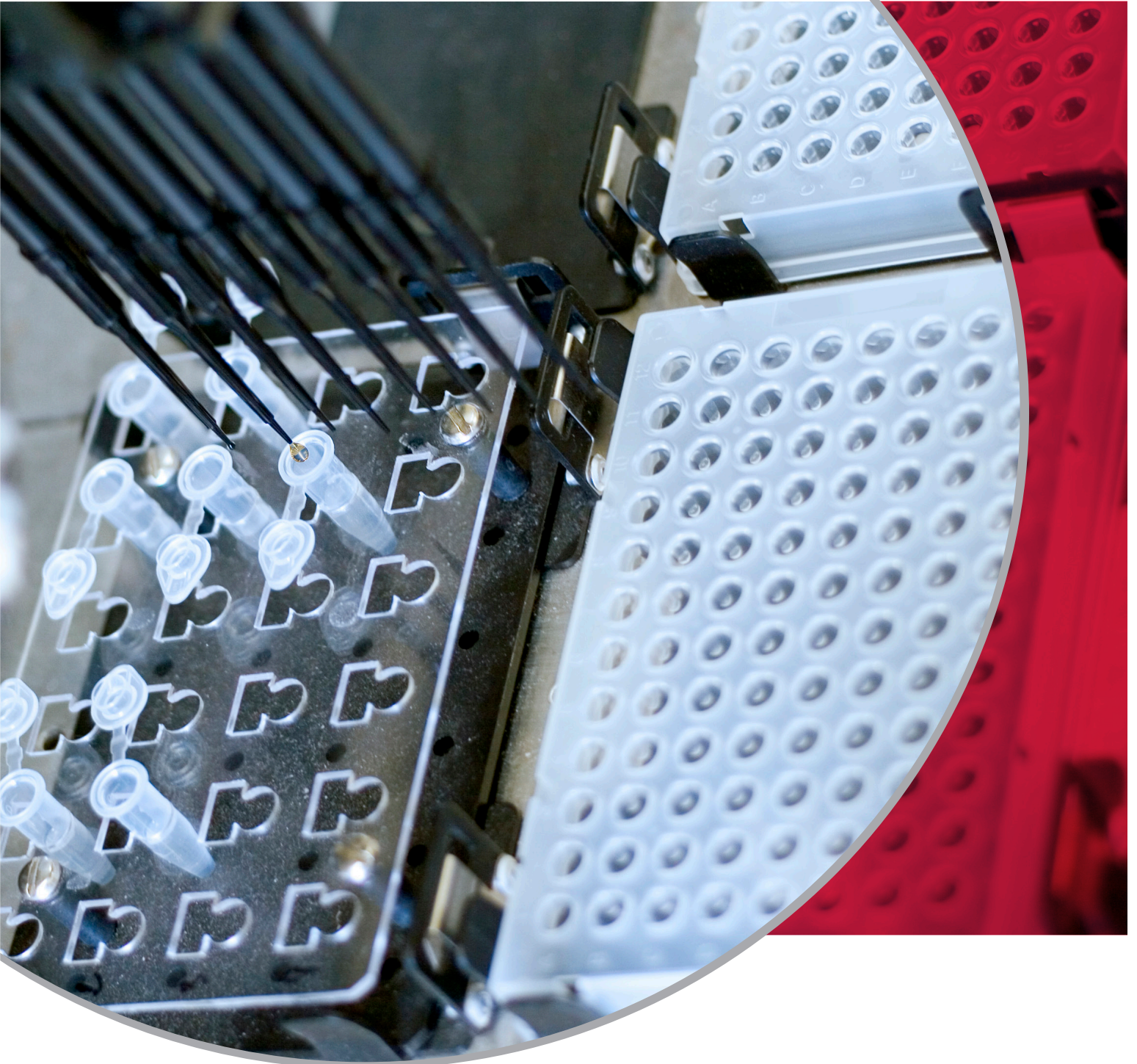


## NSK SOLUTIONS FOR MEDICAL INDUSTRY



# NSK PRODUCT OFFERINGS



## Ball Screw Products

- › High accuracy and rigidity ensure optimal performance.
- › Compact design for space saving applications.
- › Available in various diameter, length, lead, accuracy, preload and recirculation options.



