

# Centring Microscope ZM1

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Revision No.: 06



The Centring Microscope ZM1 is a sturdy, optical precision instrument to be attached on machines, control devices, measuring devices and equipment.



Technische  
Mikroskopie

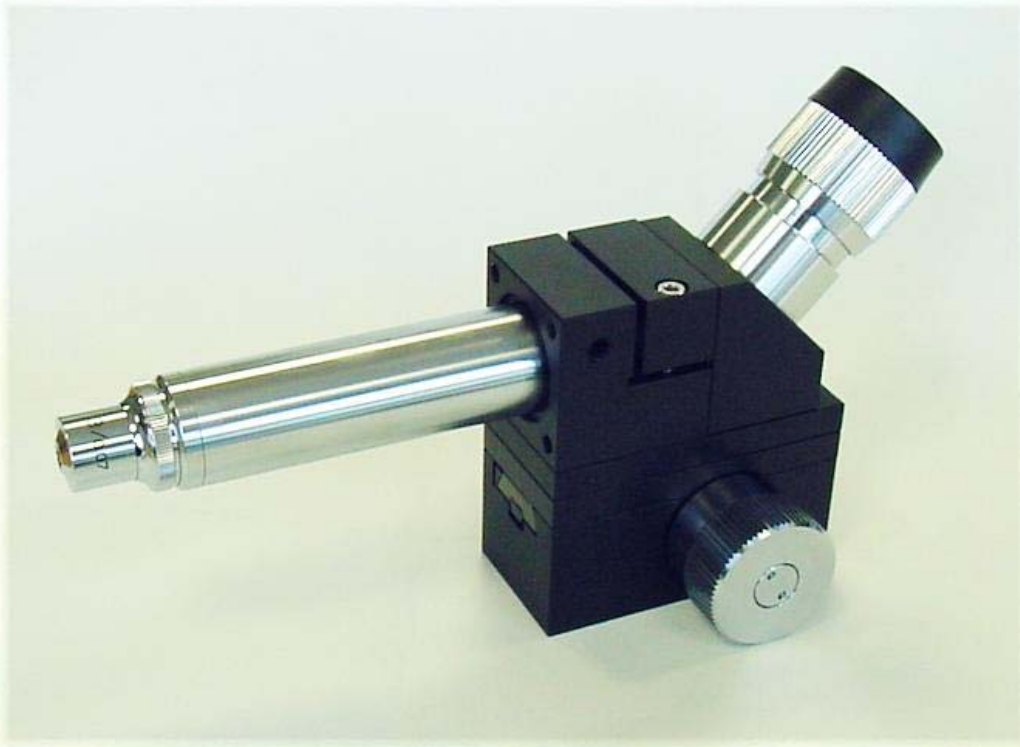
### The Centring Microscope ZM1

can be fixed at a machine assembled or with a focus element. During the alignment, the object will be moved. To align the object it has to be brought close to the integrated crosshair. Alternatively, radiuses or holes can be positioned exactly on the integrated concentric circles.

For an ergonomic view the image will be transmitted with a 45° prism to the eyepiece, which magnifies 15:1. The graticule can be focussed by adjusting the lens with a multiple thread (dioptré compensation).

The high quality, coated optics and the complete metallic design ensures a high durability.

Other equipment variants upon request.

