



History Technology



MITUTOYO MUSEUM OF METROLOGY

Mitutoyo

MITUTOYO MUSEUM OF METROLOGY

Mitutoyo Museum of Metrology is a unique museum consisting of the "Numata Commemorative Hall" and "Measuring Instrument Hall" in order to specifically exhibit the evolution history of precision measuring equipment that has ever supported the development of world industry. In the Numata Commemorative Hall you can track the footstep of Mitutoyo since its foundation (1934) and the history of evolution in the field of measuring equipment, while in the Measuring Instrument Hall, you can see the roots and evolution centralized to length measuring equipment. The items in the museum's collection have been certified by the Ministry of Economy, Trade and Industry as forming part of the nation's Heritage of Industrial Modernization.



Mitutoyo Museum of Metrology (2F and 3F) complete view

NUMATA COMMEMORATIVE HALL



History of Mitutoyo, who has been devotedly tackling the development and improvement of precision measuring equipment since its foundation in 1934 (Showa 9) in order to meet the needs from the industrial world, is also the history of Japanese precision measuring equipment.



MEASURING INSTRUMENT HALL

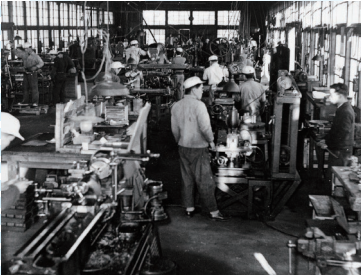


Measuring Instrument Hall is exhibiting historical documents and products of measuring equipment widely collected from the world. Especially, about 320 pieces of measuring instrument in the world donated by Mr. Nobuo Suga, who is one of the Mitutoyo OBs, are very precious and have tremendous historical values. Moreover, visitors can learn "the necessity of measuring length" and "the history in which the standard of length has been unified" as well as the changes of measuring equipment which has supported industries.



Chapter 4

Term of Development (1961-1970)




Utsunomiya plant of those days

Substantiation of manufacturing technology

Mitutoyo established sales subsidiary "MTI" in the United States in 1963 (Showa 38). The full-fledged order intake of calipers from overseas in addition to those domestic sales at that time required the further production ramp-up of calipers. The high accuracy and production ramp-up of calipers were concurrently achieved with technical efforts to provide interchangeability among parts, self-produce a number of machine tools, and adopt the graduation process by photo-etching.

Chapter 5

Term of Leap (1971-1986)




Coordinate Measuring Machine A-21

Rapid growth with electronic technology

In 1965 or later (Showa 40s), innovative electronic technologies were introduced to measuring instruments. As a result, lots of high-accuracy, epoch-making precision measuring equipment such as profile projectors, surface roughness testers, and contour measuring instruments were launched to the market. In 1972 (Showa 47), a coordinate measuring machine and a computer were combined first in Japan. In 1975 or later (Showa 50s), the coordinate measuring machine advanced beyond all imagination by means of technological innovation owing to microcomputer/electronics revolution.

Chapter 3

Term of Establishing Technologies (1954-1960)




Path to global markets

Consolidating domestic market, then making debut to the world

In 1955 to 1964 (Showa 30s), the Japanese economy as well as Mitutoyo's finance was dynamically growing. After having established the mass-production system of micrometers and calipers, Mitutoyo started development and production of various precision measuring instruments as a comprehensive precision measuring instrument manufacturer. As for sales in those days, Mitutoyo upgraded the domestic sales network and also started worldwide business evolution.

Chapter 6

Term of Establishing Key Technology (1987-1995)




Mitutoyo's world bases

From "Mitutoyo Manufacture" to "Mitutoyo Corporation"

In 1987 (Showa 62) the Mitutoyo Manufacture changed its corporate name to "Mitutoyo, Corporation." While in the 1980s and 1990s, it expanded the sales, production and R&D bases to the United States, Europe, and Asia as well. This initiative takes the roles of expanding the market and taking in the advanced measuring technologies of the world.

Chapter 2

Incipient Term (1937-1953)




Mitutoyo's first micrometer

Domestic production of micrometers

Trial manufacture of domestic micrometer was successful in December, 1936 (Showa 11), and the first 100 lots aiming at sale were finished. Numata kept only 17 of these 100 pieces, and buried the remaining 83 pieces under the floor. This is for showing his decision never to soft on quality inspection resulting in degraded performance and tighten all the members' hearts.

