

THK's Products

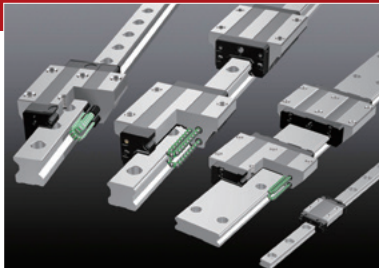
THK was the first company in the world to develop the Linear Motion (LM) Guide, which is based on an original concept and innovative technology.

THK also develops, produces, and supplies to the world a range of other vital machine components, including ball screws and electric actuators, as well as automotive and transportation components, such as L&S (Linkage and Suspension) products.

All of THK's technologies have gathered attention and are driving innovation around the world because of the smoother, more accurate movement they provide to every type of mechanism.

LM Guides

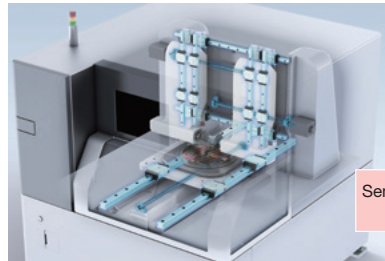
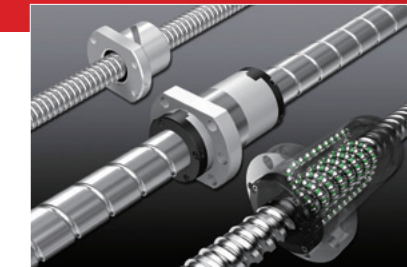
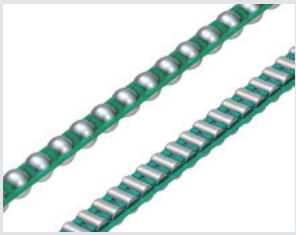
LM Guides are machine components that convert sliding motion into rolling motion, enabling machine parts to move smoothly, easily, and precisely in a straight line. As a result, LM Guides have enabled the precision, rigidity, speed, and energy-saving properties of a wide range of industrial machinery. With the introduction of products such as the Caged Ball LM Guide in 1996 and the Caged Roller LM Guide in 2001, the Company has continued to improve every aspect of the LM Guide and further expand its applications. As a result, LM Guides with caged ball and caged roller technology are now vital components of machine tools, semiconductor manufacturing equipment, and other industrial equipment.



Machine tool (Machining center)

Ball Cages and Roller Cages

The cages are resin parts that hold and guide the balls or rollers as they move. The use of cages reduces noise and friction by preventing direct contact between the balls or rollers. This allows for a longer service life, reduced noise, and an extended period of maintenance-free operation.

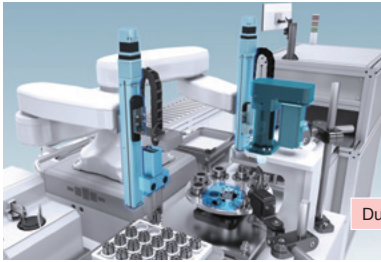


Semiconductor manufacturing equipment (Dicing saw)

Ball Screws

Ball screws are machine components that function by causing a large number of balls to circulate between a screw shaft and a nut. This mechanism efficiently converts rotary motion into linear motion. With the Caged Ball Screw, THK has incorporated caged ball technology into its existing ball screw designs, thus helping to achieve longer life with reduced noise and provide an extended period of maintenance-free operation.

As a result, these products are now essential elements in machine tools, industrial robots, semiconductor manufacturing equipment, and other industrial equipment. THK also offers ball screws that are designed to support high loads, making them ideally suited for replacing the hydraulic cylinders used in equipment such as injection molding machines, presses, and die casting machines.



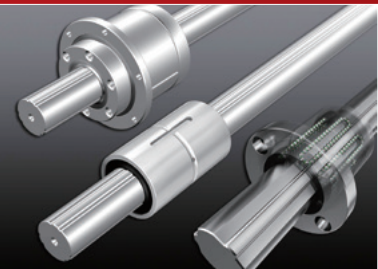
Dual-arm robot

Electric Actuators

Electric actuators are hybrid products combining a guide component, such as an LM Guide with a ball screw, linear motor, or other drive component. In industries such as electronics, there is an increasing need to shorten development and manufacturing lead times. Modularization allows these electric actuators to meet such requirements by simplifying the design and reducing assembly time. THK offers a varied lineup of electric actuators ranging from basic, cost-effective units to high-end components designed to operate with high precision or perform to clean room specifications. Such advanced electric actuators have become indispensable parts in equipment used in the manufacture or inspection of semiconductors and liquid crystal displays.

Ball Splines

Developed in 1971, the same year that THK was established, ball splines were the precursor to the LM Guide. This revolutionary linear motion guide element allows balls to roll along a rounded groove machined into the ball spline's shaft, boosting the load that the device can tolerate and permitting the transmission of torque. Compared with the products that came before, these ball splines boosted the permissible load by a factor of 13 and service life by a factor of 2,200. THK offers an extensive lineup featuring ball splines with integrated ball screws and other products that are used in a variety of equipment, including industrial robots, medical equipment, and chip mounters.