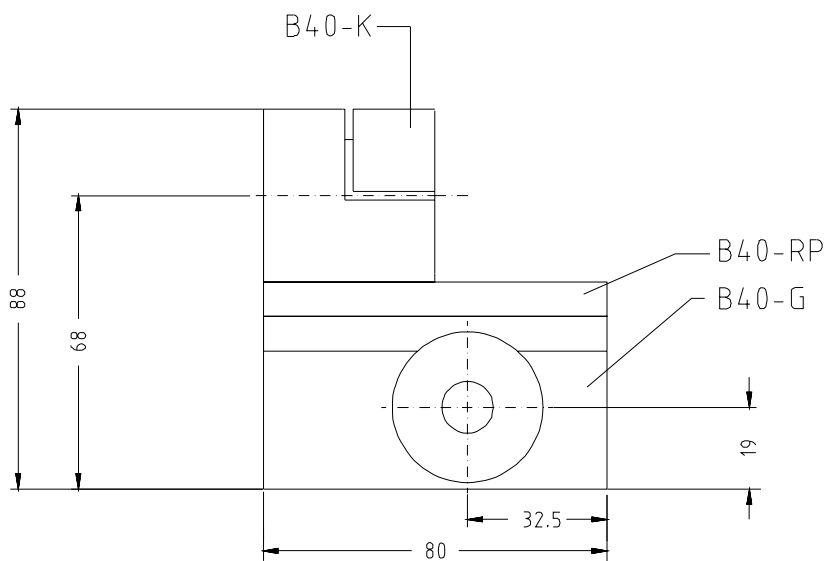
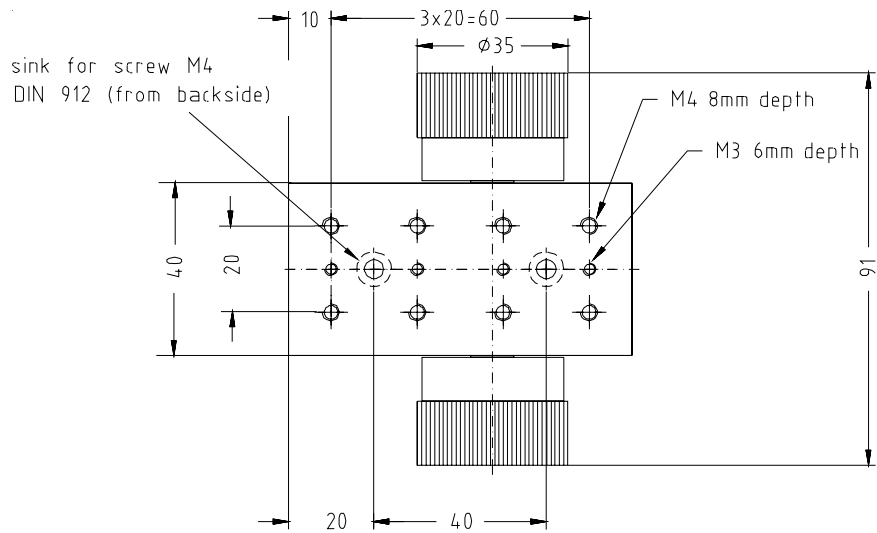


To bring the object in focus, a bearing box with clamping cube (**ZM1-Tx**) or a focus element integrated in the socket can be used (**ZM1-F with straight tube**).





The optionally available focus element **ZM1-TG** consists of components of our modular component system: clamping cube B40-K, raster plate B40-RP and a bearing box with dovetail bearing and gear rack B40-G (further bearing box variants upon request).



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## optional incident light illumination for Centring Microscopes



**Order No.:**  
**RL4-LED**

LED ring light for objectives  
OP1-Axx with 4 luminous  
diode



**Order No.:**  
**TR7-NS**

1-channel transformer  
for halogen lamps L005/L10  
(max. 6V, 10W) and  
LEDs e.g. RL4-LED (to 35 mA)  
stepless brightness control via  
UHL measuring software or  
adjusting knob



## C-Mount Adapter for assembly on the eye-piece



**Order No.:**

**MOK-CM**

C-Mount Adapter for assembly on existing Centring Microscopes, the graticule is still visible

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## USB digital color camera



**Order No.:**

**VM4-USB**

Digital camera for the c-mount adapter MOK-CM (not included) to store images or view live picture.

