NSK

BALL SCREWS
PRODUCT REFERENCE GUIDE

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COMMITTED TO NORTH AMERICA

NSK manufactures and services ball screws and other linear motion control products in the USA. 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.

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 $8.7 billion, NSK employs over 31,500 employees at 64 ISO certified manufacturing facilities. Our 120 sales operations are located in 29 countries around the globe.

With over 100 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 manufacturing facility in Franklin, Indiana is dedicated to manufacturing precision products and serving the Americas markets. Certified to ISO9001:2015 and ISO14001:2015 standards, this state-of-the-art plant includes options for custom designs.

NSK Americas' Headquarters
Ann Arbor, MI

NSK BALL SCREWS

BALL SCREW PRODUCT RANGE

Compact FA Series

QUICK SHIP BALL SCREW

- Extreme high speed capability, up to 5,000 rpm
- Compact design with ball nut size reduced up to 30%*
- Noise output reduced up to 6 db*
- Low profile support units available
- Available with lead time of stock - 8 weeks 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
- Many design options for demanding applications
- 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

*Compared to standard NSK ball screws

NSK BALL SCREW
PART NUMBERING SYSTEM

COMPACT FA SERIES BALL SCREW NOMENCLATURE

PSS	15	10	N1D	1179
SERIES	**SCREW SHAFT DIAMETER (mm)**	**LEAD (mm)**	**NSK CONTROL NO.**	**BALL SCREW SHAFT OVERALL LENGTH (mm)**

PSS: Compact FA Series (Accuracy Grade C5)

COMBINATIONS OF SHAFT DIAMETER, LEAD AND STROKE

Shaft dia.	Lead	50	100	150	200	300	400	500	600	700	800	1000	1200	1600	2000	Recommended support unit	
																Fixed	Simple
6	8			▲*												WBK04-01M (square) WBK04-11M (round)	-
	12			▲*													
8	10			▲*												WBK06-01M (square) WBK06-11M (round)	-
	15			▲*													
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							▲	▲	▲	▲	▲	▲	▲	▲		

*For shaft diameter 6 and 8, length shown is overall length.

● Stocked to 8 week delivery. ▲ Contact NSK for availability.

STANDARD SERIES BALL SCREW NOMENCLATURE

W	16	03	FA	-	7	PG	K1	-	C5	Z	32
PRODUCT CODE	SCREW SHAFT DIAMETER (mm)	APPROXIMATE THREADED LENGTH (100 mm)	SERIES		DESIGN SEQUENCE NUMBER*	BALL SCREW SPECIFICATIONS / APPEARANCE	ACCESSORIES		ACCURACY GRADE	CLEARANCE / PRELOAD CODE	LEAD (mm)

W: Ball Screw

A SERIES (FINISHED ENDS):
- **MA:** Miniature, Small Lead
- **FA:** High Speed, High Lead
- **SA:** Small Lead for Machine Tool
- **KA:** Stainless Steel

S SERIES (UNFINISHED ENDS):
- **MS:** Miniature, Small Lead
- **FS:** High Speed, High Lead
- **SS:** Small Lead for Machine Tool

PRELOAD TYPE:
- **BLANK:** No Preload (Clearance Type)
- **D:** Double Nut Preload
- **P:** Single Nut, Oversize Ball Preload
- **Z:** Single Nut, Offset Type Preload

CIRCULATION METHOD:
- **BLANK:** Tube Type
- **G:** End Cap Type
- **Y:** Deflector Type
- **SS:** Tangential Deflection (BSS-Series)

BLANK: Standard
K1: K1™ Unit

Z: Preloded (Zero Clearance)
T: 0.005 mm (Max Clearance)

5: 5mm lead
10: 10mm lead
6.35: 1/4" lead

* Assigned by NSK

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:

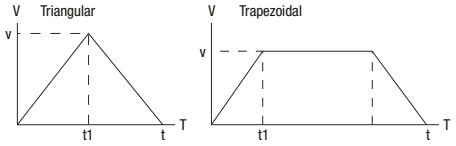
Stroke: _____ mm

Stroke Time (t): _____ sec

Ramp Time (t1): _____ sec

Acceleration: _____ m/s²

Deceleration: _____ m/s²

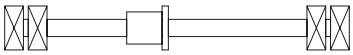


Orientation:

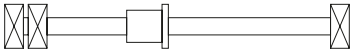
Mounting Orientation: _____
(Horizontal/Vertical)

Support Method

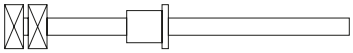
☐ Fixed-Fixed



☐ 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) (Horizontal Distance)

Y-coord: _____ (mm) (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)

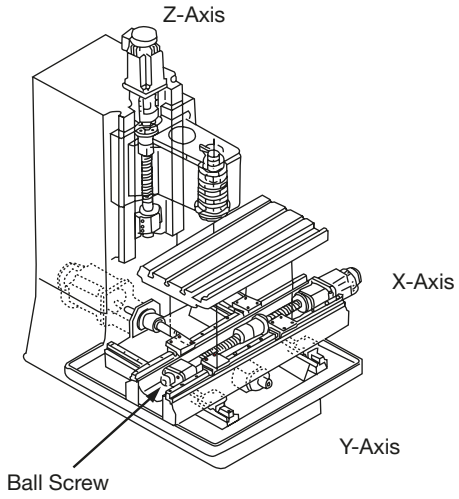
APPLICATIONS

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

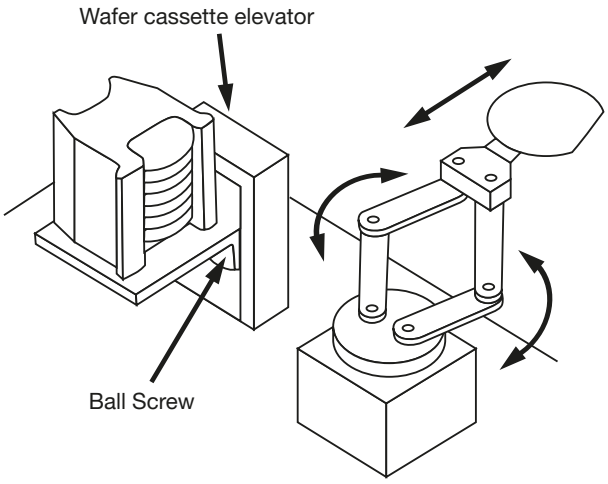
APPLICATIONS

- Automotive Manufacturing Equipment
- Electronics Parts Manufacturing
- Tire Manufacturing
- Glass Manufacturing
- Household Appliance Manufacturing
- Film
- TV, Audio, Broadcasting Industry
- 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 Manufacturing
- Food Processing Machines
- Equipment for Aircraft Assembly
- Medical Equipment
- Inspection Equipment

APPLICATION 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 models and drawings.
Visit SolidComponents at http://npa.solidcomponents.com.

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