GM	142	57	68
DH25AL, AN, EM	123	68	81
DH25BL, BN, GM	123	51	61
DH30AL, AN	98	70	83
DH30EM	98	58	69
DH30BL, BN, GM	98	44	52
DH35AL, AN, EM	78	51	61
DH35BL, BN, GM	78	36	43
DH45AL, AN, EM	60	38	45
DH45BL, BN, GM	60	30	36
DH55AL, AN, EM	51	31	37
DH55BL, BN, GM	51	25	30
DH65AN, EM	43	27	32
DH65BN, GM	43	20	24
DS15AL, EM	177	116	138
DS15CL, JM	177	174	208
DS20AL, EM	127	94	112
DS20CL, JM	127	136	162
DS25AL, EM	111	70	83
DS25CL, JM	111	108	129
DS30AL, EM	94	63	75
DS30CL, JM	94	102	121
DS35AL, EM	76	54	64
DS35CL, JM	76	87	104

Note: Dynamic equivalent coefficients for DV models are the same as for DH models.

## 6. Dust-Resistant Parts and Lubrication Accessories

### (1) Standard specifications

- DH/DS linear guides can be used as is in normal operating conditions thanks to standard specifications that prevent the entry of foreign matter. The ball slides feature end seals on both ends, and bottom seals as standard. (Fig.4)
- The ball slides of DV model come standard with NSK K1-L on both ends.

Table 14 Seal friction per ball slide(maximum value) Unit: N

Model	Size	15	20	25	30	35	45	55	65
DH		8	9	10	10	12	17	22	29
DS		8	9	9	9	10	—	—	—
DV		11	13	14	17	23	33	44	—

### (2) Optional parts for dust resistance

Table 15 shows available options for higher dust resistance. Select the options that best suit your operation environment.

Table 15 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 matters, such as swarf generated in cutting operations 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 DH20 to DH65 and DV20 to DV55, but not for DS models.

## 7. Lubrication Components

### (1) Types of lubrication accessories

Fig. 5 shows grease fittings and tube fittings. We provide lubrication accessories with an extended thread body length (L) for the addition of dust-resistant accessories such as NSK K1-L lubrication units, double seals and protectors. We provide suitable lubrication accessories for special dust-resistant requirements upon request. NSK can also provide extended length threads for ease of replenishment. Please contact NSK if stainless lubrication accessories are required.

### (2) Mounting position of lubrication accessories

The standard position for grease fittings is at the end face of the ball slide, but we can mount them on the side of the end cap as an option. (Fig. 6)

Please consult NSK for the installation of grease or tube fittings to the ball slide body.

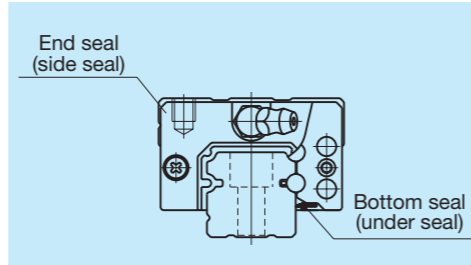


Fig. 4

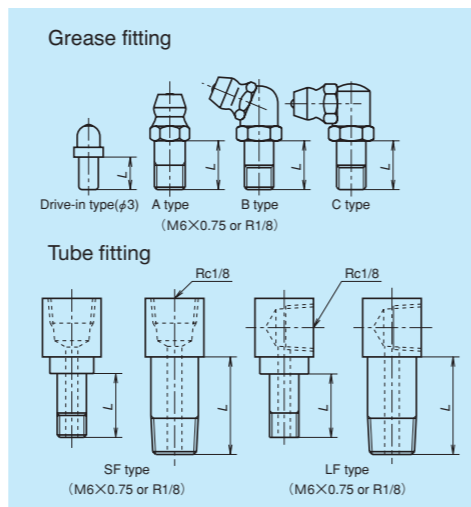


Fig. 5 Grease fitting and tube fitting

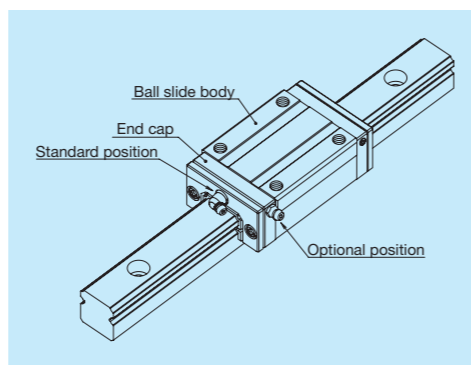


Fig. 6 Mounting position of lubrication accessories

## 8. NSK K1-L™ and NSK K1 Lubrication Units for Food Processing Machinery / Medical Equipment

Lubrication units consist a porous synthetic resin with abundant lubricating oil. As lubrication units contact the raceway surface close to the rolling element contact point, fresh oil seeps out from the resin to provide continuous lubrication. Table 16 shows linear guide dimensions when equipped with NSK K1-L and NSK K1 lubrication units for food processing machinery/medical equipment.

Table 16 Dimensions of linear guides equipped with NSK K1-L/ NSK K1 for food processing machinery/medical equipment Unit: mm

Model No.	Standard ball slide length	Ball slide length with two NSK K1-L or NSK K1 for food processing machinery/medical equipment L	NSK K1-L / NSK K1 for food processing machinery/medical equipment			Protrusion of grease fitting N	
			Thickness of single NSK K1-L unit V <sub>1</sub>	Thickness of single NSK K1 unit V <sub>2</sub>	Thickness of protective cover V <sub>3</sub>		
DH15	AN, EM	55	65.6	5.3	4.5	0.8	(5)
	BN, GM	74	84.6				
DH20	AN, EM	69.8	80.4	5.3	4.5	0.8	(14)
	BN, GM	91.8	102.4				
DH25	AL, AN, EM	79	90.6	5.8	5	0.8	(14)
	BL, BN, GM	107	118.6				
DH30	AL, AN	85.6	97.6	6	5	1	(14)
	EM	98.6	110.6				
DH35	BL, BN, GM	124.6	136.6	6.5	5.5	1	(14)
	AL, AN, EM	109	122				
DH45	AL, AN, EM	139	154	7.5	—	—	(15)
	BL, BN, GM	171	186				
DH55	AL, AN, EM	163	178	7.5	—	—	(15)
	BL, BN, GM	201	216				
DH65	AN, EM	193	211	9	—	—	(16)
	BN, GM	253	271				
DS15	AL, EM	56.8	66.4	4.8	4	0.8	(5)
	CL, JM	40.4	50				
DS20	AL, EM	65.2	75.8	5.3	4.5	0.8	(14)
	CL, JM	47.2	57.8				
DS25	AL, EM	81.6	92.2	5.3	4.5	0.8	(14)
	CL, JM	59.6	70.2				
DS30	AL, EM	96.4	108.4	6	5	1	(14)
	CL, JM	67.4	79.4				
DS35	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) + (V<sub>1</sub> thickness of single NSK K1-L unit) × (number of K1-L units).
- 2) NSK K1 lubrication units for food processing machinery /medical equipment are available for DH15 to DH35 and DS15 to DS35. When using these NSK K1 units, the slide length = (standard ball slide length) + (V<sub>2</sub> thickness of single NSK K1 unit × number of K1 units) + (V<sub>3</sub> thickness of the protective cover × 2).

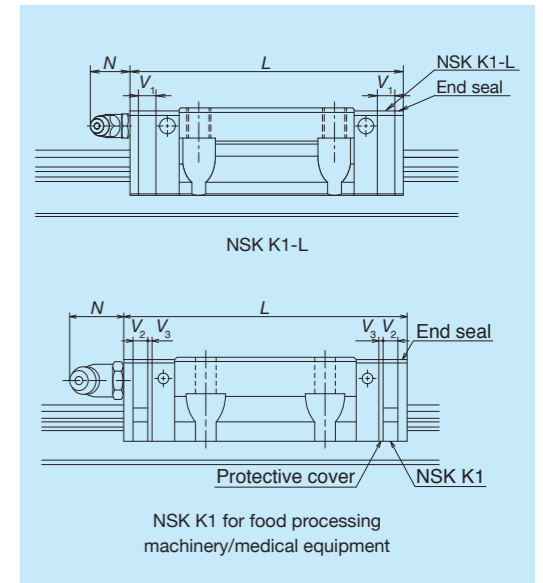


Fig. 7

## 9. Rust Prevention

### Surface treatments

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

Table 17 Material/surface treatment code

Code	Description
C	Special high carbon steel
D	Special high carbon steel with surface treatment
V	Special high carbon steel + tapped holes on rail bottom surface
W	Special high carbon steel with surface treatment + tapped holes on rail bottom surface
Z	Other, special

Note: Codes V and W are supported for DV models only.

### 10. Installation

#### (1) Permissible values for mounting error

Mounting errors may result in harmful effects, such as shortened operating life, deteriorated motion accuracy, and/or friction variation. Tables 18 and 19 show mounting tolerances, with representative errors shown in Figs 8 and 9.

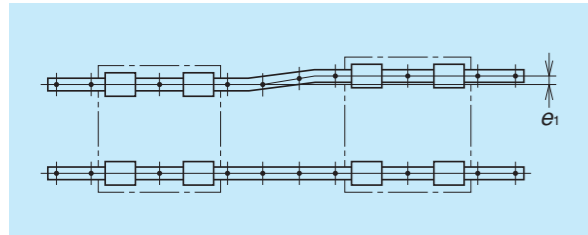


Fig. 8

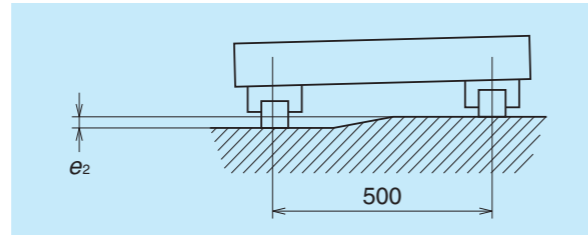


Fig. 9

Table 18

Unit:  $\mu\text{m}$

Value	Preload	Model No.							
		DH15	DH20	DH25	DH30	DH35	DH45	DH55	DH65
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	375 $\mu\text{m}/500\text{mm}$							
	Z1, ZZ, Z3, ZH	330 $\mu\text{m}/500\text{mm}$							

Note: Permissible values for mounting error of DV models are the same as those for DH models.

Table 19

Unit:  $\mu\text{m}$

Value	Preload	Model No.				
		DS15	DS20	DS25	DS30	DS35
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	375 $\mu\text{m}/500\text{mm}$				
	Z1, ZZ, Z3, ZH	330 $\mu\text{m}/500\text{mm}$				

#### (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 20.

Shoulder height of the mounting surface and corner radius r

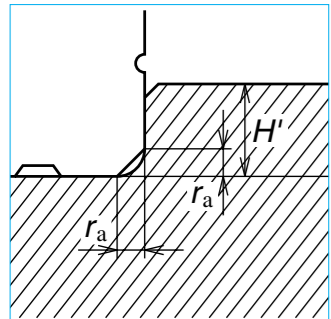


Fig. 10 Shoulder for the rail datum surface

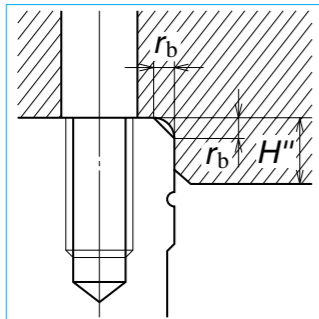


Fig. 11 Shoulder for the ball slide datum surface

Table 20

Unit: mm

Model No.	Corner radius(maximum)		Shoulder height	
	$r_a$	$r_b$	$H'$	$H''$
DH15	0.5	0.5	4	4
DH20	0.5	0.5	4.5	5
DH25	0.5	0.5	5	5
DH30	0.5	0.5	6	6
DH35	0.5	0.5	6	6
DH45	0.7	0.7	8	8
DH55	0.7	0.7	10	10
DH65	1	1	11	11
DS15	0.5	0.5	4	4
DS20	0.5	0.5	4.5	5
DS25	0.5	0.5	5	5
DS30	0.5	0.5	6	6
DS35	0.5	0.5	6	6

Note: Shoulder height and corner radius of DV models are the same as those for DH models.

