



Leica MZ125

Modular high-performance
stereomicroscope with 12.5:1 zoom

Leica
MICROSYSTEMS

The vision

Leading-edge technology for a new era

In research and technology the bar has been raised. Advances in science and industry are becoming more complex and present new challenges. Precision optical instruments are expected to produce application-specific solutions to meet these challenging needs. Leica Microsystems, a leader in developing innovative technologies, presents the next generation of high-performance stereomicroscopes to confidently pave the road into the future.

The Leica MZ12s high-performance stereomicroscope offers leading-edge optical technology at an affordable price. Companies and users throughout the world have the opportunity to experience the performance and the quality of a Leica.

Unprecedented Imaging

Computer-controlled optical design systems were used to develop lenses using new types of glass with enhanced optical properties. These lenses faithfully transmit the properties of wavelengths of light, resulting in unsurpassed resolution, image contrast and sharpness.

High Quality Manufacturing Components

Leica has established sophisticated manufacturing processes to meet stringent performance and specification criteria without compromise. Perfection is ensured not only by our certified quality-assurance systems, but also by Leica's own exacting standards.

Versatility

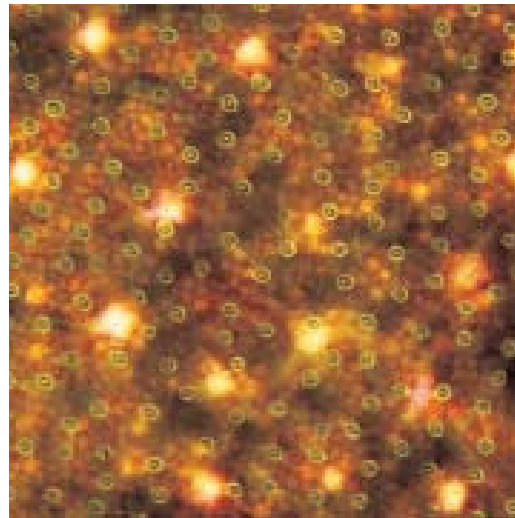
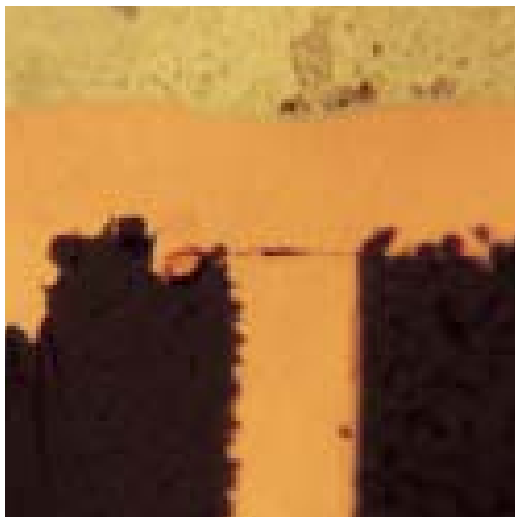
Leica stereomicroscopes are built using patented antistatic materials that protect against electrostatic discharge (ESD). They can be used to inspect the most sensitive components with assured confidence and they allow true workplace flexibility and safety.

The elegant design of the Leica MZ12s personifies the principles of ergonomics. The contoured shapes and modern antistatic materials combine to promote comfort and convenient handling.

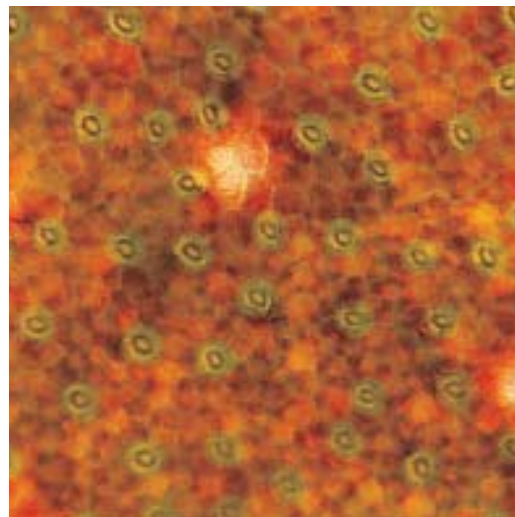
Right: Leica MZ12s with 45° inclined binocular tube, 1.0× plano objective, incident-light stand and focusing drive (coarse/fine)



Multi-layer circuit board, crack resulting in poor contact. Original image scales 37:1 and 600:1



Water-lily leaf (Nymphaea alba), openings. Original image scales 100:1 and 200:1



Leica MZ12s with ErgoTube™
10° – 50°, 1.0× plano objective, high-performance stand HL for transmitted light (bright field), and focusing drive (coarse/fine)

Leica Design
by Ernest Igl/Christophe Apothéloz





The optics

Top performance for successful projects

Quick and reliable information is the key to success today, particularly in the domain of precision optical instruments. The Leica MZ125 high-performance stereomicroscope provides the user with more information, more details – and therefore with more knowledge.