Horizontal articulated robot (SCARA robot)



Transfer robot

Cross Roller Rings

Cross roller rings are roller bearings that feature internal cylindrical rollers arranged orthogonally so as to facilitate load bearing in every direction. The incorporation of the spacer cages between rollers prevents roller skew and friction between the rollers. Possessing high rigidity while maintaining a compact structure, cross roller rings are used in the rotating parts of many different types of industrial machinery, including the joint areas and rotating parts of industrial robots, as well as machining center swivel tables. Other applications include rotating parts of medical equipment and semiconductor manufacturing equipment.

Products Using Core Linear Motion System Technology

Seismic Isolation and Damping Systems

Seismic isolation and damping systems make use of THK's core linear motion system technology. The THK Group supplies a broad range of products from seismic isolation and damping systems for high-rise buildings, low-rise residences, and other structures such as temples and shrines, to seismic isolation systems for servers and a variety of manufacturing equipment. In this manner, the Group is helping to minimize the damage caused by earthquakes.

Seismic Isolation System for Buildings

Recovery System with Laminated Rubber

Return

Support

Reduce

Linear Re-Circulating Guide CLB

Viscous Damping System RDT

Seismic Isolation Platforms

Seismic Isolation Module Model TGS

Servers

Seismic Isolation Table Model TSD

Works of Art

Renewable Energy

Due to their unique mechanisms, THK's shaft units for wind turbines possess high strength and durability in addition to achieving dramatically lower torque and improved power generation efficiency. In 2017, THK began supplying these products to Challenergy Inc., which developed the world's first wind turbine capable of generating energy even during typhoons.

Shaft Unit for Wind Turbines

Automotive and Transportation Equipment-Related Products

THK RHYTHM and THK RHYTHM AUTOMOTIVE (TRA), which form the core of the automotive and transportation business, manufacture undercarriage L&S (Linkage and Suspension) products. Because they are made of aluminum, THK's link balls possess high corrosion and wear resistance, and they are extremely lightweight in comparison to conventional steel products. In addition to its cold-forged ball joints,

THK RHYTHM has expanded the range of products it offers to include aluminum links that integrate ball joints with aluminum suspension links. These critical safety components are held to the highest standards of quality and performance and help to enhance the safety and comfort of automobiles.

Suspension arms

Suspension ball joints

Height sensor joints

Stabilizer connecting rods

Steering tie rods (Rack and pinion)

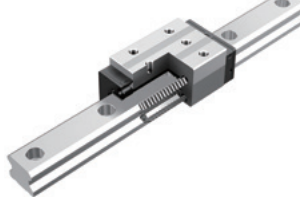
Steering linkages

New Products



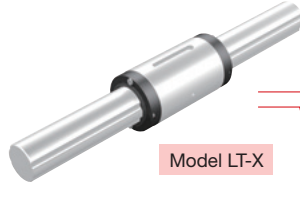
Global Standard LM Guide Model HSR (Improved)

This durable product is an improvement on its predecessors, featuring better movement, noise reduction, and high-speed performance.



Roller Guide Model HRX

This easy-to-use roller guide is suited for a wide range of users, and its full-roller design gives it high resilience. This product features a roller retaining function, making the rail and block easily interchangeable.



Rotary Ball Spline Model LTR-AX/LTR-V

This product combines a ball spline with an angular bearing. The internal Model LT-X ball spline provides smoother movement than previous models.



Model LTR-V (Compact type)



LM Guide with Linear Encoder Model SHS-LE

This product combines an LM Guide with a THK linear encoder (a linear position sensor), which enables compact machine designs that do not require as much time to assemble.



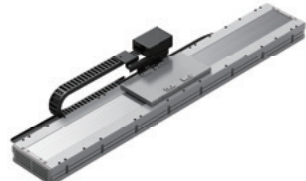
High-Speed Ball Screw for Machine Tools Model BSM

With its newly developed circulation structure, this product features improved high-speed performance and an optimized raceway design that extends service life by a factor of 1.7 when compared to current products.



DIN-Standard Double Nut Ball Screw Model SDAN-V

This ball screw conforms to DIN standards, which are widely used in emerging markets. As a continuation of the SDA design, it is capable of handling high-speed drives.



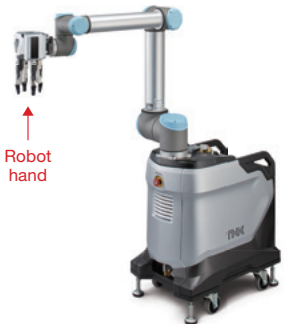
Linear Motor Series Model ULM

This product's fully enclosed design enables it to improve the takt time and productivity of transfer applications in clean environments such as those used in semiconductor and LCD manufacturing.



Picking Robot Hand System Model PRS

This robot hand with multiple fingers can grip a variety of items. It enables distribution centers to automate the process of picking items quickly and at low cost because the robot's controls and image processing do not require programming.



SEED Solutions BA-ST: Ball screw actuator

SEED Solutions BA-ST: Ball Screw Actuator

This product uses a hollow shaft stepper motor, cross roller ring, and ball screw to achieve high thrust with a compact design. The internal stepper motor makes it possible to run at low power.

