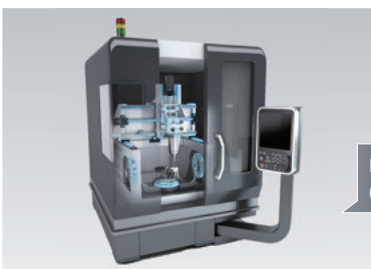
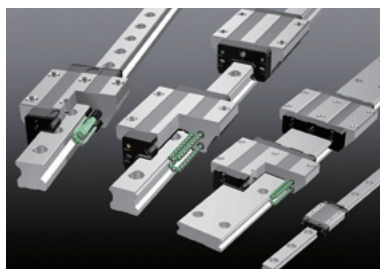


THK's Products

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 infuse every type of mechanism with smoother and more accurate movement, driving innovation around the world.

The LM Guide

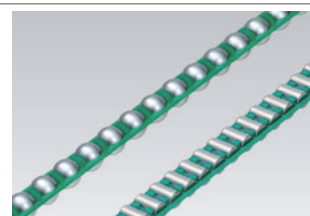
The LM Guide is a machine component that converts sliding motion into rolling motion, enabling machine parts to move smoothly, easily, and precisely with linear motion. As a result, the LM Guide has enabled the precision, rigidity, speed, and energy-saving properties of a wide range of industrial machinery. 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 Guide products 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

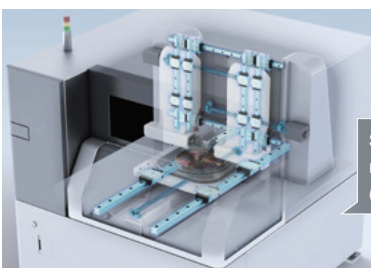
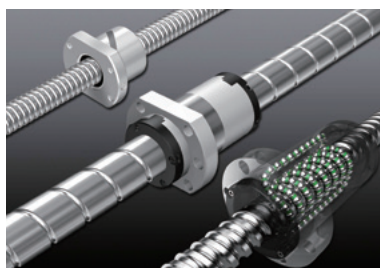
The cages are resin parts that hold and guide the balls or rollers as they move. The use of cages reduces noise and friction by preventing direct contact between the balls or rollers. This allows for a longer service life, reduced noise, and an extended period of maintenance-free operation.



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.

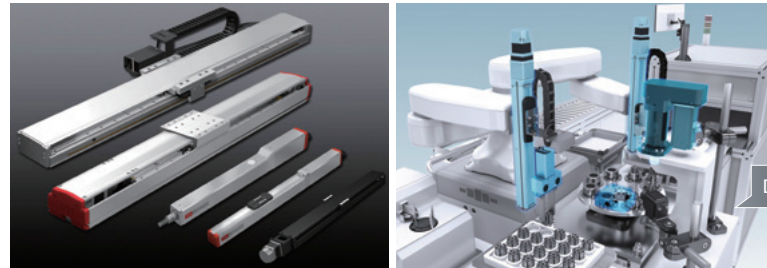
As a result, these products are now essential elements in machine tools, industrial robots, semiconductor manufacturing equipment, and other industrial equipment. THK also offers ball screws that are designed to support high loads, making them ideally suited for replacing the hydraulic cylinders used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



Semiconductor
manufacturing equipment
(Dicing saw)

Electric Actuators

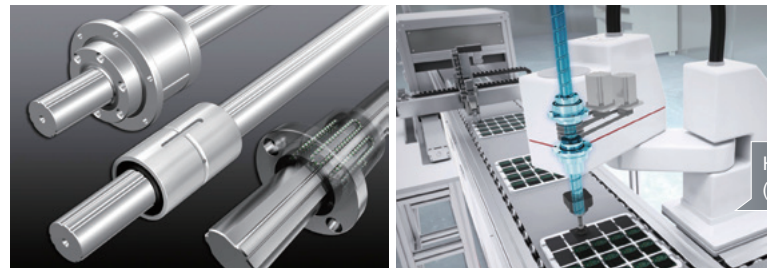
Electric actuators are hybrid products combining a guide component, such as an LM Guide, with a ball screw, linear motor, or other drive component. In industries such as electronics, there is an increasing need to shorten development and manufacturing lead times. Modularization allows these electric 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.



Dual-arm robot

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)

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.



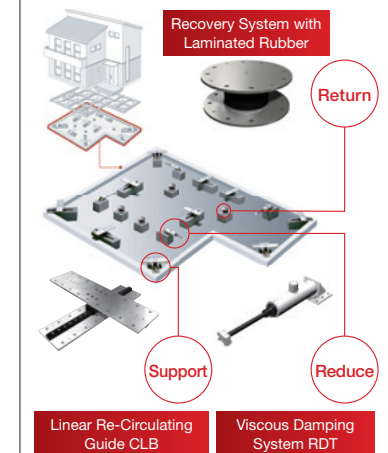
Transfer robot

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

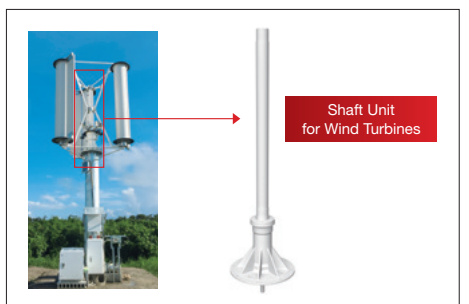


Seismic Isolation Platforms



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.



Automotive and Transportation Equipment-Related Products

The automotive and transportation business, centered on THK RHYTHM and THK RHYTHM AUTOMOTIVE (TRA), focuses on products related to undercarriage L&S (linkage and suspension) components. Made from aluminum, THK's link balls are highly resistant to corrosion and wear. They are also considerably lighter than traditional steel parts.

THK also develops and mass-produces ball screws for automatic brakes, which utilize the core linear motion product technology of its industrial machinery business. As CASE progresses within the automotive industry, the Company is accelerating its development and introduction of new products that respond to this trend.