Chapter 7

Toward a New Era (1996-)




Quick Vision Series

Corresponding to high precision and advanced features

As the time enters in the 21st century and each industry rapidly advances, higher precision and advanced feature are more and more required on length measurement. To answer to these requirements, Mitutoyo has developed and commercialized new products one after another.

Chapter 8

Realization of a Dream




Footsteps of Founder Yohan Numata

The Society for the Promotion of Buddhism (the current BUKKYO DENDO KYOKAI) which Yohan Numata founded in 1965 (Showa 40) are still expanding various public operations including the spreading of "Teaching of Buddha" hand in hand with local co-operating base organizations existing not only in Japan but also in the United States, Europe, and Asia as well.

Chapter 1

Birth of Mitutoyo Manufacture (1934-1936)



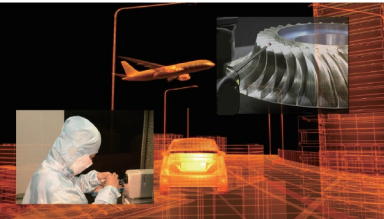
Model of Kamata Plant at time of company's establishment

Kamata Factory, the origin of Mitutoyo

1930 (Showa 5), Yehan Numata came back to Japan from his studying abroad in the United States and started to serve as a "Cabinet Resource Bureau Statistics Officer". However, he could not forget his thought to begin with and decided to establish an enterprise by himself and stand as an outside protector of Buddhism with the fund obtained from the enterprise. In 1934 (Showa 9) he opened a research institute aiming at domestic production of micrometers, and two years later, the "Mitutoyo Manufacture" was born.

Chapter 8

Realization of a Dream



Video Show
Mitutoyo History
"Realization of a dream"

3F

Development of Mitutoyo coordinate measuring machines

Entrance

MEASURING INSTRUMENT HALL

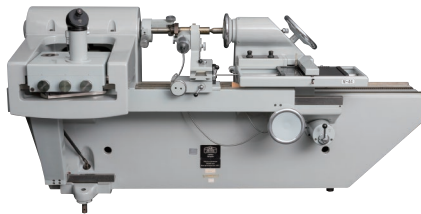
You can see the roots and changes of measuring equipment through measurement-related historical documents and products which are collected from the world.

2F

Collection 4 Testing Machines

In measurement, notation is made using any basic unit and quantity, for example like 1m.

On the other hand, it is also necessary to check the property, performance, etc. of an object and, therefore, machines for these purposes are also devised. This is the subject, for example, of hardness or strength of the material. Roles of these machines classified into "Testing Machine" in the world of industry are also very important in terms of quality control in the manufacturing stage.



Collection 3 Optical Measuring Instruments

Those measuring machines which apply the nature of light and use elements such as light source, lenses or mirrors are called "Optical Measuring Instruments". Origin of its development lied in telescopes and microscopes, etc. and measurements have been performed so far according to the principles and applications of these instruments. Speed of light leads to the definition of meter, and the property of light as a wave is used for ultra-precision measurement. So, optical measuring instruments are expected to contribute not only to measurement but also development of other future technologies.



Collection 2 Length Measuring Instruments

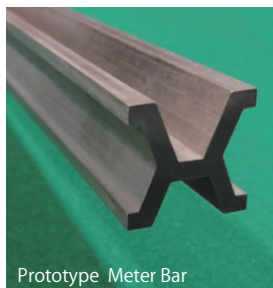
Micrometers or calipers are classified into a family of tools for measuring length, that is, length measuring instrument. For the purpose of measuring lengths precisely, some kinds of characteristic equipment have been devised. Particularly, measurement of a long object has specific difficulties, since it is affected by the temperature or how the object is placed.



Whitworth's (UK) large-sized length measuring instrument (c.1850)

This is the screw-type length measuring instrument which Whitworth of Britain manufactured in the middle of the 19th century and assumed as an important industrial heritage in terms of the accuracy of machine works. At present it is exhibited only in the Mitutoyo Museum of Metrology in Japan.

