Non-contact Measuring Microscope

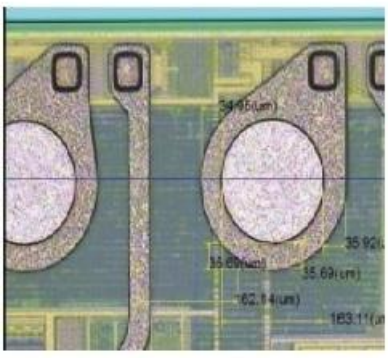
CA-MS Series XYZ Measurement Microscope



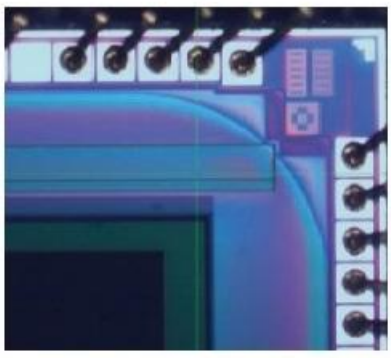




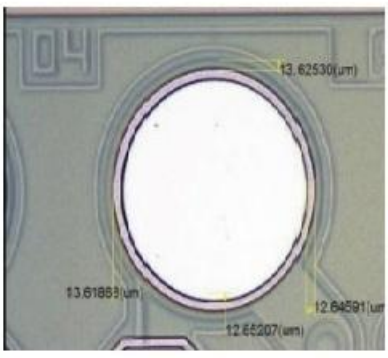
Application Cases



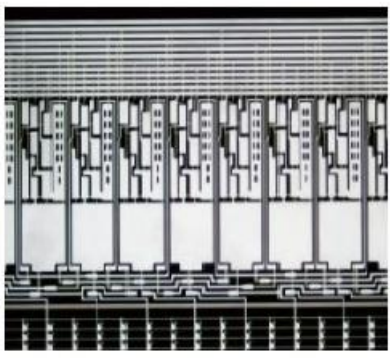
Bumping Size Measuring in IC Advanced Package



