

## LINEAR BALL AND ROLLER GUIDES Product Reference Guide



# NSK Linear Guides

## Product Range

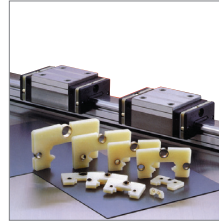


NH/NS Series

### Interchangeable Linear Guide

- › Easier installation with high self-aligning capabilities
- › Interchangeable parts for quick repair and replacement
- › Short delivery time
- › Ideal for general industry
- › Extended product life with K1™ Lubrication Units
- › Long life (up to 2x than previous LH/LS series)
- › High speed
- › Low noise

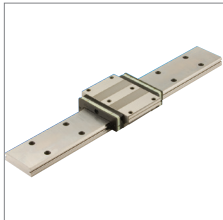
## Accessories



K1™ Lubrication Units

### Maintenance-free Lubrication

- › Extended lubrication life
- › Less risk of mechanical failure
- › FDA Compliant Unit available



LW Series

### Wide Rail Linear Guide

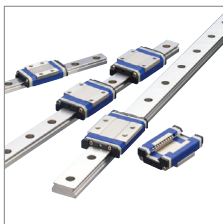
- › Wide rail offers high rigidity and load capacity
- › Interchangeable parts for quick repair and replacement
- › Low profile for compact design
- › Ideal for general industry
- › Extended product life with K1™ Lubrication Units



LG2/LGU

### Clean Room Grease

- › Low particle emission to keep equipment clean
- › High durability reduces upkeep costs
- › Rust prevention ability is significantly higher than fluorine greases



PU/PE, LU/LE Series

### Miniature Linear Guide

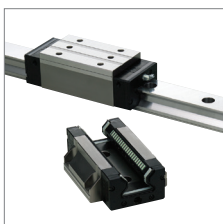
- › Low dust generation to keep your equipment clean
- › High corrosion resistant stainless steel
- › Extended product life with K1™ Lubrication Units
- › Interchangeable parts for quick repair and replacement
- › Ideal for medical and semiconductor industries



HP Seals

### High Performance Seals

- › With seal's multi-lip structure, entry of foreign matter is reduced by 1/10 when compared to NSK linear guides without a high performance seal
- › Product life is extended up to 5x of standard NSK linear guides



RA and RB Series

### High Rigidity Roller Guide

- › Super high rigidity for greater accuracy
- › The world's highest load capacity
- › Dustproof to extend product life
- › Rail covers offer extra sealing for even longer life
- › RB series offers low profile design
- › Interchangeable parts for quick repair and replacement
- › Ideal for the machine tool industry
- › Extended product life with K1™ Lubrication Units



Rail Covers

### Contamination Protection for Rails

- › Covers entire rail to prevent contamination from building up in the rail mounting holes (RA series only)



V1 Series

### Contaminated Environment Linear Guide

- › High performance seals reduce the entry of contaminants to extend product life by up to 5x that of standard NSK linear guides
- › Cleaner operation and extended product life with K1™ Lubrication Units
- › Ideal for highly contaminated areas



Special Coatings

### Special Coatings for Harsh Environments

- › **Armoloy®** – a hard, protective coating provides corrosion resistance plus increased durability
- › **Black Chrome** – provides corrosion resistance
- › **Fluoride Black Chrome** – offers higher corrosion resistance than standard black chrome and is preferred for applications using acid or other harsh chemicals

# Committed to North America

NSK manufactures and services innovative linear motion and control products in the US. NSK linear guides can be found in many applications within the automotive, semiconductor, food and beverage, medical, machine tool and packaging industries.

To respond quickly and efficiently to the unique challenges of our customers, NSK distribution centers, manufacturing facilities and sales offices are strategically located throughout the Americas.

Customers can trust NSK to provide the highest quality linear motion products, total application solutions and world-class engineering support. U.S. manufacturing gives NSK the flexibility to quickly respond to your needs – whether you require a next-day modification, or rush repair and maintenance services after the sale.

