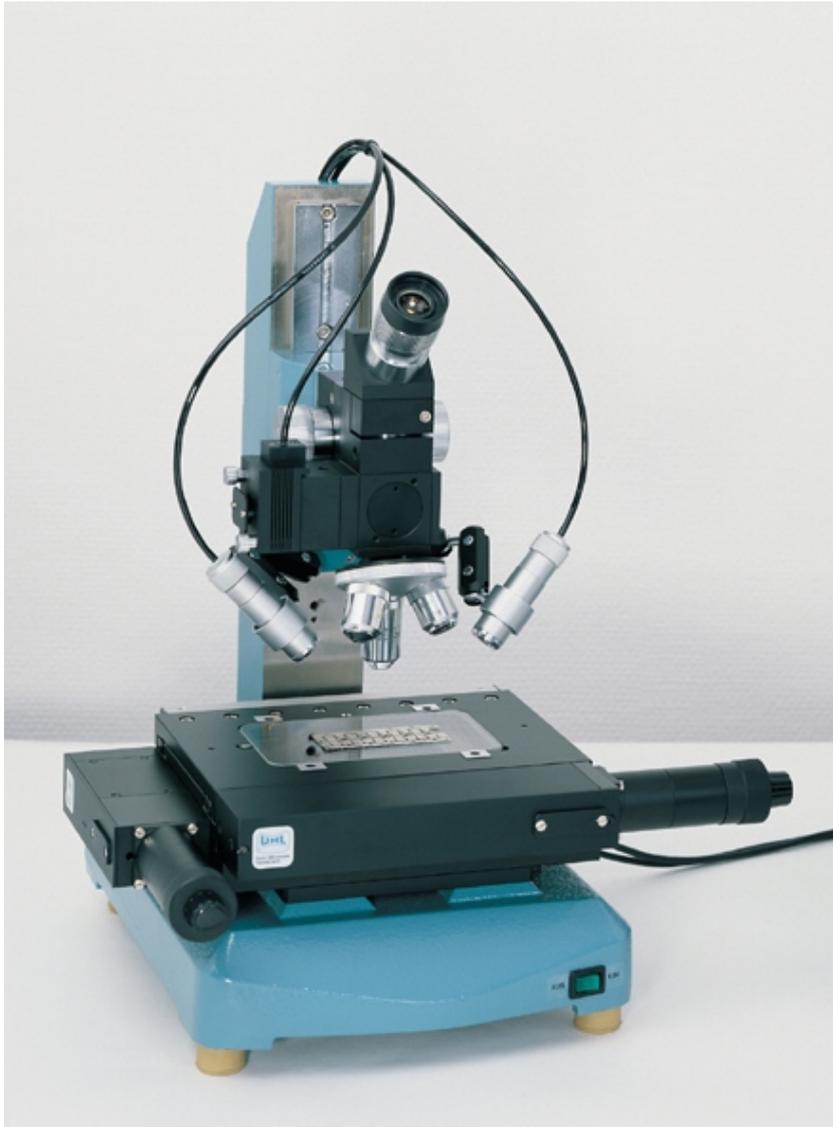


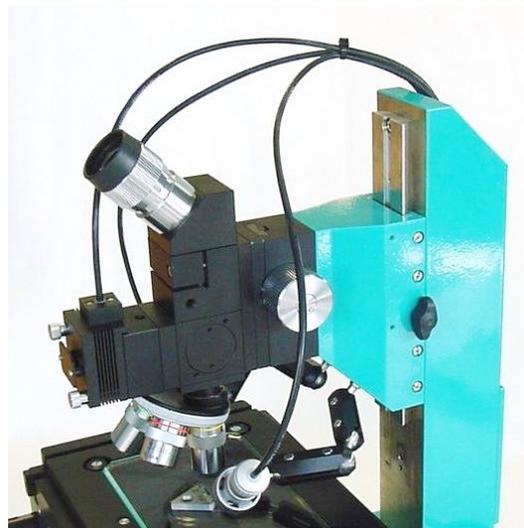
Tool Makers Microscope WM2



The tool makers microscope WM2 is a robust and easy to operate device for the universal use in the workshop.



The **tool makers microscope WM2** consists of a stabil base stand of grey iron casting with dovetail driven coarse adjustment in the z-axis for measurements of high objects. The dovetail can be fixed with help of a clamp mechanism.



The microscope tube, consisting of components from our modular component system, can be focused on the measuring object with a coarse guiding block (dovetail guiding, rack and pinion) **B40-G** or a coarse / fine guiding block with roller guides **B40-KR**.

The tool makers microscopes WM2 can be equipped with halogen lamps for the coaxial incident illumination as well as for transmitted illumination.

On jointed arms fixed lamps provide oblique incident illumination.

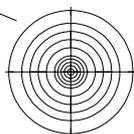
A transformer with 3 channels **TR7-3-S** serves for controlling the lamps.



