

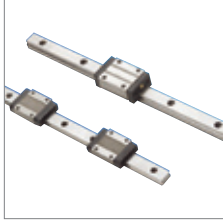
Linear and Roller Guides

Product Reference Guide



NSK Linear Guides

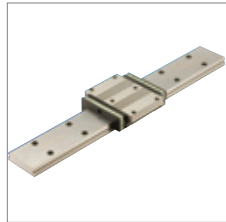
Product Range



LH/LS Series

Interchangeable Linear Guide

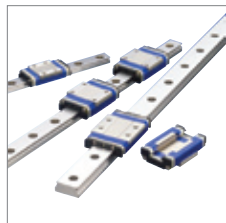
- Errors are reduced with high self-aligning capabilities
- Interchangeable parts for quick repair and replacement
- Short delivery time
- Ideal for all industries



LW Series

Wide Rail Linear Guide

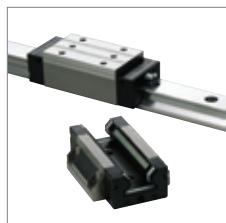
- Wide rail offers high rigidity and load capacity
- Interchangeable parts for quick repair and replacement
- Low profile for compact design
- Ideal for all industries



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



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

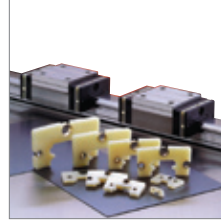


V1 Series

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

Accessories



K1™ Lubrication Units

Maintenance-free Lubrication

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



LG2/LGU

Clean Room Grease

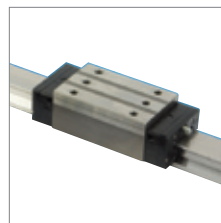
- Low particle emission to keep equipment clean
- High durability reduces upkeep costs
- Rust prevention ability is significantly higher than fluorine greases



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



Rail Covers

Contamination Protection for Rails

- Covers entire rail to prevent contamination from building up in the rail mounting holes



Special Coatings

Special Coatings for Harsh Environments

- **Armoly®** – 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 ideal 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 \$6.5 billion, NSK employs over 24,000 employees at 62 ISO certified manufacturing facilities. Our 129 sales operations are located in 27 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' Head Office
Ann Arbor, MI

NSK

NSK Linear Guide

Table 1: Preload Code

Preloaded Assembly (heavy preload-fine clearance)	Z4-ZØ
Interchangeable Assembly	ZZ, ZT

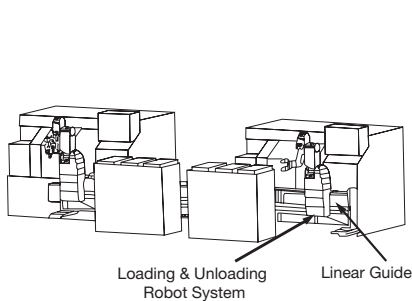
Table 3: Accuracy Code

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

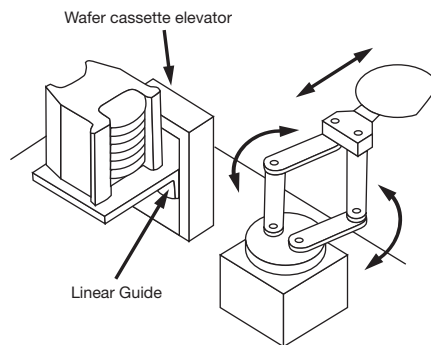
Table 2: Material/Surface Treatment Code (For Custom Assembly Only)

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

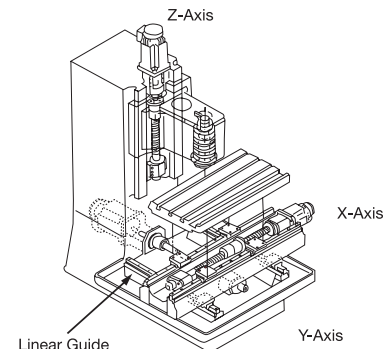
Applications Examples



Loading and Unloading Robot



Wafer Cassette Elevator



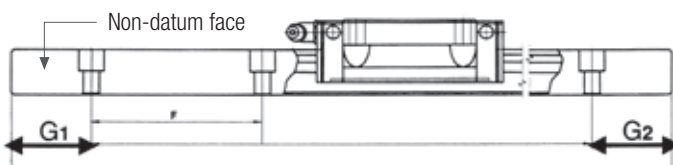
Machine Center

Linear Guide Product Selection

To help in the selection of linear guides, NSK has come up with a series of questions that need to be answered in order to determine the appropriate NSK product.