## Around the Globe

The NSK Group is one of the world's leading manufacturers of motion and control products. A global company with sales of over \$7.2 billion, NSK employs over 29,400 employees at 64 ISO certified manufacturing facilities. Our 121 sales operations are located in 30 countries around the globe.

With over 90 years of experience, NSK products and solutions have been chosen by leading brands around the world. As an industry innovator, NSK can help you lead the way by delivering high quality motion and control solutions.

## Local Solutions

NSK's 75,000 sq. ft. manufacturing facility in Franklin, Indiana is dedicated to manufacturing precision products and serving the Americas markets. Certified to ISO9001:2008 and ISO14001:2004 standards, this state-of-the-art plant ensures shorter manufacturing lead times and quicker turnaround to meet the needs of customers from coast to coast.

With unique domestic services including rail cutting and custom configurations, NSK can meet your deadline.



NSK Americas' Headquarters  
Ann Arbor, MI

# NSK Linear Guides

**Table 1: Preload Code**

Preload	P/N Code
Fine Clearance, Z0	0
Slight Preload, Z1	1
Medium Preload, Z3	3
Heavy Preload, Z4 (LA Series)	4
Interchangeable Fine Clearance, ZT	T
Interchangeable Slight Preload, ZZ	Z
Interchangeable Medium Preload, ZH	H

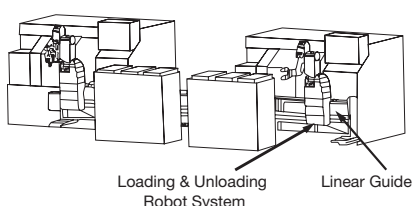
**Table 3: Accuracy Code**

Accuracy	Without NSK K1™	With NSK K1™
Ultra precision grade	P3	K3
Super precision grade	P4	K4
High precision grade	P5	K5
Precision grade	P6	K6
Normal grade	PN	KN
Normal interchangeable grade	PC	KC

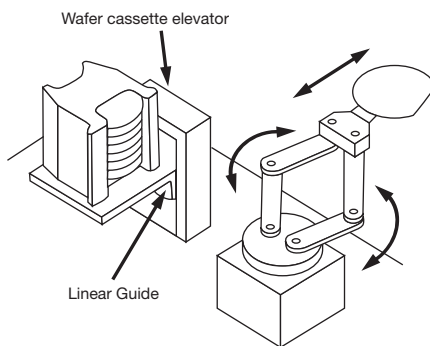
**Table 2: Material/Surface Treatment Code (For Custom Assembly Only)**

Code	Description
P	Special high carbon steel + high performance seal
R	Special high carbon steel + surface treatment + high performance seal
T	Stainless steel + high performance seal
U	Stainless steel + surface treatment + high performance seal
C	Special high carbon steel (NSK standard)
K	Stainless steel
D	Special high carbon steel with surface treatment
H	Stainless with surface treatment
Z	Other, special

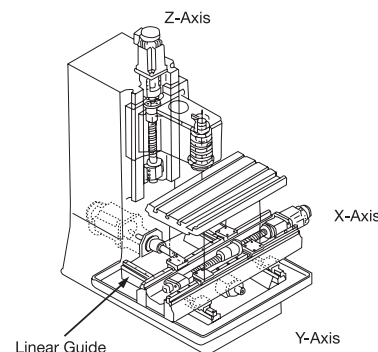
## Application Examples



**Loading and Unloading Robot**



**Wafer Cassette Elevator**



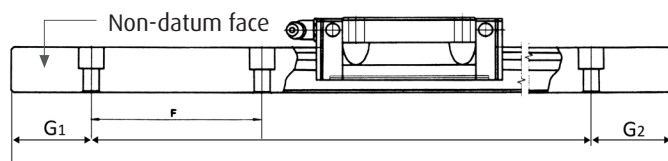
**Machine Center**

## Linear Guide Product Selection

Answer the following questions to determine the appropriate NSK product.