With the Leica MZ125, both high relief and flat specimens, are observed in large fields of view and then magnified continuously in one motion from 8× to 100×. In its standard configuration with 1.0× plano objective and distortion-free 10× eyepieces, the Leica MZ125 offers a higher magnification (100×), a larger numerical aperture (0.125) and better resolution (375 line-pairs/mm) than any comparable stereomicroscope on the market. The parfocally-matched zoom system ensures constant image sharpness throughout the entire zoom range.

Planapochromatic objectives

The 1.0× and 0.63× planapochromatic objectives were developed specifically for use with the Leica MZ125 stereomicroscope; their perfor-

mance in terms of contrast, richness of detail, resolution, and color fidelity is unsurpassed and extends the limits of microscopical observation. The long working distances of 97mm, attainable with the 0.63× planapochromatic objective and 135mm with the 0.5× planapochromatic objective respectively, create more room for working on the object. Other optical accessories, such as the 1.6× planapochromatic objective and the 40× eyepieces, increase the magnification up to 640×.

Brilliant images in every dimension

The high numerical aperture (0.2) and the maximum resolution of 600 line-pairs / mm attainable with the 1.6× planapochromatic objective, enable the range of the instrument to be extended to that of the compound microscope. The comprehensive approach to the observation of three-dimensional objects, from the lowest to the highest magnification, reveals previously unavailable information.



When equipped with the 1.0× planapochromatic objective and with 10× eyepieces, the Leica MZ125 attains a total magnification of 100×, a numerical aperture of 0.125, and a resolution of 375 line-pairs / mm. The working distance of the new 0.8× plano objective is 112mm, offering ample space for tools and for manipulating the object. All objectives are lead-free.



The program

Made-to-measure solutions for every application

For a stereomicroscope to provide outstanding user benefits it must quickly and easily adapt to the current working situation and to the individual user. It is precisely this versatility that makes the Leica MZ12s such a fine long-term investment. Its high value results from the quality of the parfocal optical systems and the comprehensive choice of accessories for every imaginable investigational task, instruction, and documentation.

The user as the measure of things

Leica offers the widest choice of binocular tubes on the market, and a unique range of ErgoModules™. The ErgoTube™ has a viewing angle continuously variable from 10° to 50°, and ensures an ideal and dynamic sitting position for every user. It is especially recommended for use with the Leica MZ12s.

Modularity: Investment in the future

The complete range of Leica stereomicroscope stands and illuminators allows the Leica MZ12s to be equipped for any task. For example, the swing-arm stand provides room to manipulate bulky objects, and high-performance stands for transmitted light ensure that transparent objects are ideally illuminated.

The coaxial illuminator shows the surface contrasts of flat, highly-reflecting objects such as wafers or polished metal sections. Various types of fiber-optic light enable spatial objects to be presented as models. The fluorescence illuminator, combines with various filter sets (e.g. GFP), to facilitate the differentiation of highly detailed fluorescing structures.

ErgoTube® and ErgoModule® are registered in the United States Patent and Trademark Office.

- 1 Motor focus for effortless focusing and for repetitive tasks
- 2 Coaxial illuminator for flat, highly-reflecting surfaces, e.g. wafers and polished metal sections
- 3 Leica IC A integrated analog video camera
- 4 Fluorescence module with various filter combinations (e.g. GFP) for the differential observation of fine fluorescing structures
- 5 Discussion stereomicroscope for education and training
- 6 High-performance transmitted-light stands for the efficient illumination of transparent specimens. Example: Transmitted-light stand for bright- and dark field
- 7 Rotatable polarization stage for double-refracting materials
- 8 Leica MPS60 photoautomat (shutterpiece with 1% spot measurement)



The Leica MZ125: A fine example of ergonomics and versatility



The system

Digital technologies for professional requirements

By introducing digital imaging, Leica has ushered in a new era for image processing in professional microscopy. Digital imaging shortens work processes, saves costs, is up to date, and offers the facilities of printing, data transfer, multimedia and Internet publishing. Leica provides stereomicroscopes, CCD cameras and image managers from the same source, and has designed the optics and the software specially for microscopy.