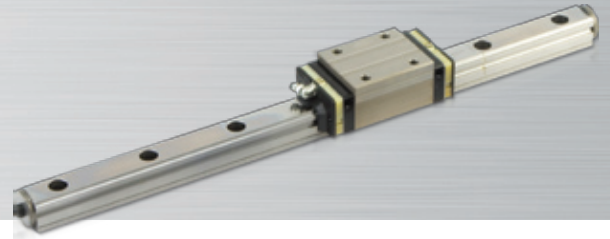
1. What is your application?
2. Do you have a part # (from NSK or a competitor)?
3. If so, how did you arrive at the part # you selected?
4. What type of carriage or bearing style is needed for your application: tapped, through hole, square or flange style?
5. How many carriages or bearings are needed 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



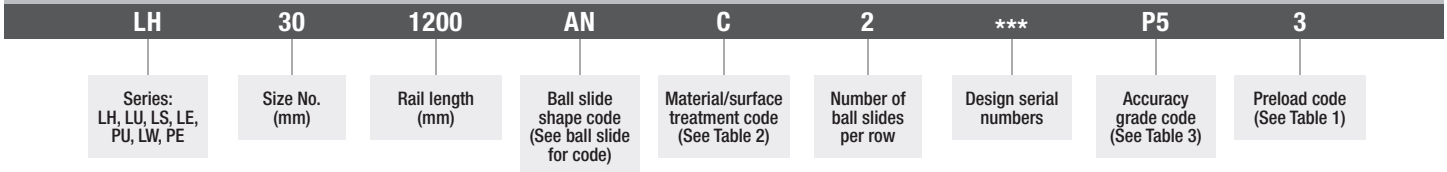
In order to properly cut linear guide rail, the G dimension must be determined. The G dimension is the dimension from the end of the rail length to the center of the first bolt-hole. In certain applications, we will need to know the G dimension for both ends of the rail.

