



Dovetail stages

# Miruc Optical and Its Measurement Microscopes Unsurpassed Quality

**Miruc Optical**

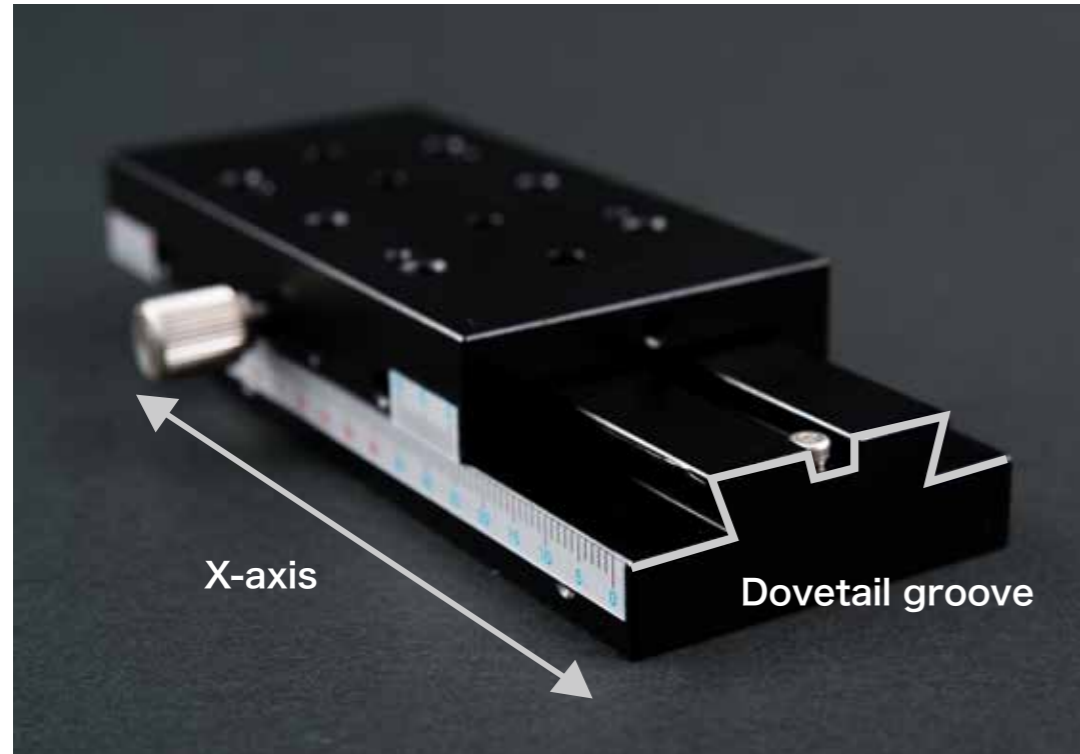
Miruc Optical is renowned for the fine craftsmanship and high quality of its measuring microscopes and fine-tuned sliders used in positioning. The company's mainstay product, the "Dovetail Stage," is a slide unit that is particularly favored for its smooth, long stroke and load-bearing capacity. Miruc's artisans created a product with motion so smooth that it cannot be compared to those from other firms. As a standard component for positioning and measurement, these tools are widely regarded as essential workplace items.



Alignment adjustment for centering

## The Highly-Patented and Inimitable Dovetail Stage

**T**he Dovetail Stage is effective in facilitating the movement of one portion of a component, such as lens positioning. It allows slide movement by means of a trapezoid-shaped part that slides along a trapezoid-shaped groove. Since the creation of such tools requires precise operation, the number of businesses engaged in this field is declining; such firms have already disappeared completely from the United States and are increasingly rare in Japan. However, Miruc Optical has long specialized in this technology, and continues to produce stages that can be distinguished from those of other firms in terms of quality, precision, and durability.



**X Axis Drive Stages**

Now in addition to the Dovetail Stage, Miruc Optical is developing a variety of stages that includes a standard length and breadth movement "XY axis drive," a 360-degree free movement "gate turning" type, and a "multi-function feed screw" type through which sizes of 2mm, 5mm, and 10mm can be selected with one rotation of the handle. Including international patents, the company currently has close to 100 intellectual properties supporting its rich product lineup.



**Skelton Stage**

Optimal slide unit for applications where convention metal dovetail stages are unsuitable due to their weight, the gas they produce during anodizing, and the risk that grease contamination may cause their slides to stick.