1. What is your application?
2. Do you have a part # (from NSK or a competitor)?
3. If so, how did you arrive at the part # you selected?
4. What type of carriage or bearing style is needed for your application: tapped, through hole, square or flange style?
5. How many carriages or bearings are needed per rail?
6. What rail length do you require?
7. What are your accuracy and preload requirements?
8. What is the G dimension? (See below)
9. Accessories – do you need K1™ Lubrication Units, high performance seals, metal seals, rail or bolt hole covers or special coatings?
10. What is your expected delivery date?
11. What is the load applied to the assembly?
12. What is the maximum temperature of your application?
13. What type of environment does this application run? (ex. cleanroom, vacuum, etc.)
14. At what speed does your application run?
15. What is the required life of this linear guide?

## G Dimension Information



In order to properly cut linear guide rail, the G dimension must be determined. The G dimension is the dimension from the end of the rail length to the center of the first bolt-hole. In certain applications, we will need to know the G dimension for both ends of the rail.



# NSK Linear Guide Part Numbering System

## Preloaded Assembly Nomenclature

### Reference number coding for assembled ball slide: NH and VH Series

<b>NH</b>	<b>30</b>	<b>1200</b>	<b>AN</b>	<b>C</b>	<b>2</b>	<b>***</b>	<b>P5</b>	<b>3</b>
Series: NH, VH	Size No. (mm)	Rail length (mm)	Ball slide shape code: AN: Square (Tapped Holes) - Standard - High Type BN: Square (Tapped Holes) - Long - High Type AL: Square (Tapped Holes) - Standard - Low Type	Material/surface treatment code (See Table 2)	Number of ball slides per row	Design serial numbers	Accuracy grade code (See Table 3)	Preload code (See Table 1)
			BL: Square (Tapped Holes) - Long - Low Type EM: Flanged (Tapped & Thru Holes) - Standard GM: Flanged (Tapped & Thru Holes) - Long					

### Reference number coding for assembled roller slide: RA and RB Series

<b>RA</b>	<b>35</b>	<b>1000</b>	<b>AN</b>	<b>C</b>	<b>2</b>	<b>***</b>	<b>P4</b>	<b>3</b>
Series: RA, RB	Size No. (mm)	Rail length (mm)	Roller slide shape code: AN: Square (Tapped Holes) - Standard - High Type BN: Square (Tapped Holes) - Long - High Type EM: Flanged (Tapped & Thru Holes) - Standard GM: Flanged (Tapped & Thru Holes) - Long	Material/surface treatment code (See Table 2)	Number of roller slides per row	Design serial numbers	Accuracy grade code (See Table 3)	Preload code (See Table 1)
			AL: Square (Tapped Holes) - Standard - Low Type BL: Square (Tapped Holes) - Long - Low Type TL: Square (Tapped Holes) - Standard - Low Type (RB series) UL: Square (Tapped Holes) - Long - Low Type (RB series)					

### Reference number coding for assembled ball slide: NS Series

<b>NS</b>	<b>30</b>	<b>1200</b>	<b>AL</b>	<b>C</b>	<b>2</b>	<b>***</b>	<b>P5</b>	<b>3</b>
Series	Size No. (mm)	Rail length (mm)	Ball slide shape code: AL: Square (Tapped Holes) - Standard - Low Type CL: Square (Tapped Holes) - Short - Low Type	Material/surface treatment code (See Table 2)	Number of ball slides per row	Design serial numbers	Accuracy grade code (See Table 3)	Preload code (See Table 1)
			EM: Flanged (Tapped & Thru Holes) - Standard JM: Flanged (Tapped & Thru Holes) - Short					

### Reference number coding for assembled ball slide: LW Series

<b>LW</b>	<b>35</b>	<b>1000</b>	<b>EL</b>	<b>C</b>	<b>2</b>	<b>***</b>	<b>PC</b>	<b>Z</b>
Series	Size No. (mm)	Rail length (mm)	Ball slide shape code: EL: Flanged - Standard	Material/surface treatment code (See Table 2)	Number of ball slides per row	Design serial numbers	Accuracy grade code (See Table 3)	Preload code (See Table 1)

