

## BALL SCREWS PRODUCT REFERENCE GUIDE



# Committed to North America

NSK manufactures and services ball screws and other linear motion control products in the U.S. NSK ball screw solutions 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 domestically-manufactured ball screws, 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

NSK Americas is one of the world's leading manufacturers of motion and control products. A global company with sales of over \$8 billion, NSK employs over 25,000 employees at 63 ISO certified manufacturing facilities. Our 113 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 77,950 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 domestic manufacturing and custom configurations, NSK can meet your deadline.**



NSK Americas' Head Office  
Ann Arbor, MI

**NSK**



# NSK Ball Screws

## Ball Screw Product Range



Compact FA Series

### Quick Ship Ball Screw

- ➔ Fastest ball screw on the market
- ➔ Compact design with ball nut size reduced up to 30%\*
- ➔ Noise output reduced up to 6 db\*
- ➔ Ideal for all industries
- ➔ Available with 4 week lead time on standard sizes
- ➔ Domestically manufactured at NSK's Franklin, Indiana ball screw plant



Standard Series

### Standard Series Ball Screw

- ➔ High accuracy and rigidity ensure optimal performance
- ➔ Maintenance-free operation available with K1™ Lubrication Units
- ➔ A variety of options and accessories to best meet your unique requirements
- ➔ Ideal for all industries
- ➔ Standard sizes available in stock for fast delivery
- ➔ Domestically manufactured at NSK's Franklin, Indiana ball screw plant

## Ball Screw Accessories



K1™ Lubrication Units

### Maintenance-free Lubrication

- ➔ Reduced risk of mechanical failure
- ➔ Extended lubrication life even in severe environments
- ➔ Reduced equipment cost, improved machine design and efficiency with no oil piping required
- ➔ Environmentally friendly



HP Seals

### High Performance Seals

- ➔ Provides an effective barrier against contamination
- ➔ Multi-lip structure reduces entry of foreign matter in contaminated environments
- ➔ Extended operating life and reduced cost as product life is increased up to four times\*
- ➔ Entry of foreign matter is reduced to less than 1/15\*



Special Environments

### Special Environments

- ➔ **Armoloy Coating** – a hard, protective coating provides corrosion resistance plus increased durability. Available on domestically manufactured products.
- ➔ **Black Chrome Coating** – provides corrosion resistance and is ideal for application using acid or other harsh chemicals. Contact NSK for availability.
- ➔ **Fluoride Black Chrome Coating** – offers higher corrosion resistance than standard black chrome. Contact NSK for availability.
- ➔ **Clean Room Grease** – low dust emission with high durability and higher rust prevention than fluorine greases.



Support Units

### Support Units

- ➔ Time saving, easy installation with NSK ball screws
- ➔ Offer high dust protection to extend ball screw product life
- ➔ Specially designed units provide maximum performance for applications from light to heavy loads

# NSK Ball Screw

## Part Numbering System



### Compact FA Series Ball Screw Nomenclature

PSS	15	10	N1D	1179
Compact FA Series (Accuracy grade: C5)	Screw Shaft Diameter (mm)	Lead (mm)	NSK Control No.	Ball Screw Shaft Overall Length (mm)