### 11. Maximum Allowable Speed

Table 21 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 21 Maximum allowable speed

Unit : m/min

Model	Size	15	20	25	30	35	45	55	65
DH				300				200	150
DS			300					—	—

### 12. Handling Precautions

- (1) Bumping or hitting the slide may cause damage.
- (2) If rust preventive oil has been applied, thoroughly remove it and put lubricant inside the slide before use. For seal lubrication, put lubricant on the rail.
- (3) The operating temperature should be less than 80°C. If this temperature is exceeded, plastic parts may be damaged.
- (4) If using NSK K1-L or NSK K1 lubrication units for food processing machinery/medical equipment, the maximum operating temperature is 50°C (momentary maximum temperature: 80°C). Do not leave lubrication units in white kerosene or rust preventive oil that contains white kerosene.
- (5) Note the following regarding interchangeable slides:
  - (a) Interchangeable slides are delivered on a provisional rail (an installation tool).
  - (b) Always use the provisional rail when transferring interchangeable slides onto/from a rail.
  - (c) Do not remove the slide from the provisional rail except when transferring to a rail.

## 13. Dimensions

DH - AN (High-load / Standard, square type)

DH - BN (Super-high-load / Long, square type)

### (1) Reference number for assembly (Preloaded assembly or assembled interchangeable slide/rail)

<b>DH 30 1200 ANC 2 -** P5 3</b>	
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. 1 on page 3)	Number of ball slides per rail
Material/surface treatment code (refer to Table 17 on page 8) C: Special high carbon steel, D: Special high carbon steel with surface treatment	

### (2) Reference number for interchangeable type

<b>DAH 30 AN Z -L</b>	
Ball slide	Option code No code: No options -L: Equipped with NSK K1-L
Interchangeable ball slide model code DAH: DH model interchangeable ball slide	
Size	Preload code No code: Fine clearance, Z: Slight preload, H: Medium preload
Ball slide shape code (refer to Fig. 1 on page 3)	

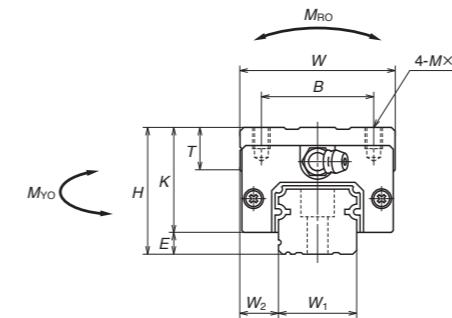
<b>N1H 30 1200 LCN -** PC Z</b>	
Rail	Preload code (refer to Table 9 on page 5) T: Fine clearance Z: Slight preload (common rail for slight or medium preload)
Interchangeable rail model code N1H: NH model interchangeable rail	Accuracy code PH: High precision grade interchangeable type PC: Normal grade interchangeable type
Size	Design serial number Added to the reference number
Rail length (mm)	Butting rail specification* N: Non-butting; L: Butting specification
Rail shape code: L L: Standard	
Material/surface treatment code (refer to Table 17 on page 8)	*Please consult with NSK when requesting the butting rail specification.

Rails are the same as the NH model

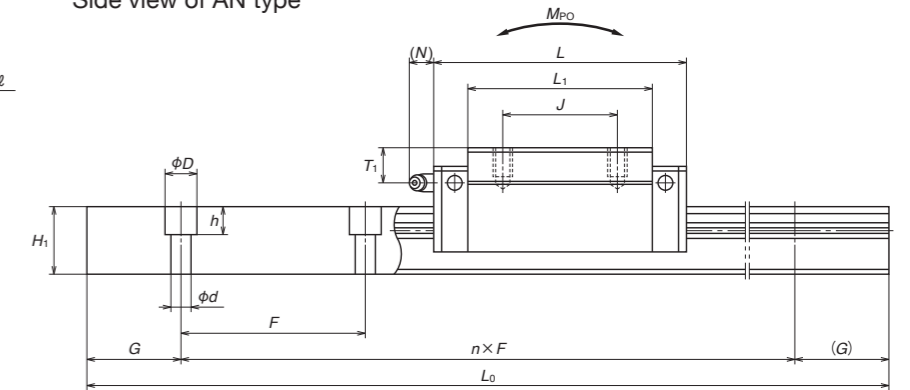
Model No.	Assembly			Ball slide									Grease fitting			Width W <sub>1</sub>	Height H <sub>1</sub>
	Height H	E	W <sub>2</sub>	Width W	Length L	Mounting hole			L <sub>1</sub>	K	T	Hole size					
						B	J	M×Pitch×ℓ				Hole size	T <sub>1</sub>	N			
DH15AN DH15BN	28	4.6	9.5	34	55 74	26	26	M4×0.7×6	39 58	23.4	8	φ3	8.5	3.3	15	15	
DH20AN DH20BN	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	
DH25AN DH25BN	40	7	12.5	48	79 107	35	35 50	M6×1×9	58 86	33	12	M6×0.75	10	11	23	22	
DH30AN DH30BN	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	
DH35AN DH35BN	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	
DH45AN DH45BN	70	14	20.5	86	139 171	60	60 80	M10×1.5×17	105 137	56	17	Rc1/8	20	13	45	38	
DH55AN DH55BN	80	15	23.5	100	163 201	75	75 95	M12×1.75×18	126 164	65	18	Rc1/8	21	13	53	44	
DH65AN DH65BN	90	16	31.5	126	193 253	76	70 120	M16×2×20	147 207	74	23	Rc1/8	19	13	63	53	

Assembly (Preloaded assembly or assembled interchangeable slide/rail)

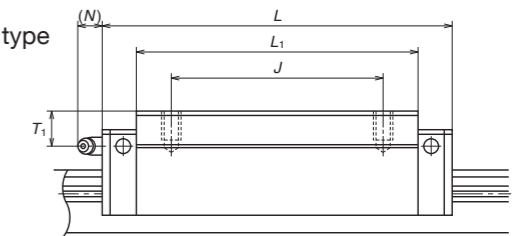
Front view of AN and BN types



Side view of AN type

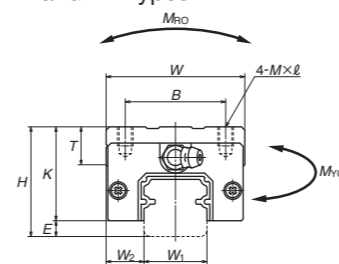


Side view of BN type

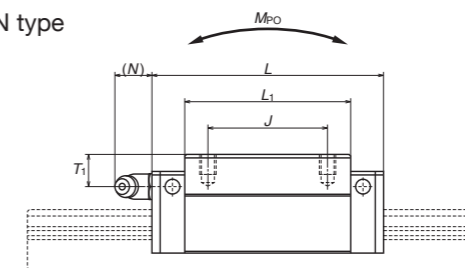


Ball slide of interchangeable type

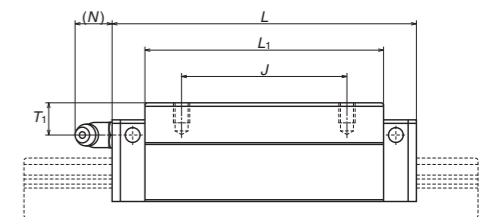
AN and BN types



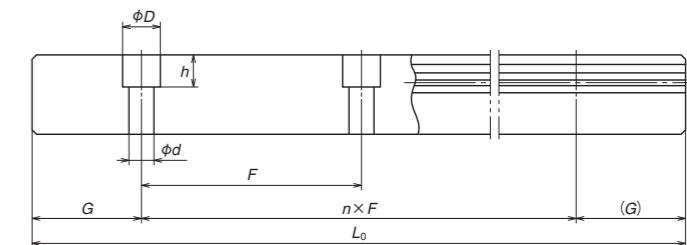
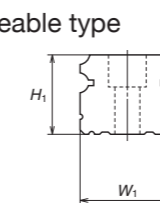
AN type



BN type



Rail of interchangeable type



Unit: mm

Pitch F	Rail		1) Basic load ratings										Weight	
	Mounting bolt hole d×D×h	G (Ref.)	Max. length L <sub>0max</sub>	Dynamic		Static		Static moment (N·m)				Ball slide (kg)	Rail (kg/m)	
				[50km] C <sub>50</sub> (N)	[100km] C <sub>100</sub> (N)	C <sub>0</sub> (N)	M <sub>RO</sub>	M <sub>PO</sub>		M <sub>YO</sub>				
60	4.5×7.5×5.3	20	2 980	17 800 22 800	14 200 18 100	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	29 800 38 000	23 700 30 000	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	42 500 57 500	33 500 45 500	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	51 500 77 000	41 000 61 000	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	78 500 102 000	62 500 81 000	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	135 000 164 000	107 000 131 000	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	199 000 243 000	158 000 193 000	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	300 000 390 000	239 000 310 000	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	

Note 1) For details on basic load ratings, refer to "5. Basic Load Ratings and Rated Life" on page 6.