NSK Linear Guide Part Numbering System

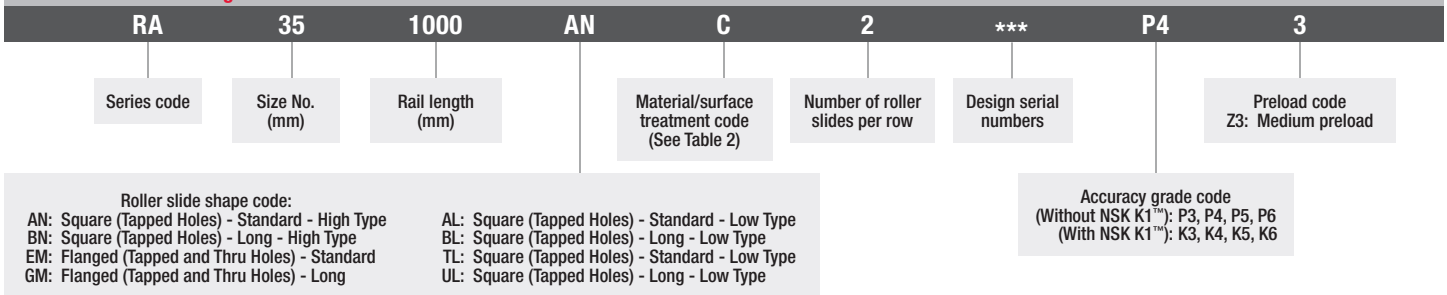


Preloaded Assembly Nomenclature

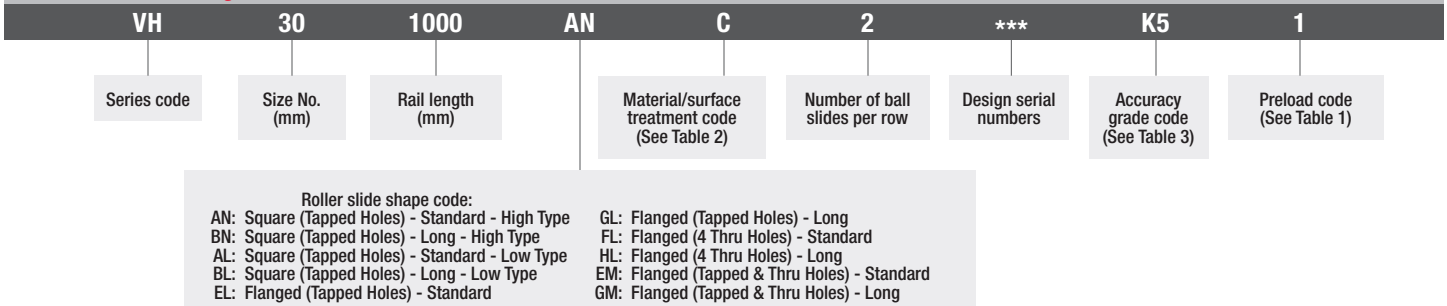
Reference number coding for assembled rail and ball slide: LH, LU, LS, LE, PU, LW, PE Series



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



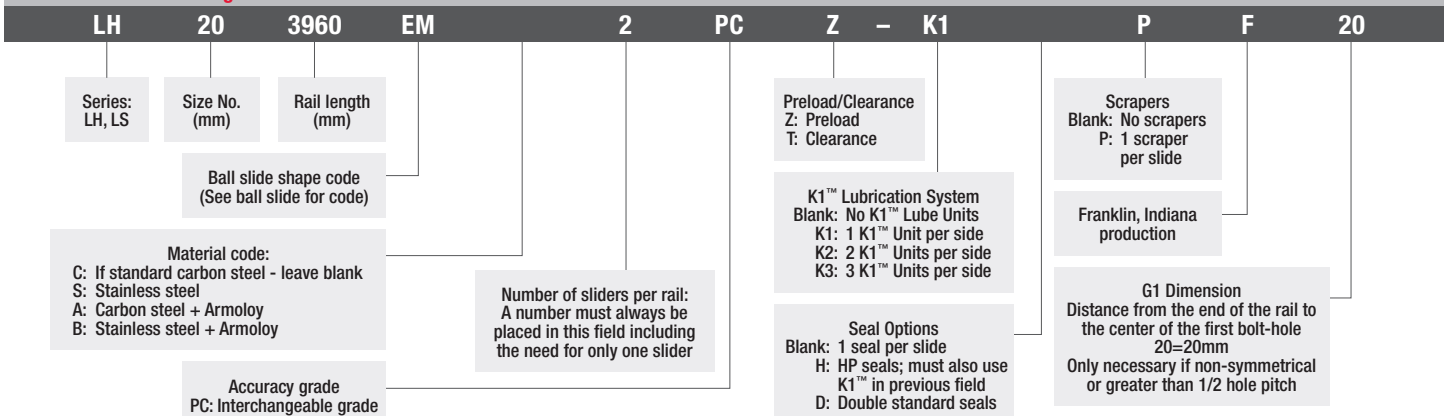
Reference number coding for assembled rail and ball slide: V1 Series



Interchangeable Type Nomenclature

Interchangeable rails and slides for random matching are available for LH, LU, LS, LE, LW, SH, SS, PU, PE and RA Series.
The rails and slides may be purchased separately.

Reference number coding for assembled rail and ball slide.