Among the items in this lineup is a truly original tool called "Skeleton," the world's first plastic stage. Research institutions approached Miruc Optical with a request for a stage that did not require surface treatment or greasing, since metal stages rust without surface treatment, and smooth motion cannot be achieved without grease. Though the company originally believed the request impossible, they went back to the drawing board and conceptualized a type of resin that would become an industry first. Resins do not require grease as they are self-lubricating, and surface treatment is unnecessary because resins will never rust. These properties allow it to be used in a variety of environments, including underwater or in areas where grease is unsanitary, such as within the healthcare industry. Miruc Optical has also received a great deal of interest from the food industry and recently from the electronics industry in regards to the creation of waterproof smartphones.

**Scope Unit**

Measure Scopes are microscopes essential to all industrial manufacturing, processing and inspection processes. It can be applied with use of measurement, inspection, alignment and positioning and combined in various way.

Beyond its unique and diverse product lines, Miruc Optical is reaching new heights with a semi-order system to meet customer needs, whatever they may be. When selling an XY stage in its completed form, problems surfacing upon installation are not uncommon. For instance, the handle position may not fit, or an issue with the construction may interfere with operation. Thus, semi-order stages allow the customer to freely choose each part to configure their optimal XY stage. In addition, the customer can configure a microscope system suitable for their environment, beginning with a stage and adding parts such as optical components, stands, and micrometers that are essential to measurement. Though the Miruc Optical catalog currently lists around 700 items, this number could reach tens of thousands when semi-order custom purchases are factored in, a feature that is unusual for any other company in the world.



**Gate Turning Stage**

Featuring maximum 180° bending and 360° rotation, allowing complete flexibility in positioning.



**Reversible Stage**

Excellent flexibility and operability, adjusting to different surface contours front and back, scale plates and clamp levers switched around at front and back, right and left, bidirectional sliding (XY) along a single axis.





Straightness Inspection



Assembling process



Rack adjustment



Final Inspection

### Products That Feel Like an Extension of the Body

While Miruc Optical's strength lies in its innovative stages and rich product lineup, however wonderful the concept this all becomes meaningless without smooth operation.

A stage is composed of more than 20 parts, but blueprints and machine tools have their own error margins, each part has its own measurement errors, and the surface treatment thickness is not uniform. The culmination of all these error margins means that, even under an organized process, idiosyncrasies will emerge. What sets Miruc Optical apart is how they overcome this. Their artisans handcraft products to a precision of 1 micron, and prepare various types of sandpaper and tools to match the various conditions of the components. And because the viscosity of grease changes with temperature, these artisans will even alter the compound based on the season. It is precisely this kind of workflow that allows the company to create smooth movement that is unrivaled even by large competitors. CEO Hiroaki Muramatsu has this to say with regard to the differences:

"Cheap and poorly-tailored shoes will not last, for example, and are prone to make your feet sore. Likewise, poor imitations cannot compare to our products in terms of productive efficiency or durability. Like a well-tailored shoe, we want everyone to experience products that feel like an extension of one's body."

Though Miruc Optical is an optics firm specializing in monocular measurement microscopes, its customer base extends well



Hiroaki Muramatsu, CEO

beyond that to quality-control environments in which numerous microscopes are used. Like the above-mentioned Dovetail Stage, the company has seen clear results from expanding its support network to a variety of businesses, starting with industrial machinery. The company is now turning its sights to Western firms that do not yet possess Dovetail technology, hoping to support their product development and manufacturing, and seeking to expand its list of mutually complimentary partners throughout the world.

text & photos by Ryogo Shioda

### Company profile

**Company Name:** Miruc Optical Co., Ltd.

**Business Operations:** Design and manufacture of microscopes and optical-related equipment; design and manufacture of precision machine tools; design and manufacture of positioning slide stages; design and manufacture of other related peripherals and special equipment

**Headquarters:** 34-24 Matsuki, Hachioji, Tokyo, Japan 192-0362

**CEO:** Hiroaki Muramatsu

**Founded:** 1963

**Number of Employees:** 24

**Website:** <http://www.miruc.co.jp/english>



If you are interested in ordering sample items from Miruc Optical Co., Ltd. or are interested in exploring the possible applications of their technology for your company's needs please contact us at Protechnology Japan to set up a consultation.

Please read the QR code and enter your details into the form.