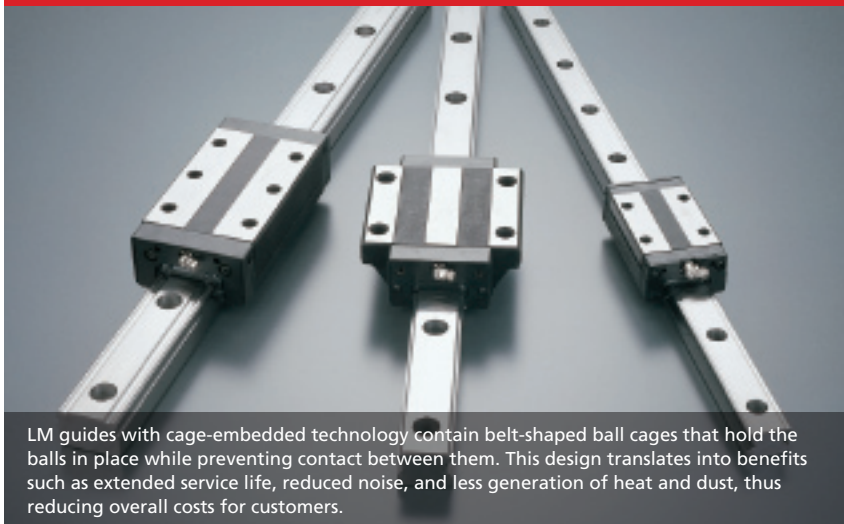


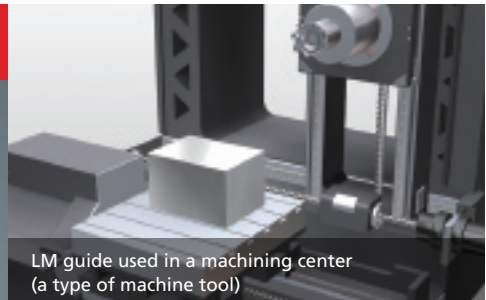
THK PRODUCTS

THK's products, centering on LM guides, are used in various types of industrial machinery. As a machinery component vital to increasing precision, speed, and energy efficiency, LM guides contribute to the development of industry.

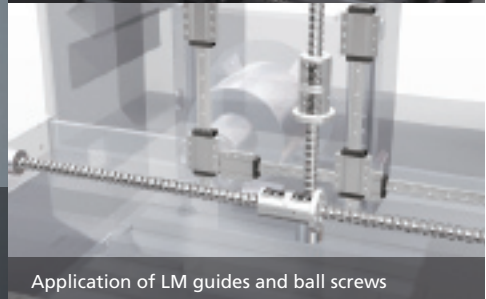
Linear Motion (LM) Guides



LM guides with cage-embedded technology contain belt-shaped ball cages that hold the balls in place while preventing contact between them. This design translates into benefits such as extended service life, reduced noise, and less generation of heat and dust, thus reducing overall costs for customers.



LM guide used in a machining center (a type of machine tool)



Application of LM guides and ball screws

In 1996 THK became the first company in the world to successfully develop the next generation of LM guides featuring caged ball technology. Since then we have striven to expand the usage of these improved LM guides. The ball cages are plastic parts that keep the balls in place and guide them. This stops direct contact between the balls, eliminating noise and friction. Compared with first-generation LM guides, the use of caged ball technology reduces noise, extends

service life, and enables longer maintenance-free periods. LM guides based on caged ball technology are now vital components of many types of equipment. They have made a major contribution to the development of high-speed, low-noise industrial machinery with longer productive lives, notably in the machine tool and semiconductor production equipment sectors.

Ball Screws



Ball screws with cage-embedded technology employ ball cages to facilitate higher speeds, longer service life, and lower noise levels—all features that are in high demand from customers.



Ball screw used in a dicing saw (for semiconductor production)

Application of ball screws and LM guides

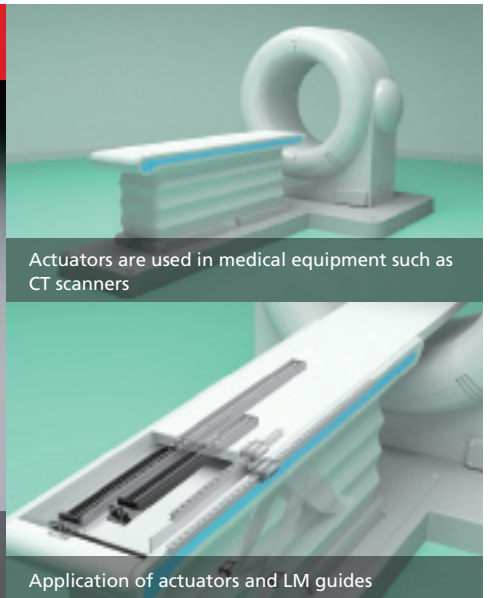
Ball screws are machinery parts that function by causing a large number of balls to circulate between the screw shaft and the nuts. This mechanism of action efficiently converts rotary motion into linear motion. Primarily employed in various types of industrial machinery, ball screws are labor-saving devices that act as drive components in motors. THK has also developed ball screws featuring caged ball technology that have made a significant contribution to the development of