DH - AL (High-load / Standard, square low-profile type)  
 DH - BL (Super-high-load / Long, square low-profile type)

**(1) Reference number for assembly (Preloaded assembly or assembled interchangeable slide/rail)**

<b>DH 30 1200 AL C 2 -** P5 3</b>	
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. 1 on page 3)	Number of ball slides per rail
Material/surface treatment code (refer to Table 17 on page 8) C: Special high carbon steel, D: Special high carbon steel with surface treatment	

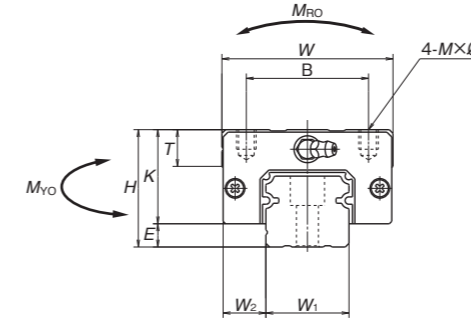
**(2) Reference number for interchangeable type**

<b>DAH 30 AL Z -L</b>	
Ball slide	Option code No code: No options -L: Equipped with NSK K1-L
Interchangeable ball slide model code DAH: DH model interchangeable ball slide	
Size	Preload code No code: Fine clearance, Z: Slight preload, H: Medium preload
Ball slide shape code (refer to Fig. 1 on page 3)	

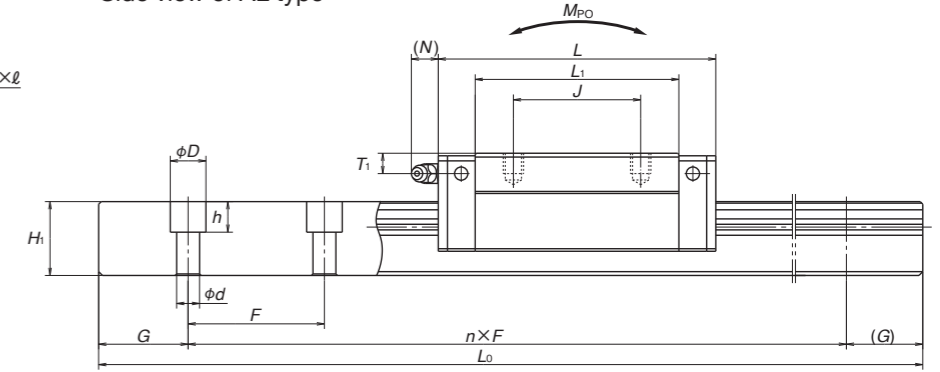
<b>N1H 30 1200 LCN -** PC Z</b>	
Rail	Preload code (refer to Table 9 on page 5) T: Fine clearance Z: Slight preload (common rail for slight or medium preload)
Interchangeable rail model code N1H: NH model interchangeable rail	Accuracy code PH: High precision grade interchangeable type PC: Normal grade interchangeable type
Size	Design serial number Added to the reference number
Rail length (mm)	Butting rail specification* N: Non-butting; L: Butting specification
Rail shape code: L L: Standard	
Material/surface treatment code (refer to Table 17 on page 8)	*Please consult with NSK when requesting the butting rail specification.

Rails are the same as the NH model

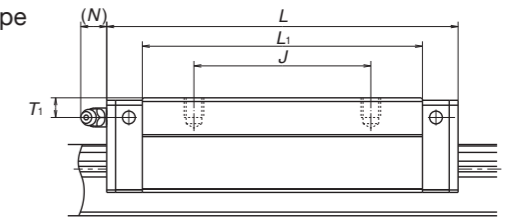
Assembly (Preloaded assembly or assembled interchangeable slide/rail)  
 Front view of AL and BL types



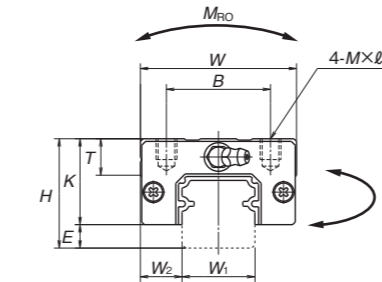
Side view of AL type



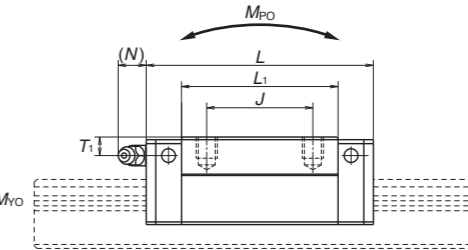
Side view of BL type



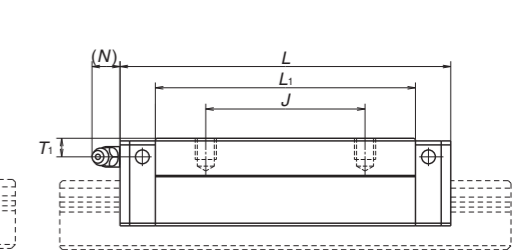
Ball slide of interchangeable type  
 AL and BL types



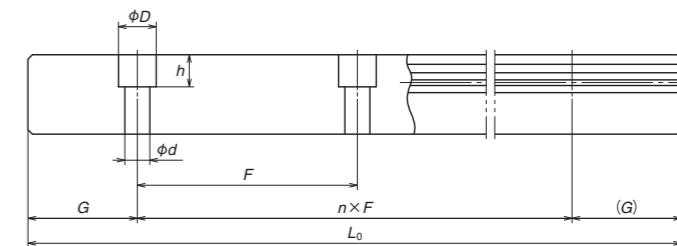
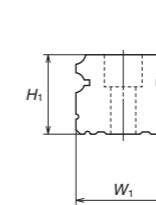
AL type



BL type



Rail of interchangeable type



Model No.	Assembly			Ball slide								Grease fitting			Width W <sub>1</sub>	Height H <sub>1</sub>
	Height H	E	W <sub>2</sub>	Width W	Length L	Mounting hole			L <sub>1</sub>	K	T	Hole size	T <sub>1</sub>	N		
						B	J	M×Pitch×ℓ								
DH25AL DH25BL	36	7	12.5	48	79 107	35	35 50	M6×1×6	58 86	29	12	M6×0.75	6	11	23	22
DH30AL DH30BL	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
DH35AL DH35BL	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
DH45AL DH45BL	60	14	20.5	86	139 171	60	60 80	M10×1.5×10	105 137	46	17	Rc1/8	10	13	45	38
DH55AL DH55BL	70	15	23.5	100	163 201	75	75 95	M12×1.75×13	126 164	55	15	Rc1/8	11	13	53	44

Rail		1) Basic load ratings											Weight	
Pitch F	Mounting bolt hole d×D×h	G (Ref.)	Max. length L <sub>0max</sub>	Dynamic		Static C <sub>0</sub> (N)	M <sub>RO</sub>	Static moment (N·m)				Ball slide (kg)	Rail (kg/m)	
				[50km] C <sub>50</sub> (N)	[100km] C <sub>100</sub> (N)			M <sub>PO</sub>		M <sub>YO</sub>				
				(One slide)	(Two slides)	(One slide)	(Two slides)							
60	7×11×9	20	3 960	42 500 57 500	33 500 45 500	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	51 500 77 000	41 000 61 000	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	78 500 102 000	62 500 81 000	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	135 000 164 000	107 000 131 000	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	199 000 243 000	158 000 193 000	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	

Note 1) For details on basic load ratings, refer to "5. Basic Load Ratings and Rated Life" on page 6.



DH - EM (High-load / Standard, flanged type)  
 DH - GM (Super-high-load / Long, flanged type)

### (1) Reference number for assembly (Preloaded assembly or assembled interchangeable slide/rail)

<b>DH 30 1200 EMC 2 -** P5 3</b>	
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. 1 on page 3)	Number of ball slides per rail
Material/surface treatment code (refer to Table 17 on page 8) C: Special high carbon steel, D: Special high carbon steel with surface treatment	

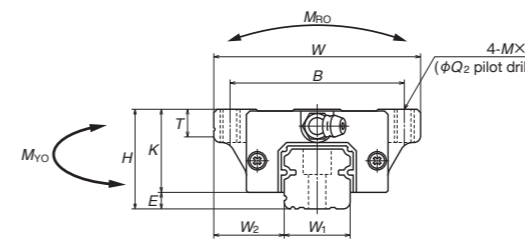
### (2) Reference number for interchangeable type

<b>DAH 30 EM Z -L</b>	
Ball slide	Option code No code: No options -L: Equipped with NSK K1-L
Interchangeable ball slide model code DAH: DH model interchangeable ball slide	
Size	Preload code No code: Fine clearance, Z: Slight preload, H: Medium preload
Ball slide shape code (refer to Fig. 1 on page 3)	

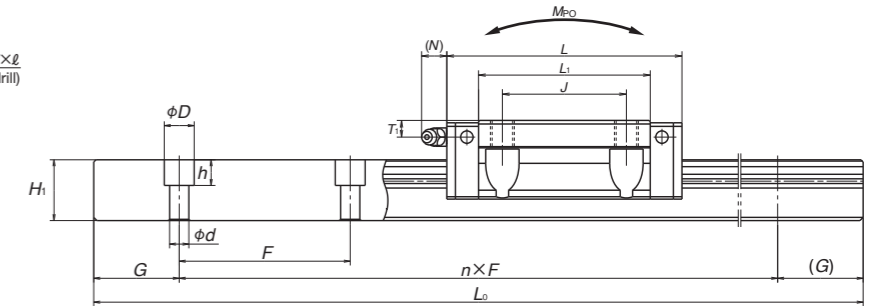
<b>N1H 30 1200 LCN -** PC Z</b>	
Rail	Preload code (refer to Table 9 on page 5) T: Fine clearance Z: Slight preload (common rail for slight or medium preload)
Interchangeable rail model code N1H: NH model interchangeable rail	Accuracy code PH: High precision grade interchangeable type PC: Normal grade interchangeable type
Size	Design serial number Added to the reference number
Rail length (mm)	Butting rail specification* N: Non-butting; L: Butting specification
Rail shape code: L L: Standard	
Material/surface treatment code (refer to Table 17 on page 8)	*Please consult with NSK when requesting the butting rail specification.

Rails are the same as the NH model

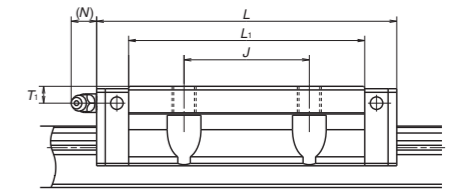
Assembly (Preloaded assembly or assembled interchangeable slide/rail)  
 Front view of EM and GM types



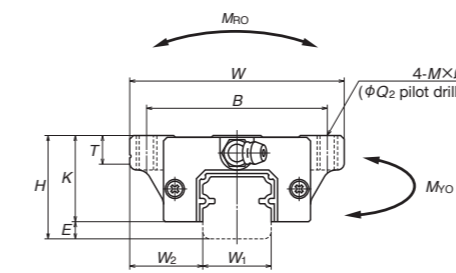
Side view of EM type



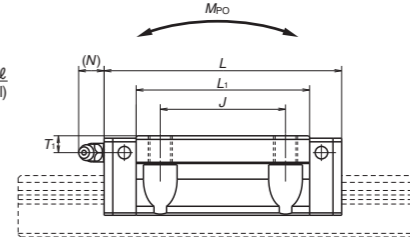
Side view of GM type



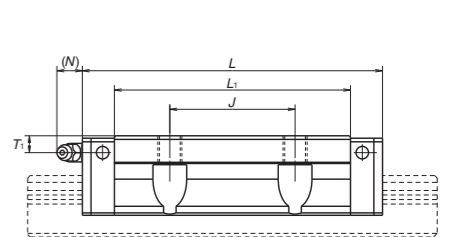
Ball slide of interchangeable type  
 EM and GM types



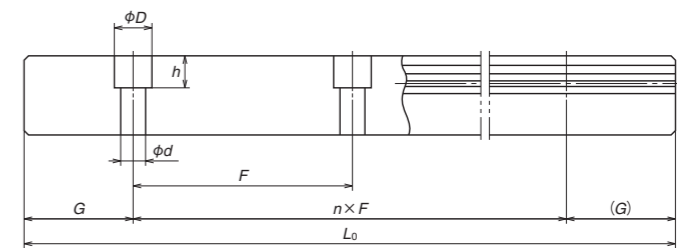
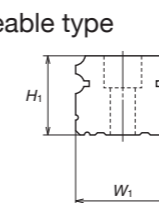
EM type