### Reference number coding for assembled ball slide: PU/PE Series

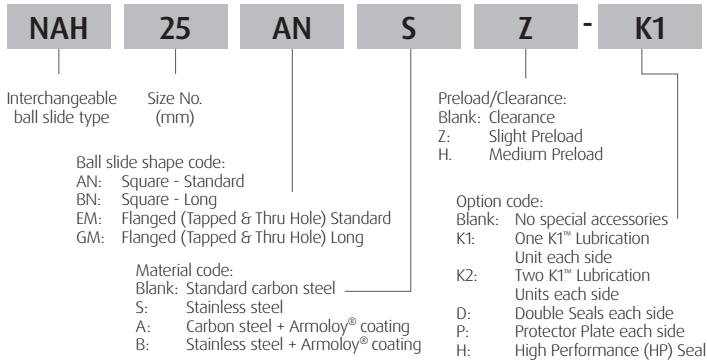
<b>PU</b>	<b>15</b>	<b>0470</b>	<b>AL</b>	<b>K</b>	<b>2</b>	<b>***</b>	<b>PC</b>	<b>T</b>
Series: PU, PE	Size No. (mm)	Rail length (mm)	Ball slide shape code: TR/AR/AL: Standard BL/BR: Long - High load type	Material/surface treatment code (See Table 2)	Number of ball slides per row	Design serial numbers	Accuracy grade code (See Table 3)	Preload code (See Table 1)

### Reference number coding for assembled ball slide: LU/LE Series

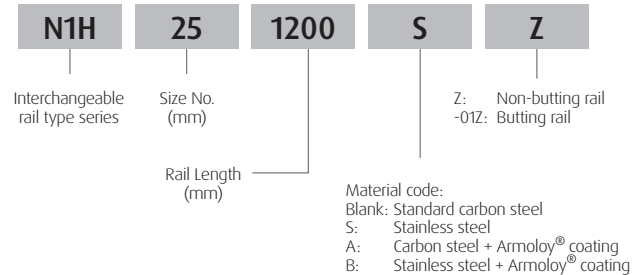
<b>LU</b>	<b>12</b>	<b>0270</b>	<b>AR</b>	<b>K</b>	<b>2</b>	<b>***</b>	<b>P5</b>	<b>1</b>
Series: LU, LE	Size No. (mm)	Rail length (mm)	Ball slide shape code: AL: Standard - LU15 with ball retainer TL: Standard - large mounting hole AR: Standard - with ball retainer	Material/surface treatment code (See Table 2)	Number of ball slides per row	Design serial numbers	Accuracy grade code (See Table 3)	Preload code (See Table 1)
			TR: Standard - large mounting hole with ball retainer BL: Long - High load type UL: Long - High load type - large mounting hole					