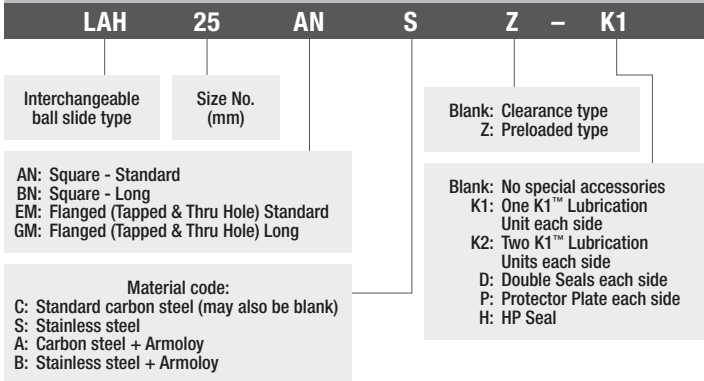


NSK Linear Guide

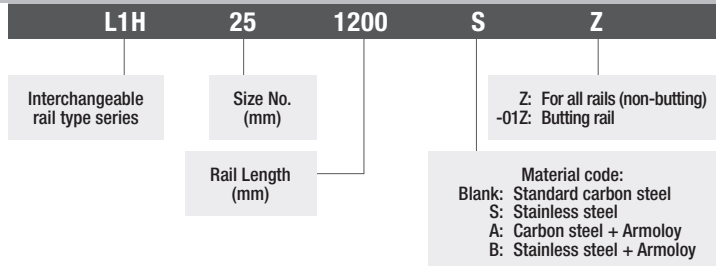
Part Numbering System

NSK Linear Guide Slide and Rail Nomenclature

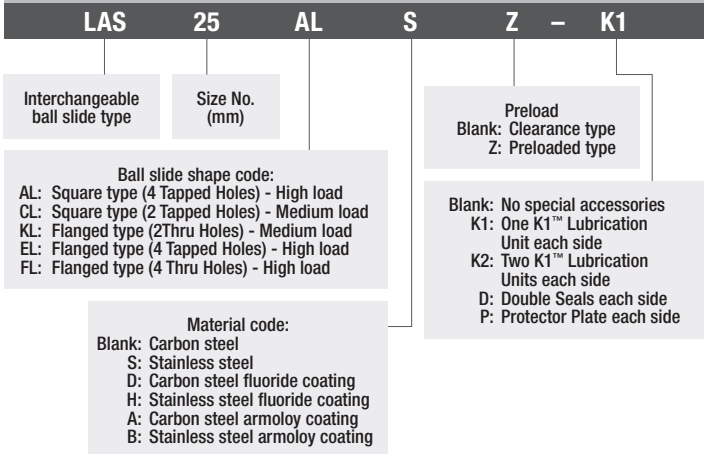
LH Series Ball Slide



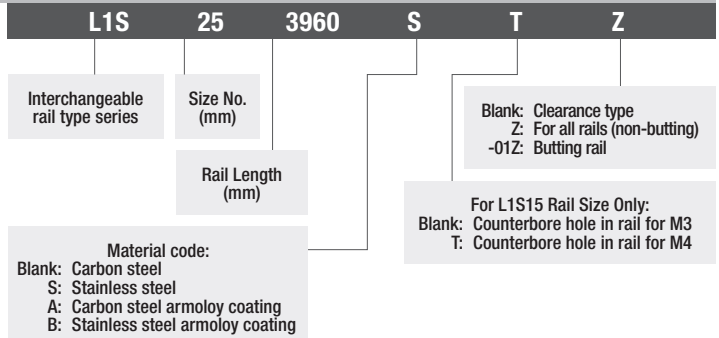
LH Series Rail



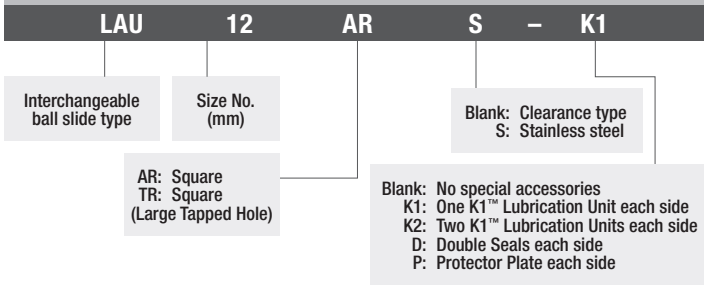
LS Series Ball Slide



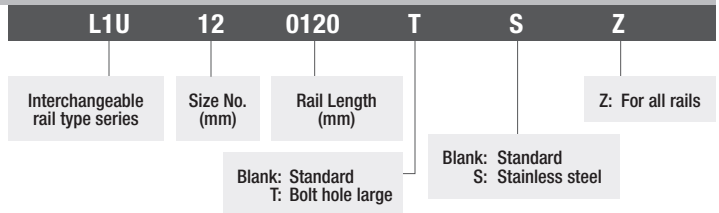
LS Series Rail



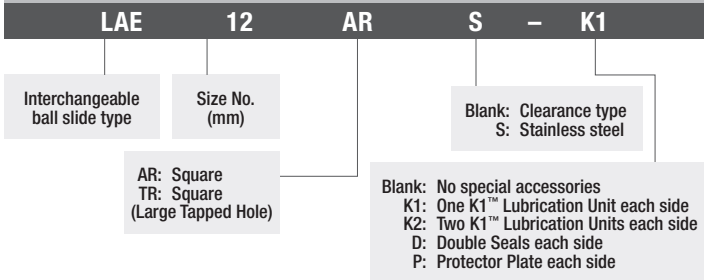
LU Series Ball Slide



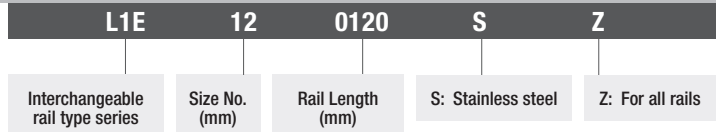
LU Series Rail



LE Series Ball Slide



LE Series Rail





LW Series Ball Slide

LAW	27	EL	Z
Interchangeable ball slide type	Size No. (mm)	Ball slide shape code: EL: Flanged (Tapped Hole)	Blank: Clearance Z: Light preload

LW Series Rail

L1W	27	0820	Z
Rail type	Size No. (mm)	Rail Length (mm)	Blank: Clearance Z: For all units

RA Series Roller Slide

RAA	35	AN	K	6	Z
Interchangeable series roller slide type	Size No. (mm)	Roller slide shape code: AN: Square (Tapped Holes) - Standard BN: Square (Tapped Holes) - Long EM: Flanged (Tapped and Thru Holes) - Standard GM: Flanged (Tapped and Thru Holes) - Long	K: K1™ P: No K1™	6: P6 accuracy	Z: Medium preload

RA Series Rail

R1A	35	3000	Z
Interchangeable series rail type	Size No. (mm)	Rail Length (mm)	Blank: Standard carbon steel Z: For all rails (non-butting) -01Z: Butting rail

PU/PE Series Ball Slide *

PA	U	15	AL	S	-	K1
Single ball slide code	Series name U: PU E: PE	Size No. (mm)	Ball slide shape code	Material code: S: Stainless steel		Option code K1: Products with NSK K1™ Blank: No options

PU/PE Series Rail *

P1	U	15	0470
Interchangeable series rail type	Series name U: PU E: PE	Size No. (mm)	Rail Length (mm)

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

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) or SolidComponents (www.npa.solidcomponents.com) to download CAD files and technical information.