GM type



Rail of interchangeable type



Model No.	Assembly			Ball slide										Width	Height		
	Height	Width	Length	Mounting hole					Grease fitting								
				B	J	M×Pitch×ℓ	Q <sub>2</sub>	L <sub>1</sub>	K	T	Hole size	T <sub>1</sub>	N			W <sub>1</sub>	H <sub>1</sub>
DH15EM DH15GM	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
DH20EM DH20GM	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
DH25EM DH25GM	36	7	23.5	70	79 107	57	45	M8×1.25×10	6.8	58 86	29	11	M6×0.75	6	11	23	22
DH30EM DH30GM	42	9	31	90	98.6 124.6	72	52	M10×1.5×12	8.6	72 98	33	11	M6×0.75	7	11	28	26
DH35EM DH35GM	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
DH45EM DH45GM	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
DH55EM DH55GM	70	15	43.5	140	163 201	116	95	M14×2×18	12.5	126 164	55	15	Rc1/8	11	13	53	44
DH65EM DH65GM	90	16	53.5	170	193 253	142	110	M16×2×24	14.6	147 207	74	23	Rc1/8	19	13	63	53

Pitch	Mounting bolt hole d×D×h	G (Ref.)	Max. length L <sub>0max</sub>	Basic load ratings								Weight	
				Dynamic		Static		Static moment (N·m)				Ball slide (kg)	Rail (kg/m)
				[50km] C <sub>50</sub> (N)	[100km] C <sub>100</sub> (N)	C <sub>0</sub> (N)	M <sub>RO</sub>	M <sub>PO</sub>		M <sub>YO</sub>			
								(One slide)	(Two slides)	(One slide)	(Two slides)		
60	4.5×7.5×5.3	20	2 980	17 800 22 800	14 200 18 100	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	29 800 38 000	23 700 30 000	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	42 500 57 500	33 500 45 500	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	59 000 77 000	47 000 61 000	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	78 500 102 000	62 500 81 000	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	135 000 164 000	107 000 131 000	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	199 000 243 000	158 000 193 000	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	300 000 390 000	239 000 310 000	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

Note 1) For details on basic load ratings, refer to "5. Basic Load Ratings and Rated Life" on page 6.

DS - CL (Medium-load / Short, square low-profile type)

DS - AL (High-load / Standard, square low-profile type)

## (1) Reference number for assembly (Preloaded assembly or assembled interchangeable slide/rail)

<b>DS 30 1200 AL C 2 -** P5 3</b>	
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. 1 on page 3)	Number of ball slides per rail
Material/surface treatment code (refer to Table 17 on page 8) C: Special high carbon steel, D: Special high carbon steel with surface treatment	

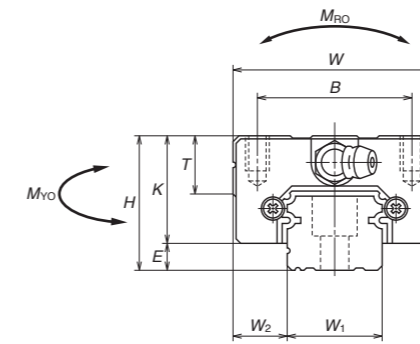
## (2) Reference number for interchangeable type

<b>DAS 30 AL Z -L</b>	
Ball slide	Option code No code: No options -L: Equipped with NSK K1-L
Interchangeable ball slide model code DAS: DS model interchangeable ball slide	Preload code No code: Fine clearance, Z: Slight preload, H: Medium preload
Size	
Ball slide shape code (refer to Fig. 1 on page 3)	

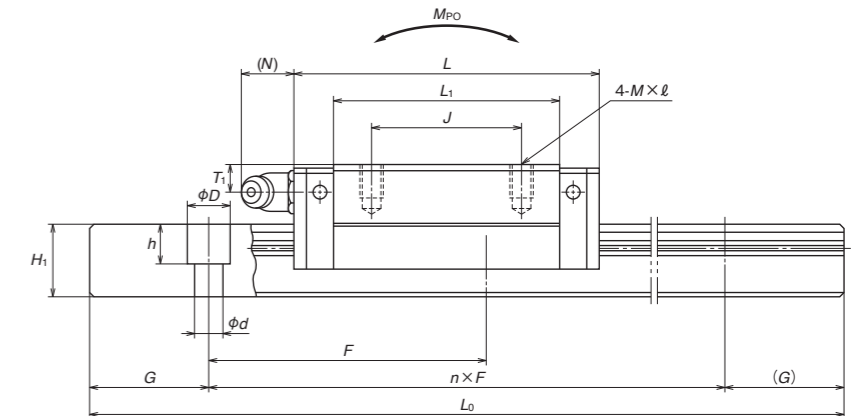
<b>N1S 30 1200 LCN -** PC Z</b>	
Rail	Preload code (refer to Table 9 on page 5) T: Fine clearance Z: Slight preload (common rail for slight or medium preload)
Interchangeable rail model code N1S: NS model interchangeable rail	Accuracy code PH: High precision grade interchangeable type PC: Normal grade interchangeable type
Size	Design serial number Added to the reference number
Rail length (mm)	Butting rail specification* N: Non-butting; L: Butting specification
Rail shape code L: NS15 with mounting holes for M3, NS20 to NS35 standard T: NS15 with mounting holes for M4	
Material/surface treatment code (refer to Table 17 on page 8)	*Please consult with NSK when requesting the butting rail specification.

Rails are the same as the NS model

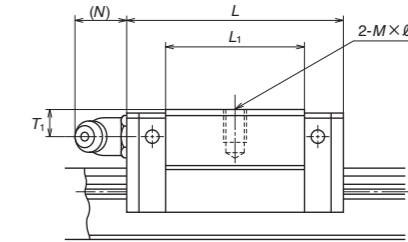
Assembly (Preloaded assembly or assembled interchangeable slide/rail)  
Front view of AL and CL types



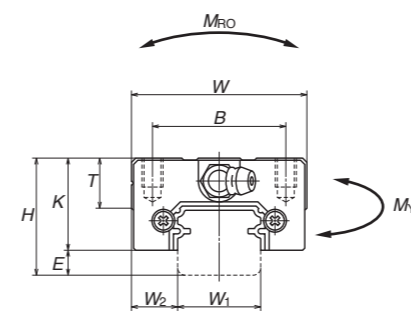
Side view of AL type



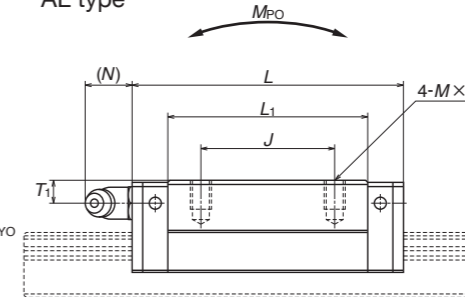
Side view of CL type



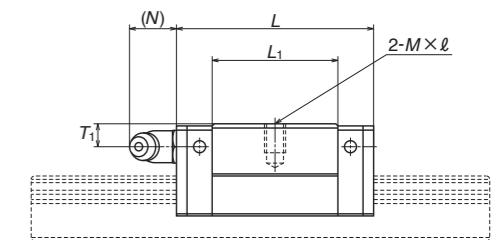
Ball slide of interchangeable type  
AL and CL types



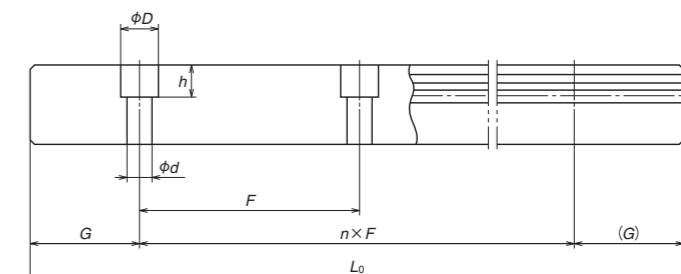
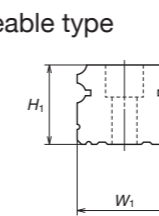
AL type



CL type



Rail of interchangeable type



Model No.	Assembly			Ball slide										Width W <sub>1</sub>	Height H <sub>1</sub>	
	Height H	E	W <sub>2</sub>	Width W	Length L	Mounting hole			L <sub>1</sub>	K	T	Grease fitting				
						B	J	M×Pitch×ℓ				Hole size	T <sub>1</sub>			N
DS15CL DS15AL	24	4.6	9.5	34	40.4 56.8	26	— 26	M4×0.7×6	23.6 40	19.4	10	φ 3	6	3	15	12.5
DS20CL DS20AL	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
DS25CL DS25AL	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
DS30CL DS30AL	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
DS35CL DS35AL	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

Pitch F	Rail			Basic load ratings								Weight	
	Mounting bolt hole d×D×h	G (Ref.)	Max. length L <sub>0max</sub>	Dynamic		Static		Static moment (N·m)				Ball slide (kg)	Rail (kg/m)
				[50km] C <sub>50</sub> (N)	[100km] C <sub>100</sub> (N)	C <sub>0</sub> (N)	M <sub>RO</sub>	M <sub>PO</sub>		M <sub>VO</sub>			
60	*4.5×7.5×5.3 3.5×6×4.5	20	2 920	9 150 14 100	7 250 11 200	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	13 400 19 700	10 600 15 600	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	22 300 33 000	17 700 26 100	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	31 000 48 000	24 700 38 000	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	43 000 66 500	34 500 52 500	40 000 74 500	465 865	220 695	1 670 4 000	185 580	1 400 3 350	0.86 1.3	7.0

Notes 1) For details on basic load ratings, refer to "5. Basic Load Ratings and Rated Life" on page 6.  
\*) Standard mounting hole of NS15 rail is for M4 bolts (Hole size: 4.5 × 7.5 × 5.3).  
If you require mounting hole for M3 bolts (Hole size: 3.5 × 6 × 4.5), please specify when ordering.