# NSK Linear Guide Interchangeable Slide and Rail Nomenclature

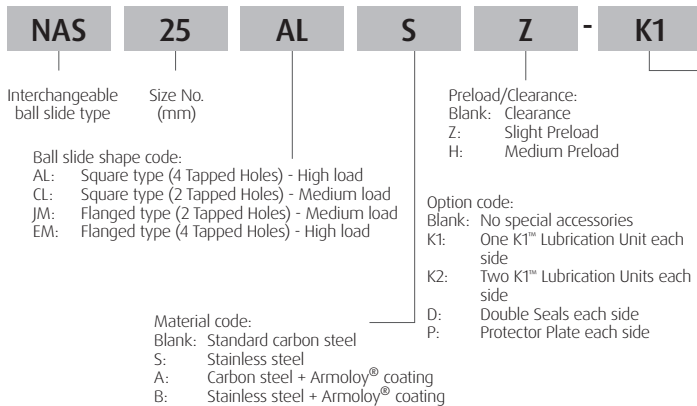
## NH Series Ball Slide



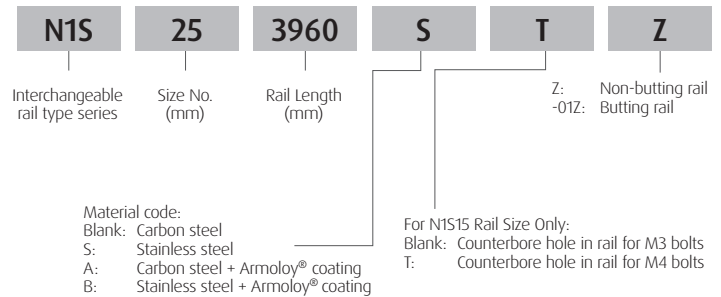
## NH Series Rail



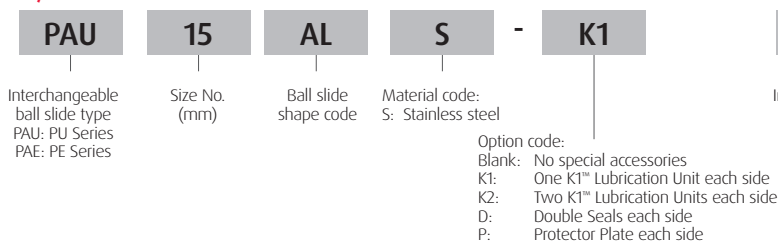
## NS Series Ball Slide



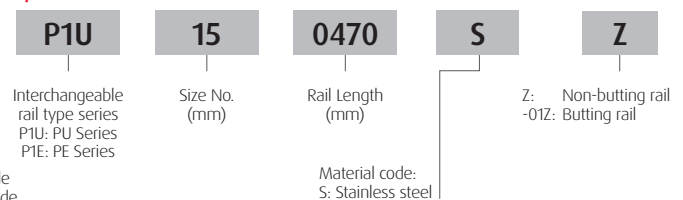
## NS Series Rail



## PU/PE Series Ball Slide \*

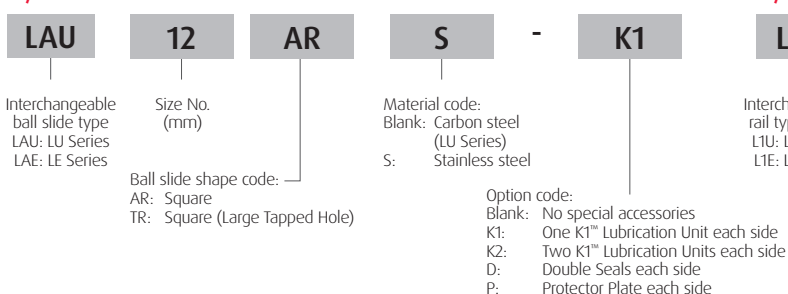


## PU/PE Series Rail \*

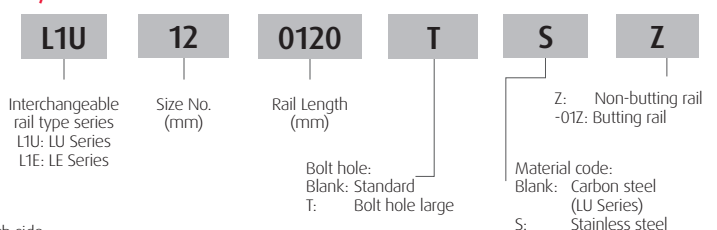


\* Interchangeable rails and slides are available for PU/PE sizes 09, 12, & 15 only.