Worldwide Sales Offices

NSK Ltd.-Headquarters, Tokyo, Japan Americas & Europe Department Asia Marketing & Sales Department	www.nsk.com tel: 03-3779-7120 tel: 03-3779-7121	New Zealand: NSK New Zealand Ltd. Auckland	www.nsk-rhp.co.nz tel: (09) 276-4992	Turkey: NSK Bearings Middle East Trading Co., Ltd. Istanbul	tel: 90-216-442-7106
AFRICA South Africa: NSK South Africa (Pty) Ltd. Johannesburg	tel: (011) 458 3600	Philippines: NSK representative office Manila	tel: 02-759-6246	United Kingdom: NSK Bearings Europe Ltd. Peterlee, England	tel: 0191-586-6111
ASIA AND OCEANIA Australia: NSK Australia Pty. Ltd. Melbourne	www.nskaustralia.com.au tel: (03) 9764-8302	Singapore: NSK International (Singapore) Pte Ltd. Singapore	tel: (65) 273 0357	Newark, England	tel: 0163-660-5123
China: NSK Hong Kong Ltd. Hong Kong	tel: 2739-9933	NSK Singapore (Pte) Ltd. Singapore	tel: (65) 278 1711	NSK Steering Systems Europe Ltd. Coventry, England	tel: 024-76-588588
India: Rane NASTECH Ltd. Chennai	tel: 04114-65313, 65314, 65365, 66002	Taiwan: Taiwan NSK Precision Co., Ltd. Taipei	tel: 02-2591-0656	NORTH AND SOUTH AMERICA NSK Americas, Inc. (American Headquarters) Ann Arbor, Michigan, U.S.A.	tel: 734-913-7500
Indonesia: P.T. NSK Bearings Manufacturing Indonesia Jakarta	tel: 021-898-0155	Thailand: NSK Bearings (Thailand) Co., Ltd. Bangkok	tel: 02-6412150~58	Argentina: NSK Argentina SRL Buenos Aires	tel: 011-4762-6556
Korea: NSK Korea Co., Ltd. Seoul	tel: 02-3287-0300	NSK Safety Technology (Thailand) Co., Ltd. Chonburi	tel: (038) 214-317-8	Brazil: NSK Brasil Ltda. São Paulo	www.br.nsk.com tel: 011-3269-4700
Malaysia: NSK Bearings (Malaysia) Sdn. Bhd. Kuala Lumpur	tel: 03-7958-4396	Siam NASTECH Co., Ltd. Chachoengsao	tel: (038) 522-343~350	Canada: NSK Canada Inc. Toronto	www.ca.nsk.com tel: 905-890-0740
NSK Micro Precision (M) Sdn. Bhd. Kuala Lumpur	tel: 03-961-6288	EUROPE NSK Europe Ltd. (European Headquarters) Maidenhead, England	www.eu.nsk.com tel: 0162-850-9800	Mexico: NSK Rodamientos Mexicana, S.A. de C.V. Mexico City	tel: 5-301-2741 www.us.nsk.com
		France: NSK France S.A. Paris	tel: 01 30 57 39 39	United States of America: NSK Corporation Ann Arbor, Michigan	tel: 734-913-7500
		Germany: NSK Deutschland GmbH Düsseldorf	tel: 02102-481-0	Sales Offices: Ann Arbor, Michigan	tel: 734-913-7500
		NSK Steering Systems Europe Ltd. Stuttgart	tel: 0771-79082-277	Santa Fe Springs, California	tel: 562-968-1000
		Neuweg Fertigung GmbH Munderkingen	tel: 07393-540	NSK American Technical Center Ann Arbor, Michigan	tel: 734-913-7500
		Italy: NSK Italia S.P.A. Milano	tel: 02-995-191	NSK Precision America, Inc. Franklin, Indiana	tel: 317-738-5038
		Poland: NSK Europe Ltd. Warsaw Liaison Office Warsaw	tel: 48-22-645-1525, 1526	San Jose, California	tel: 408-944-9400
		NSK Iskra S.A. Kielce	tel: 48-41-366-6111	www.nskprecision.com	
		Spain: NSK Spain S.A. Barcelona	tel: 93-575-4041	NSK Steering Systems America Bennington, Vermont	tel: 802-442-5448
				NSK Latin America Inc. Miami, Florida	www.la.nsk.com tel: (305) 477-0605

NSK Ltd. has a basic policy not to export any products or technology designated as controlled items by export-related laws. When exporting the products in this brochure, the laws of the exporting country must be observed. Specifications are subject to change without notice and without any obligation on the part of the manufacturer. Every care has been taken to ensure the accuracy of the data contained in this brochure, but no liability can be accepted for any loss or damage suffered through errors or omissions. We will gratefully acknowledge any additions or corrections.