## Linear Guide Products

- › Interchangeable rail and linear slide sold separately or as assembled components.



## Robot Modules™ Products

- › Integrated linear axis system that uses NSK linear guides, ball screws, and Monocarrier™ actuators.
- › Ergonomic design, sealed in an aluminum housing.
- › High rigidity, accuracy and repeatability.
- › Pre-assembled axis reduces time and labor cost.
- › Motor-ready design for customer flexibility.



## Megatorque™ Motor Products

- › Direct drive technology.
- › Maintenance-free operation.
- › Easy Installation.
- › Compact design with through hole for easy wire management.
- › Accurate, micron-level repeatability with no backlash.
- › Accessories available including a drive controller, mounting brackets, etc.



## Monocarrier™ Linear Actuator Products

- › Easy-to-install ball screw, linear guide and support units integrated into one structure.
- › Lightweight, compact design.
- › Long operating life and maintenance-free operation.
- › Rust-resistant, chrome plated standard material.



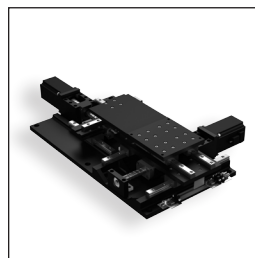
## Support Units for Ball Screws

- › Reduces maintenance cost, no re-lubrication is required.
- › Offers high dust protection.
- › Extends ball screw product life.
- › Provides maximum performance for applications from light to heavy loads.
- › Standard stock options available.



## K1™ Lubrication Units

- › Long-term, maintenance-free lubrication unit that is available for ball screws, linear guides, Robot Modules™ and Monocarrier™ product.
- › No maintenance required for 5 years or up to 10,000 km operational distance.
- › All precision linear products can be equipped with K1™ lubrication units.



## Integrated Products

- › Custom designs integrating NSK precision linear components.

# SOLUTIONS FOR MEDICAL INDUSTRY

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As the world population continues to grow and develop, so does the demand for health care. The health care industry must constantly evolve to achieve best outcomes at an economical value.

To meet such challenges, the health care industry relies on medical device and equipment OEM's to produce innovative, reliable, maintenance-free machines. To ensure the highest quality components are used within each machine, OEM's rely on trusted manufacturers, such as NSK.

Regarded as an industry leader, NSK's RoHS-compliant linear motion products have been used within the medical imaging, diagnostics, robotic surgery and medical equipment sectors. Learn more about NSK products and solutions for OEM medical applications.

## NSK – An International Company

The NSK Group is one of the world's leading manufacturers of rolling element bearings, linear motion and automotive component products for multiple industries and applications. Within the linear motion division, NSK is regarded as the world's leading manufacturer of precision ground ball screws. 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.

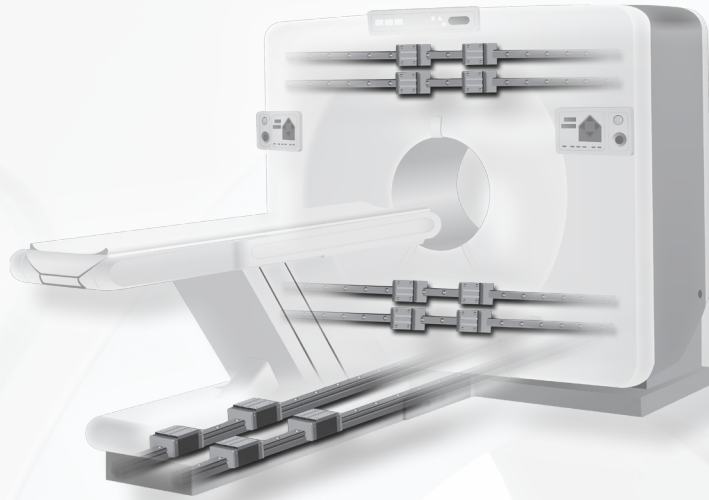
With over 90 years of experience, NSK products and solutions have been chosen by leading brands around the world. NSK conducts rigorous tests to guarantee that the best selection of steel is used during the manufacturing process of all NSK products. Choosing NSK ensures unsurpassed quality, performance, reliability.