## LU/LE Series Ball Slide

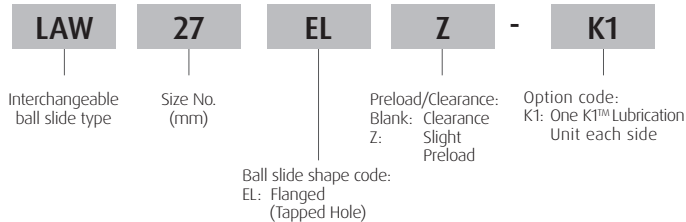


## LU/LE Series Rail

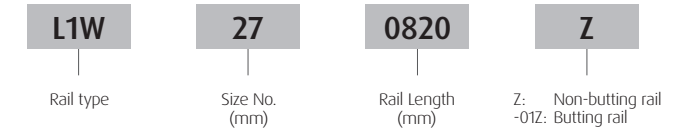


## NSK Linear Guide Interchangeable Slide and Rail Nomenclature

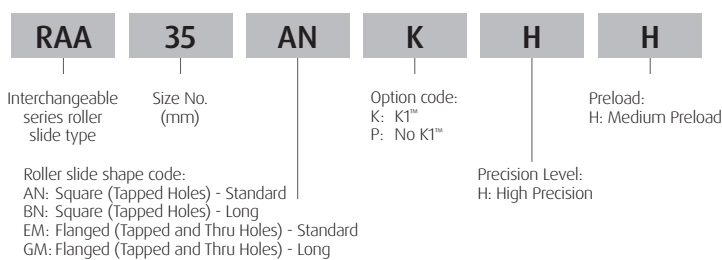
### LW Series Ball Slide



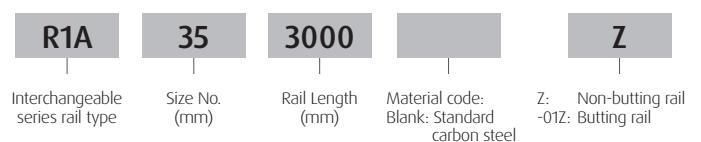
### LW Series Rail



### RA Series Roller Slide

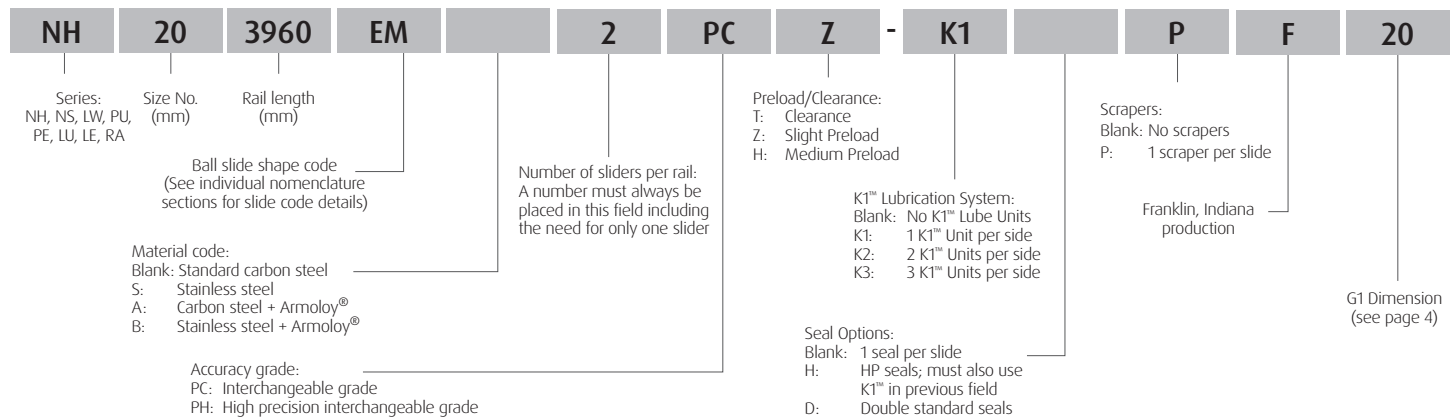


### RA Series Rail



## NSK Linear Guide, Interchangeable Slide and Rail (Assembled) Nomenclature

Interchangeable rails and slides for random matching are available for **NH, NS, LW, PU, PE, LU, LE** and **RA Series**. The rails and slides may be purchased separately.



## CAD Files and Technical Information



**SolidComponents™**

NSK has partnered with SolidComponents™ to offer you easy access to CAD files and technical information. Visit NSK's website ([www.nskprecision.com](http://www.nskprecision.com)) or SolidComponents ([www.npa.solidcomponents.com](http://www.npa.solidcomponents.com)) to download CAD files and technical information.

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