Unit: mm

DS - JM (Medium-load / Short, flanged type)  
 DS - EM (High-load / Standard, flanged type)

### (1) Reference number for assembly (Preloaded assembly or assembled interchangeable slide/rail)

<b>DS 30 1200 EMC 2 -** P5 3</b>	
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. 1 on page 3)	Number of ball slides per rail
Material/surface treatment code (refer to Table 17 on page 8) C: Special high carbon steel, D: Special high carbon steel with surface treatment	

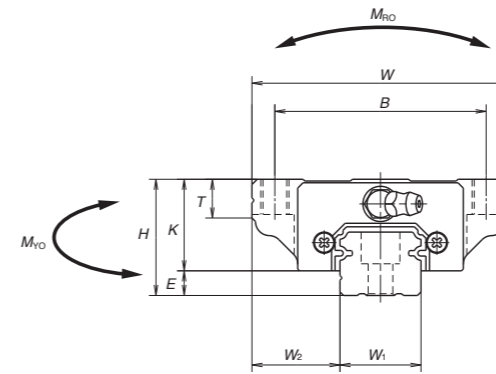
### (2) Reference number for interchangeable type

<b>DAS 30 EM Z -L</b>	
Ball slide	Option code No code : No options -L: Equipped with NSK K1-L
Interchangeable ball slide model code DAS: DS model interchangeable ball slide	
Size	Preload code No code: Fine clearance, Z: Slight preload, H: Medium preload
Ball slide shape code (refer to Fig. 1 on page 3)	

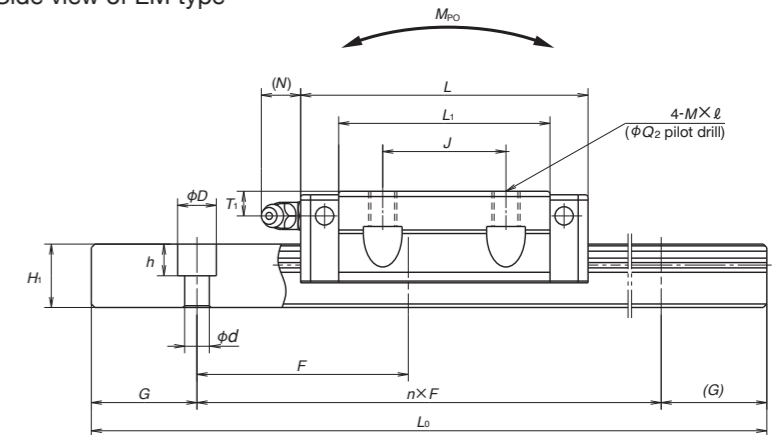
<b>N1S 30 1200 LCN -** PC Z</b>	
Rail	Preload code (refer to Table 9 on page 5) T: Fine clearance Z: Slight preload (common rail for slight or medium preload)
Interchangeable rail model code N1S: NS model interchangeable rail	Accuracy code PH: High precision grade interchangeable type PC: Normal grade interchangeable type
Size	Design serial number Added to the reference number
Rail length (mm)	Butting rail specification* N: Non-butting; L: Butting specification
Rail shape code L: NS15 with mounting holes for M3, NS20 to NS35 standard T: NS15 with mounting holes for M4	
Material/surface treatment code (refer to Table 17 on page 8)	*Please consult with NSK when requesting the butting rail specification.

Rails are the same as the NS model

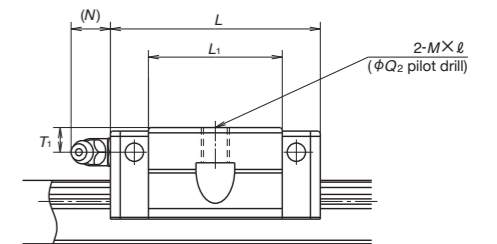
Assembly (Preloaded assembly or assembled interchangeable slide/rail)  
 Front view of EM and JM types



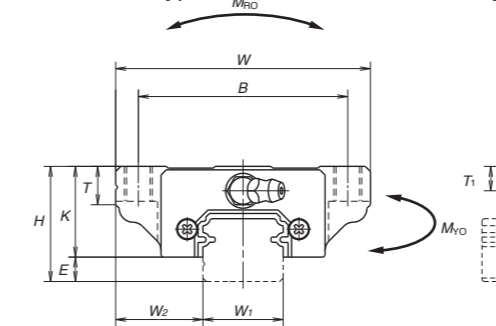
Side view of EM type



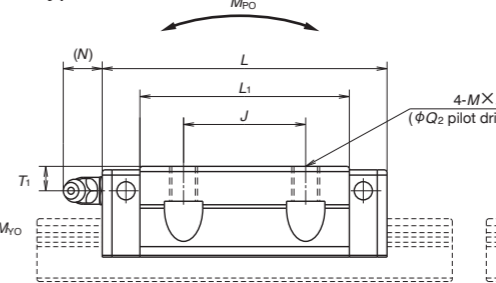
Side view of JM type



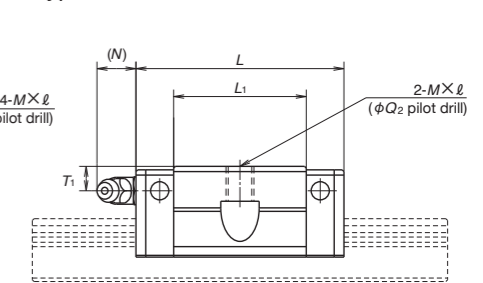
Ball slide of interchangeable type  
 EM and JM types



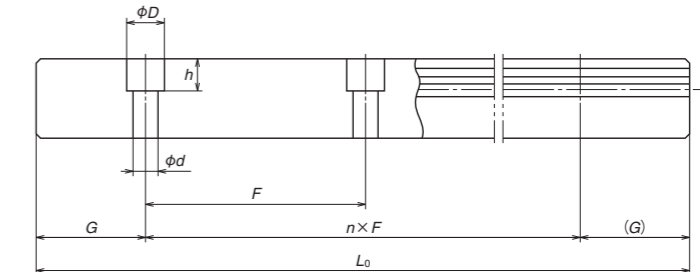
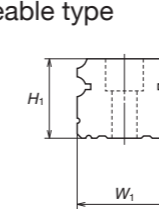
EM type



JM type



Rail of interchangeable type



Model No.	Assembly			Ball slide										Width	Height		
	Height	E	W <sub>2</sub>	Width	Length	Mounting hole				Grease fitting			Width			Height	
						B	J	M×Pitch×ℓ	Q <sub>2</sub>	L <sub>1</sub>	K	T					Hole size
<b>DS15JM</b> <b>DS15EM</b>	24	4.6	18.5	52	40.4 56.8	41	— 26	M5×0.8×7	4.4	23.6 40	19.4	8	φ 3	6	3	15	12.5
<b>DS20JM</b> <b>DS20EM</b>	28	6	19.5	59	47.2 65.2	49	— 32	M6×1×9	5.3	30 48	22	10	M6×0.75	5.5	11	20	15.5
<b>DS25JM</b> <b>DS25EM</b>	33	7	25	73	59.6 81.6	60	— 35	M8×1.25×10	6.8	38 60	26	11	M6×0.75	7	11	23	18
<b>DS30JM</b> <b>DS30EM</b>	42	9	31	90	67.4 96.4	72	— 40	M10×1.5×12	8.6	42 71	33	11	M6×0.75	8	11	28	23
<b>DS35JM</b> <b>DS35EM</b>	48	10.5	33	100	77 108	82	— 50	M10×1.5×13	8.6	49 80	37.5	12	M6×0.75	8.5	11	34	27.5

Rail		Basic load ratings										Weight	
Pitch	Mounting bolt hole d×D×h	G	Max. length L <sub>0max</sub>	Dynamic		Static C <sub>0</sub> (N)	M <sub>RO</sub>	Static moment (N·m)				Ball slide (kg)	Rail (kg/m)
				[50km] C <sub>50</sub> (N)	[100km] C <sub>100</sub> (N)			M <sub>PO</sub>		M <sub>VO</sub>			
F	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(One slide)	(Two slides)	(One slide)	(Two slides)	(kg)	(kg/m)
60	*4.5×7.5×5.3 3.5×6×4.5	20	2 920	9 150 14 100	7 250 11 200	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	13 400 19 700	10 600 15 600	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	22 300 33 000	17 700 26 100	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	31 000 48 000	24 700 38 000	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	43 000 66 500	34 500 52 500	40 000 74 500	465 865	220 695	1 670 4 000	185 580	1 400 3 350	1.2 1.7	7

Notes 1) For details on basic load ratings, refer to "5. Basic Load Ratings and Rated Life" on page 6.  
 \*) Standard mounting hole of NS15 rail is for M4 bolts (Hole size: 4.5 × 7.5 × 5.3).  
 If you require mounting hole for M3 bolts (Hole size: 3.5 × 6 × 4.5), please specify when ordering.

DV - AN (High-load / Standard, square type)  
 DV - BN (Super-high-load / Long, square type)

**(1) Reference number for assembly (Preloaded assembly or assembled interchangeable slide/rail)**

<b>DV 30 1200 ANC 2 -** L5 3</b>	
Model	Preload code (refer to Table 9 on page 5) 0: Z0, 1: Z1, 3: Z3, T: ZT, Z: ZZ
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. 1 on page 3)	Number of ball slides per rail
Material/surface treatment code (refer to Table 17 on page 8) C: Special high carbon steel, D: Special high carbon steel with surface treatment V: Special high carbon + tapped holes on a rail bottom surface W: Special high carbon with surface treatment + tapped holes on a rail bottom surface	

**(2) Reference number for interchangeable type**

<b>DAV 30 ANC -** LC Z</b>	
Ball slide	Preload code (refer to Table 9 on page 5) T: Fine clearance, Z: Slight preload
Interchangeable ball slide model code DAV: DV Model interchangeable ball slide	Accuracy code LC: Normal grade interchangeable type
Size	Design serial number Added to the reference number
Ball slide shape code (refer to Fig. 1 on page 3)	
Material/surface treatment code (refer to Table 17 on page 8)	

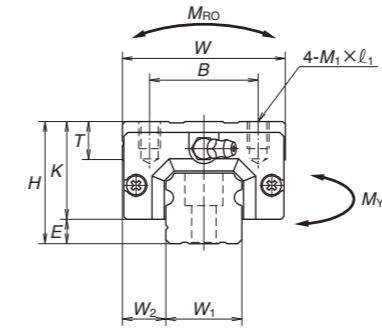
<b>V1H 30 1200 LCN -** PC Z</b>	
Rail	Preload code (refer to Table 9 on page 5) T: Fine clearance, Z: Slight preload
Interchangeable rail model code V1H: VH model interchangeable rail	Accuracy code PC: Normal grade interchangeable type
Size	Design serial number Added to the reference number
Rail length (mm)	Butting rail specification* N: Non-butting; L: Butting specification
Rail shape code: L L: Standard	
Material/surface treatment code (refer to Table 17 on page 8)	*Please consult with NSK when requesting the butting rail specification.

Rails are the same as the VH model

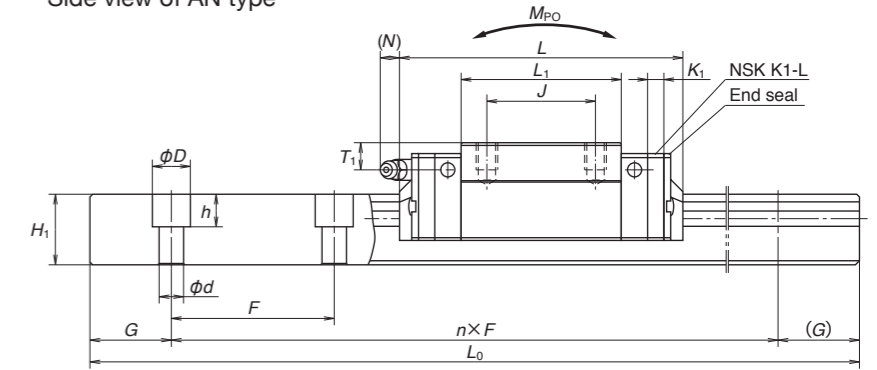
Model No.	Assembly			Ball slide										Grease fitting			Width W <sub>1</sub>	Height H <sub>1</sub>
	Height H	E	W <sub>2</sub>	Width W	Length L	Mounting hole					K <sub>1</sub>	Hole size	T <sub>1</sub>	N				
						B	J	M <sub>1</sub> × Pitch × ℓ <sub>1</sub>	L <sub>1</sub>	K					T			
<b>DV15AN</b> <b>DV15BN</b>	28	4.6	9.5	34	70.6{ 77 } 89.6{ 96 }	26	26	M4 × 0.7 × 6	39 58	23.4	8	5.3	φ3	8.5	1 { 8.2 }	15	15	
<b>DV20AN</b> <b>DV20BN</b>	30	5	12	44	87.4{ 94.2 } 109.4{ 116.2 }	32	36 50	M5 × 0.8 × 6	50 72	25	12	5.3	M6 × 0.75	5	11.1{ 12.3 }	20	18	
<b>DV25AN</b> <b>DV25BN</b>	40	7	12.5	48	97 { 104.4 } 125 { 132.4 }	35	35 50	M6 × 1 × 9	58 86	33	12	5.8	M6 × 0.75	10	9.6{ 12.9 }	23	22	
<b>DV30AN</b> <b>DV30BN</b>	45	9	16	60	104.4{ 114.8 } 143.4{ 153.8 }	40	40 60	M8 × 1.25 × 10	59 98	36	14	6	M6 × 0.75	10	11.4{ 14.2 }	28	26	
<b>DV35AN</b> <b>DV35BN</b>	55	9.5	18	70	128.8{ 139.2 } 162.8{ 173.2 }	50	50 72	M8 × 1.25 × 12	80 114	45.5	15	6.5	M6 × 0.75	15	10.9{ 13.7 }	34	29	
<b>DV45AN</b> <b>DV45BN</b>	70	14	20.5	86	161.4{ 174.2 } 193.4{ 206.2 }	60	60 80	M10 × 1.5 × 17	105 137	56	17	7.5	Rc1/8	20	12.5{ 14.1 }	45	38	
<b>DV55AN</b> <b>DV55BN</b>	80	15	23.5	100	185.4{ 198.2 } 223.4{ 236.2 }	75	75 95	M12 × 1.75 × 18	126 164	65	18	7.5	Rc1/8	21	12.5{ 14.1 }	53	44	

