MARVISION I OPTICAL MEASURING INSTRUMENTS

MICROSCOPES AND INDUSTRIAL SOLUTIONS

Mahr

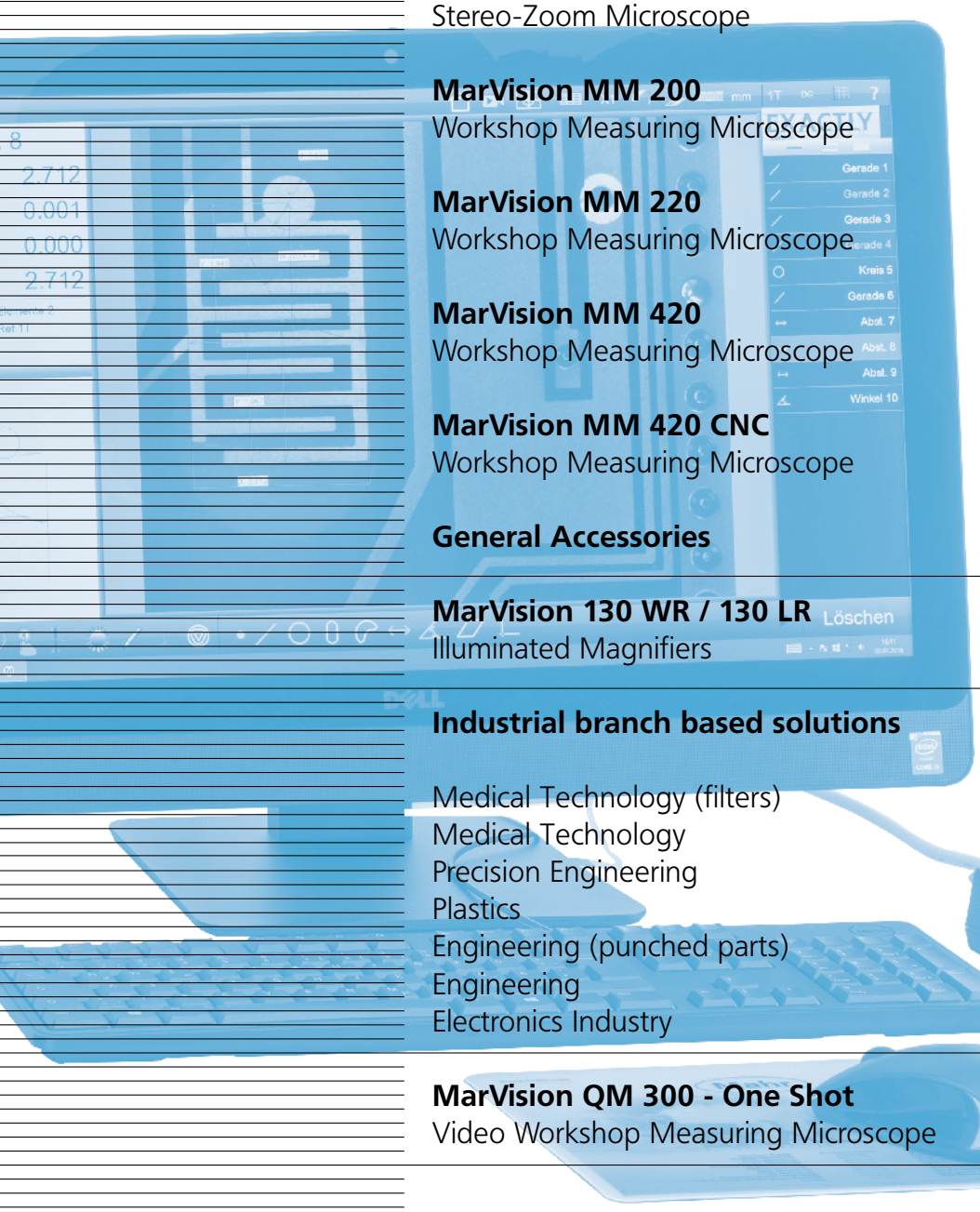
EXACTLY

THE SECOND DIMENSION IN METROLOGY.
OPTICAL METROLOGY FROM MAHR

The latest Information on MARVISION optical measuring instruments can be found on our website:
www.mahr.de/en/Home, WebCode 20543

► | Maximum precision in manufacturing and quality control are the keys to your company's success. With MarVision optical measuring instruments, Mahr offers you a quick and reliable solution to many different 2D measurement tasks – from cutting tools and precision products for the manufacturing industry and medical technology to miniaturized electronic components. The extremely precise measuring instruments as well as operating and evaluation units are the foundations to meeting your high demands. | ◄