## NSK Americas

Headquartered in Ann Arbor, Michigan, NSK Americas consists of United States, Canada, Mexico, Latin America and Brazil operations. Seven manufacturing facilities are located in the USA, including a linear precision components facility in Franklin, Indiana. Certified to ISO 9001:2008 and ISO 14001: 2004 standards, this state-of-the-art manufacturing plant ensures shorter lead times and faster turnaround. NSK has a dedicated team of sales, marketing, customer service, and engineering experts that not only serve as your personal guide to selecting the right product solution but also as a long-term solutions provider. NSK can assist in domestic repairs and replacement services minimizing potential downtime to provide significant cost savings.



# MEDICAL IMAGING



## Industry Challenges

Supply state-of-the-art equipment and adhere to changing regulations, while providing patients with the highest quality care. Improve patient wait time, comfort and safety when undergoing testing from CT, PET, and MRI scanning devices.

## NSK Approach

NSK Linear Guides™ provide smooth, quiet, and low friction motion. Optional K1™ Lubrication Units reduce maintenance cost and extend operating life.

## Product Features

### NH Series Linear Guides

- › NSK's standard LH linear guides series have been improved.
- › NH Series achieves world's highest dynamic load ratings, higher speed, lower noise and improved smooth motion.
- › Operating life is two times longer enabling enhanced machine capabilities.
- › Downsize other linear guides and still achieve required fatigue life, subject to actual loading conditions.
- › Drop-in replacement for the previous LH series (same mounting dimensions).
- › Interchangeable sliders and rails, sold separately or assembled.
- › High self-aligning capability absorbs installation errors.
- › High speed end caps are a standard feature.
- › Optional K1™ Lubrication Unit further extends product life and provides maintenance-free operation.
- › Inventory available for fast delivery.
- › RoHS compliant.

### NH Series Linear Guides



\* Dependent on application, Engineers may recommend other NSK product lines for medical imaging solutions.

# MEDICAL DIAGNOSTICS

## Industry Challenges

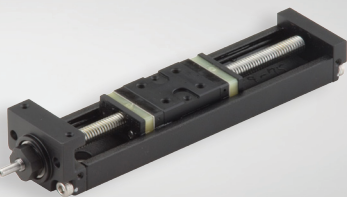
Diagnostic devices, such as blood analyzers, need to process multiple samples, while delivering consistent, accurate results in an efficient manner.

## NSK Approach

NSK Monocarrier™ linear actuators are a low-maintenance solution. The MCM Series is available in miniature sizes for compact, space-saving designs. Smooth motion, low vibration, high rigidity, and long operating life are all achieved with the use of the NSK Monocarrier™ product line.



MCM Monocarrier™



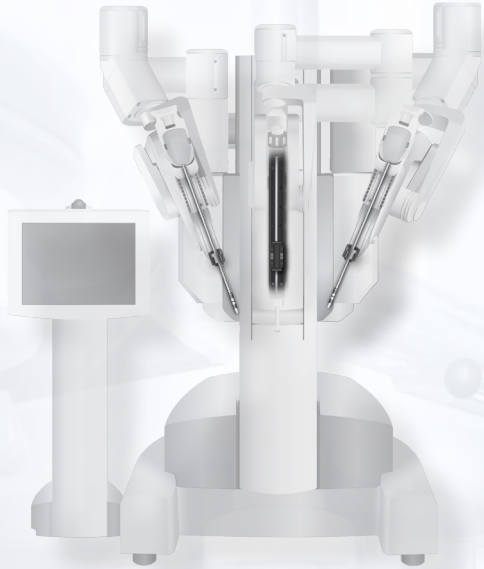
## Product Features

### Monocarrier™ Actuators: MCM Series

- › NSK ball screws, linear guides and support units integrated into one unit.
- › Lightweight, compact design.
- › Reduced design and installation time.
- › Equipped with K1™ Lubrication Units to extend product life and provide maintenance-free operation.
- › Chrome plating provides rust protection.
- › Optional features available for MCM Series:
  - Sensor units and rails
  - Cover units
  - Multi-axis combining brackets
  - Motor bracket / motor adaptors
  - Premium fluoride chrome plating provides increased rust protection
- › 4 week delivery for many standard catalog items.
- › RoHS compliant.

\* Dependent on application, Engineers may recommend other NSK product lines for medical diagnostic solutions.

# ROBOTIC SURGERY



## Industry Challenges

Deliver smooth, accurate, and precise movement to ensure reliable and repeatable results, while continually evaluating level of patient care received.

