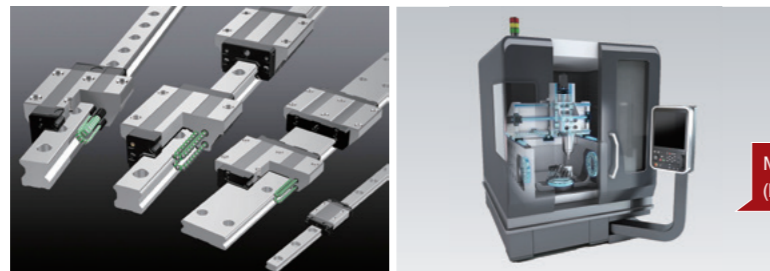


THK's Products

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

The LM Guide

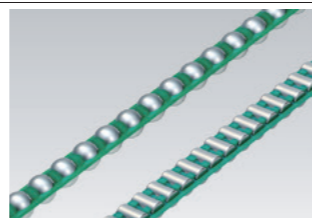
The LM Guide is a machine component that converts sliding motion into rolling motion, enabling machine parts to move smoothly, easily, and precisely in a straight line. As a result, the LM Guide has enabled the precision, rigidity, speed, and energy-saving properties of a wide range of industrial machinery.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

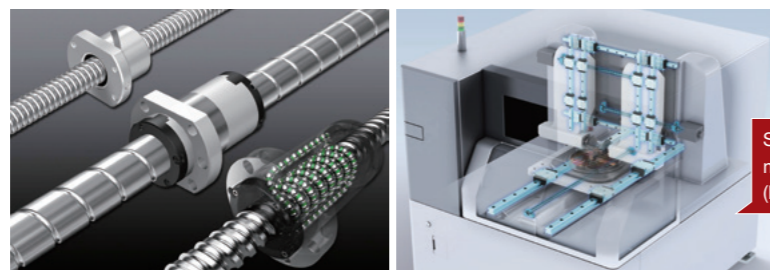
The cages are resin parts that hold and guide the balls or rollers as they move. The use of cages reduces noise and friction by preventing direct contact between the balls or rollers. This allows for a longer service life, reduced noise, and an extended period of maintenance-free operation.



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.

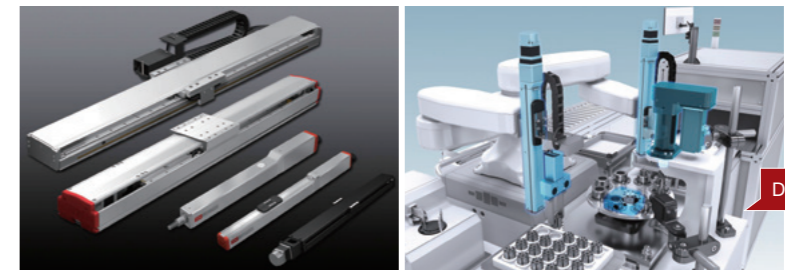
As a result, these products are now essential elements in machine tools, industrial robots, semiconductor manufacturing equipment, and other industrial equipment. THK also offers ball screws that are designed to support high loads, making them ideally suited for replacing the hydraulic cylinders used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



Semiconductor manufacturing equipment (Dicing saw)

Electric Actuators

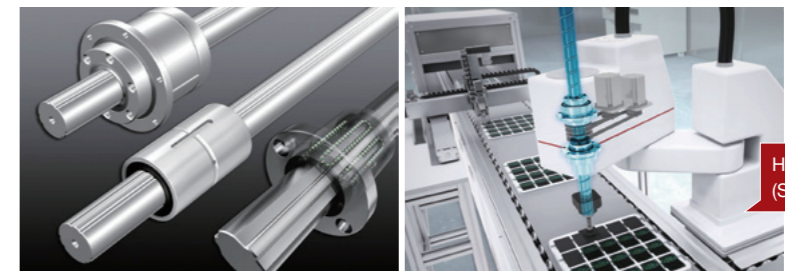
Electric actuators are hybrid products combining a guide component, such as an LM Guide, with a ball screw, linear motor, or other drive component. In industries such as electronics, there is an increasing need to shorten development and manufacturing lead times. Modularization allows these electric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

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

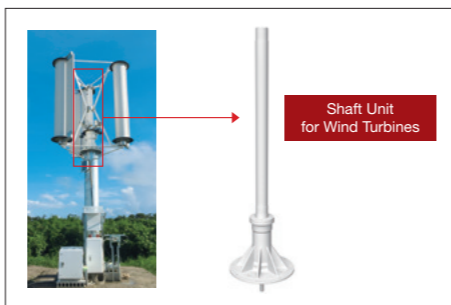
Servers

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 Challengeenergy 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.

In addition to the cold-forged ball joints that have been its mainstay, THK RHYTHM has expanded the range of products it offers to include aluminum links that integrate ball joints with aluminum suspension links. Through its critical safety parts that meet the automotive industry's requirements for the highest levels of quality and performance, the Company contributes to the production of safer, more comfortable automobiles.

Suspension arms

Suspension ball joints

Height sensor joints

Steering tie rods (Rack and pinion)

Steering linkages

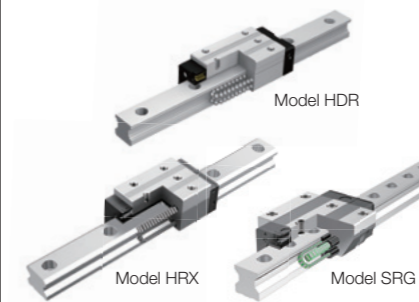
Stabilizer connecting rods

New Products



Miniature LM Guide Model RSX

This product is easily customizable to specialized block lengths often requested by customers. It uses a corner-type wire to achieve excellent ball retention.



Interchangeable LM Guide Model HDR, Model HRX, and Model SRG

Interchangeable rails and blocks can be managed separately, and rails can be disconnected and used as needed. These products simplify the process of replacing blocks.



Hollow Ball Screw N Series

This product is intended for small, high-precision machining devices. It enables forced cooling and has a maximum shaft length of 3,000 mm.



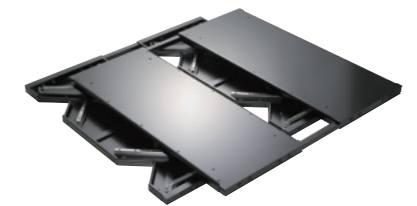
Lightweight Actuator Model CFK37

This product utilizes a lightweight end material (CFRP) on the outer rail to maintain rigidity while significantly decreasing weight. It has excellent damping properties and helps reduce takt time.



Lightweight Actuator Models ALK20 and 45

These products were added to the existing lineup of models ALK26 and 30. The main components of these products are made of extruded aluminum, making them significantly more lightweight at a reasonable price.



Seismic Isolation Table for Servers TSD-1200L

The maximum displacement when activated is ± 250 mm, a 25% improvement over conventional models, providing better protection against large earthquakes and long-period ground motion. It has an improved ability to absorb seismic energy.

Pick and Place Robot Model PPR

This is a robot specialized for picking and placing electrical components. Its high-precision force-sensing technology reduces damage to electrical components. In addition, the visualization of force, position, and pressure data assists with troubleshooting and quality improvements.