► | MarVision. Optical Measuring Instruments

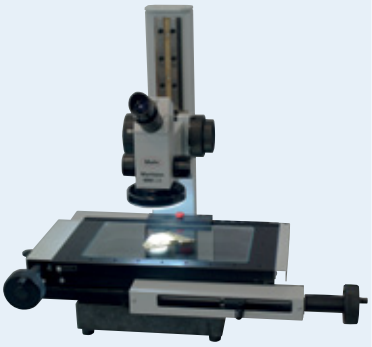
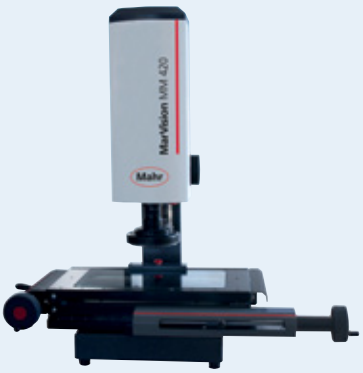
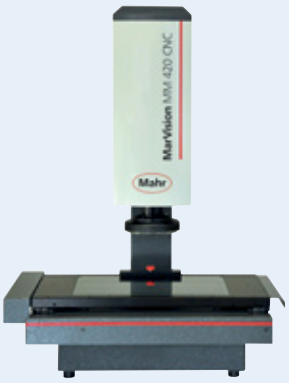


MarVision. Optical Measuring Instruments

OVERVIEW

		SM 150 / SM 151	SM 160 / SM 161	MM 200
				
Page		6	6	10
Features		• Microscope to examine surfaces and contours of work pieces • Stereoscopic image is obtained with the binocular lens (particularly suitable for surfaces that are damaged) • SM 151 additionally with trinocular lens. Optional CamSet for storing images	• Microscope to examine surfaces and contours of work pieces • With a support arm • Stereoscopic image is obtained with the binocular lens • Ideal for large work pieces • SM 161 additionally with trinocular lens. Optional CamSet for storing images	• Measuring microscope for measuring distances in X and Y-Axis • Includes transmitted light and ring light • Data output on the digital mircometer head • Monocular with cross line reticules • An ocular head (angular measuring device) is also available
Measuring range	mm			50 x 50
Lenses / Magnification		7 – 45x	7 – 45x	8x – 40x
Illumination		Incident & transmitted light, LED ring light optional	LED ring light optional	Incident & transmitted light
Optical inspection		●	●	●
Save image		●*	●**	
Measure distances (X, Y)				●
Protocol printout				
Geometric elements (points, lines, circles, distances, intersection)				
Data transmission	RS232C USB			●
Tolerance input	TOL			
Automatic edge detection				
Order no.	220 V	**4245001 / 4245002**	**4245003 / 4245004**	**4246000 / 4246001**
Order no.	110 V	**4245061 / 4245062**	**4245063 / 4245064**	**4246005 / 4246006**

* only for SM 151
** only for SM 161

MM 220	MM 420	MM 420 CNC	QM 300
			
12	17	20	36
• Includes transmitted light and ring light • Operating and Display Unit QC 200: evaluation of geometric elements (circles, distances, intersection, etc.), transfer data to a PC, printout results / reports, create measuring programs with the Teach-In mode • Optional: telecentric transmitted light for more focused measurement of rotationally symmetric parts • Optional: An ocular head (angular measuring device)	• With M3-Software and Touchscreen PC: measuring geometric elements (circles, distances, intersection, etc.), transfer data to a PC, printout results / reports, create measuring programs with the Teach-In mode • Automatic Edge Detection • Measuring Z-Axis is available, optional • Optional: telecentric transmitted light for more focused measurement of rotationally symmetric parts • Optional: reading and creating DXF files • Optional: Coaxial illumination	• With M3-Software and Touchscreen PC: measuring geometric elements (circles, distances, intersection, etc.), transfer data to a PC, printout results / reports, create measuring programs with the Teach-In mode • Automatic Edge Detection • Measuring Z-Axis • Optional: telecentric transmitted light for more focused measurement of rotationally symmetric parts • Optional: Coaxial illumination• Optional: reading and creating DXF files	• Video Measuring Micro-scope • Rapid measurement from micro and / or small components • High resolution camera • LED Incident & transmitted light • With M3-Software and Touchscreen PC • Optional: Adjustable LED for 96 x 72 mm
100 x 100 to 250 x 170	100 x 100 to 400 x 250	200 x 100 x 200 to 250 x 170 x 200	32 x 24 / 57 x 42 / 96 x 72
8x – 40x	0.7x – 4.5x / motorized 6.5:1 35x-225x on the screen	0.7x – 4.5x / motorized 6.5:1 35x-225x on the screen	
LED ring light / transmitted light	LED ring light / transmitted light	LED ring light / transmitted light	Incident & transmitted light
●	●	●	●
	●	●	●
●	●	●	●
●	●	●	●
●	●	●	
●	●	●	●
●	●	●	●
	●	●	●
See page 13	**See page 18**	**See page 20**	**See page 38**

