

PRECISION IS OUR PROFESSION

Catalog No. E11000

# Introduction to Precision Measuring Instrument Solutions

— Medical Device and Pharmaceutical Industries Edition —



# Mitutoyo

# Mitutoyo's precision measurement instruments for production



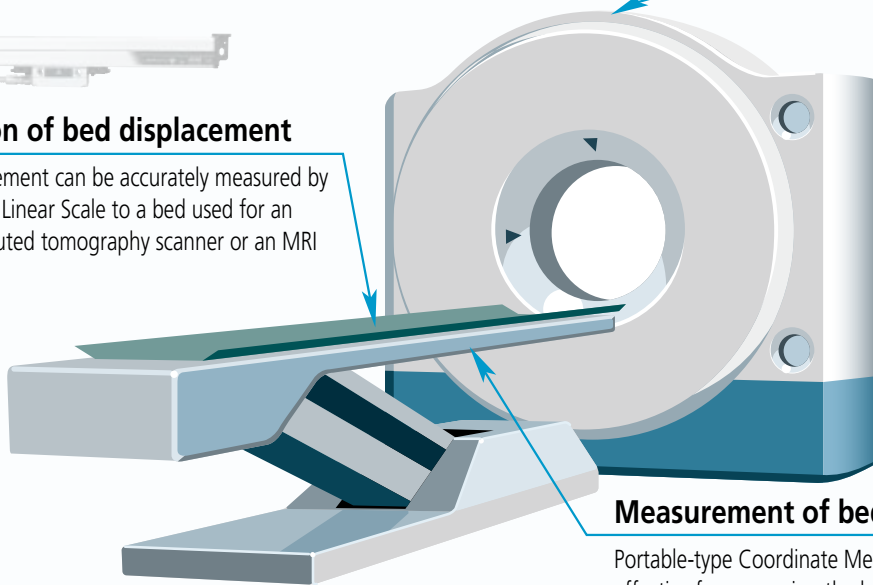
## For the Diagnostic Device Field

### X-ray computed tomography scanners



#### Detection of bed displacement

Bed displacement can be accurately measured by mounting a Linear Scale to a bed used for an X-ray computed tomography scanner or an MRI device.



### Large axle bearing

High-accuracy Roundness Measuring Machines and Coordinate Measuring Machines can be employed for roundness measurement of large axle bearings used in X-ray computed tomography scanner gantries.



### Measurement of bed frames

Portable-type Coordinate Measuring systems are effective for measuring the large frames of beds and couches: workpieces do not have to be moved to measuring instruments.



### Endoscopes



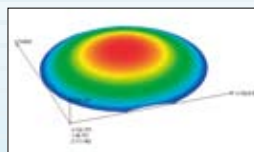
#### Tip

Vision and Optical Measuring Instruments are most appropriate for measuring the size and the position of small holes such as lens mounts and clamps.



#### Objective lens

Using CNC Form Measuring Instruments, high-accuracy profile and surface evaluation, and surface roughness measurement of aspheric lenses used in endoscopes and lenses for various medical optical devices is possible.



For various fields including the research, development and production of pharmaceutical goods

Small Tools (calipers, micrometers, dial indicators, etc.) and Linear Gauges are helpful for dimension and form measurement of various workpieces.

# Measuring instruments — Support for the needs of medical devices and Pharmaceutical



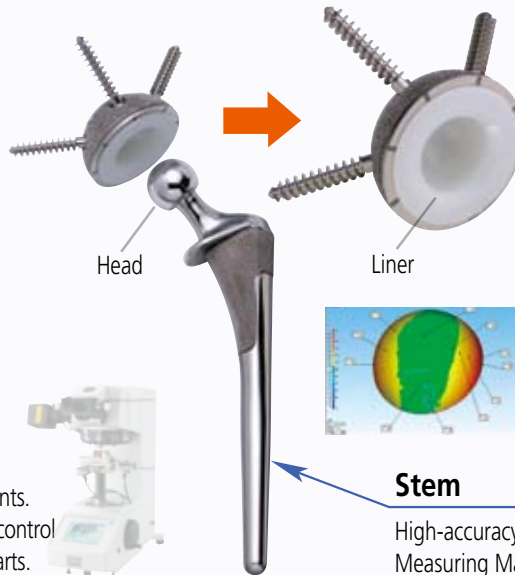
## For the Therapeutic device Field

### Artificial joints



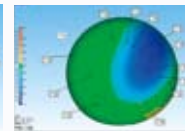
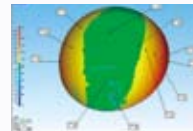
#### Material management

The bearing surface is an important factor determining the durable years of artificial joints. Hardness Testing Instruments are helpful to control the abrasion resistance of the component parts.