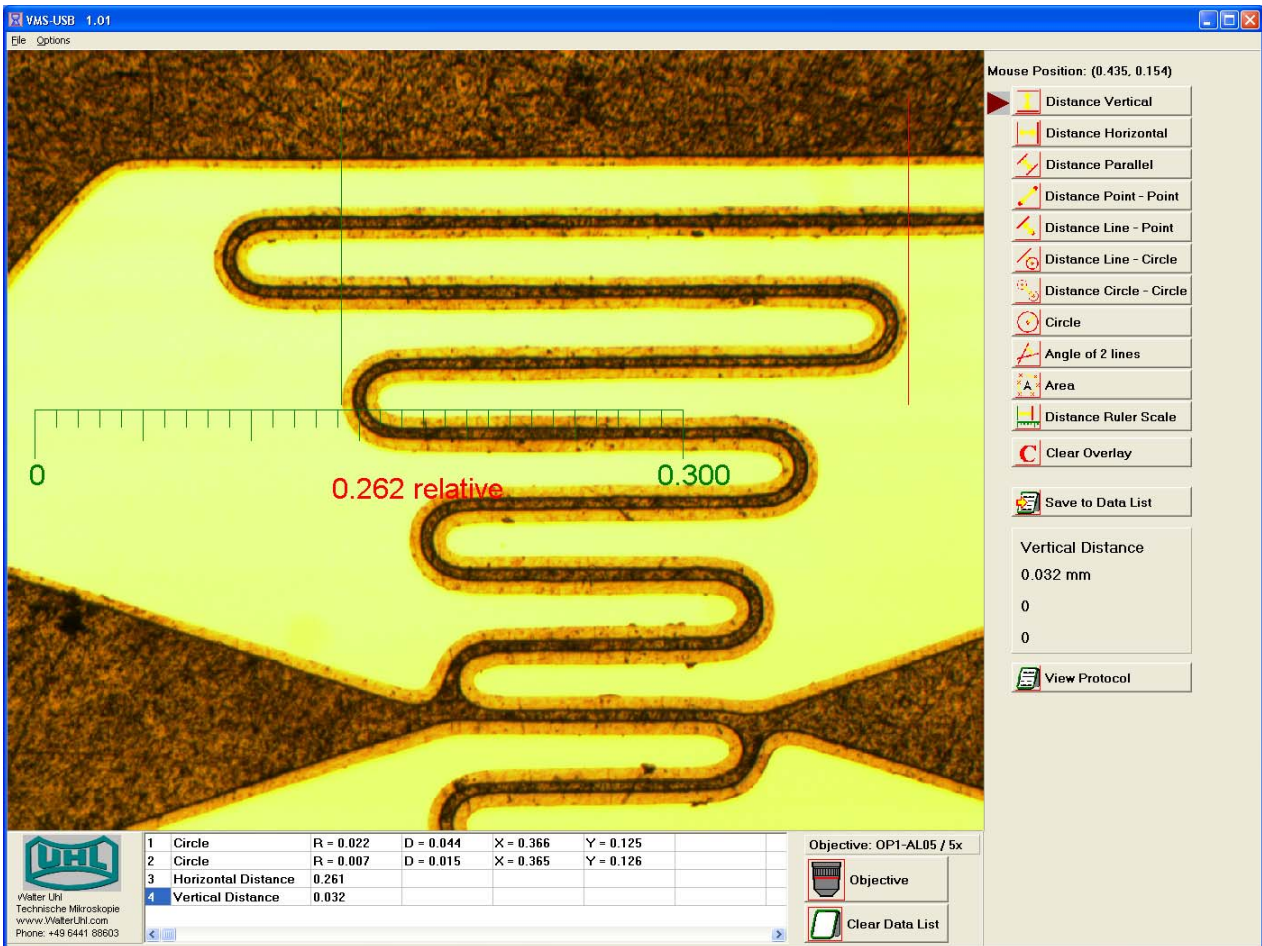
Resolution of the CMOS-sensor:  
1280x1024 pixel max. 18 frames / sec.

USB 2.0 interface

incl. PC-software for the image acquisition



# Manual measurement software VMS-USB



Order No.:

VMS-USB

Easy measurement software for use with the USB digital colour camera VM4-USB.

Various applications from picture documentation up to high accurate measurement are possible.

The geometric elements point / line / circle and distances can be measured and stored in a text protocol. For documentation the video image including the measured value, the measuring lines and a comment can be stored.

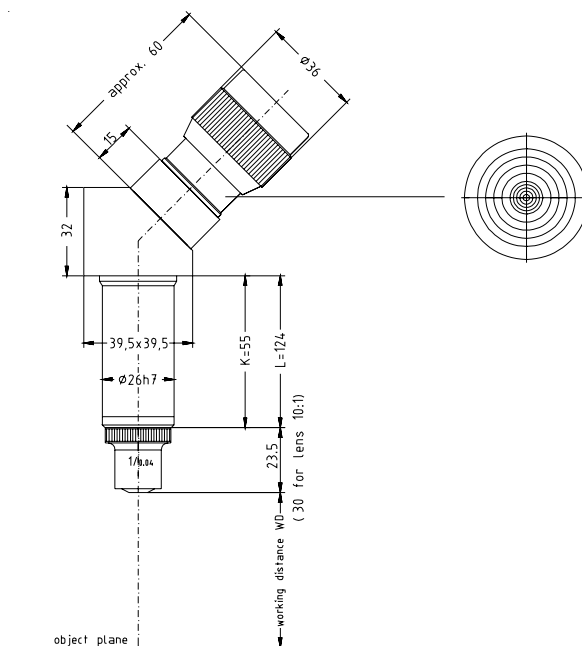
Using user defined screen masks, a simple good/bad evaluation or a special alignment can be done.