MarVision. Stereo Zoom Microscope SM 150 / SM 160

PRODUCT ADVANTAGES

Interchangeable eye pieces
(for flexible magnification)

Adjustable interocular (lens) with distance and diopter compensation

Mount for LED ring light

Screw thread for mounting ancilliary lens

LED transmitted light

Sturdy base

Continously variable zoom lens 7 – 45x magnification

Fine focus adjustment

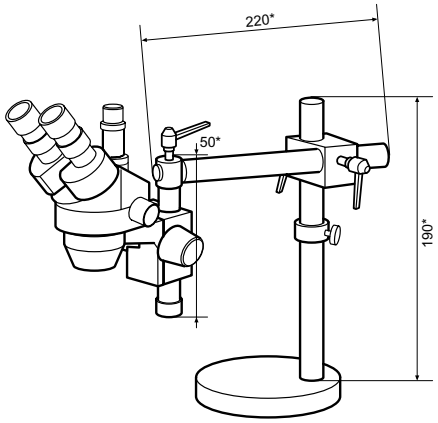
Continous adjustment
of transmitted and incident light

Optional Trinocular is also available

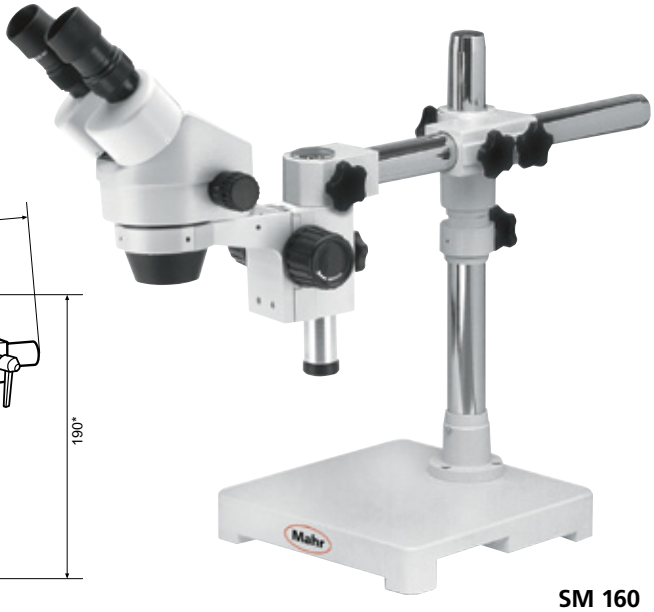
SM 161

Stereo-Zoom-Mikroskope MarVision SM 150 / SM 160

SM 150



* Adjustment range



SM 160

Application

- For the inspection of workpieces either on the production line and in the quality assurance

Features

- High quality optics for light intensive and sharp three dimensional images
- Continuously variable magnification due to the adjustable zoom lenses
- Focusing with an ergonomic hand wheel, mounted either side, ideal for either a left or right handed operator
- Prism head tilted to 45° and rotatable through 360°, adjustable pupillary distance (54 - 76 mm) with the dioptric adjustment
- Integrated incident and transmitted illumination, continuously variable (SM 150 / SM 151)
- Optional mounting of a digital camera is a possible (SM 151 / SM 161)

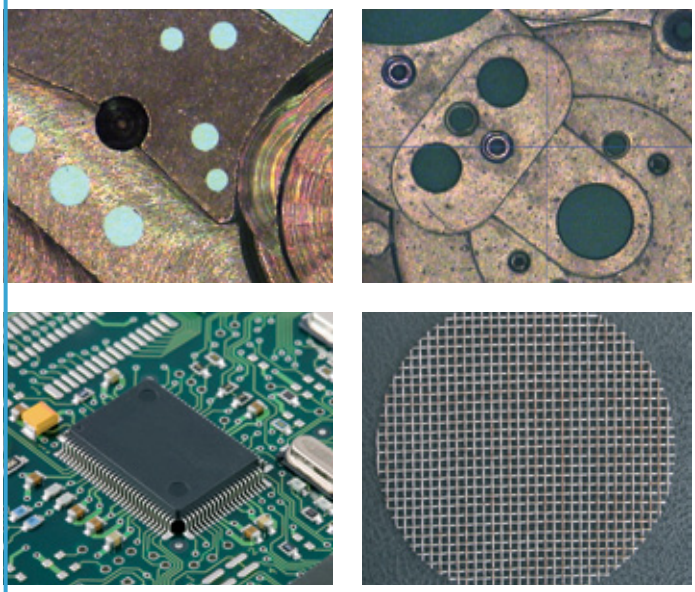
- Supplied with: Microscope, ocular 10x, dust cover, glass plate and white / black plate (SM 150 / SM 151), operating instructions