#### Head/ Liner

Coordinate Measuring Machines can measure 3D shapes with high speed and accuracy providing the efficient measurement of heads and liners necessary to improve the fit and functionality of artificial joints.



#### Stem

High-accuracy Coordinate Measuring Machines provide efficient measurement of curved workpieces such as stems.



### Injector/ Catheter

#### Cannula tip

Vision Measuring Instruments are effective for measuring microscopic areas such as cannula tips, where fine sharpness and light puncture force is critical.



Catheter

#### Diameter measurement

Laser Scan Micrometers, provide non-contact, high-speed and accuracy measurement, and are effective for outside diameter inspection of sliders and tubes.



#### Syringe

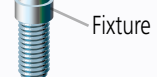
The internal shape of a syringe can influence fluid leakage and plunger operation. Roundness Measuring Machines can measure the roundness, cylindricity and surface roughness with high accuracy.



### Dental implants



Abutment



Fixture

#### Fixture/ Abutment

Optical and Surface Roughness Instruments are employed for dimensional- and surface-roughness control of abutments and fixtures, critical components affecting implant wear.



## Medical devices and

Workpieces such as materials, component parts and finished



# The development and medical goods

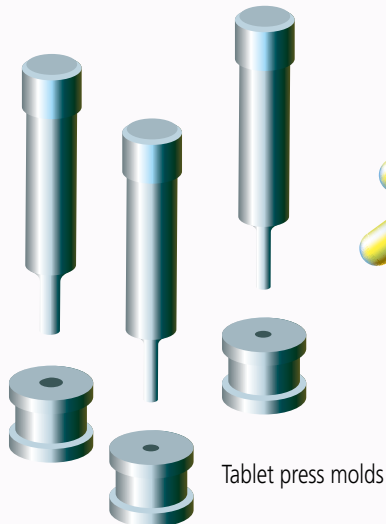


## For the Pharmaceutical Goods Field

### Tablets and capsules

#### Molds for tables

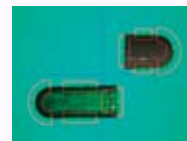
Surface Measuring Instruments, that measure dimension, surface-roughness and form/contour simultaneously, are effective for the form control of tablet press molds used in tablet production.



Tablet press molds

#### Capsules

Vision and Optical Measuring Instruments, provide non-contact, high-speed and accuracy measurement, effective for capsule dimension and inner diameter inspection and deformity control.

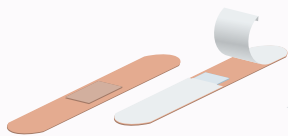


#### Tablets

Hardness Testing Instruments can be used to inspect tablet hardness, an important texture attribute of medicinal chemicals, and can also evaluate the hardness of the plating layers of tablet press molds.



### Poultice, plaster, emergency adhesive plaster, etc.



Emergency adhesive plaster



Plaster

#### Soft material object

The Litematic is very appropriate for measuring deformable workpieces. Measurement of thickness is accomplished with low measuring force, and minute impact on the base.

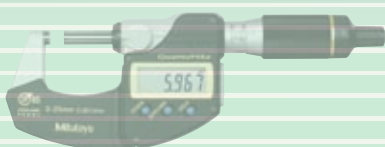
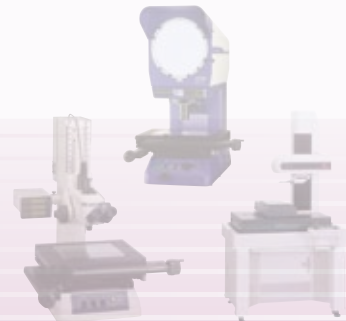


### Container








































































































































#### Mouths of containers/ bottles

Optical and Form Measuring Instruments are effective for the measurement of screws thread form, bottle diameters and container openings, where control of air-tight seals is critical. Surface Roughness instruments can be used to inspect openings where surface roughness can affect the sealed state.



# Precision Measuring Instruments Supporting Medical Devices and Pharmaceutical Industries

The followings are application examples for Mitutoyo's precision measuring instruments.