## Centring Microscopes with 45° prism and image erection



A graticule of Ø19 with crosshair and concentric circles is built in the eyepiece.



Following designs are available:  
long or short tube.

### Centring Microscopes with short tube

order no.:	lens	working distance WD (mm)	total magnification	object diameter (mm)
ZM1-K1	1 : 1	180	10 x	26
ZM1-K2	2 : 1	80	20 x	11
ZM1-K3	3 : 1	35	35 x	7
ZM1-K4	4 : 1	15	45 x	5,4
ZM1-K5	5 : 1	14	50 x	4
ZM1-K6	6 : 1	14	70 x	3,3
ZM1-K10	10 : 1	7	125 x	1,9

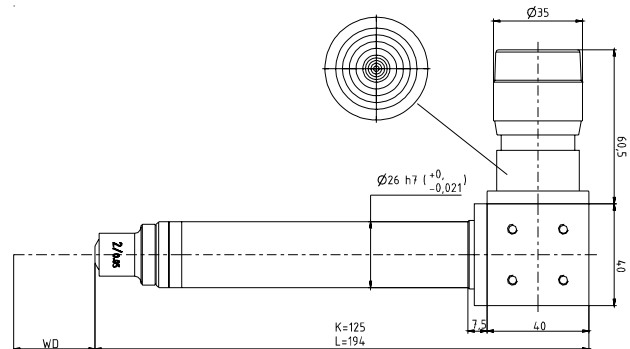
### Centring Microscopes with long tube

order no.:	lens	working distance WD (mm)	total magnification	object diameter (mm)
ZM1-L1	1 : 1	105	20 x	11
ZM1-L2	2 : 1	62	40 x	6
ZM1-L3	3 : 1	27	60 x	4
ZM1-L4	4 : 1	11	75 x	3,1
ZM1-L5	5 : 1	12	100 x	2,5
ZM1-L6	6 : 1	12	120 x	2
ZM1-L10	10 : 1	6	185 x	1,3

## Centring Microscopes with 90° prism for image erection



A graticule of  $\varnothing 19$  with crosshair and concentric circles is built in the eyepiece.



Following designs are available:  
long or short tube.

### Centring Microscopes with short tube and 90° prism for image erection

order no.:	lens	working distance WD (mm)	total magnification	object diameter (mm)
ZM1-K9P1	1 : 1	180	10 x	26
ZM1-K9P2	2 : 1	80	20 x	11
ZM1-K9P3	3 : 1	35	35 x	7
ZM1-K9P4	4 : 1	15	45 x	5,4
ZM1-K9P5	5 : 1	14	50 x	4
ZM1-K9P6	6 : 1	14	70 x	3,3
ZM1-K9P10	10 : 1	7	125 x	1,9

### Centring Microscopes with long tube and 90° prism for image erection

order no.:	lens	working distance WD (mm)	total magnification	object diameter (mm)
ZM1-L9P1	1 : 1	105	10 x	11
ZM1-L9P2	2 : 1	62	20 x	6
ZM1-L9P3	3 : 1	27	35 x	4
ZM1-L9P4	4 : 1	11	45 x	3,1
ZM1-L9P5	5 : 1	12	50 x	2,5
ZM1-L9P6	6 : 1	12	70 x	2
ZM1-L9P10	10 : 1	6	125 x	1,3

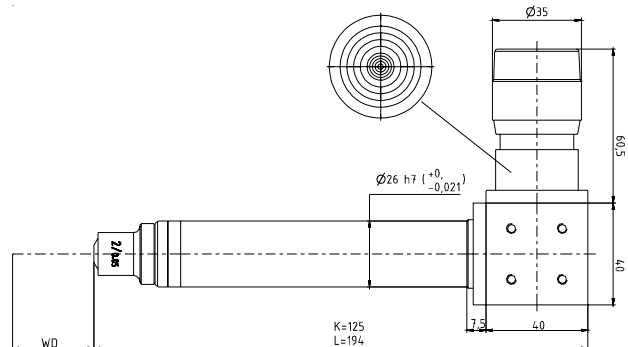




## Centring Microscopes with 90° mirror



The Centring Microscope with a 90° mirror does not erect the image. That means that the image will be shifted horizontally.