Technical Data

		SM 150	SM 151	SM 160	SM 161
Magnification		variable 7x - 45x (0.7 / 0.8 / 1 / 1.5 / 2 / 3 / 4 / 5)			
Field of view dia.	mm	28 - 5			
Observation tube angle		45°			
Optical tube		Binocular	Trinocular	Binocular	Trinocular
Camera connector			●		●
Working distance	mm	75			
Max. height of test piece	mm	110		–	–
Illumination		12 V / 15 W Incident and transmitted light, variable	12 V / 15 W Incident and transmitted light, variable	–	–
Base dimensions	mm	260 x 200	260 x 200	230 x 230	230 x 230
Order no.	220 V	**4245001**	**4245002**	**4245003**	**4245004**
Order no.	110 V	**4245061**	**4245062**	**4245063**	**4245064**

Stereo-Zoom Microscopes MarVision SM 150 / SM 160

MarVision SM 151 / SM 161 with digital camera

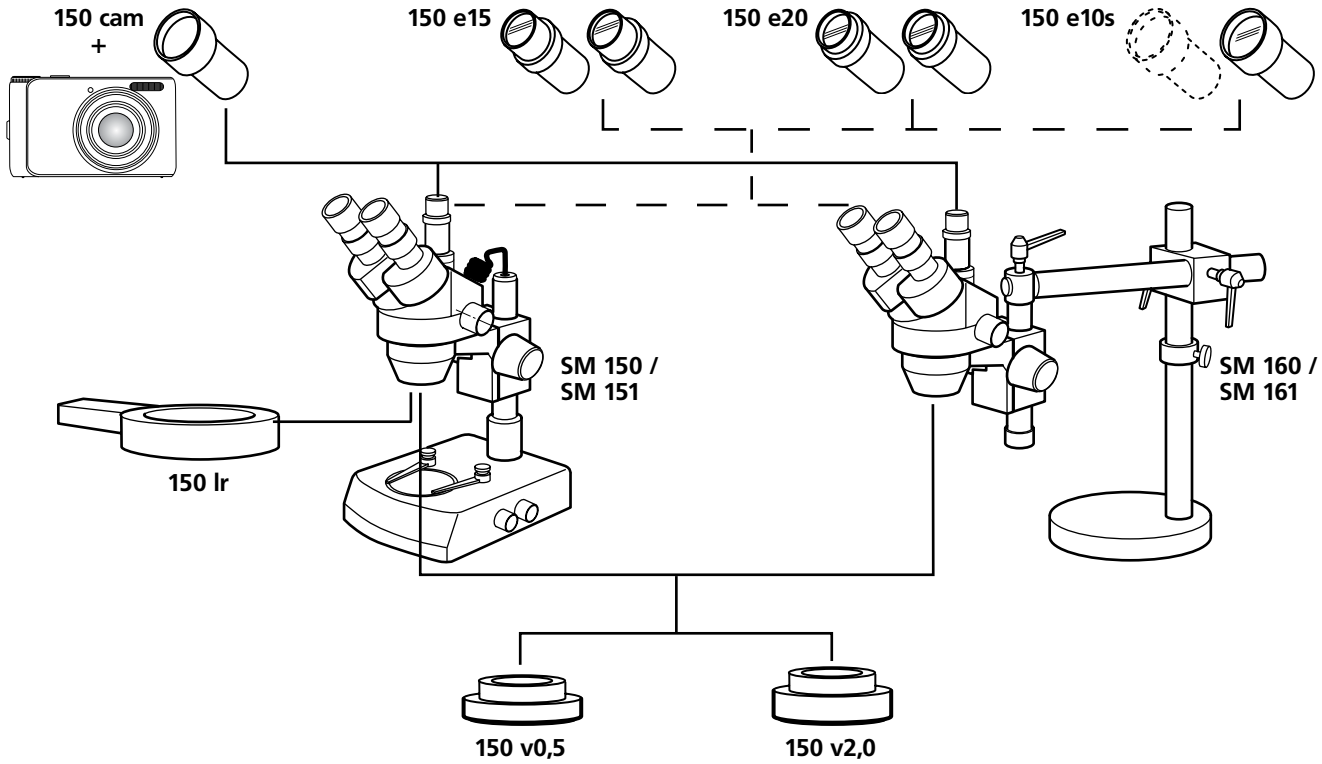


Features

- High quality digital camera with ca. 12 Megapixel and 4x optical zoom. Ideal to document workpieces (e.g. inspection of incoming goods, first sample examination, etc.)
- Supplied with: Digital camera (type of camera is dependent on the current model range), retaining ring and adaptor

Ill.: Type of camera is dependent on current the model range, retaining ring and adaptor to connect the camera objctive to the microscope for high-quality microscopic photographs for the documentation of workpieces. Similar to illustration