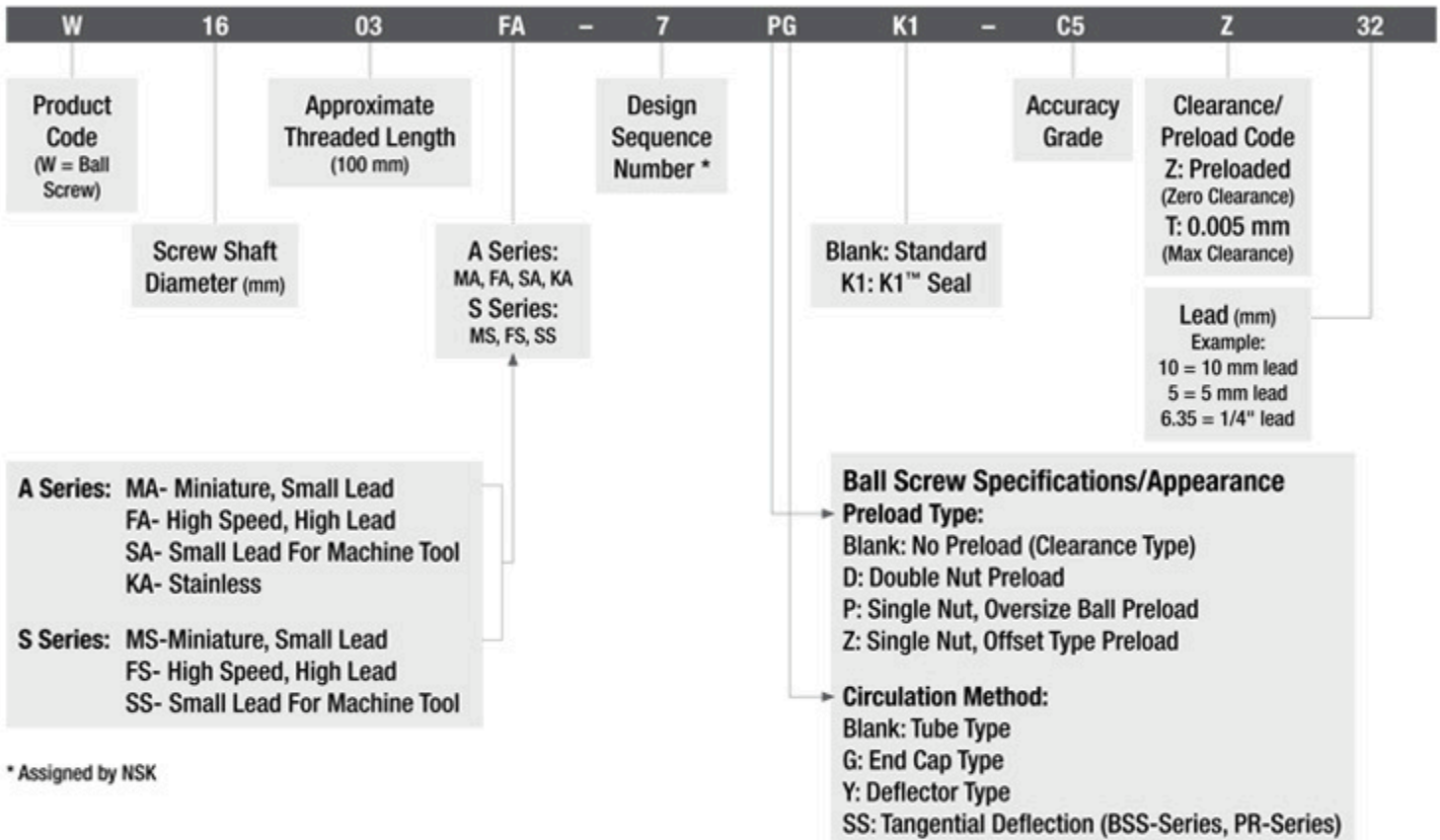
Shaft Diameter	Lead	Stroke														Recommended Support Unit	
		50	100	150	200	300	400	500	600	700	800	1000	1200	1600	2000	Fixed side support unit	Simple side support unit
10	5	●	●		●	●	●									WBK08-01B	WBK08S-01B
	10		●		●	●	●										
12	5	●	●		●	●	●	●								WBK08-01B	WBK08S-01B
	10		●		●	●	●	●									
	20		▲		▲	▲	▲	▲									
	30		▲		▲	▲	▲	▲									
15	5	●	●		●	●	●	●	●							WBK12-01B WBK10-01B	WBK12S-01B
	10		●		●	●	●	●	●	●	●	●					
	20		▲		▲	▲	▲	▲	▲	▲	▲	▲					
	30		▲		▲	▲	▲	▲	▲	▲	▲	▲					
20	5			●	●	●	●	●	●	●						WBK15-01B	WBK15S-01B
	10				●	●	●	●	●	●	●	●	●				
	20					▲	▲	▲	▲	▲	▲	▲	▲	▲			
	30				▲	▲	▲	▲	▲	▲	▲	▲	▲				
	40						▲	▲	▲	▲	▲	▲	▲	▲	▲		
	60						▲	▲	▲	▲	▲	▲	▲	▲	▲		
25	5			●	●	●	●	●		●	●	●				WBK20-01	WBK20S-01
	10					●	●	●	●	●	●	●		●			
	20							●	●	●	●	●	●	●	●		
	25							●	●	●	●	●	●	●	●		
	30							▲	▲	▲	▲	▲	▲	▲	▲		
	50							▲	▲	▲	▲	▲	▲	▲	▲		