Leica digital imaging systems

Leica Microsystems offers a complete and modular system for professional recording, archiving, analyzing, and processing of electronic images. The new Leica DC 150 (6 megapixels), Leica DC 300 (7.2 megapixels), Leica DC 300F (fluorescence, 2.9 megapixels), Leica DC 350F (fluorescence, 2.9 megapixels, black & white), and Leica DC 500 (12 megapixels) digital imaging systems provide customized, future-oriented solutions for all applications in research, development, industry, biology and medicine.

Leica Image Manager for professional archiving, handling and analyzing of electronic images

The Leica software «Image Manager» includes various modules for activities ranging from the storage and post-processing of images right up to complex networking.

Leica video system

The Leica IC A integrated video module enables workplaces to be equipped both ergonomically and economically, since the IC A does not require a C-mount or special adaptation. The Leica IC A opens up new possibilities for image analysis in the natural sciences, for industrial quality control, and for live presentations to large audiences and for digital post-processing. It is possible to record your sample or technique for training or documentation on a VCR.

Leica photoautomat

If documentation is to be on conventional film material, Leica offers advanced systems. For example, the Leica MPS60 uses 1% spot metering and directs 100% of the light to the highly-sensitive measuring diode, enabling perfect photographs to be taken using short exposure times, even under the low-light conditions of fluorescence.