Bumping Registration Accuracy Measuring in IC Advanced Package



Welding Leg Measuring in PCB



TFT Measuring in LCD

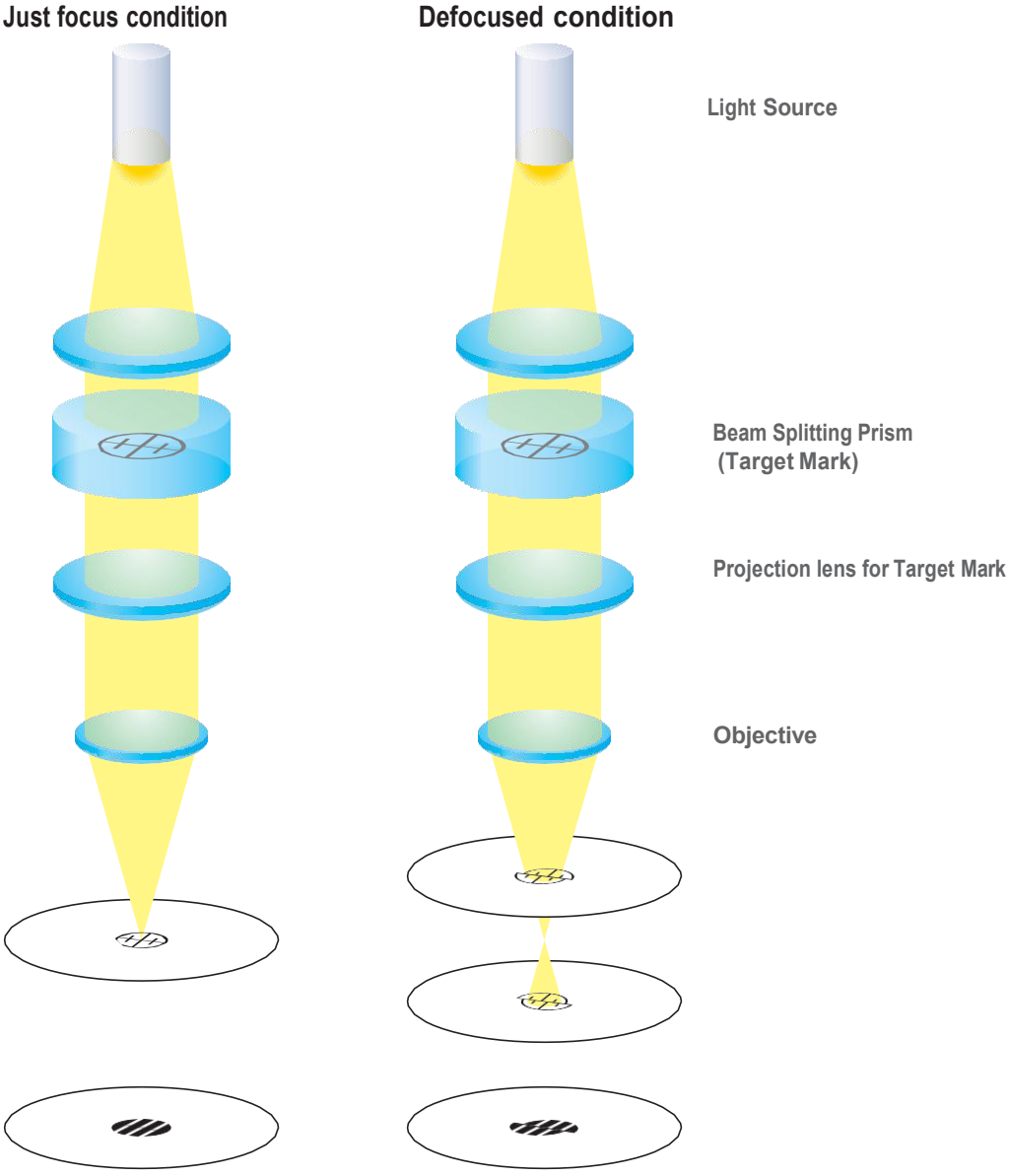
WESTERN OPTRONICS

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CA-MS Series Non-contact XYZ Measuring Microscope

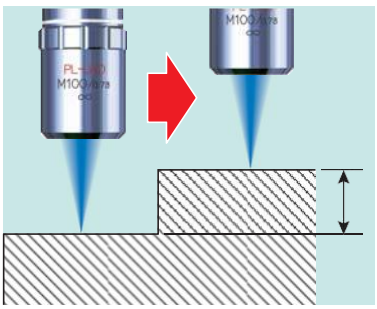
Principle of measurement

This microscope system offers a precise focus indicator consisting of an index graticule (Target Mark) and a beam splitting prism built into reflecting illumination optical system of microscope. And it has been designed based on the optical principle that at just focus status, of which the upper and lower halves coincide, can be observed above the focused image of a specimen, and that when defocused even slightly, the index line is split into two lines in the upper and lower halves of the graticule.



Method of measurement

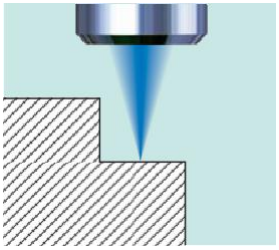
An exact focal point is secured by confirming that the vertical index lines in the upper and lower halves of the graticule coincide with both of straight lines exactly, rather than by making judgements as to whether image of a specimen surface is blurred or not.
Since this is a unique system that is neither affected by the focal depth of objective lenses nor dependent on the ability of the human eyes to discriminate two points, a focal point can be determined very accurately as compared with other focusing systems.
This focusing system and the digital gauge allow non-contact, high precision measurements of step heights between surfaces.



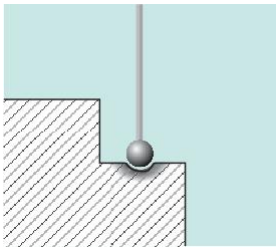
Advantages

- As a focal point is detected under the non-contact optical method, measurements can be taken without being affected by physical damages to a specimen such as distortion, blow or nicks, etc. (Refer to Diagram-①)
- Since the precise focus indicator based on the "split-target" method has been adopted, highly-accurate depth measurements can be taken simply by coinciding the two halves of the graticule.
- As the operation is so simple, this is the most suitable measuring microscope system for various kinds of applications.
- While observing minute surface condition of a point of measurement, the positional relation between a reference point of measurement and a point of measurement can be confirmed, and measurements can be also taken in the same field of view. (Refer to Diagram-②)
- Measurement accuracy can be improved through the use of high magnification objective lenses. (Refer to Diagram-③)
- Either Black-stripe or White-stripe Target Mark can be chosen as per a condition of specimen surface. Since three kinds of Target Mark status (black-stripe, while-stripe and nothing) can be selected by a lever, the photographs can be taken without the Target Mark if necessary.
- Various models can be configured by the combination of different equipment such as viewing head, measuring stage and other optional items, depending on applications of respective users. (Refer to System Diagram)
- In case of observing transparent, mirror or pearskin finish surfaces with a laser system, focus errors are apt to occur due to diffuse reflection. While, Target Mark can be projected onto such surfaces in case of our optical system, step heights of such specimen surfaces can be measured.