Collection 1 The standard of length



Prototype Meter Bar

The meter standard was determined as the standard of concrete length based on a length of 1 m defined from the meridian length between the north pole and the equator. The Prototype Meter bar was made from the alloy of platinum (90%) and iridium (10%) that will not be deformed over time and under any environmental conditions, also providing an X-shaped cross-section. In 1888 (Meiji 21), 30 pieces of Prototype Meter bars were completed and one of them was distributed to Japan as No. 22 Prototype Meter bar in 1890 (Meiji 23).

Collection 5 Suga Collection



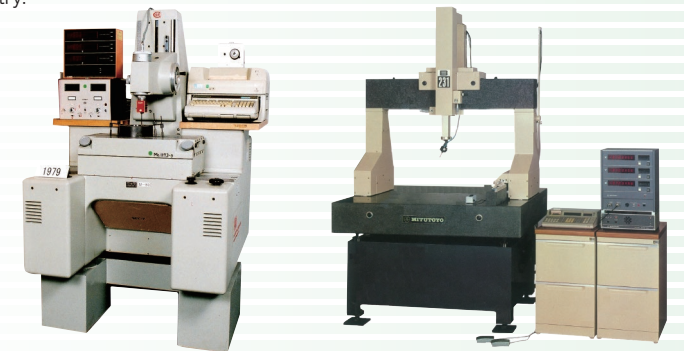
World's first dial gage

Mr. Nobuo Suga who served as the vice president of MTI (the present U.S. Mitutoyo) devoted himself into collection of world measurement tools to study about them based on his outstanding sense on art. Such enthusiasm and knowledge about measurement were demonstrated not only in the employee education of Mitutoyo but also in the enlightenment of its customers. Despite that these huge amount of collected measurement tools are very precious in terms of the history of measuring equipment, Mr. Suga gladly donated them to the Mitutoyo Museum of Metrology together with his passion and romance.

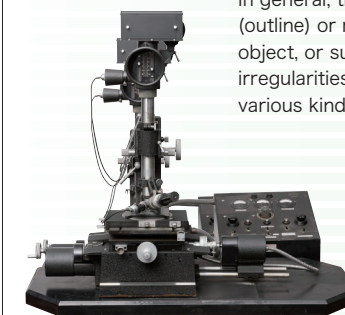
Collection 6 Coordinate Measuring Machines (CMMs)

The Coordinate Measuring Machine (CMM) is a measuring machine equipped with a length measuring system in the orthogonal directions of right and left, front and rear, and height, which calculates the coordinate values of measuring points by either contact or non-contact.

It is an extremely versatile measuring instrument that can measure dimensions, positions, geometric deviations, and contour shapes in a single measurement operation. The first full-scale industrial CMM was manufactured by Ferranti in the UK in 1960. From the beginning of their development, these measuring machines were designed for data processing by computer. CMMs have become indispensable measuring instruments in the modern machinery industry.



Collection 7 Form Measuring Instruments



In general, the term of "form" represents the outside shape (outline) or roundness (complete circle or cylinder) of an object, or surface roughness (surface form) showing fine irregularities on the object surface. To measure these features various kinds of machines were developed as form measuring instruments. Since these measurements could not be directly evaluated according to the unit of length, it was necessary to set the unit and parameter separately for each subject of measurement. Development of form measurement is expected more than ever in measurements and evaluation technologies so as to correspond to machine parts which are continuously diversified.

Collection 8 In-house Installed Machines



Measuring equipment is required to provide an accuracy higher than that for processing with machines. Moreover, various machines are also required for manufacturing measuring equipment. Sometimes existing commercial processing machines are not enough for realizing the feature, quality or cost of a new target product. Although, through the history of development, Mitutoyo has incessantly invented original manufacturing methods and processing technologies, it has been as well required to produce in-house installed machines by itself to realize them into concrete. Some of them are exhibited to explain the know-how lying in the background of these products.

Dynamic Exhibit

SIP - Société Genevoise d'Instruments de Physique - (Switzerland)
Circumferential scale graduating machine (c.1920)



It is a large-sized scale ruling machine such for protractor, etc., which engraves graduations on the circumference of a disk of up to 1m in diameter being placed in the machine's center. Protractors processed by this machine were used such as for determining the horizontal and perpendicular positions of an astronomical telescope of those days, etc.

Entrance

Technology

The history of Mitutoyo began from the “dream” of one man.