Leica DC digital imaging system,
Leica MZ12s with trinocular video-/
phototube

COMING



The details

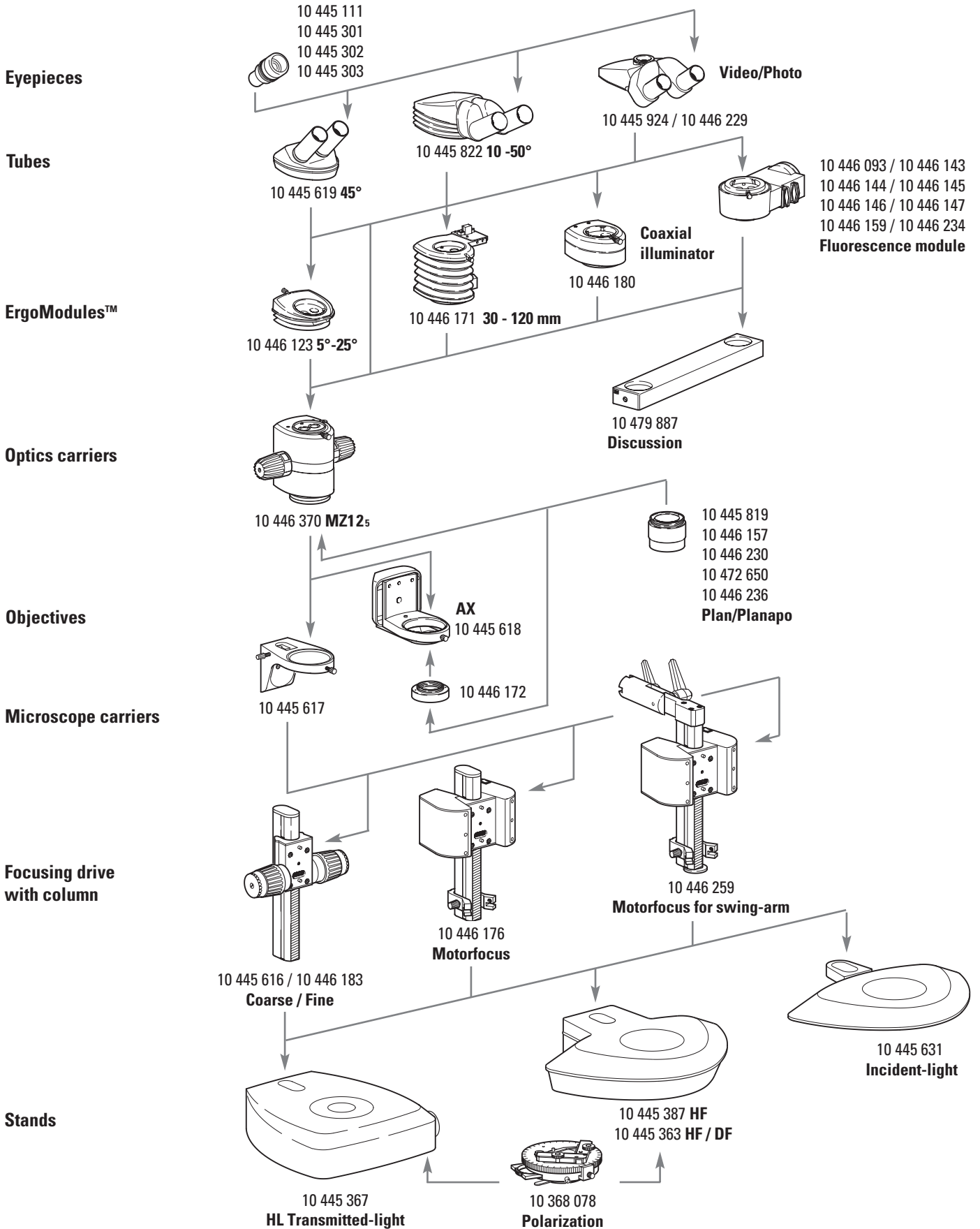
Leica MZ125 stereomicroscope

Design principle	Multiple-coated, parfocal high-performance optical system with two parallel beam paths (infinity optics) and one main objective (CMO), lead-free
Surface resistance of antistatic material	$<10^{11}$ Ohm/square centimeter, discharge time <2 seconds from 1000V to 100V
Numerical aperture	0.2 with 1.6× planapochromatic objective, 0.125 with 1.0× plano or planapochromatic objective
Resolution	375 line-pairs / mm with 1.0× plano or planapochromatic objective, 600 line-pairs / mm with 1.6× planapochromatic objective
Magnification changer	12.5:1 zoom, 0.8×–10×
10 engageable ratchet positions	at 1, 1.25, 1.6, 2, 2.5, 3.2, 4, 5, 6.4, 8
Magnifications	8× to 100× (with 1.0× objective and 10× eyepieces)
Total magnification	4× to 640×
Field diameter	0.4mm to 52.5mm
Working distances	60mm (1.0× plano), 135mm (0.5× plano), 97mm (0.63× planapo), 112mm (0.8× plano), 55mm (1.0× planapo), 19mm (1.6× planapo), 91–990mm (achromats)
Planachromatic and planapochromatic objectives	1.0× (plano, planapo), 0.5× (plano), 0.63× (planapo), 0.8× (plano), 1.6× (planapo), lead-free
Wide-field eyepieces for eyeglass wearers	Distortion free, 10×/21B, 16×/14B, 25×/9.5B, 40×/6B
Dioptric correction	+5 to –5
Eyecups	Variable degree of eye contact
Binocular tubes	Apochromatic ErgoTube™ 10° to 50° with synchronized interpupillary adjustment Various ErgoModules™
Interpupillary distance	52 to 76mm
Stands, illuminators	
Focusing drive	Coarse, fine, manual and motorized, tiltable for OEM adaptations (bonders)
Length of column	300mm and 500mm, side-faced profile
Microscope carrier	Two basic heights, optics carrier rotatable through 360°, stereoscopic or vertical observation
Swing-arm stand	ESD version with 400/25m column, large stand with 550/50mm column, alternative with clamp for 20–50mm thick table tops
Universal stand	450/50mm or 800/50m column, 52cm × 34cm baseplate, magnetic carrier for stages
Transmitted-light stands	Bright field, bright and dark field, high-performance base
Stages	Various, including rotatable polarization stage
Incident lamps	Inclined, coaxial, vertical, fibre-optic light guides, fluorescence module
Accessories	
Photomicrographic systems	Leica MPS30 and MPS60, fully automatic, with data back
Video, filming, digital imaging	Various configurations, Leica IC A integrated video module, Leica DC digital imaging systems, Leica DC 150 digital still camera
Image Management Software	image manager
Discussion tube	For training and education
Drawing tube	For both left- and right-handed users
Double-iris diaphragm	For increasing the depth of field
Measuring graticules	For measuring lengths and for counting
Vertical and oblique observation	45° view by moving the optics rather than the specimen

For more detailed information, please ask for the brochure “Modular System” (M1 105-4en).