①

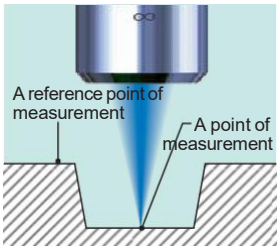


Optical system

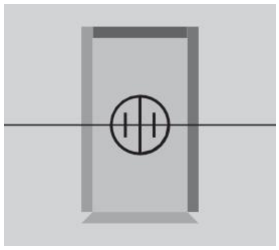


Contact system

②



Cross section diagram



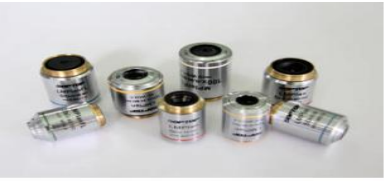
Display screen

③ Example: measuring height of bonding wire

SPECIFICATIONS

Model	CA-MS210A	CA-MS320A	CA-MS330A	CA-MS430A
Optical System	Infinity optical system			
Viewing Head	5~35 degree tilting trinocular head (erect image); unilateral diopter adjustment: ±5 diopter; interpupillary distance: 50mm-76mm; splitting ratio: 100:0 or 0:100.			
Eyepiece	High eye point wide field plan eyepiece PL10X/22mm, with adjustable diopter, reticle attachable.			
motorized nosepiece	Sextuple electric motorized nosepiece (with DIC slot) /BD sextuple electric motorized nosepiece (with DIC slot)			
Objective	Infinity long working distance plan achromatic metallurgical objective 5X/10X/20X/50X/100X			
	Infinity long working distance plan BD achromatic metallurgical objective 5X/10X/20X			
	Infinity long working distance BD plan semi apochromatic metallurgical objective 50X/100X			
Magnification	Optical magnification: 50X~1000X			
Frame	Marble base, with Z-axis electric focusing function, electric controller, Z-axis movement range 150mm, Z-axisrepeat accuracy ± 2 um; With 5W LED transmitted light illumination, adjustable brightness, digital readout, three-axis display accuracy of 0.1 μm, optional unit mm/inc			
Stage	Manualed measuring stage 200 (X)mm×100 (Y) mm, X/Y measurement accuracy: (2+L/100)um,The platform includes fast moving device and fine adjustment device, maximum bearing weight: 10KG, table size 258mm x 358mm, Weight25kg	Manualed measuring stage 300 (X)mm×200 (Y) mm, X/Y measurement accuracy : (3+L/100)um,The platform includes fast moving device and fine adjustment device, maximum bearing weight: 15KG,table size 350mm x 500mm, Weight 45kg	Manualed measuring stage 300(X)mm×300 (Y) mm, X/Y measurement accuracy : (3+L/100)um,The platform includes fast moving device and fine adjustment device, maximum bearing weight: 20KG,table size 500mm x 500mm, Weight 60kg	Manualed measuring stage 400 (X)mm×300 (Y) mm, X/Y measurement accuracy : (3+L/100)um,The platform includes fast moving device and fine adjustment device, maximum bearing weight: 20KG,table size 458mm x 620mm, Weight 70kg
lauxiliary focus module	Bright and dark field Auxiliary focus module, with BD switch device; with filter slots for filters and polarizing kit, with 5W LED light, the brightness is adjustable.			
	Focusing assist module, with light and dark field switching device, with green 5W LED light (including 100V - 240V wide voltage, 5W LED controller, dimmable)			
motorized	Electric controller, with automatic/manual Z-axis focusing device, independent control of three kinds of lights for up/down/focusing assist, brightness adjustable , including X/ Y/Z separate reset and one key reset, electric nosepiece, with Z-axis emergency stop button			
Camera	Germany Camera, target size: 1/1.8 inch;Resolution: 1600 x 1200 (1.9 MP), frame rate: 20 fps, 3 megapixels			
Adapter	0.5X/0.65X C-mount adapter			
PC	21.5 inch Lenovo computer			
Software	SOPTOP MS precision measurement software, real-time display of three coordinate data of digital readout, with image measurement module, support of automatic edge searching, automatic magnification identification and other functions, customized data upload function			
Accessory	Polarizer, 360 degree rotatable analyzer, interference filters(Blue, Green, Red), high precision micrometer, DIC, calibrater, table is optional, 1075mm*995mm*685mm, weight 120kg			