Notes  
 1) Specifications for DV models are the same as those for DH models as described on pages 3 to 10.  
 2) Please inform NSK about your service conditions using the "Data Sheet for Linear Guides in Contaminated Environments". Please contact NSK for details.  
 3) DV models do not have a ball retainer. Note that balls will fall out when the ball slide is removed from the rail.  
 4) Values inside < > refer to dimensions when equipped with a protector

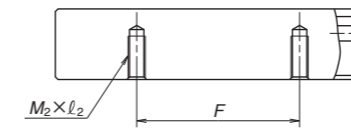
Assembly (Preloaded assembly or assembled interchangeable slide/rail)  
 Front view of AN and BN types



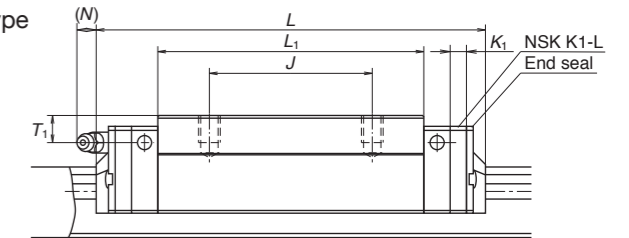
Side view of AN type



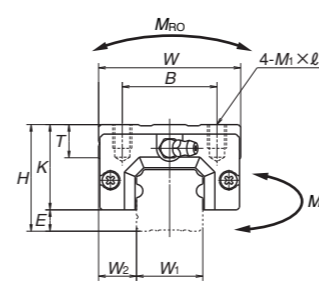
Specification for tapped holes on rail bottom face



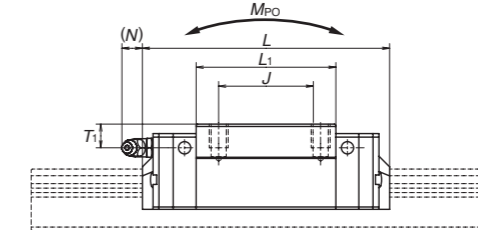
Side view of BN type



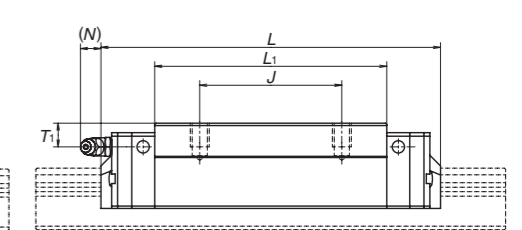
Ball slide of interchangeable type  
 AN and BN types



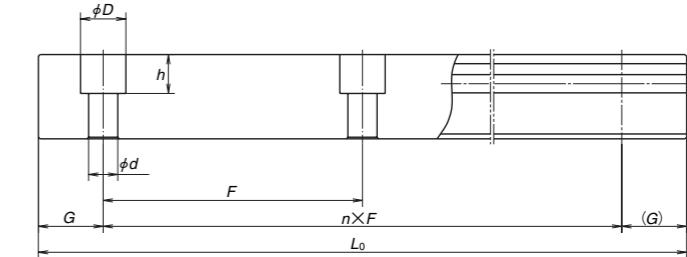
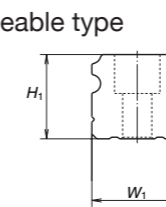
AN type



BN type



Rail of interchangeable type



Unit: mm

Pitch F	Mounting bolt hole d × D × h	Tapped hole M <sub>2</sub> × Pitch × ℓ <sub>2</sub>	G (Ref.)	Max. length L <sub>0max</sub>	Basic load ratings <sup>5)</sup>										Weight	
					Dynamic		Static C <sub>0</sub> (N)	Static moment (N·m)				Ball slide (kg)	Rail (kg/m)			
					[50km] C <sub>50</sub> (N)	[100km] C <sub>100</sub> (N)		M <sub>RO</sub>	M <sub>PO</sub>		M <sub>YO</sub>					
									(One slide)	(Two slides)	(One slide)	(Two slides)				
60	4.5 × 7.5 × 5.3	M5 × 0.8 × 8	20	2 000	17 800 22 800	14 200 18 100	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	M6 × 1 × 10	20	3 960	29 800 38 000	23 700 30 000	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	M6 × 1 × 12	20	3 960	42 500 57 500	33 500 45 500	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	M8 × 1.25 × 15	20	4 000	51 500 77 000	41 000 61 000	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	M8 × 1.25 × 17	20	4 000	78 500 102 000	62 500 81 000	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	M12 × 1.75 × 24	22.5	3 990	135 000 164 000	107 000 131 000	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	M14 × 2 × 24	30	3 960	199 000 243 000	158 000 193 000	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		

5) For details on basic load ratings, refer to "5. Basic Load Ratings and Rated Life" on page 6.

DV - AL (High-load / Standard, square low-profile type)  
 DV - BL (Super-high-load / Long, square low-profile type)

**(1) Reference number for assembly (Preloaded assembly or assembled interchangeable slide/rail)**

<b>DV 30 1200 AL C 2 -** L5 3</b>	
Model	Preload code (refer to Table 9 on page 5) 0: Z0, 1: Z1, 3: Z3, T: ZT, Z: ZZ
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. 1 on page 3)	Number of ball slides per rail
Material/surface treatment code (refer to Table 17 on page 8) C: Special high carbon steel, D: Special high carbon steel with surface treatment V: Special high carbon + tapped holes on a rail bottom surface W: Special high carbon with surface treatment + tapped holes on a rail bottom surface	

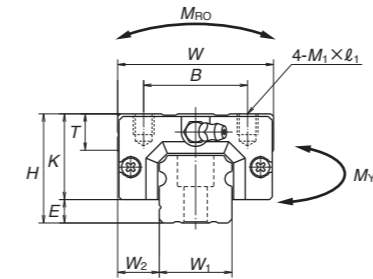
**(2) Reference number for interchangeable type**

<b>DAV 30 AL C -** LC Z</b>	
Ball slide	Preload code (refer to Table 9 on page 5) T: Fine clearance, Z: Slight preload
Interchangeable ball slide model code DAV: DV Model interchangeable ball slide	Accuracy code LC: Normal grade interchangeable type
Size	Design serial number Added to the reference number
Ball slide shape code (refer to Fig. 1 on page 3)	
Material/surface treatment code (refer to Table 17 on page 8)	

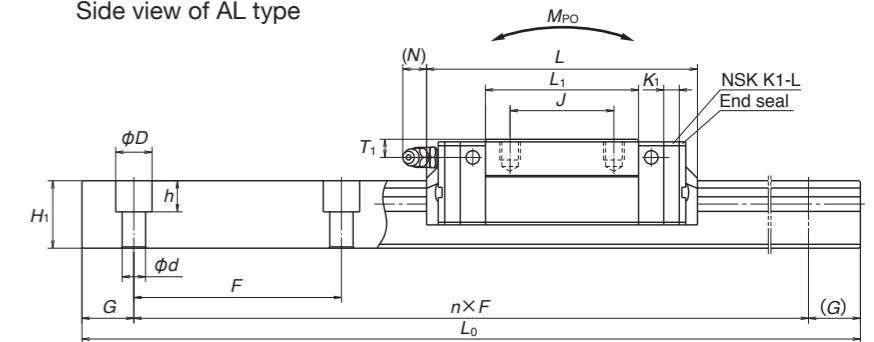
<b>V1H 30 1200 L CN -** PC Z</b>	
Rail	Preload code (refer to Table 9 on page 5) T: Fine clearance, Z: Slight preload
Interchangeable rail model code V1H: VH model interchangeable rail	Accuracy code PC: Normal grade interchangeable type
Size	Design serial number Added to the reference number
Rail length (mm)	Butting rail specification* N: Non-butting; L: Butting specification
Rail shape code: L L: Standard	
Material/surface treatment code (refer to Table 17 on page 8)	*Please consult with NSK when requesting the butting rail specification.

Rails are the same as the VH model

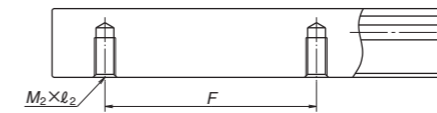
Assembly (Preloaded assembly or assembled interchangeable slide/rail)  
 Front view of AL and BL types



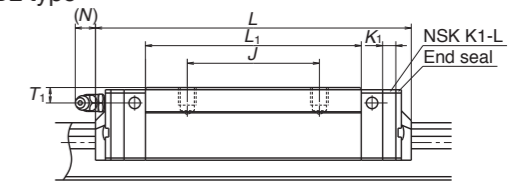
Side view of AL type



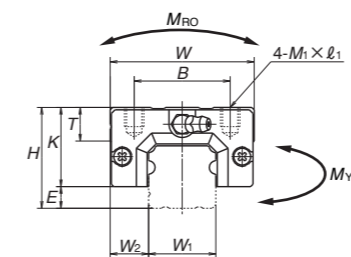
Specification for tapped holes on rail bottom face



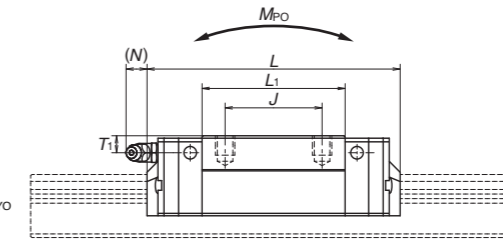
Side view of BL type



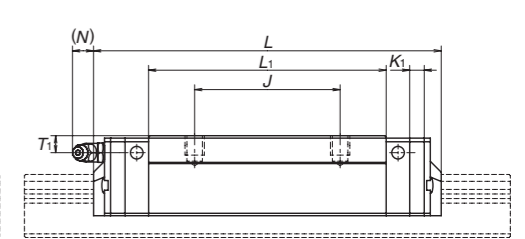
Ball slide of interchangeable type  
 AL and BL types