Following designs are available:  
long or short tube.

### Centring Microscopes with short tube and 90° mirror

order no.:	lens	working distance WD (mm)	total magnification	object diameter (mm)
ZM1-K9S1	1 : 1	160	10 x	22
ZM1-K9S2	2 : 1	75	20 x	10
ZM1-K9S3	3 : 1	34	35 x	7
ZM1-K9S4	4 : 1	15	45 x	5,4
ZM1-K9S5	5 : 1	14	50 x	4
ZM1-K9S6	6 : 1	14	70 x	3,3
ZM1-K9S10	10 : 1	7	125 x	1,9

### Centring Microscopes with long tube and 90° mirror

order no.:	lens	working distance WD (mm)	total magnification	object diameter (mm)
ZM1-L9S1	1 : 1	100	10 x	10
ZM1-L9S2	2 : 1	62	20 x	6
ZM1-L9S3	3 : 1	27	35 x	4
ZM1-L9S4	4 : 1	11	45 x	3,1
ZM1-L9S5	5 : 1	12	50 x	2,5
ZM1-L9S6	6 : 1	12	70 x	2
ZM1-L9S10	10 : 1	6	125 x	1,3

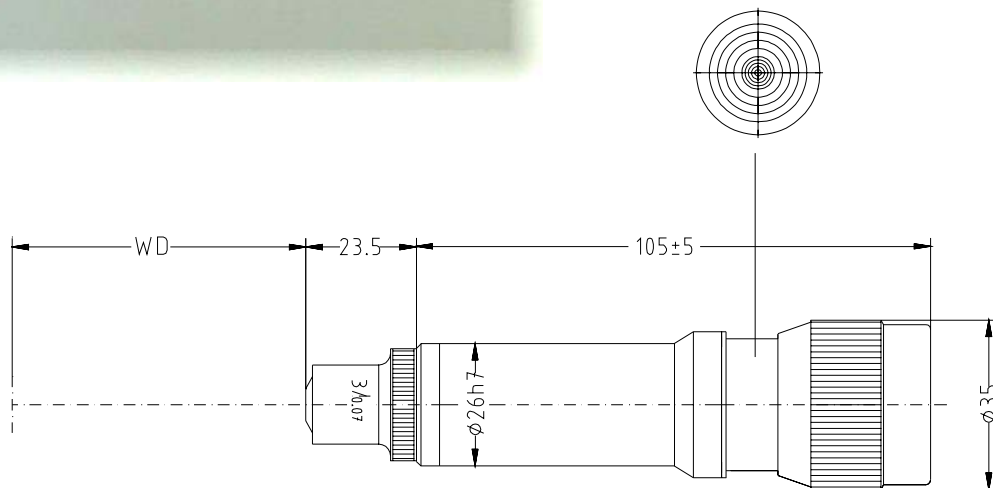
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## Centring Microscopes with straight tube and image erection



Due to the prism for the image erection, the tube gets shorter.



## Centring Microscopes with straight tube and prism for image erection

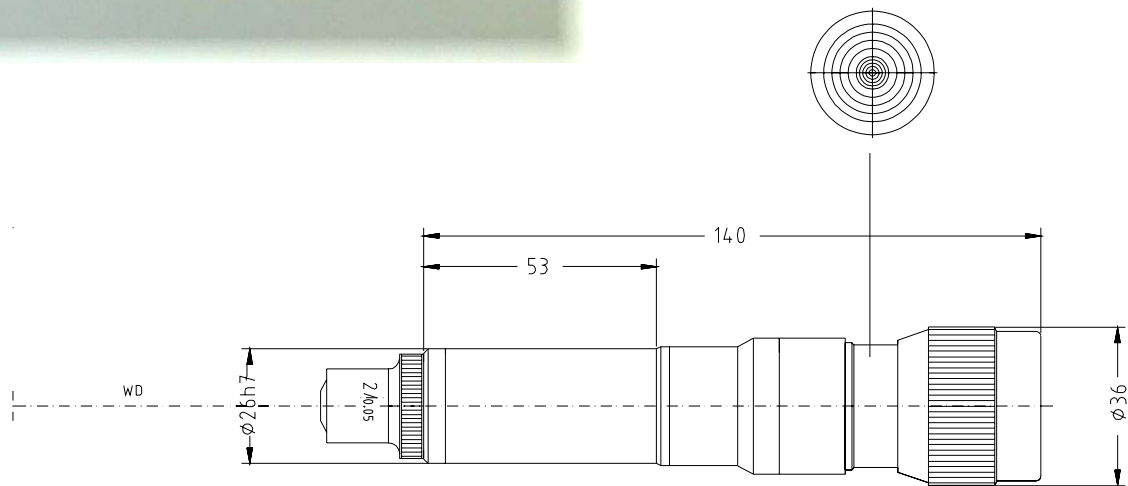
order no.:	lens	working distance WD (mm)	total magnification	object diameter (mm)
ZM1-GP1	1 : 1	350	5 x	60
ZM1-GP2	2 : 1	97	18 x	16
ZM1-GP3	3 : 1	40	28 x	10
ZM1-GP4	4 : 1	18	40 x	7.2
ZM1-GP5	5 : 1	14	58 x	5
ZM1-GP6	6 : 1	14	66 x	4,3
ZM1-GP10	10 : 1	6	123 x	2,3