The beginning of a dream - Idea of foundation -

Founder Yehan Numata was born in 1897 (Meiji 30) as the third son of the Numata family which served as the chief priest of Jodo-shinshu Hongwan-ji-ha Joren-ji in Hiroshima Prefecture. After graduating a junior high school, he went to the United States as an assistant Buddhist missionary of Jodo-shin Honganji-sect. He worked his way through the University of California at Berkeley, and then completed the graduate school of the same university. Meanwhile, in parallel to studies, he published the English magazine "The Pacific World" from a thought of spreading Buddhism and Japanese culture to American people and energetically collected funds for that purpose from both the Japanese and U.S. investors.



Scenery of founder's hometown (Higashi Shiwa-mura, Kamo-gun, Hiroshima pref.)

However, the magazine was soon driven into discontinuance from the financial deficit. Although Numata came back to Japan in 1930 (Showa 5) and served to be a "Cabinet Resource Bureau Statistics Officer", his thought of spreading Buddhism in the world was stronger than ever and he decided not to depend on others but establish an enterprise by himself in order to obtain the fund.

Realization of a dream - As the pioneer of precision measurement machine -

Numata established a research center with the aim of producing Japan's first micrometers in Tokyo's Kamata district in 1934 (Showa 9). Mitutoyo's history began with this event. Immediately after the end of World War II it was such a hard time that no demand existed for precision measuring equipment. However, as Japan started to revive, the company rigorously challenged unknown technologies based on the concept of “good, cheap, and durable” and continuously marketed to the world the leading precision measuring instruments combining "mechanical technology", "electronic technology", "optical technology", "computer technology" and "control technology" together. On the other hand, Mitutoyo has accelerated overseas operations from the start of the 1960s and established the status with a global presence. In 1965 (Showa 40) Numata, in order to carry out a thought of spreading Buddhism, which he continued having through the experience of corporate management exceeding a quarter of a century, into a concrete form, he contributed private fortune and established the Society for the Promotion of Buddhism (the current BUKKYO DENDO KYOKAI) as a public utility foundation.



Mizonokuchi Factory at time of company's foundation (current Head Office)

A new dream - history of challenges, starting now -

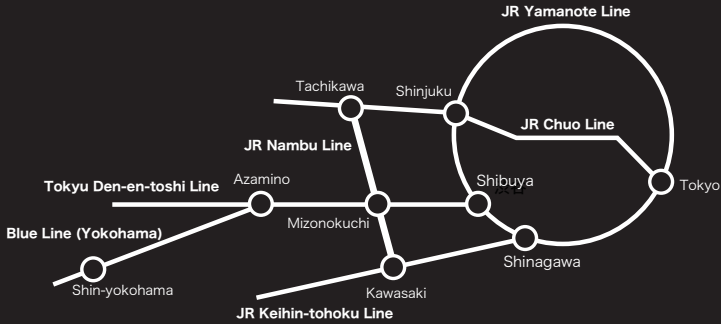
About 80 years since the start in 1934 (Showa 9) Mitutoyo has achieved tremendous growth, metamorphosing from a small research center crammed into 100 square meters into a company with a global presence. The formidable frontier spirit of Mitutoyo's research and development staff has been the driving force behind the company's success. Always providing the best possible products as the leader in precision measuring technology, which has been referred to as the mother technology (base technology) of industry, is our mission. The time has rushed into the age of "nanotechnology" which demands accuracy on the order of 1mm/1,000,000=1nm (nanometer). While the further technical innovation is called for, in order to meet the customer's expectation, we intend to strive proactively to achieve mastery of those technologies that will open the way to the next age, maintaining our pride as a top brand.



The current Mitutoyo Head Office (Kawasaki)