Field of Application			Mitutoyo's Precision Measuring Instruments							
			Coordinate Measuring Instruments	Vision Measuring Instruments	Form Measuring Instruments	Optical Measuring Instruments	Sensor Systems	Testing Instruments	Scales	Small Tools
										
Diagnostic devices	X-ray computed tomography scanner	Measurement of gantries's large bearings								
		Measurement of bed frame dimensions								
		Bed positioning control								
	Ultrasonic medical diagnosis system	Dimensional measurement of component parts								
	X-Ray diagnostic equipment	Dimensional measurement of component parts								
Medical Treatment Devices	Proton beam medical treatment equipment	Form and dimensional measurement of boluses and collimators								
	Injection syringes	Form measurement of syringes								
		Form measurement of plunger parts								
		Dimensional and angle measurement of injection needle tips								
		Hardness measurement of cannulas								
	Suture needles	Dimensional and angle measurement of needle tips								
	Artificial hip and knee joints	Dimensional and form measurement of heads and liners								
	Artificial bones	Dimensional and form measurement of fixation and connection plate parts for heads and liners								
	Dental implants	Measurement of fixtures and abutments								
	Catheters	Outside diameter measurement								
		Elasticity measurement								
	Stents	Dimensional and hardness measurement of parts								
	Contact lenses	Form and thickness measurement								
	Dental instruments	Measurement of dental unit frames								
		Dimensional measurement of hand pieces								
		Dimensional measurement of drills								
		Hardness measurement of metallic materials								
	Electric and magnetic therapy apparatuses	Dimensional measurement of component parts								
	Hearing aids	Dimensional measurement of component parts								
	Pacemakers	Dimensional measurement of component parts								
	Steel equipments	Dimensional and hardness measurement of parts								
	Blood drawing, fluid and blood transfusion instruments	Dimensional and form measurement of joints								
Pharmaceutical	Tablets	Dimensional measurement								
		Hardness measurement of tablets								
	Capsules	Dimensional measurement								
	Antiphlogistic analgetic for external use	Thickness and surface roughness measurement								
	Containers and ampules	Dimensional measurement								
Metal molds	Metal molds for tablet press	Dimensional, form and hardness measurement								
	Molds for various plastic products	Dimensional, form and hardness measurement								

Remarks:

Names of the pecision measuring instruments presented in this leaflet are classified into the products mentioned above.

Coordinate Measuring Instruments: Coordinate Measuring Machines, Portable Coordinate Measuring System  
Form Measuring Instruments: Surface Roughness Measuring Instruments, CNC Form Measuring Instruments, Form Measuring Instruments, Roundness Measuring Machines  
Optical Measuring Instruments: Optical Measuring Instruments, Profile Projecters, Measuring Microscopes, Surface Measuring Instruments  
Sensor Systems: Laser Scan Micrometers, Litematic  
Testing Instruments: Hardness Testing Instruments  
Scales: Linear Scales

Export permission by the Japanese government may be required for exporting our products according to the Foreign Exchange and Foreign Trade Law. Please consult our sales office near you before you export our products or you offer technical information to a nonresident.

Coordinate Measuring Machines	_____
Vision Measuring Systems	_____
Form Measurement	_____
Optical Measuring	_____
Sensor Systems	_____
Test Equipment and Seismometers	_____
Digital Scale and DRO Systems	_____
Small Tool Instruments and Data Management	_____

**Mitutoyo Corporation**  
20-1, Sakado 1-Chome,  
Takatsu-ku, Kawasaki-shi,  
Kanagawa 213-8533, Japan  
T +81 (0) 44 813-8230  
F +81 (0) 44 813-8231  
<http://www.mitutoyo.co.jp>

**Mitutoyo**

Note: All information regarding our products, and in particular the illustrations, drawings, dimensional and performance data contained in this pamphlet, as well as other technical data are to be regarded as approximate average values. We therefore reserve the right to make changes to the corresponding designs, dimensions and weights. The stated standards, similar technical regulations, descriptions and illustrations of the products were valid at the time of printing. Only quotations submitted by ourselves may be regarded as definitive.

Our products are classified as regulated items under Japanese Foreign Exchange and Foreign Trade Law. Please consult us in advance if you wish to export our products to any other country. If the purchased product is exported, even though it is not a regulated item (Catch-All controls item), the customer service available for that product may be affected. If you have any questions, please consult your local Mitutoyo sales office.