Quality comes first: Leica has established sophisticated manufacturing processes that meet the most stringent performance and specification criteria, without compromise. Perfection is ensured not only by our certified quality assurance standards but also by Leica’s own exacting requirements.

Leica, the standard for individual solutions

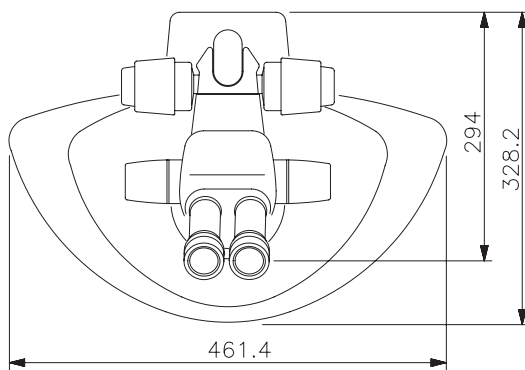
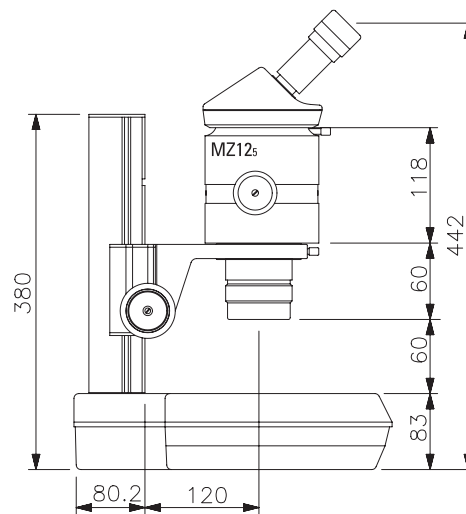
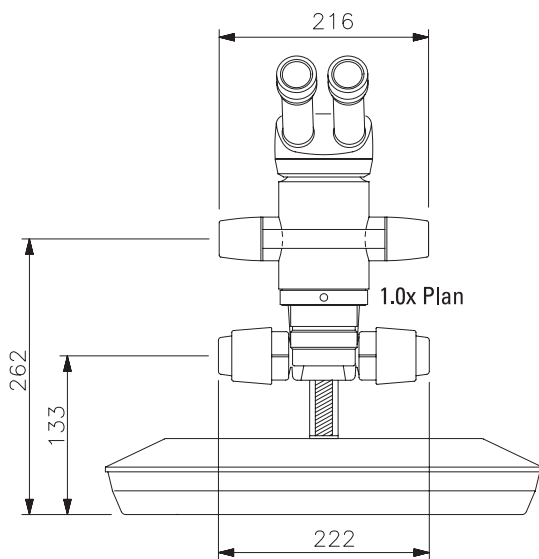