Accessories for MarVision SM 151 / SM 161



Illumination

		Order no.
LED ring light, adjustable D= 75 mm, incl. mains adaptor	**150 lr**	**4245030**
Cold light source luminance / brightness 8 Mlx, Output 30 W, Power input 50VA / 240V	**200 fs***	**4245043**
Flexible fiber optic light guide 2-Arm, L=500 mm, D=4 mm	**200 fl***	**4245042**

Eyepieces / Ocular

	Reticule (plate)	Quantity		Order no.
Magnification 15x		2	**150 e15**	**4245010**
Magnification 20x		2	**150 e20**	**4245011**
Magnification 10x	●	1	**150 e10s**	**4245012**

Ancilliary Lenses

		Order no.
Magnification 0.5x	**150 v0,5**	**4245020**
Magnification 2.0x	**150 v2,0**	**4245021**

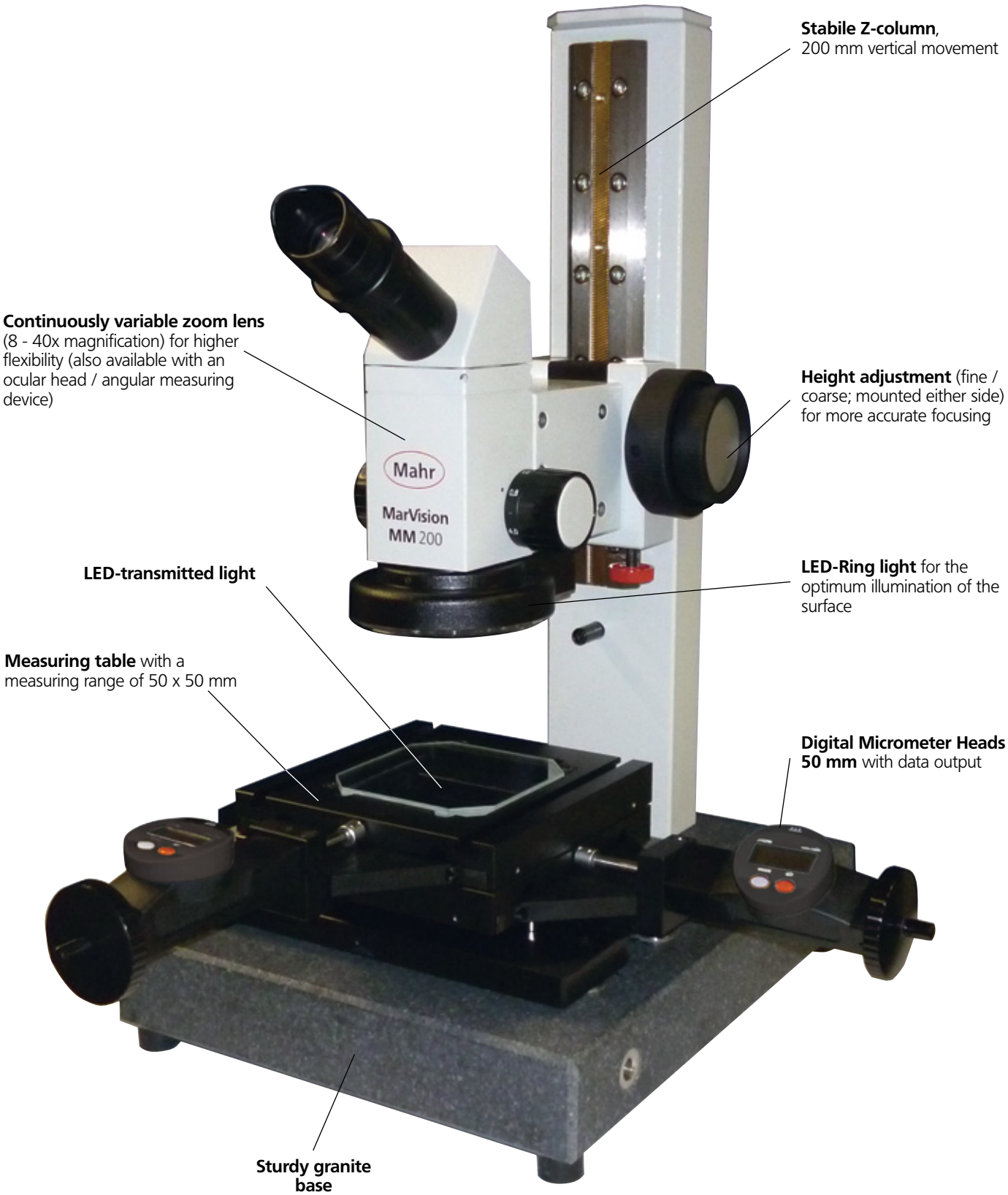
Camera

		Order no.
CamSet incl. digital camera and adaptor	**150 cam****	**4245026**

* *See page 27* ** *Only for SM 151 and SM 161*

MarVision. Optical Workshop Measuring Microscope MM 200

PRODUCT ADVANTAGES



Stabile Z-column, 200 mm vertical movement

Continuously variable zoom lens (8 - 40x magnification) for higher flexibility (also available with an ocular head / angular measuring device)