## Centring Microscopes with straight tube



The Centring Microscope with a straight tube does not erect the image. That means that the image will be rotated by 180°.



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### Centring Microscopes with straight tube

order no.:	lens	working distance WD (mm)	total magnification	object diameter (mm)
ZM1-G1	1 : 1	235	7,5 x	38
ZM1-G2	2 : 1	90	20 x	14
ZM1-G3	3 : 1	38	30 x	9
ZM1-G4	4 : 1	18	45 x	6,5
ZM1-G5	5 : 1	15	60 x	5
ZM1-G6	6 : 1	15	70 x	4
ZM1-G10	10 : 1	7	130 x	2,2

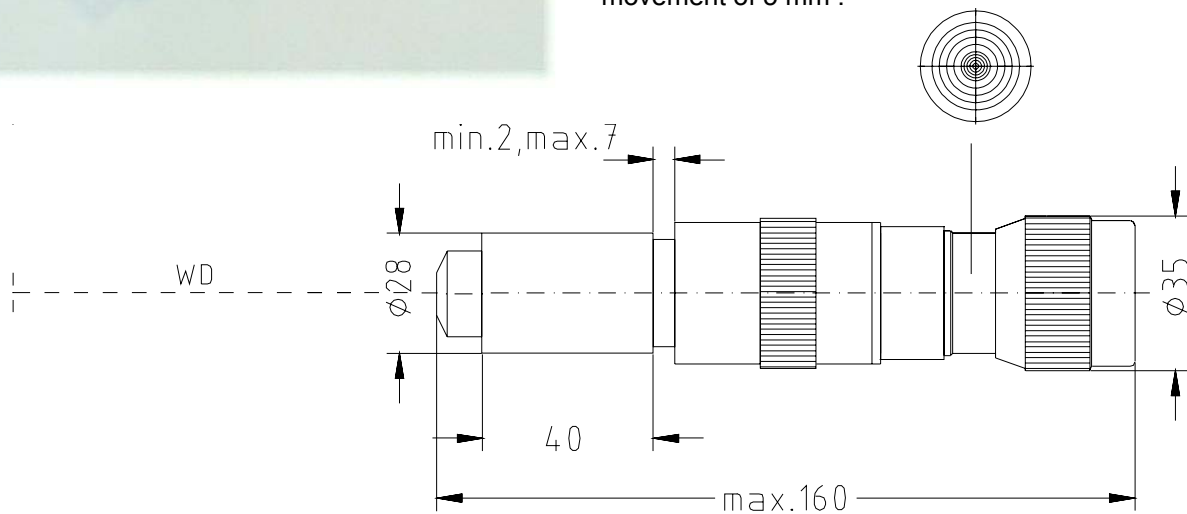


## Centring Microscopes with integrated focus



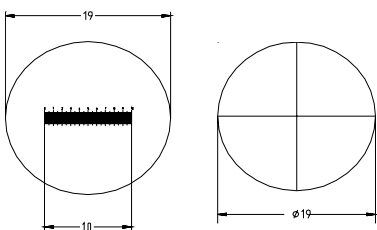
The Centring Microscope with a straight tube does not erect the image. That means that the image will be rotated by 180°.

Inside the tube is a fine thread with a range of movement of 5 mm .