COMPOSITION

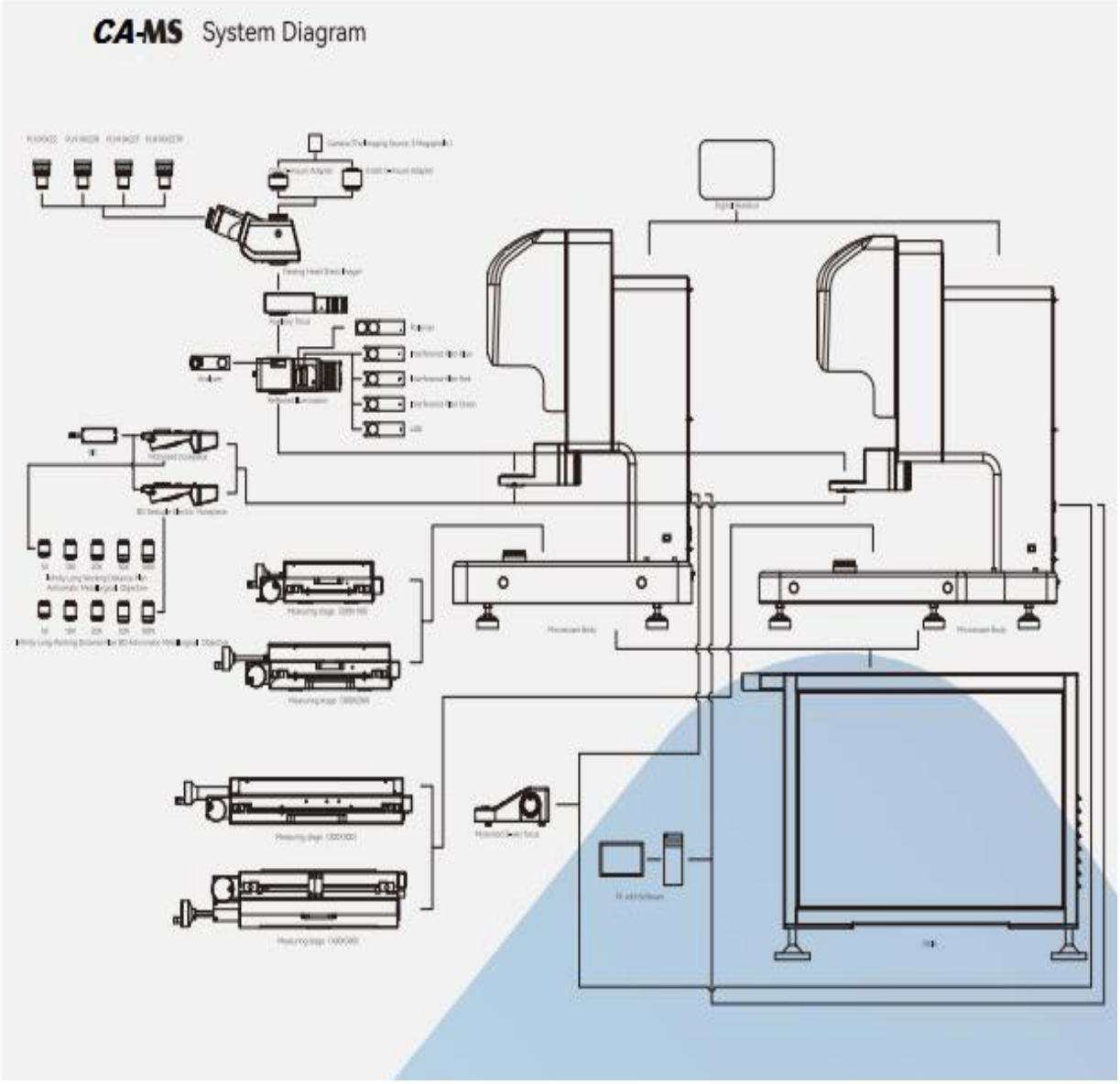


Infinity Long WD Metallurgical Objective

The objective can achieve high transmittance and high definition, and truly restore the natural color. In addition to light field observation, it is also competent for darkfield and differential interference observation.