The data

Objective		1.0× Plan 1.0× Planapo		0.5× Plan		0.63× Planapo		0.8× Plan		1.6× Planapo	
Eyepiece	Magnification changer position	Working distance									
		60 Plan 55 Planapo		135 Plan		97 Planapo		112 Plan		19 Planapo	
		Total magnification	Field diameter (mm)	Total magnification	Field diameter (mm)	Total magnification	Field diameter (mm)	Total magnification	Field diameter (mm)	Total magnification	Field diameter (mm)
10×/21B	0.8	8.0	26.3	4.0	52.5	5.1	41.2	6.4	32.8	12.8	16.4
	1.0	10.0	21.0	5.0	42.0	6.4	32.8	8.0	26.3	16.0	13.1
	1.25	12.5	16.8	6.3	33.3	8.0	26.3	10.0	21.0	20.0	10.5
	1.6	16.0	13.1	8.0	26.3	10.2	20.6	12.8	16.4	25.6	8.2
	2.0	20.0	10.5	10.0	21.0	12.8	16.4	16.0	13.1	32.0	6.6
	2.5	25.0	8.4	12.5	16.8	16.0	13.1	20.0	10.5	40.0	5.3
	3.2	32.0	6.6	16.0	13.1	20.5	10.2	25.6	8.2	51.2	4.1
	4.0	40.0	5.3	20.0	10.5	25.6	8.2	32.0	6.6	64.0	3.3
	5.0	50.0	4.2	25.0	8.4	32.0	6.6	40.0	5.3	80.0	2.6
	6.3	63.0	3.3	31.5	6.7	40.3	5.2	50.4	4.2	100.8	2.1
8.0	80.0	2.6	40.0	5.3	51.2	4.1	64.0	3.3	128.0	1.6	
10.0	100.0	2.1	50.0	4.2	64.0	3.3	80.0	2.6	160.0	1.3	
16×/14B	0.8	12.8	17.5	6.4	35.0	8.2	27.3	10.2	22.0	20.5	10.9
	1.0	16.0	14.0	8.0	28.0	10.2	22.0	12.8	17.5	25.6	8.8
	1.25	20.0	11.2	10.0	22.4	12.8	17.5	16.0	14.0	32.0	7.0
	1.6	25.6	8.8	12.8	17.5	16.4	13.7	20.5	10.9	41.0	5.5
	2.0	32.0	7.0	16.0	14.0	20.5	10.9	25.6	8.8	51.2	4.4
	2.5	40.0	5.6	20.0	11.2	25.6	8.8	32.0	7.0	64.0	3.5
	3.2	51.2	4.4	25.6	8.8	32.8	6.8	41.0	5.5	81.9	2.7
	4.0	64.0	3.5	32.0	7.0	41.0	5.5	51.2	4.4	102.4	2.2
	5.0	80.0	2.8	40.0	5.6	51.2	4.4	64.0	3.5	128.0	1.8
	6.3	100.8	2.2	50.4	4.4	64.5	3.5	80.6	2.8	161.3	1.4
8.0	128.0	1.8	64.0	3.5	81.9	2.7	102.4	2.2	204.8	1.1	
10.0	160.0	1.4	80.0	2.8	102.4	2.2	128.0	1.8	256.0	0.9	
25×/9.5B	0.8	20.0	11.9	10.0	23.8	12.8	18.6	16.0	14.8	32.0	7.4
	1.0	25.0	9.5	12.5	19.0	16.0	14.8	20.0	11.9	40.0	5.9
	1.25	31.3	7.6	15.6	15.2	20.0	11.9	25.0	9.5	50.0	4.8
	1.6	40.0	5.9	20.0	11.9	25.6	9.3	32.0	7.4	64.0	3.7
	2.0	50.0	4.8	25.0	9.5	32.0	7.4	40.0	5.9	80.0	3.0
	2.5	62.5	3.8	31.3	7.6	40.0	5.9	50.0	4.8	100.0	2.4
	3.2	80.0	3.0	40.0	5.9	51.2	4.6	64.0	3.7	128.0	1.9
	4.0	100.0	2.4	50.0	4.8	64.0	3.7	80.0	3.0	160.0	1.5
	5.0	125.0	1.9	62.5	3.8	80.0	3.0	100.0	2.4	200.0	1.2
	6.3	157.5	1.5	78.8	3.0	100.8	2.4	126.0	1.9	252.0	0.9
8.0	200.0	1.2	100.0	2.4	128.0	1.9	160.0	1.5	320.0	0.7	
10.0	250.0	1.0	125.0	1.9	160.0	1.5	200.0	1.2	400.0	0.6	
40×/6B	0.8	32.0	7.5	16.0	15.0	20.5	11.7	25.6	9.4	51.2	4.7
	1.0	40.0	6.0	20.0	12.0	25.6	9.4	32.0	7.5	64.0	3.8
	1.25	50.0	4.8	25.0	9.6	32.0	7.5	40.0	6.0	80.0	3.0
	1.6	64.0	3.8	32.0	7.5	41.0	5.9	51.2	4.7	102.4	2.3
	2.0	80.0	3.0	40.0	6.0	51.2	4.7	64.0	3.8	128.0	1.9
	2.5	100.0	2.4	50.0	4.8	64.0	3.8	80.0	3.0	160.0	1.5
	3.2	128.0	1.9	64.0	3.8	81.9	2.9	102.4	2.3	204.8	1.2
	4.0	160.0	1.5	80.0	3.0	102.4	2.3	128.0	1.9	256.0	0.9
	5.0	200.0	1.2	100.0	2.4	128.0	1.9	160.0	1.5	320.0	0.8
	6.3	252.0	1.0	126.0	1.9	161.3	1.5	201.6	1.2	403.2	0.6
8.0	320.0	0.8	160.0	1.5	204.8	1.2	256.0	0.9	512.0	0.5	
10.0	400.0	0.6	200.0	1.2	256.0	0.9	320.0	0.8	640.0	0.4	



Leica MZ125: The dimensions



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