## NSK Approach

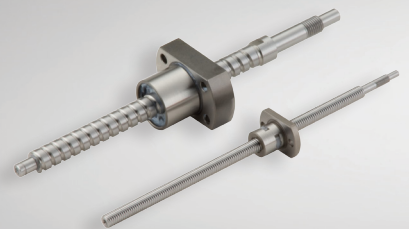
NSK BSS Series ball screws are available in miniature sizes and can be used within the arm of a surgical robot. Each ball screw is designed to deliver high precision and accuracy, which results in unparalleled smooth motion. With the use of K1™ Lubrication Units maintenance costs are significantly reduced.

## Product Features

### BSS Series Ball Screws

- › High speed.
- › Reduced operating noise.
- › Compact design – 30% smaller than conventional models.
- › Low profile support units are available to allow for space-saving designs.
- › Lubrication options available for use in clean room environments.
- › Superior seals reduce entry of dust and other contaminants.
- › Optional K1™ Lubrication Units provide maintenance-free operation.
- › 4 week delivery time for many standard catalog items.
- › RoHs compliant.

BSS Series Ball Screws



\* Dependent on application, Engineers may recommend other NSK product lines for robotic surgery solutions.



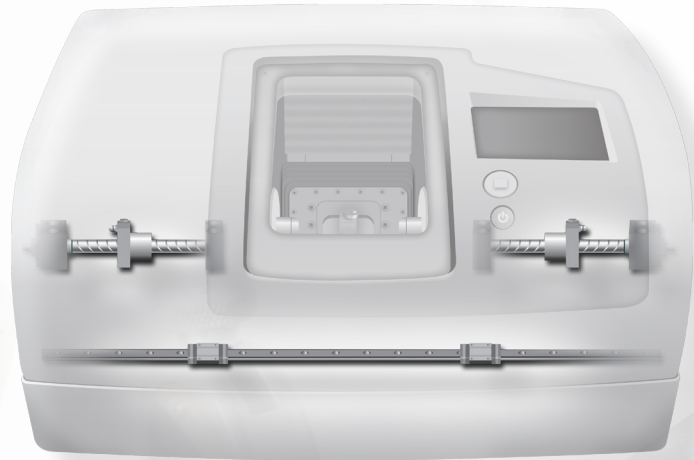
# MEDICAL EQUIPMENT

## Industry Challenges

Integrated motion that successfully combines accuracy, rigidity, and speed.

## NSK Approach

NSK miniature linear guides combined with miniature ball screws are a good solution for dental milling machines and other medical equipment. Their compact size, ideal for space limitations, delivers high speed, accuracy and rigidity to successfully provide a long term solution.



PU/PE Linear Guides



## Product Features

### PU/PE Linear Guides

- › 20% lighter weight than conventional miniature linear guide models.
- › Reduced noise.
- › Improved sealing reduces entry of foreign contaminants.
- › Stainless steel material provides excellent corrosion resistance.
- › Retained steel balls for easy handling.
- › Equipped with K1™ Lubrication Units to extend product life and provide maintenance-free operation.
- › Inventory available for fast delivery.
- › Special coatings can be applied to ball screw and linear guides to prevent corrosion and provide added protection in high contaminant environments.
- › PE series are a miniature wide rail type ideal for single rail use because of its capacity against high moment loads.
- › RoHS compliant.

\* Dependent on application, Engineers may recommend other NSK product lines for medical equipment solutions.



## **NSK AMERICAS**

### **Argentina**

NSK Argentina SRL  
Buenos Aires  
54.11.4762.6556

### **Brazil**

NSK Brasil Ltda.  
Sao Paulo SP  
55.11.3269.4700

### **Canada**

NSK Canada Inc.  
Mississauga ON  
1.877.994.6675

### **Latin America**

NSK Latin America Inc.  
Miami FL  
1.305.477.0605

### **Mexico**

NSK Rodamientos Mexicana, S.A. de C.V.  
Tlalnepantla de Baz MX  
52.55.3682.2900

### **United States**

NSK Corporation  
Ann Arbor MI  
1.888.446.5675

**Website:** [www.nskamericas.com](http://www.nskamericas.com)

**NSK Global:** [www.nsk.com](http://www.nsk.com)

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