### Centring Microscopes with integrated focus

order no.:	lens	working distance WD (mm)	total magnification	object diameter (mm)
ZM1-F1	1 : 1	270	6 x	45
ZM1-F2	2 : 1	86	20 x	14,6
ZM1-F3	3 : 1	38	30 x	9
ZM1-F4	4 : 1	16	40 x	6,8
ZM1-F5	5 : 1	13	58 x	5
ZM1-F6	6 : 1	13	70 x	4,1
ZM1-F10	10 : 1	6	130 x	2,2



All Centring Microscopes can be equipped with graticules with measurement scale (10 mm in 100 pitches) or a single crosshair (5  $\mu$ m linewidth).



## Machine Centring Microscope MZM



Universal centring microscope to set up tool machines (e.g. boring and milling machines). The edges of a workpiece can be positioned, rotary stages can be centered or machine spindles can be aligned.

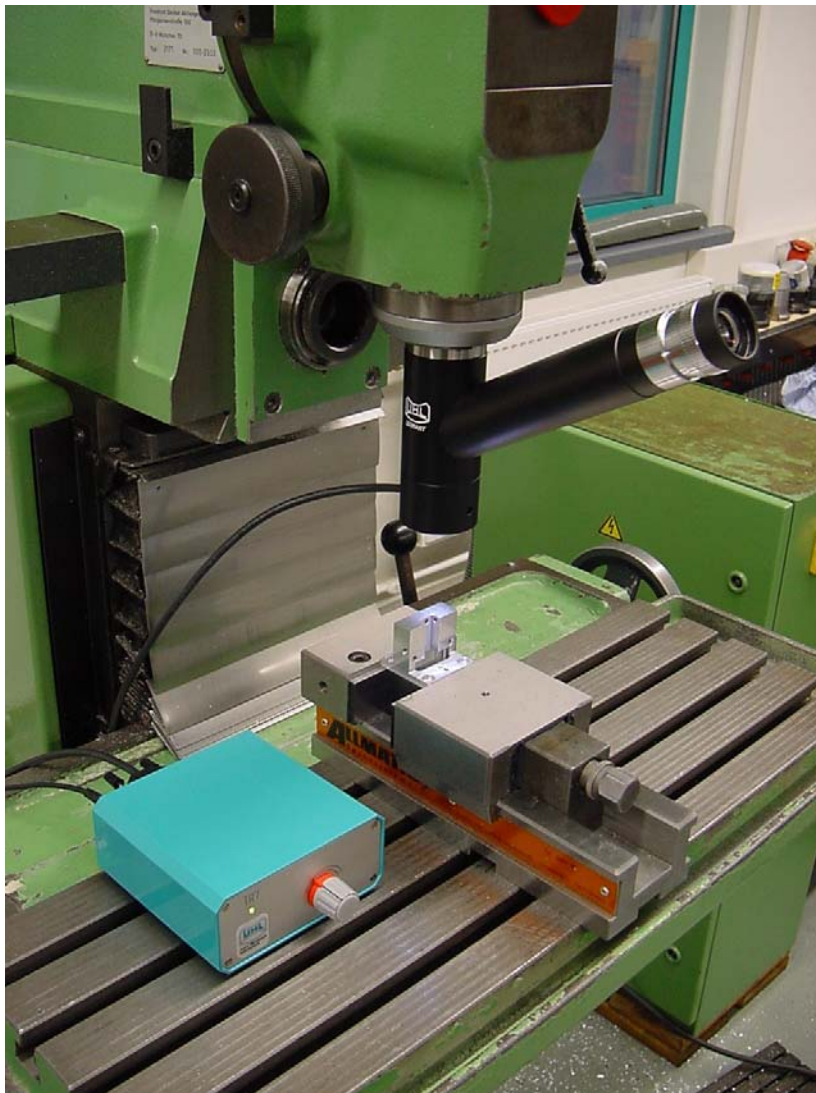
The centring microscope is fixed in the machine instead of the tool. Different fixture tapers and draw bolts are available on request.