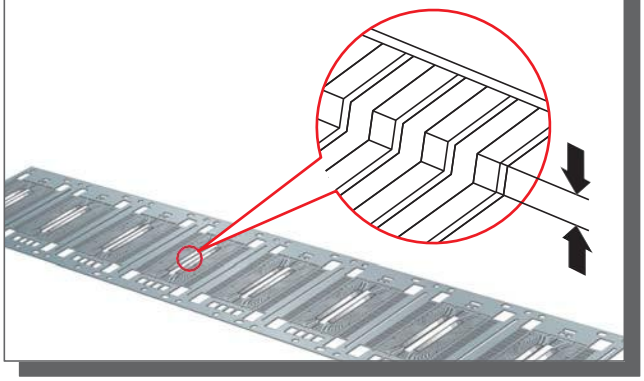
Part Number	Magnification	(N.A.)	Working Distance (mm)	Cover Glass Thickness (mm)	Parfocal Distance (mm)	Conjugate Distance (mm)
Infinity Long WD Plan Achromatic Metallurgical Objective	5X	0.15	10.8	0	45	∞
	10X	0.30	12.2			
	20X	0.40	8.8			
	50X	0.55	7.9			
	100X	0.8	2.1			
Infinity Long WD Plan Bright & DarkField Achromatic Metallurgical Objective	5X	0.15	9.0			
	10X	0.3	9.0			
	20X	0.45	3.4			
Infinity Long WD Plan Bright & Dark Field Semi-apochromatic Metallurgical Objective	50X	0.55	7.5			
	100X	0.8	2.1			

SYSTEM DIAGRAM



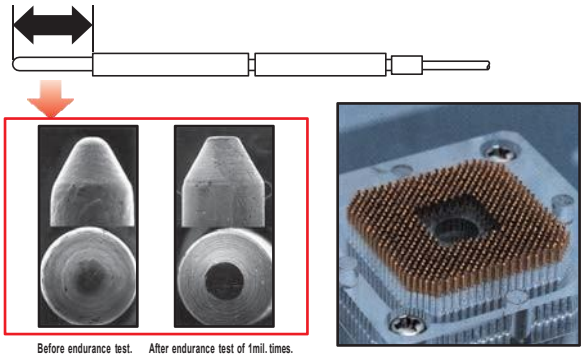
APPLICATIONS

<Height of lead frame>

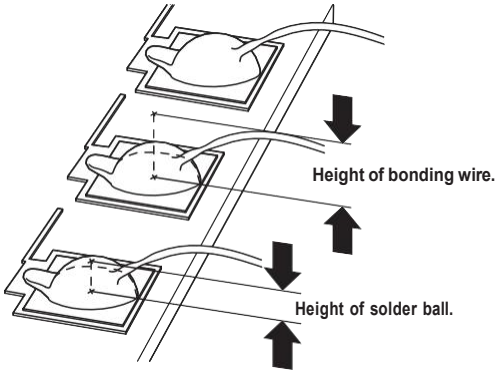


<Height of IC probe>

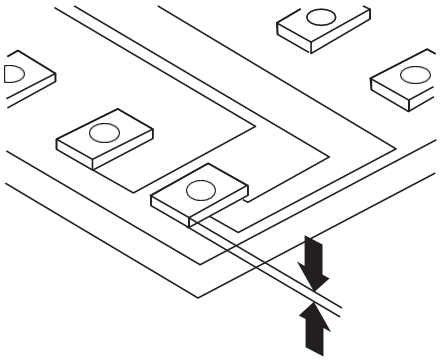
(To see how much the probe tip is worn out.)



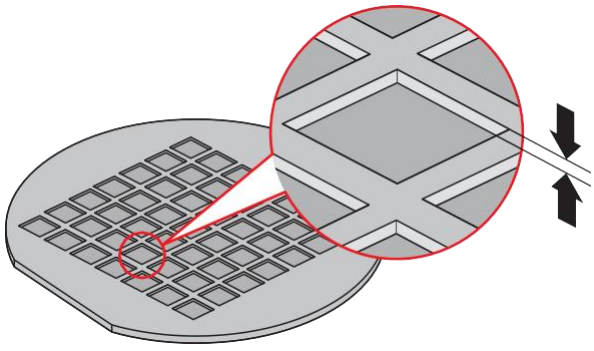
<Height of bonding wire and solder ball>