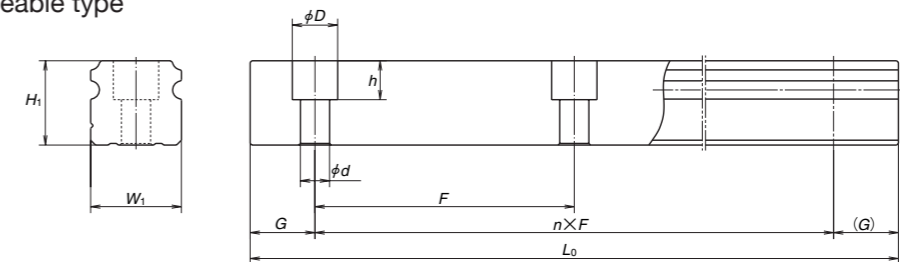
AL type



BL type



Rail of interchangeable type



Model No.	Assembly			Ball slide										Width	Height		
	Height	E	W2	W	Length	Mounting hole					Grease fitting						
						B	J	M1 x Pitch x l1	L1	K	T	K1	Hole size			T1	N
DV25AL DV25BL	36	7	12.5	48	97 <104.4> 125 <132.4>	35 50	35 50	M6 x 1 x 6	58 86	29	12	5.8	M6 x 0.75	6	9.6 <12.9>	23	22
DV30AL DV30BL	42	9	16	60	104.4 <114.8> 143.4 <153.8>	40 60	40 60	M8 x 1.25 x 8	59 98	33	14	6	M6 x 0.75	7	11.4 <14.2>	28	26
DV35AL DV35BL	48	9.5	18	70	128.8 <139.2> 162.8 <173.2>	50 72	50 72	M8 x 1.25 x 8	80 114	38.5	15	6.5	M6 x 0.75	8	10.9 <13.7>	34	29
DV45AL DV45BL	60	14	20.5	86	161.4 <174.2> 193.4 <206.2>	60 80	60 80	M10 x 1.5 x 10	105 137	46	17	7.5	Rc1/8	10	12.5 <14.1>	45	38
DV55AL DV55BL	70	15	23.5	100	185.4 <198.2> 223.4 <236.2>	75 95	75 95	M12 x 1.75 x 13	126 164	55	15	7.5	Rc1/8	11	12.5 <14.1>	53	44

Notes  
 1) Specifications for DV models are the same as those for DH models as described on pages 3 to 10.  
 2) Please inform NSK about your service conditions using the "Data Sheet for Linear Guides in Contaminated Environments". Please contact NSK for details.  
 3) DV models do not have a ball retainer. Note that balls will fall out when the ball slide is removed from the rail.  
 4) Values inside < > refer to dimensions when equipped with a protector.

Pitch	Mounting bolt hole d x D x h	Tapped hole M2 x Pitch x l2	G	Max. length L0max	Basic load ratings								Weight		
					Dynamic		Static		Static moment (N·m)				Ball slide (kg)	Rail (kg/m)	
					C50(N)	C100(N)	C0 (N)	MRO	MPO		MYO				
					[50km]	[100km]	(N)	(N)	(One slide)	(Two slides)	(One slide)	(Two slides)			
60	7 x 11 x 9	M6 x 1 x 12	20	3 960	42 500	33 500	46 000	360	555	320	1 840	267	1 540	0.46	3.6
80	9 x 14 x 12	M8 x 1.25 x 15	20	4 000	51 500	41 000	51 500	490	870	350	2 290	292	1 920	0.69	5.2
80	9 x 14 x 12	M8 x 1.25 x 17	20	4 000	78 500	62 500	80 500	950	1 380	755	4 500	630	3 800	1.2	7.2
105	14 x 20 x 17	M12 x 1.75 x 24	22.5	3 990	135 000	107 000	140 000	2 140	2 860	1 740	9 750	1 460	8 150	2.2	12.3
120	16 x 23 x 20	M14 x 2 x 24	30	3 960	199 000	158 000	198 000	3 600	4 850	3 000	16 300	2 510	13 700	3.7	16.9

5) For details on basic load ratings, refer to "5. Basic Load Ratings and Rated Life" on page 6.

Unit: mm

DV - EM (High-load / Standard, flanged type)  
 DV - GM (Super-high-load / Long, flanged type)

**(1) Reference number for assembly (Preloaded assembly or assembled interchangeable slide/rail)**

<b>DV 30 1200 EMC 2 -** L5 3</b>	
Model	Preload code (refer to Table 9 on page 5) 0: Z0, 1: Z1, 3: Z3, T: ZT, Z: ZZ
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. 1 on page 3)	Number of ball slides per rail
Material/surface treatment code (refer to Table 17 on page 8) C: Special high carbon steel, D: Special high carbon steel with surface treatment V: Special high carbon + tapped holes on a rail bottom surface W: Special high carbon with surface treatment + tapped holes on a rail bottom surface	

**(2) Reference number for interchangeable type**

<b>DAV 30 EMC -** LC Z</b>	
Ball slide	Preload code (refer to Table 9 on page 5) T: Fine clearance, Z: Slight preload
Interchangeable ball slide model code DAV: DV Model interchangeable ball slide	Accuracy code LC: Normal grade interchangeable type
Size	Design serial number Added to the reference number
Ball slide shape code (refer to Fig. 1 on page 3)	
Material/surface treatment code (refer to Table 17 on page 8)	

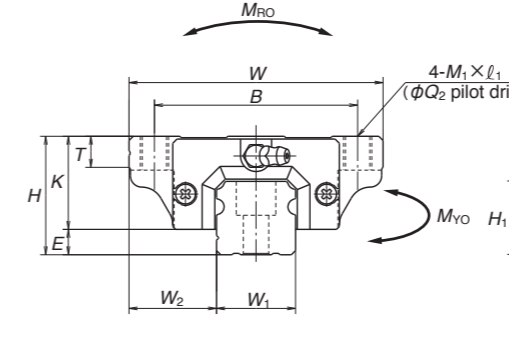
<b>V1H 30 1200 LCN -** PC Z</b>	
Rail	Preload code (refer to Table 9 on page 5) T: Fine clearance, Z: Slight preload
Interchangeable rail model code V1H: VH model interchangeable rail	Accuracy code PC: Normal grade interchangeable type
Size	Design serial number Added to the reference number
Rail length (mm)	Butting rail specification* N: Non-butting; L: Butting specification
Rail shape code: L L: Standard	
Material/surface treatment code (refer to Table 17 on page 8)	*Please consult with NSK when requesting the butting rail specification.

Rails are the same as the VH model

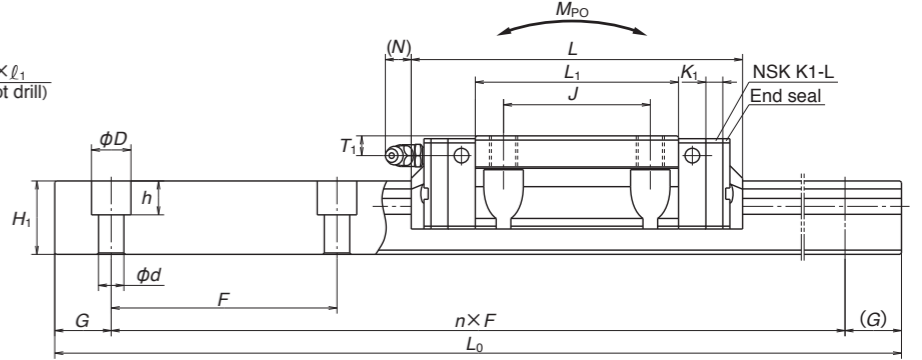
Model No.	Assembly			Ball slide											Grease fitting			Width/Height		
	Height H	E	W <sub>2</sub>	Width W	Length L	Mounting hole						Hole size					T <sub>1</sub>	N	W <sub>1</sub>	H <sub>1</sub>
						B	J	M <sub>1</sub> × Pitch × ℓ <sub>1</sub>	Q <sub>2</sub>	L <sub>1</sub>	K	T	K <sub>1</sub>	Hole size	T <sub>1</sub>	N				
<b>DV15EM</b> <b>DV15GM</b>	24	4.6	16	47	70.6<77> 89.6<96>	38	30	M5×0.8×7	4.4	39 58	19.4	8	5.3	φ3	4.5	1 < 8.2 >	15	15		
<b>DV20EM</b> <b>DV20GM</b>	30	5	21.5	63	87.4<94.2> 109.4<116.2>	53	40	M6×1×9.5	5.3	50 72	25	10	5.3	M6×0.75	5	11.1<12.3>	20	18		
<b>DV25EM</b> <b>DV25GM</b>	36	7	23.5	70	97 <104.4> 125 <132.4>	57	45	M8×1.25×10	6.8	58 86	29	11	5.8	M6×0.75	6	9.6<12.9>	23	22		
<b>DV30EM</b> <b>DV30GM</b>	42	9	31	90	117.4<127.8> 143.4<153.8>	72	52	M10×1.5×12	8.6	72 98	33	11	6	M6×0.75	7	11.4<14.2>	28	26		
<b>DV35EM</b> <b>DV35GM</b>	48	9.5	33	100	128.8<139.2> 162.8<173.2>	82	62	M10×1.5×13	8.6	80 114	38.5	12	6.5	M6×0.75	8	10.9<13.7>	34	29		
<b>DV45EM</b> <b>DV45GM</b>	60	14	37.5	120	161.4<174.2> 193.4<206.2>	100	80	M12×1.75×15	10.5	105 137	46	13	7.5	Rc1/8	10	12.5<14.1>	45	38		
<b>DV55EM</b> <b>DV55GM</b>	70	15	43.5	140	185.4<198.2> 223.4<236.2>	116	95	M14×2×18	12.5	126 164	55	15	7.5	Rc1/8	11	12.5<14.1>	53	44		

Notes  
 1) Specifications for DV models are the same as those for DH models as described on pages 3 to 10.  
 2) Please inform NSK about your service conditions using the "Data Sheet for Linear Guides in Contaminated Environments". Please contact NSK for details.  
 3) DV models do not have a ball retainer. Note that balls will fall out when the ball slide is removed from the rail.  
 4) Values inside < > refer to dimensions when equipped with a protector.