Height adjustment (fine / coarse; mounted either side) for more accurate focusing

LED-transmitted light

LED-Ring light for the optimum illumination of the surface

Measuring table with a measuring range of 50 x 50 mm

Digital Micrometer Heads 50 mm with data output

Sturdy granite base

Workshop Measuring Microscope MarVision MM 200

Applications

- For measuring distances and angles (with the ocular head 200 w) for example: punched and flexible parts, plastic components as well as electronic circuit boards

Features

Measuring Microscope

- High quality optics for light intensive and sharp three dimensional images
- Zoom lenses with continuous variable magnification and/or fixed lenses
- Focusing with an ergonomic hand wheel, mounted either side, ideal for either a left or right handed operator
- Prism head tilted to 45°; with dioptric adjustment
- LED ring light, dimmable
- LED transmitted light, dimmable
- Sturdy granite base
- Stable XY table precision mounted

- Supplied with: Microscope, ocular 10x with cross line reticules, 2 Digital Micrometer Heads - 50 mm, illumination box, with test certificate, operating instructions

Digital Micrometer Head

Functions:
Zero setting, PRESET (enter a numerical value), mm/inch, Absolute/Relative measurement

- High contrast LCD with 6 mm high digits
- Bezel can be rotated through 270°
- Data output via RS232C or USB

Note: Also available without Micrometer Heads

Technical Data

Measuring range X / Y	mm	50 / 50	
Measuring table dimensions	mm	150 x 150	
Max. table load	kg	15	
Measuring system:		Micrometer Head	
- Readings	mm	0.001	
- Error limit	µm	8	
- Repeatability	µm	2	
Magnification		Fixed lenses 32x	Variable zoom 8 - 40x (0.8 / 1 / 1.25 / 1.6 / 2 / 2.5 / 3.2 / 4)
Field of view	mm	6	23 - 4
Max. height of test piece	mm	190	
Max. height of test piece 0.5x	mm	115	
Illumination		LED Incident and transmitted light, individually adjustable	
Interfaces		USB / Opto RS232	
Dimensions* H x W x D	mm	535 x 410 x 470	
Order no.	220 V	**4246000**	**4246001**
Order no.	110 V	**4246005**	**4246006**

* *Measuring table is centered*

MarVision. Optical Workshop Measuring Microscope MM 220

PRODUCT ADVANTAGES

Variable Zoom lens (8 - 40x magnification) for higher flexibility (also available with an ocular head / angular measuring device)

LED Ring light for the optimum illumination of the surfaces

Stabile Z-column, 200 mm vertical movement (optional: can be extended by 200 mm)

Height adjustment (fine / coarse; mounted either side) for more accurate focusing