Other support units are also available. ● four-week delivery. ▲ Made to order.





## Standard Series Ball Screw Nomenclature



➔ Contact an NSK representative for custom ball screw part numbering. ➔

## NSK on the Job

To receive a large bonus, a theatrical equipment manufacturer needed to design and assemble an application within an extremely tight deadline. The customer preferred a domestic manufacturer to ensure on-time delivery, and the application's unique specifications demanded that the customer find a supplier with exceptional engineering support. NSK was the logical choice for the customer.

The application was a unique design that incorporated two stages in one. The unit turned completely upside down and had to perform smoothly and quietly at all angles despite heavy, uneven loads.

NSK's combination of domestic manufacturing and engineering expertise helped the customer meet their tight deadline, and receive their bonus, along with the recognition of a job well done.



# Ball Screw Specification Sheet

## For New Applications

Customer Name:  Date:

Customer Point of Contact:

Customer Phone:  Customer Email:

Application:  (ex: machine tool, transport, etc.)

### Speed and Travel:

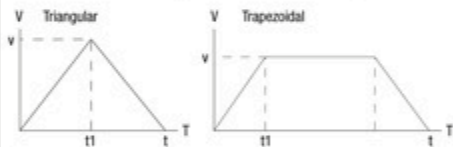
Stroke:  mm

Stroke Time (t):  sec

Ramp Time (t1):  sec

Acceleration:  m/s<sup>2</sup>

Deceleration:  m/s<sup>2</sup>



### Orientation:

Mounting Orientation:   
(Horizontal/Vertical)

### Support Method

☐ Fixed-Fixed



☐ Fixed-Simple



☐ Fixed-Free



### Environment:

Temperature Range:

deg C  
 deg F

☐ General Industry

☐ Wash Down

☐ Clean Room

☐ Vacuum

☐ Outside Use

☐ Splash

☐ Corrosive

☐ High Humidity

☐ Contaminated

☐ Food/Medical

### Load Conditions:

Moving Mass:  kg

External Axial Force:  N

Maximum Load:  N

Maximum RPM:  rpm

Mass Supported by Linear Guides?

☐ Yes ☐ No

Position of Ball Screw Relative to COG

X-coord:  (mm) Y-coord:  (mm)  
(Horizontal Distance) (Vertical Distance)

### Duty Cycle

Life Expectation:  Years

Cycles Per Hour:

Operating Hours:  Per Day

Operating Days:  Per Year

### Accuracy/Repeatability Requirements:

### Additional Comments:

### Application Details

(Please enter any other special considerations not covered)

# Applications

NSK Ball Screws can be found in applications across many different industries.

## Applications Listing

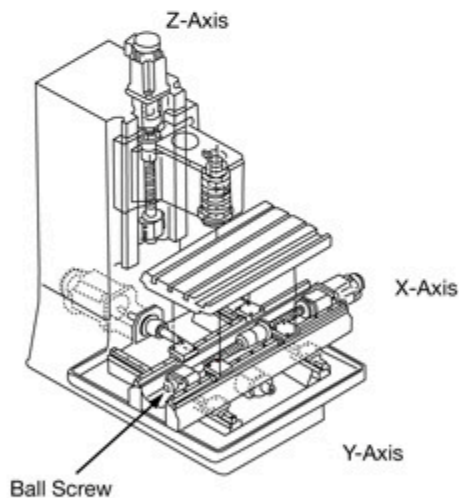
### Industries

- ➔ Medical
- ➔ Automotive
- ➔ Semiconductor and LCD
- ➔ Printed Circuit Board
- ➔ Electronics Parts Manufacturing
- ➔ Tire Manufacturing
- ➔ Food Processing
- ➔ Glass Manufacturing
- ➔ Household Appliance
- ➔ Optical Component/Equipment
- ➔ Film
- ➔ TV, Audio, Broadcasting Industry