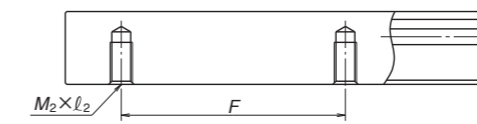
Assembly (Preloaded assembly or assembled interchangeable slide/rail)  
 Front view of EM and GM types



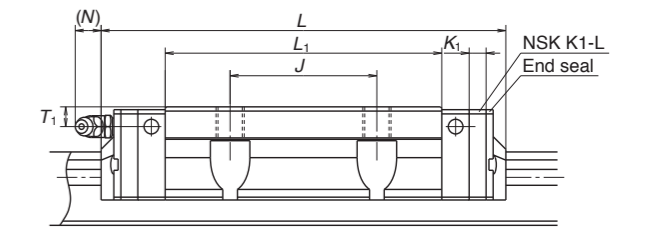
Side view of EM type



Specification for tapped holes on rail bottom face



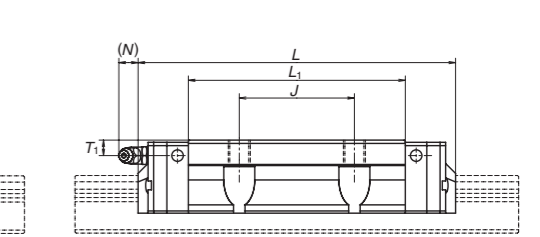
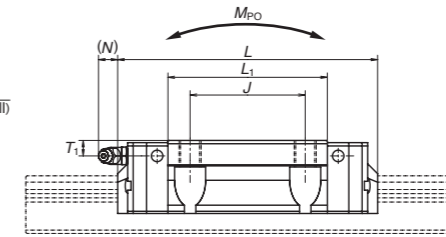
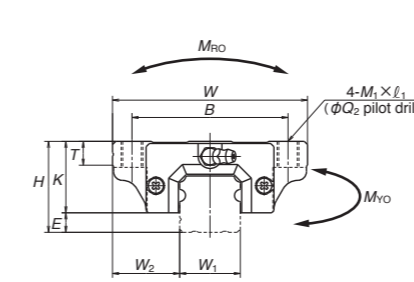
Side view of GM type



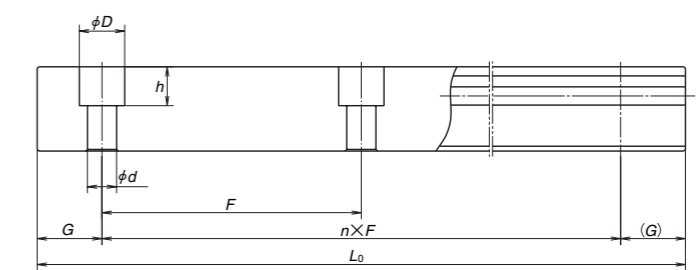
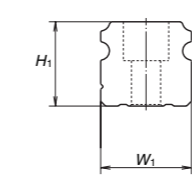
Ball slide of interchangeable type  
 EM and GM types

EM type

GM type



Rail of interchangeable type



Unit: mm

Pitch F	Mounting bolt hole d × D × h	Tapped hole M <sub>2</sub> × Pitch × ℓ <sub>2</sub>	G (Ref.)	Max. length L <sub>0max</sub>	Basic load ratings						Ball slide (kg)	Rail (kg/m)			
					Dynamic		Static C <sub>0</sub> (N)	Static moment (N·m)							
					[50km] C <sub>50</sub> (N)	[100km] C <sub>100</sub> (N)		M <sub>PO</sub> (One slide)	M <sub>YO</sub> (Two slides)	M <sub>YO</sub> (One slide)			M <sub>YO</sub> (Two slides)		
					22 800	14 200	20 700							94.5	575
60	4.5×7.5×5.3	M5×0.8×8	20	2 000	17 800	14 200	20 700	108	166	216	1 150	181	480	0.17	1.6
60	6×9.5×8.5	M6×1×10	20	3 960	29 800	23 700	32 500	219	340	420	2 230	355	955	0.45	2.6
60	7×11×9	M6×1×12	20	3 960	42 500	33 500	46 000	360	555	725	3 700	610	1 540	0.63	3.6
80	9×14×12	M8×1.25×15	20	4 000	59 000	47 000	63 000	600	870	1 030	5 600	865	2 650	1.2	5.2
80	9×14×12	M8×1.25×17	20	4 000	78 500	62 500	80 500	950	1 380	1 530	8 350	1 280	3 800	1.7	7.2
105	14×20×17	M12×1.75×24	22.5	3 990	135 000	107 000	140 000	2 140	2 860	3 000	15 600	2 520	13 100	3.0	12.3
120	16×23×20	M14×2×24	30	3 960	199 000	158 000	198 000	3 600	4 850	5 150	26 300	4 350	22 100	5.0	16.9

5) For details on basic load ratings, refer to "5. Basic Load Ratings and Rated Life" on page 6.

**Worldwide Sales Offices**

P: Phone ☆: Head Office

<b>NSK LTD. HEADQUARTERS, TOKYO JAPAN</b>			
	P: +81-3-3779-7111		
<b>Africa</b>		<b>Korea:</b>	
<b>South Africa:</b>		<b>NSK KOREA CO., LTD.</b>	
<b>NSK SOUTH AFRICA (PTY) LTD.</b>		SEOUL	P: +82-2-3287-0300
SANDTON	P: +27-011-458-3600	<b>Malaysia:</b>	
<b>Aisia and Oceania</b>		<b>NSK BEARINGS (MALAYSIA) SDN.BHD.</b>	
<b>Australia:</b>		SHAH ALAM ☆	P: +60-3-7803-8859
<b>NSK AUSTRALIA PTY. LTD.</b>		PRAI	P: +60-4-3902275
MELBOURNE	P: +61-3-9765-4400	JOHOR BAHRU	P: +60-7-3546290
<b>China:</b>		IPOH	P: +60-5-2555000
<b>NSK (SHANGHAI) TRADING CO., LTD.</b>		<b>Philippines:</b>	
JIANGSU	P: +86-512-5796-3000	<b>NSK INTERNATIONAL (SINGAPORE) PTE LTD.</b>	
<b>NSK (CHINA) INVESTMENT CO., LTD.</b>		<b>PHILIPPINES REPRESENTATIVE OFFICE (MANILA)</b>	
JIANGSU ☆	P: +86-512-5796-3000	MANILA	P: +63-2-893-9543
BEIJING	P: +86-10-6590-8161	<b>Singapore:</b>	
TIAN JIN	P: +86-22-8319-5030	<b>NSK INTERNATIONAL (SINGAPORE) PTE LTD.</b>	
CHANGCHUN	P: +86-431-8898-8682	SINGAPORE	P: +65-6496-8000
SHENYANG	P: +86-24-2550-5017	<b>Thailand:</b>	
DALIAN	P: +86-411-8800-8168	<b>NSK BEARINGS (THAILAND) CO., LTD.</b>	
NANJING	P: +86-25-8472-6671	BANGKOK	P: +66-2320-2555
FUZHOU	P: +86-591-8380-1030	<b>Vietnam:</b>	
WUHAN	P: +86-27-8556-9630	<b>NSK VIETNAM CO., LTD.</b>	
QINGDAO	P: +86-532-5568-3877	HANOI ☆	P: +84-24-3955-0159
GUANGZHOU	P: +86-20-3817-7800	HO CHI MINH CITY	P: +84-28-3822-7907
CHANGSHA	P: +86-731-8571-3100	REPRESENTATIVE OFFICE	
LUOYANG	P: +86-379-6069-6188	<b>Europe</b>	
XI'AN	P: +86-29-8765-1896	<b>United Kingdom:</b>	
CHONGQING	P: +86-23-6806-5310	<b>NSK EUROPE LTD. (EUROPEAN HEADQUARTERS)</b>	
CHENGDU	P: +86-28-8528-3680	MAIDENHEAD	P: +44-1628-509-800
<b>NSK CHINA SALES CO., LTD.</b>		<b>NSK UK LTD.</b>	
JIANGSU ☆	P: +86-512-5796-3000	NEWARK	P: +44-1636-605-123
<b>NSK HONG KONG LTD.</b>		<b>France:</b>	
HONG KONG ☆	P: +852-2739-9933	<b>NSK FRANCE S.A.S.</b>	
SHENZHEN	P: +86-755-25904886	PARIS	P: +33-1-30-57-39-39
<b>Taiwan:</b>		<b>Germany:</b>	
<b>TAIWAN NSK PRECISION CO., LTD.</b>		<b>NSK DEUTSCHLAND GMBH</b>	
TAIPEI ☆	P: +886-2-2772-3355	DUSSELDORF ☆	P: +49-2102-4810
TAICHUNG	P: +886-4-2708-3393	STUTTGART	P: +49-711-79082-0
TAINAN	P: +886-6-215-6058	WOLFSBURG	P: +49-5361-27647-10
<b>India:</b>		<b>Italy:</b>	
<b>NSK BEARINGS INDIA PRIVATE LTD.</b>		<b>NSK ITALIA S.P.A.</b>	
CHENNAI ☆	P: +91-44-28479600	MILANO	P: +39-299-5191
GURGAON	P: +91-124-4838000	<b>Netherlands:</b>	
MUMBAI	P: +91-9987617968	<b>NSK EUROPEAN DISTRIBUTION CENTRE B.V.</b>	
JAMSHEDPUR	P: +91-657-2421144	TILBURG	P: +31-13-4647647
<b>Indonesia:</b>		<b>Poland:</b>	
<b>PT. NSK INDONESIA</b>		<b>NSK POLSKA SP.Z O.O.</b>	
JAKARTA	P: +62-21-252-3458	WARSAW	P: +48-22-645-1525
		<b>Spain:</b>	
		<b>NSK SPAIN S.A.</b>	
		BARCELONA	P: +34-93-289-2763
		<b>Turkey:</b>	
		<b>NSK RULMANLARI ORTA DOGU TIC. LTD. STI.</b>	
		ISTANBUL	P: +90-216-5000-675
		<b>United Arab Emirates:</b>	
		<b>NSK BEARINGS GULF TRADING CO.</b>	
		DUBAI	P: +971-(0)4-804-8200
		<b>North and South America</b>	
		<b>United States of America:</b>	
		<b>NSK AMERICAS, INC. (AMERICAN HEADQUARTERS)</b>	
		ANN ARBOR	P: +1-734-913-7500
		<b>NSK CORPORATION</b>	
		ANN ARBOR	P: +1-734-913-7500
		<b>NSK PRECISION AMERICA, INC.</b>	
		FRANKLIN ☆	P: +1-317-738-5000
		SAN JOSE	P: +1-408-944-9400
		<b>NSK LATIN AMERICA, INC.</b>	
		MIAMI	P: +1-305-477-0605
		<b>Canada:</b>	
		<b>NSK CANADA INC.</b>	
		TORONTO ☆	P: +1-888-603-7667
		MONTREAL	P: +1-514-633-1220
		<b>Argentina:</b>	
		<b>NSK ARGENTINA SRL</b>	
		BUENOS AIRES	P: +54-11-4704-5100
		<b>Brazil:</b>	
		<b>NSK BRASIL LTDA.</b>	
		SUZANO	P: +55-11-4744-2500
		<b>Peru:</b>	
		<b>NSK PERU S.A.C.</b>	
		LIMA	P: +51-493-4385
		<b>Mexico:</b>	
		<b>NSK RODAMIENTOS MEXICANA, S.A. DE C.V.</b>	
		SILAO, GUANAJUATO	P: +52-472-500-9500

<As of August 2024>

For the latest information, please refer to the NSK website.

[www.nsk.com](http://www.nsk.com)

Every care has been taken to ensure the accuracy of data in this publication, but NSK Ltd. accepts no liability for any loss or damage incurred from errors or omissions. As we pursue continuous improvement, all content (text, images, product appearances, specifications, etc.) contained in this publication is subject to change without notice. Unauthorized copying and/or use of the contents of this publication is strictly prohibited. Please investigate and follow the latest product export laws, regulations, and permit procedures when exporting to other countries.

For more information about NSK products, please contact: \_\_\_\_\_