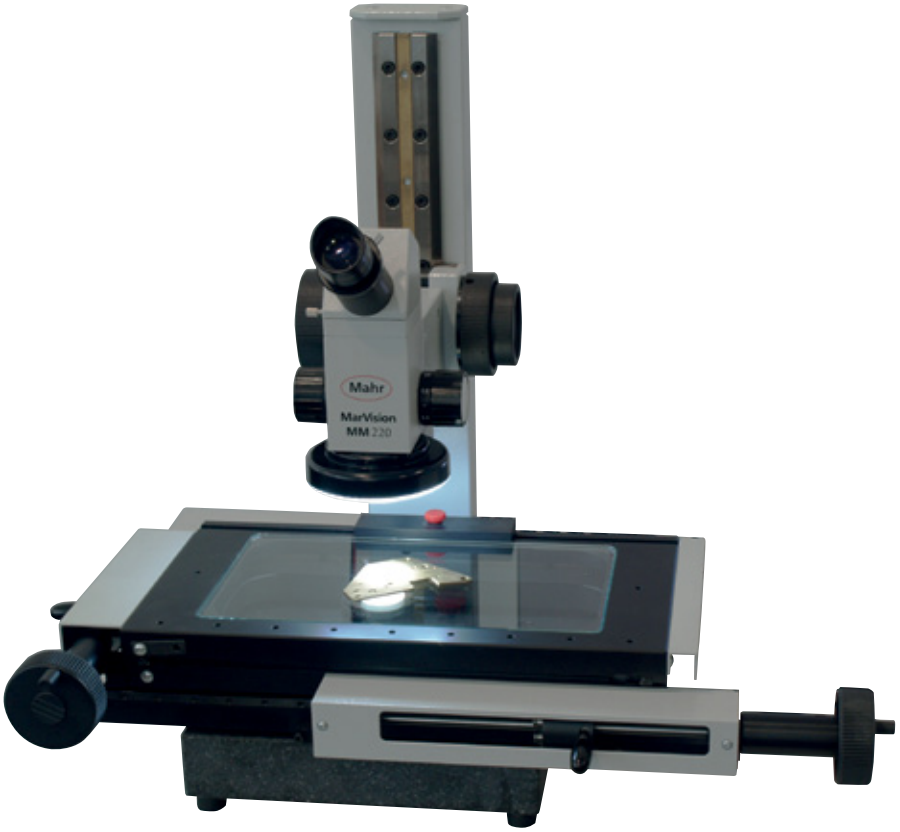
LED transmitted light

Sturdy granite base

Quick setting for fast bridging over large distances

Fine adjustment for more accurate positioning

Workshop Measuring Microscope MarVision MM 220



Applications

- For measuring distances (QC 100); bore holes and angles and determination of geometric elements (points, lines, circles, distances, intersections, etc.) (QC 200) for example: punched and flexible parts, plastic components as well as electronic circuit boards

Operating and display unit QC 200

Technical Data

Measuring range X / Y	mm	100 / 100	200 / 100	250 / 170
Max. table load	kg	20		
Measuring system:		built-in incremental measuring scale		
- Resolution	mm	0,001		
- E_1 / E_2 X / Y in µm		$E_1 = 1.9 + (L/100)$ $E_2 = 2.9 + (L/100)$ L in mm		
Magnification		Variable zoom 8-40x, rastered (0.8 / 1 / 1.25 / 1.6 / 2 / 2.5 / 3.2 / 4		
Field of view	mm	23 - 4		
Max. height of test piece	mm	185		
Max. height of test piece 0.5x	mm	110		
200 mm Extension in Z	mm	385 / 310		
Illumination		LED Incident and transmitted light, individually adjustable		
Interfaces		RS232 / USB		
Dimensions* H x W x D	mm	550 x 480 x 430	550 x 650 x 530	550 x 700 x 600
Order no. with QC 100	220 V /110 V	**4246100 / 4246105**	**4246101 / 4246106**	**– / –**
Order no. with QC 200	220 V /110 V	**4246200 / 4246205**	**4246201 / 4246206**	**4246202 / 4246207**

* *Measuring table is centered*

Workshop Measuring Microscope MarVision MM 220

Features

Measuring Microscope
- High quality optics for light intensive and sharp three dimensional images
- Zoom lenses with continuous variable magnification
- Focusing with an ergonomic hand wheel, can be mounted either side, ideal for either a left or right handed operator
- Prism head tilted to 45° with dioptric adjustment
- LED ring light, dimmable
- LED transmitted light, dimmable
- Sturdy granite base
- Stable XY table precision mounted
- Quick and fine adjustment of all axes
- Excellent accuracy and reliability due to the optical incremental measuring system

- Supplied with: Microscope, standard stop bar, operating and display unit QC 100 or QC 200, operating instructions

Operating and Display Unit QC 100
- Large, high contrast backlit graphic LCD display
- Displays for X and Y-Axis

Functions QC 100:
- Zero setting the axis
- PRESET (enter a numerical value)
- mm/inch
- Absolute/Relative measurement
- RS232 interface for processing measured data

Operating and Display Unit QC 200
- Large, high contrast backlit graphic LCD display
- Measurement and evaluation functions for points, lines, circles, angles, distances and intersecting straight lines
- "Magic" function is a time saving feature that automatically recognizes the geometric pattern of data points
- Simply create a measuring program with the Teach-In mode
- Easy program sequence due to on screen graphic guidance
- Operator prompts are available in several languages
- RS232 interface for processing measured data

Operating and display unit QC 200

Accessories

Optional Optics

		Order no.
Ocular head, with angular measuring device, rotatable through 360°. Use in exchange to the standard ocular	**200 w**	**4246010**
Ocular head, with angular measuring device and pick-up	**200 wk**	**4246018**
Ocular circular plate 2x25 mm with reticle	**200 ok**	**4246019**

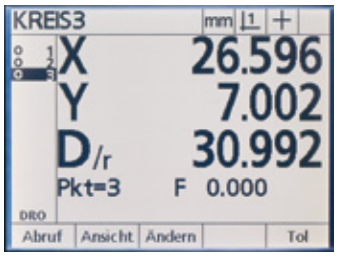
Option Illumination

		Order no.
Telecentric LED transmitted light for measuring rotationally symmetric parts	**200 ld**	**4247050**
Iris diaphragm		**4246250**

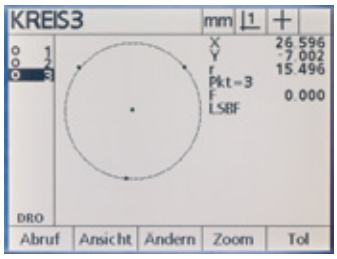
Optional Z-Axis

		Order no.
Z-Axis extension, extend the Z-Axis up to 200 mm	**420 zv**	**4246051**