high-speed, low-noise industrial machinery with extended service lives, especially in sectors such as machine tools, industrial robots, and semiconductor production equipment. Other ball screws supplied by THK are designed to support high loads, making them ideally suited for replacing the hydraulic cylinders used in capital equipment such as injection molding machines, presses, die-cast machines, blow molding machines, and extrusion molding machines.

Actuators



Integrating an LM guide and ball screw into a single component, LM guide actuators deliver high precision and rigidity within a compact space.



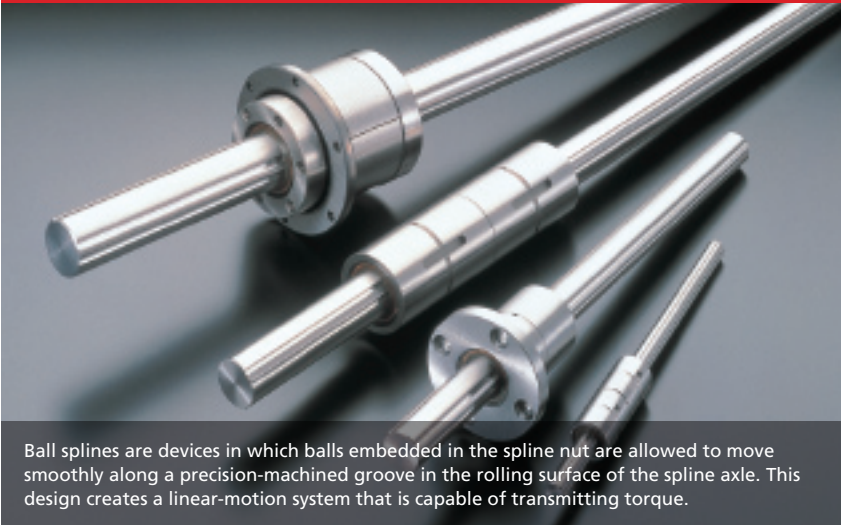
Actuators are used in medical equipment such as CT scanners

Application of actuators and LM guides

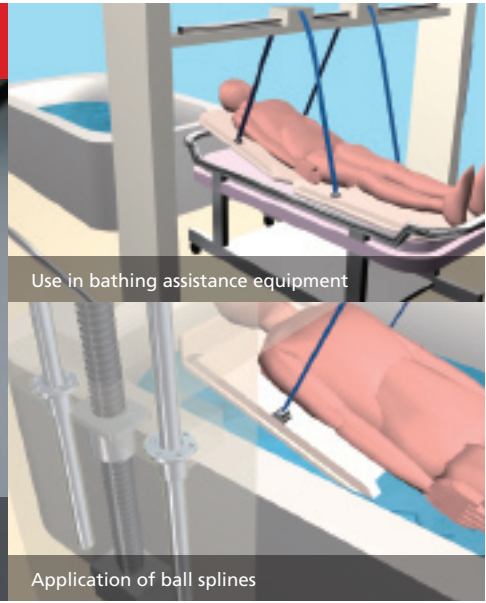
Actuators are hybrid products combining a guide component such as an LM guide with a ball screw, linear motor, or other drive component. In industries such as electronics, there is an increasing need to shorten development and manufacturing lead-times. Modularization allows actuators to realize benefits such as simplified design and fewer assembly components, thus helping to meet such requirements.

THK supplies a varied lineup of actuators ranging from basic, low-priced units to high-end components designed to operate at high speed or perform to clean-room specifications. Such advanced actuators have become indispensable parts in equipment used in the manufacture or inspection of semiconductors and flat-panel displays.

Ball Splines



Ball splines are devices in which balls embedded in the spline nut are allowed to move smoothly along a precision-machined groove in the rolling surface of the spline axle. This design creates a linear-motion system that is capable of transmitting torque.