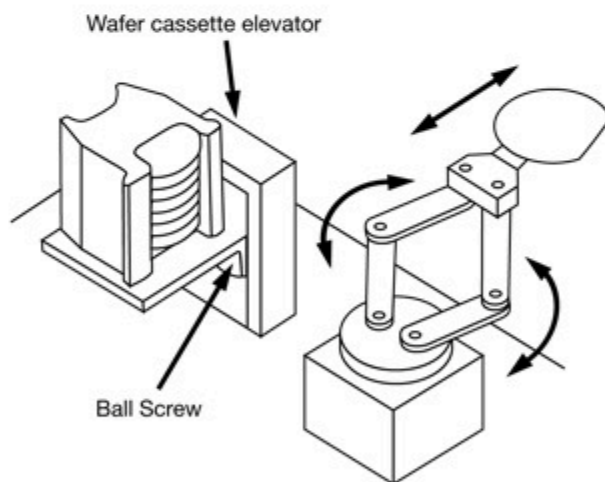
### Applications

- ➔ Machine Tools
- ➔ Injection Molding Machines
- ➔ Robots
- ➔ Woodworking Machines
- ➔ Manufacturing Equipment of Semiconductor and LCD
- ➔ Production Machine of Printed Circuit Board
- ➔ Material Handling Equipment
- ➔ Optical Equipment
- ➔ Food Processing Machines
- ➔ Equipment for Aircraft Assembly
- ➔ Medical Equipment
- ➔ Inspection Equipment

## Applications Examples



**Machine Center Drawing**



**Wafer Cassette Elevator**

## 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.

**NSK**

## Worldwide Sales Offices

### NSK Ltd. Headquarters, Tokyo, Japan

ASIA BUSINESS STRATEGIC DIVISION-  
HEADQUARTERS  
INDUSTRIAL MACHINERY BEARINGS DIVISION-  
HEADQUARTERS  
AUTOMOTIVE DIVISION-HEADQUARTERS  
NEEDLE ROLLER BEARINGS STRATEGIC  
DIVISION-HEADQUARTERS  
PRECISION MACHINERY & PARTS  
DIVISION-HEADQUARTERS

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

tel: 03-3779-7145

tel: 03-3779-7227

tel: 03-3779-7189

tel: 03-3779-2563

tel: 03-3779-7219

### Africa

#### South Africa:

NSK South Africa (Pty) Ltd.  
Johannesburg

tel: 011-458-3600

### Asia and Oceania

#### Australia:

NSK Australia Pty. Ltd.  
Melbourne

[www.nskaustralia.com.au](http://www.nskaustralia.com.au)

tel: 03-9764-8302

#### China:

NSK Hong Kong Ltd.  
Hong Kong

tel: 2739-9933

Kunshan NSK Co., Ltd.  
Kunshan Plant

tel: 0520-730-5654

Changshu NSK Needle Bearing Co., Ltd.  
Jiangsu Plant

tel: 0512-5230-1111

Guizhou HS NSK Bearings Co., Ltd.  
Anshun Plant

tel: 0853-3521505

NSK Steering Systems Dongguan Co., Ltd.  
Dongguan Plant

tel: 0769-262-0960

Zhangjiagang NSK Precision Machinery Co., Ltd.  
Jiangsu Plant

tel: 0512-5867-6496

Timken-NSK Bearings (Suzhou) Co., Ltd.  
Jiangsu Plant

tel: 0512-6665-5666

NSK China Technology Center  
Jiangsu

tel: 0512-5771-5654

NSK (Shanghai) Trading Co., Ltd.  
Shanghai

tel: 021-6235-0198

Beijing  
Guangzhou

tel: 010-6590-8161

Anshun  
Chengdu

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NSK (China) Investment Co., Ltd.  
Shanghai