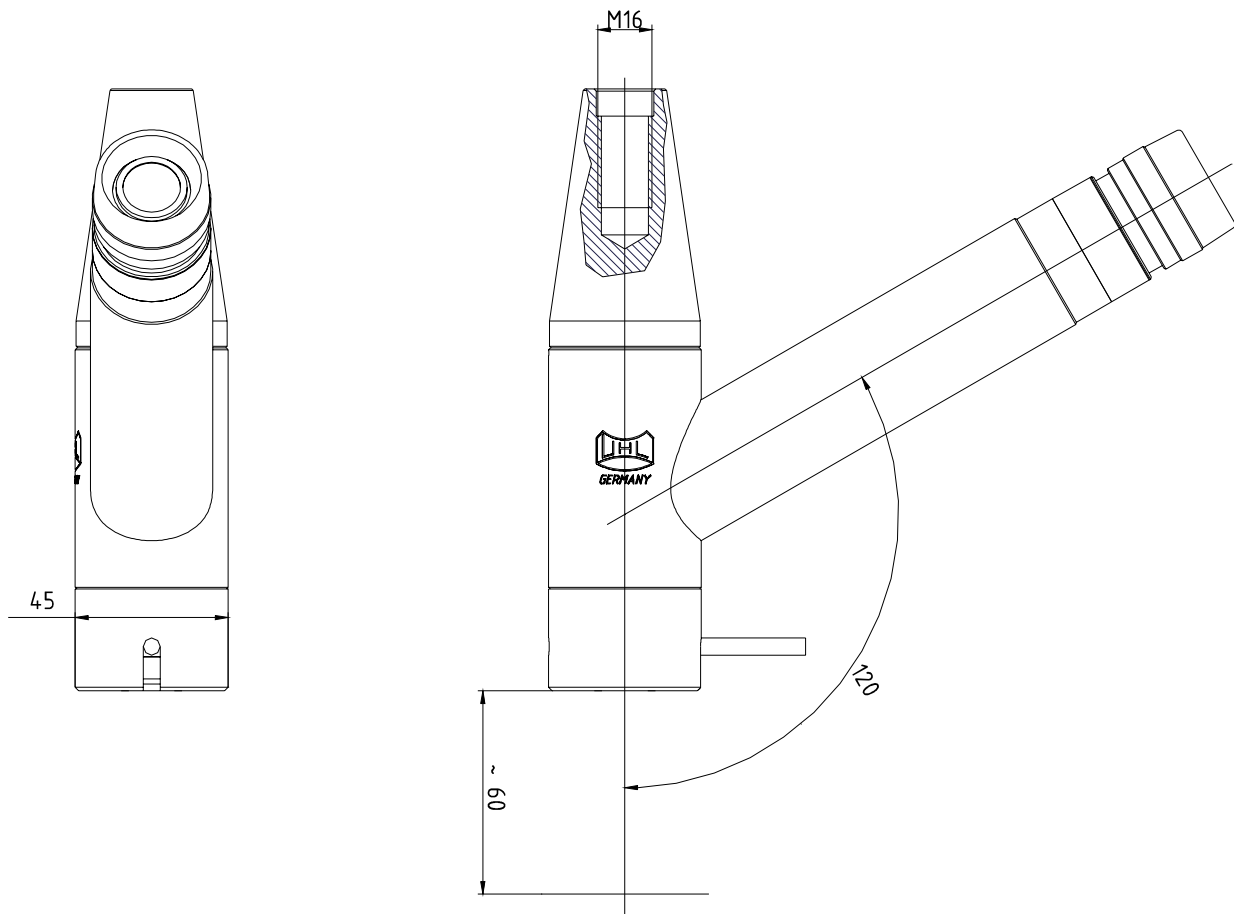
With the 30:1 total magnification of the MZM-30 and the field of view of 5 mm, a centering accuracy of 5 $\mu$ m can be achieved.

The image is true erect and with high contrast.

The eye-piece has a graticule with crosshair and concentric circles.

LEDs are used for the incident light.





**machine centring microscope**

order no.:	total magnification	working distance WD (mm)	object diameter (mm)	fixture
<b>MZM-30</b>	30 x	60	5	short taper SK40 DIN 2080

**Pull studs:**

**MZM.24-1** Pull stud  
DIN 69872 Type A



**MZM.24-2** Pull stud  
ISO 7388



**MZM.24-3** Pull stud with groove  
and internal thread  
M16



**MZM.24-4** Pull stud with  
buttress thread  
S20x2



Walter Uhl  
techn. Mikroskopie  
GmbH & Co.KG  
Loherstraße 7  
D-35614 Aßlar

Tel. (0 64 41) 8 86 03  
Fax (0 64 41) 8 57 18

related:  
**TR7-N** transformer for LED incident light

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Specifications are about to change without notice!

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