Use in bathing assistance equipment

Application of ball splines

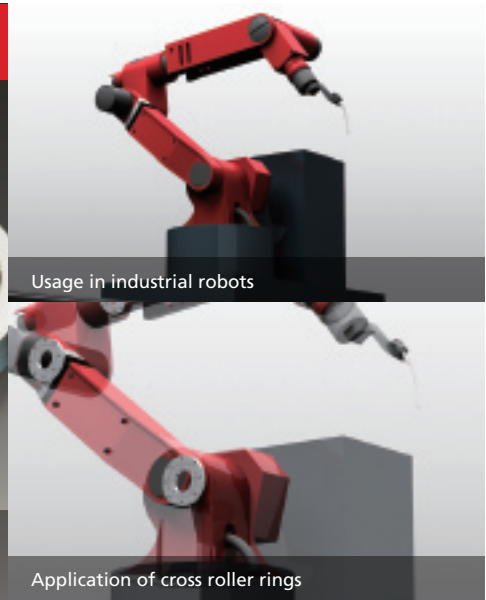
Developed in 1971, the same year that the Company was established, ball splines were the precursor to the LM guide. Balls roll along an R-shaped groove machined into the spline axle. This critical advance boosts the load that the device can tolerate and permits the transmission of torque, resulting in a revolutionary linear-motion system. Compared with conventional linear-motion bearings, which do not

contain such grooves, ball splines boost the tolerable load by a factor of 13 and service life by a factor of 2,200. Today, ball splines play a number of highly functionalized roles in a variety of machines. Usage examples include industrial robots, medical equipment, and chip mounters.

Cross Roller Rings



Cross roller rings feature internal cylindrical rollers arranged orthogonally to facilitate load bearing in every direction.



Usage in industrial robots

Application of 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 these orthogonally arranged rollers prevents roller skew and reciprocal abrasion between the rollers. These rings are highly rigid despite their compact structure. Cross roller rings are used in the rotating parts of

many different types of industrial machinery, including the joint areas and swiveling parts of industrial robots, machining center swivel tables, the rotating parts of industrial manipulators, and precision rotary tables. Other applications include medical equipment, measuring instruments, and equipment for manufacturing integrated circuits.

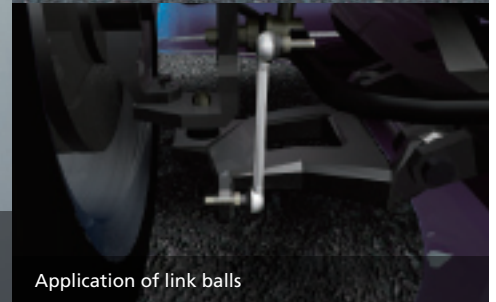
Link Balls



Use of an integral molding process for the aluminum die-cast produces lightweight link balls that are highly resistant to corrosion and abrasion. These are used widely in vehicle undercarriages.



Usage in automotive parts



Application of link balls

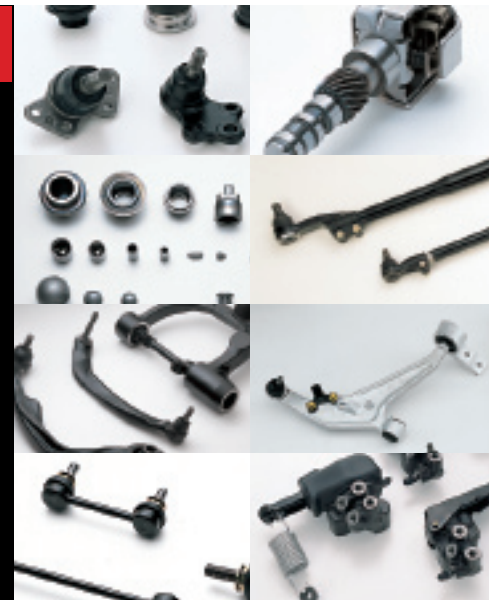
Link balls are specialty bearings that are used primarily as automotive parts. THK has developed a proprietary process for link ball production in which a die-casting process is employed to fabricate holders for the high-precision steel ball bearings that form the spherical surfaces. The shank portions are then specially welded. We use an integral molding process for the aluminum die-cast, which makes the link balls highly resistant to corrosion and wear due to abrasion. They are

also considerably lighter than the steel parts traditionally used. Link balls are used widely in automobile undercarriages, particularly in ground clearance sensors and the joint sections connecting the stabilizers to the suspension. As such, they play an important role in improving safety and comfort on the road. Over the past few years we have begun supplying link balls for an increasing number of vehicle models to leading automakers in Japan, Europe, and North America.

RHYTHM products



RHYTHM produces a wide variety of critical automotive safety components with applications in steering, suspension and braking systems as well as engines and transmissions.



RHYTHM, which became a consolidated subsidiary in May 2007, offers a product range that includes automotive components used in steering, suspension, and braking systems as well as engines and transmissions. In addition to cold-rolled steel forged ball joints, RHYTHM is currently expanding into ball joints that are integrated with aluminum

suspension links. As critical automotive safety components, RHYTHM's products must meet the highest standards of quality and performance. In striving to meet market demands by offering guarantees of zero defects and zero delivery problems, RHYTHM seeks to contribute to the production of safer and more comfortable vehicles.