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#### India:

Rane NSK Steering Systems Ltd.  
Chennai

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NSK Ltd. India Branch Office  
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#### Indonesia:

PT. NSK Bearings Manufacturing Indonesia  
Jakarta

tel: 021-898-0155

PT. NSK Indonesia  
Jakarta

tel: 021-252-3458

### Korea:

NSK Korea Co., Ltd.  
Seoul

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

tel: 02-3287-0300

Changwon Plant

tel: 055-287-6001

### Malaysia:

NSK Bearings (Malaysia) Sdn. Bhd.  
Kuala Lumpur

tel: 03-7722-3372

NSK Micro Precision (M) Sdn. Bhd.  
Malaysia Plant

tel: 03-961-6288

### New Zealand:

NSK New Zealand Ltd.  
Auckland

[www.nsk-rhp.co.nz](http://www.nsk-rhp.co.nz)

tel: 09-276-4992

### Philippines:

NSK Representative Office  
Makati City

tel: 02-893-9543

### Singapore:

NSK International (Singapore) Pte Ltd.  
Singapore

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NSK Singapore (Pte) Ltd.  
Singapore

[www.nsk-singapore.com.sg](http://www.nsk-singapore.com.sg)

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### Taiwan:

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Taipei

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### Thailand:

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tel: 02-6412-150

SIAM NSK Steering Systems Co., Ltd.  
Chachoengsao

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NSK Asia Pacific Technology Center (Thailand) Co., Ltd.  
Chonburi

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### Vietnam:

NSK Representative Office  
Hanoi

tel: 04-935-1269

### Europe

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(European Headquarters)

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

Maidenhead, U.K.

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### France:

NSK France S.A.  
Paris

tel: 01-30-57-39-39

### Germany:

NSK Deutschland GmbH  
Düsseldorf

tel: 02102-481-0

NSK Precision Europe GmbH  
Düsseldorf

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Stuttgart

tel: 0771-79082-277

Neuweg Fertigung GmbH  
Munderkingen

tel: 07393-540

### Italy:

NSK Italia S.p.A.  
Milano

tel: 02-995-19-1

Industria Cuscinetti S.p.A.  
Torino Plant

tel: 0119824811

### Netherlands:

NSK European Distribution Centre B.V.  
Tilburg

tel: 013-4647647

### Poland:

NSK Europe Ltd. Warsaw Liaison Office  
Warsaw Liaison

tel: 022-645-1525

NSK Iskra S.A.  
Kielce

tel: 041-366-6111

NSK European Technology Center, Poland Office  
Kielce

tel: 041-366-5812

### Spain:

NSK Spain S.A.  
Barcelona

tel: 093-289-27-63

### Turkey:

NSK Bearings Middle East Trading Co., Ltd.  
Istanbul

tel: 0216-442-7106

### United Kingdom:

NSK Bearings Europe Ltd.  
Peterlee Plant

tel: 0191-586-6111

NSK European Technology Centre  
Newark

tel: 01636-605123

NSK UK Ltd.  
Newark

tel: 01636-605123

NSK Precision UK Ltd.  
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NSK Steering Systems Europe Ltd.  
Coventry

tel: 024-76-337100

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### Argentina:

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### Canada:

NSK Canada Inc.  
Mississauga

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

tel: 905-890-0740

### Mexico:

NSK Rodamientos Mexicana, S.A. de C.V.  
Mexico City

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tel: 55-36822900

### United States of America:

NSK Corporation  
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[www.nskamericas.com](http://www.nskamericas.com)

tel: 734-913-7500

NSK American Technology Center  
Ann Arbor

tel: 734-913-7500

NSK Precision America, Inc.  
Franklin

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

tel: 317-738-5000

NSK Steering Systems America, Inc.  
Bennington, Vermont

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

tel: 802-442-5448

NSK Latin America, Inc.  
Miami

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

tel: 305-477-0605

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