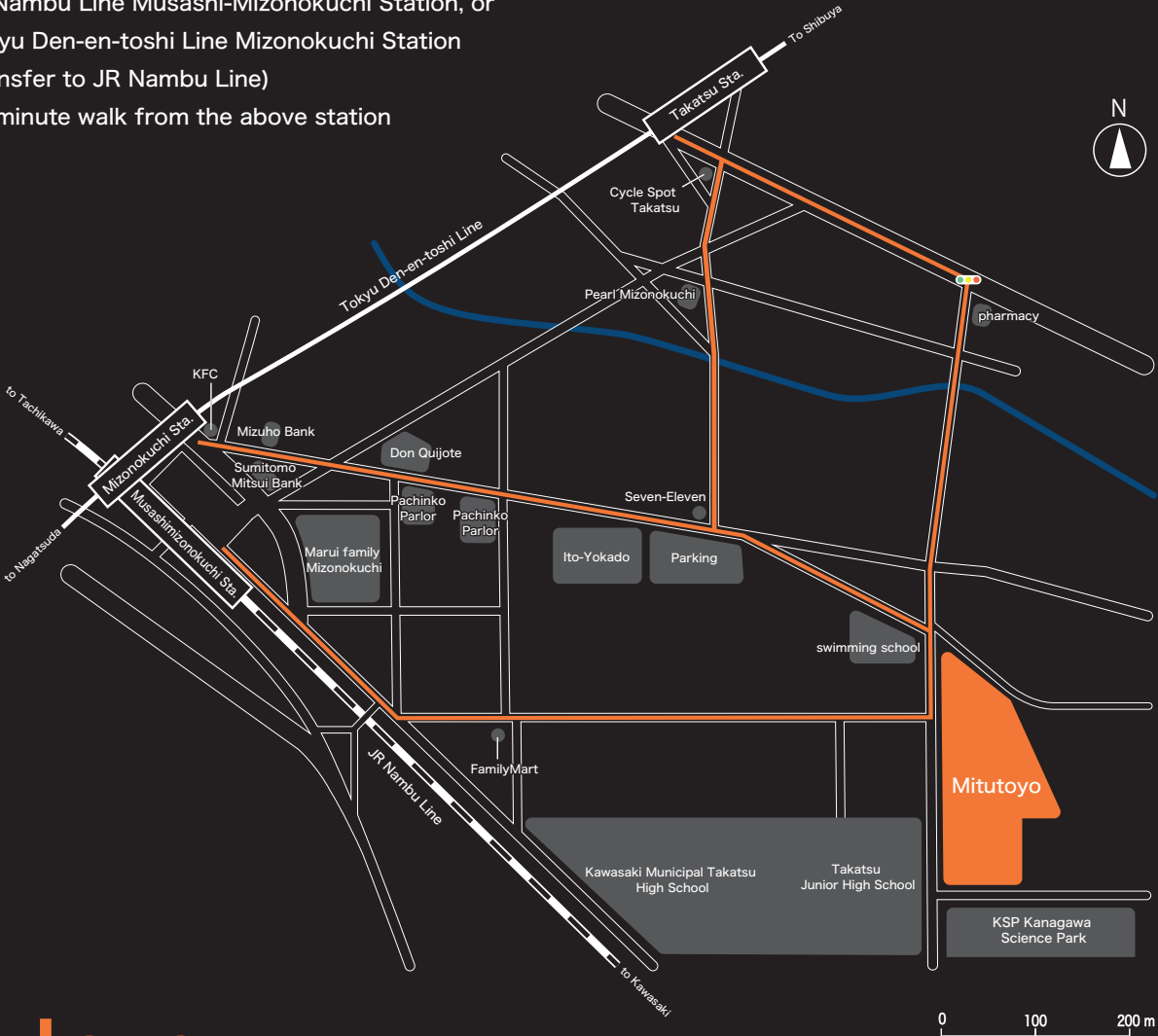
Admission: Free
Open: 10:00~17:00 (By advance reservation only)
Closed: Saturdays, Sundays, Holidays, Company's closed days
Contact: ☎213-8533
20-1, Sakado 1-Chome, Takatsu-ku, Kawasaki-shi, Kanagawa, Japan
Mitutoyo Museum of Metrology Office in the site of
Mitutoyo Corporation
TEL: 044-813-8204 (direct)
FAX: 044-813-1658



Mitutoyo Museum of Metrology Information (in Mitutoyo's official website)
URL: <https://www.mitutoyo.co.jp/exhibitions-and-events/museum/>



Access: JR Nambu Line Musashi-Mizonokuchi Station, or
Tokyu Den-en-toshi Line Mizonokuchi Station
(transfer to JR Nambu Line)
15-minute walk from the above station



Mitutoyo

☎213-8533 Sakado 1-20-1, Takatsu-Ward, Kawasaki City, Kanagawa Prefecture
TEL : 044-813-8201 (main) FAX: 044-813-8210