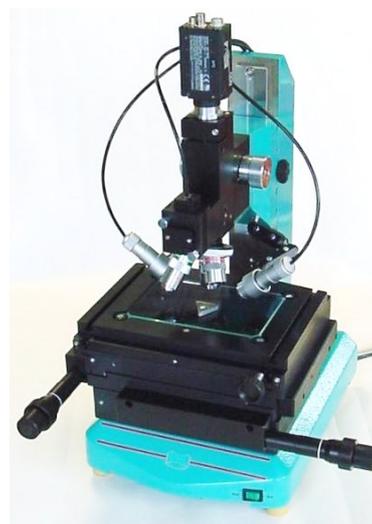
Two different tube variants are available:



In the eye-piece is a graticule Ø 19 with cross hair and concentric circles.



WM2 with tube **MS2-301** for inclined monocular **MS2-407**



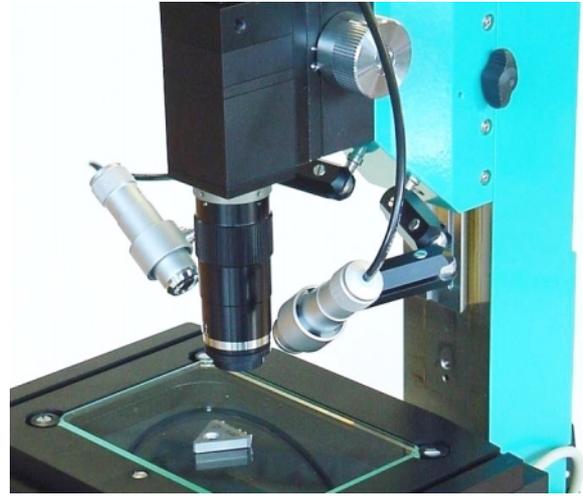
WM2 with tube **MS2-307** for a b/w CCD-camera equipment **MS2-403**



Two further tube variants are available:



WM2 with clamping cube **B40-K** for a centring microscope **ZM1** (detailed information see brochure ZM1).



WM2 with tube **MS2-309** with a zoom objective and zoom auxiliary lens **ZV-x**

For angle measurements an angle measuring eye-piece is available:



WM2 with tube **MS2-301** and angle measuring eye-piece **MS2-409**

Following digital read-outs for tool makers microscopes with linear scales on the measuring stage are available:



Simple 2-axis measuring counter with data interface **WM2-MS**



2-axis digital read-out with data interface and printer port **QC120**



2-axis digital read-out with data interface, printer port and calculating functions for geometrical combination of the measured values **QC220**



A tool makers microscope, equipped with linear scales on the measuring stage, CCD-camera as well as the video image processing system **VM3-OMS** is able to measure easily and comfortably.

The video pictures can be stored or printed for documentation.

The measuring report is adaptable to the customer's requirements.

(More details to OMS see brochure VMM150)



The tool makers microscopes WM2 can be assembled of following components:

Base stand:

MS2-108	Base stand of grey iron coating with column for receiving z-axis
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Z-Axis:

MS2-200	z-axis for objectives up to 20:1, coarse drive
MS2-203	z-axis for objectives from 20:1 on, coaxial drive

XY-Measuring stage:

KT5-NMLC	Cross stage, 25 x 25 movement range, digital micrometers, 5 µm straightness / flatness
KT5-NHMC	Cross stage, 50 x 50 mm movement range, coarse / fine adjustment, linear scales, 5 µm straightness / flatness
VM3-601	Measuring stage, 100 x 50 mm movement range, coarse / fine adjustment, linear scales, 3µm straightness / flatness
VM3-610	Swivel stage for parts adjustment (only for VM3-601)

Illumination:

MS2-501	Oblique incident light illumination, 2 lamps on jointed arms, 2 x 6V 5W
MS2-507	Transmitted light 6W 10W
MS2-508	LED ring light
TR7-3-S	Adjustable transformer, 3x 6V 10W



Tube system:

MS2-301	Incident light tube, finite, (160 tube length) with coaxial halogen incident lighting 6V 10W, objective thread connection, with clamping cube for monocular
MS2-307	Incident light tube, finite, (160 mm tube length) with coaxial halogen incident lighting 6V 10W, objective thread connection, with C-mount adapter for CCD-camera
B40-K	Clamping cube for ZM1 (see ZM1 brochure)
MS2-309	Tube with zoom objective 0,7x - 4,5x
ZV-1	Zoom-auxiliary lens 1x
ZV-1,5	Zoom-auxiliary lens 1,5x
ZV-2	Zoom-auxiliary lens 2x
B031	objective revolver 3x with objective thread

Imaging:

MS2-403	½" b/w camera equipment and mains power pack
MS2-403M	9" b/w monitor
MS2-405	½" colour camera equipment and mains power pack
MS2-405M	14" colour monitor
VMP-CCD+	cross hair generator with 2 horizontal and 2 vertical lines
MS2-407	15x eye-piece with 45° inclined monocular, cross hair and concentric circles
MS2-408	15x eye-piece with 45° inclined monocular, cross hair
MS2-409	10x eye-piece with 45° inclined monocular, angle measuring eye-piece, +/- 90°, resolution 20'

Digital read-out / measuring computer / measuring software system:

WM2-MS	Counter for 2 axes, RS232 interface, mm / inch switching, free definable coordinate origin, 0.001 mm resolution
QC120	Counter for 2 axes, RS232 interface, mm / inch switching, fixed and free definable coordinate origin, printer port, linear compensation, 0.001 mm resolution
QC220	Counter for 2 axes, RS232 interface, mm / inch switching, fixed and free definable coordinate origin, printer port, linear and point to point compensation, calculating functions for geometrical combinations of the measuring values, storage for measuring values, 0.001 mm resolution
VM3-OMS	Measuring software system UHL OMS, complete system for 2 axes with desktop-PC, monitor, 2-axes read-out card and ½" b/w camera equipment (for details see VMM150 brochure)



Incident light objectives for finite tube length 160

order no.:	magnification	working distance AA (mm)	object diameter (mm) tube with inclined monocular	field of view (mm x mm) tube with CCD-camera
OP1-AL05	5:1	18,5	2,6	0,95 x 0,77
OP1-AL10	10:1	6,7	1,3	0,45 x 0,36
OP1-AL20	20:1	1,8	0,7	0,24 x 0,19
OP1-AL40	40:1	0,6	0,35	0,12 x 0,09

Achromatic objectives for finite tube length 160

order no.:	magnification	working distance AA (mm)	object diameter (mm) tube with inclined monocular	field of view (mm x mm) tube with CCD-camera
OP1-A01	1:1	125	11	5,5 x 4,3
OP1-A02	2:1	68	6,3	2,8 x 2,1
OP1-A03	3:1	26	3,8	1,9 x 1,5
OP1-A04	4:1	13	3	1,5 x 1,1
OP1-A05	5:1	13	2,3	1,1 x 0,9
OP1-A06	6:1	13	2	0,9 x 0,7
OP1-A10	10:1	5,5	1,2	0,5 x 0,4

Zoom-auxiliary lenses for tube with zoom-objective

order no.:	working distance AA (mm)	field of view (mm x mm) tube with CCD-camera
ZV-1	57	6,9 x 5,4 bis 1,1 x 0,8
ZV-1,5	37	4,6 x 3,6 bis 0,75 x 0,55
ZV-2	27	3,5 x 2,7 bis 0,56 x 0,41



WM2 combination possibilities

Imaging	Tubussystem			
	MS2-301 Incident light tube, finite, coaxial incident lighting, for monocular eye-piece	MS2-307 Incident light tube, finite, coaxial incident lighting, for CCD-camera	B40-K Clamping cube for ZM1	MS2-309 tube with zoom objektive
MS2-403 ½" b/w camera equipment		●		●
MS2-405 ½" colour equipment		●		●
MS2-403M 9" b/w monitor		●		●
MS2-405M 14" colour monitor		●		●
MS2-407 45° inclined monocular eye-piece, cross hair and concentric circles	●			
MS2-408 45° inclined monocular eye-piece, cross hair	●			
MS2-409 45° inclined monocular eye-piece, angle measurment	●			
ZM1 centring microscopes			●	



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Standard Systems of Tool Makers Microscope WM2:

WM2-ZM01	Tool makers microscope with base stand MS2-108 ; coarse drive MS2-200 ; measuring stage 25 x 25 mm with digital micrometers KT5-NMLC ; clamping cube for ZM1 B40-K ; transmitted light MS2-507 ; oblique incident light MS2-501 ; transformer TR7-3-S ; centring microscope ZM1-K2 ; with 11 mm object diameter and 80 mm working distance
WM2-MT01	Tool makers microscope with base stand MS2-108 ; coarse drive MS2-200 ; measuring stage 100 x 50 mm VM3-601 ; incident light tube with halogen illumination MS2-301 ; transmitted light MS2-507 ; oblique incident light MS2-501 ; transformer TR7-3-S ; eye-piece with 45° inclined monocular, cross hair and concentric circles MS2-407 ; digital read-out for 2 axes QC120 ; objective revolver 3x B031 ; and objectives OP1-AL05 , OP1-AL10 and OP1-AL20
WM2-VT01	Video tool makers microscope with base stand MS2-108 ; coarse drive MS2-200 ; measuring stage 100 x 50 mm VM3-601 ; tube with zoom objective 0,7x - 4,5x MS2-309 ; transmitted light MS2-507 ; oblique incident light MS2-501 ; transformer TR7-3-S ; zoom auxiliary lens 1:1 ZV1 ; ½" colour camera equipment with mains power pack MS2-405 , 14" colour monitor MS2-405M ; cross hair generator VMP-CCD+ ; digital read-out for 2 axes QC120
WM2-VT02	Video tool makers microscope with base stand MS2-108 ; coarse drive MS2-200 ; measuring stage 100 x 50 mm VM3-601 ; incident light tube with halogen illumination MS2-307 ; transmitted light MS2-507 , oblique incident light MS2-501 ; transformer TR7-3-S ; measuring software system OMS with measuring computer, monitor and ½" b/w camera equipment VM3-OMS ; objective revolver 3x B031 ; and objectives OP1-AL05 , OP1-AL10 and OP1-AL20