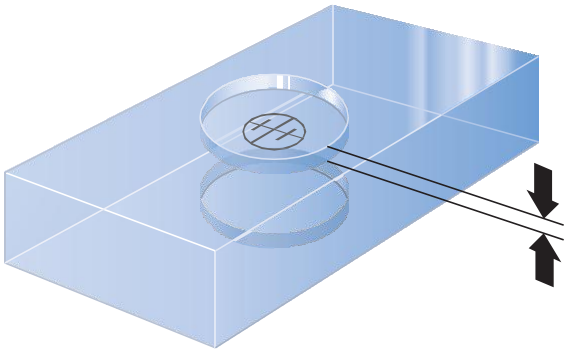
<Terminal steps on multi-layer PC boards>



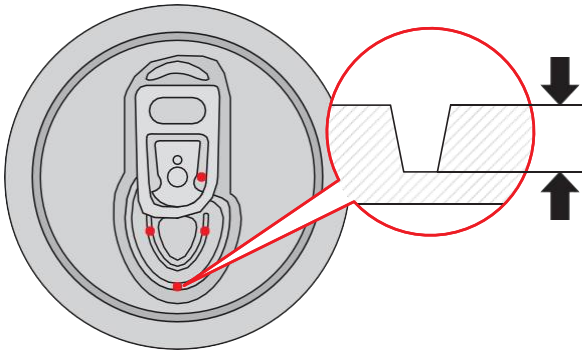
<Steps on wafers such as Si and GaAs>



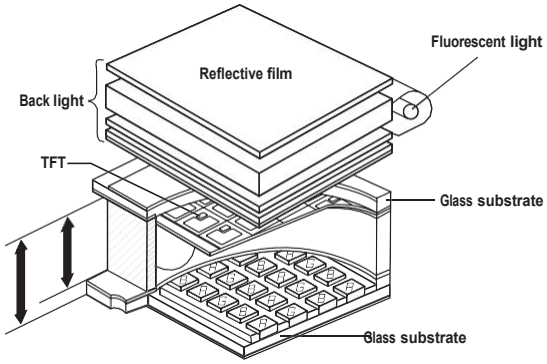
<Steps on quartz crystal>



<Recess on the can>

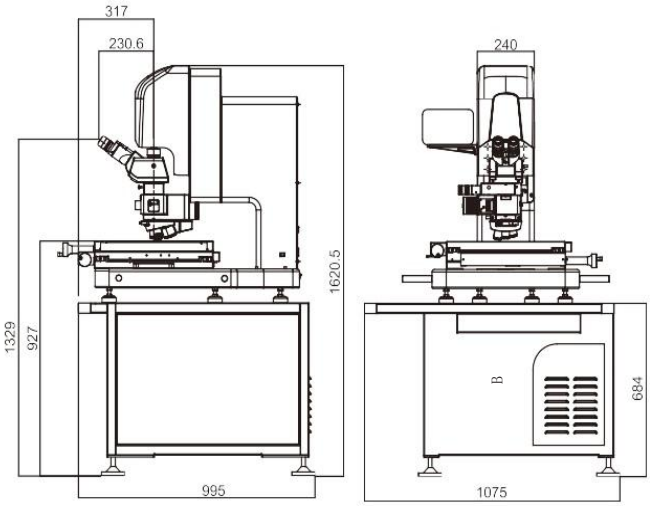


<Thickness of spacer>

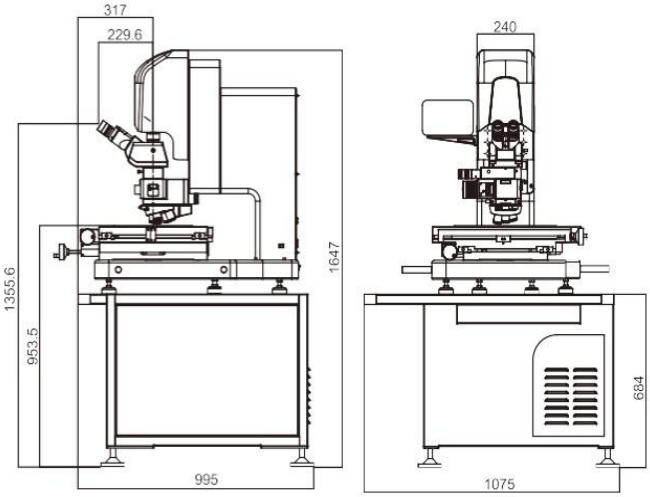


External Dimensions

CA-MS Dimension: mm



CA-MS210A/ CA-MS320A



CA-MS330A/ CA-MS430A

● All specifications are subject to change without prior notice.

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