Operating and Display Unit QC 200



Digital display



Graphic mode

Measurement and Evaluation Functions

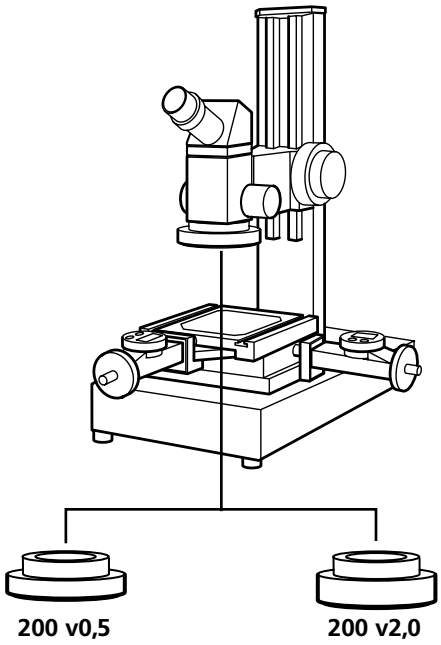
Point		e.g. intersecting straight lines
Line		e.g. line of best fit, centerline
Circle		e.g. index circle, pitch circle
Distance		e.g. distance between point-point, point-line
Angle		Taken from 2 lines
Alignment of axis		Alignment of the coordinate system on the test piece
Magic		Automatically recognizes the geometric pattern of measuring points

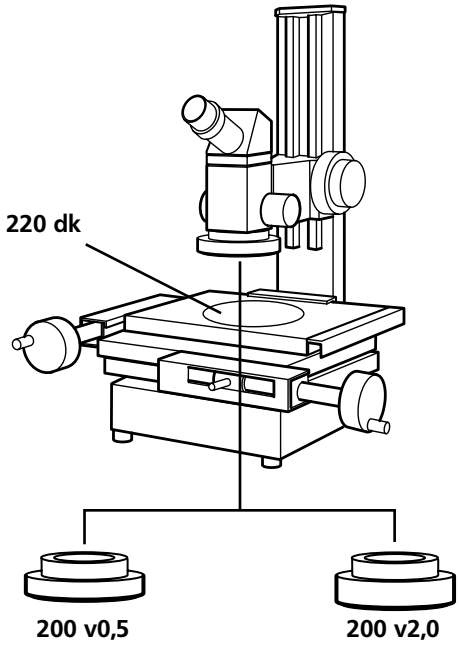
Accessories for Operating and Display Units QC 100 / QC 200 / MM 200

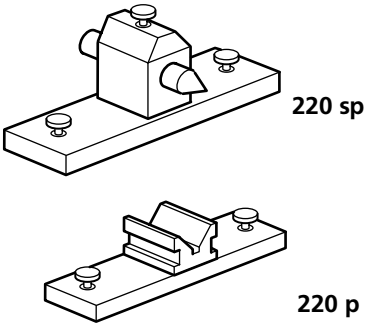
		Order no.
Foot switch for capturing measuring points	**200 qcs**	**4246111**
Data cable RS232 for the Micrometer Heads (MM 200)	**800 EWr**	**4305122**
Data cable USB for the Micrometer Heads (MM 200)	**800 EWu**	**4305121**

Workshop Measuring Microscope MarVision MM 200 / MM 220

Accessories für MarVision MM 200 / MM 220







Optics / Ancilliary Lenses MM 200 / MM 220

		Order no.
Ocular head, with angular measuring device, rotatable through 360°. Exchange to the standard ocular	**200 w**	**4246010**
Magnification 0.5x	**200 v0,5**	**4246020**
Magnification 2.0x	**200 v2,0**	**4246021**

Illumination MM 200 / MM 220

		Order no.
Cold light source luminance / brightness 8 Mlx, Output 30 W, Power input 50VA / 240V	**200 fs**	**4245043**
Flexible fiber optic light guide 2-Arm, L=500 mm, D=4 mm	**200 fl**	**4245042**

For Measuring Tables MM 220

		Order no.
Pair of V-blocks for diameters 5-55 mm to be mounted on the measuring table 200 x 100 mm	**220 p**	**4246801**
Pair of center supports height 40 mm to be mounted on the measuring table 200x100 mm	**220 sp**	**4246802**
Rotary glass plates D=100 mm for measuring table 200 x 100 mm	**220 dk**	**4246920**
Rotary glass plates D=100 mm for measuring table 250 x 170 mm	**220 dg**	**4246921**
Stop bar 90° with object clamps	**220 as90**	**4246821**

Dust Covers MM 200 / MM 220

	Order no.
Dust cover for MM 200	**4246070**
Dust cover for measuring ranges 100 / 100 and 200 / 100	**4246071**
Dust cover for measuring range 250 / 170	**4246072**

MarVision. Workshop Video Measuring Microscope MM 420

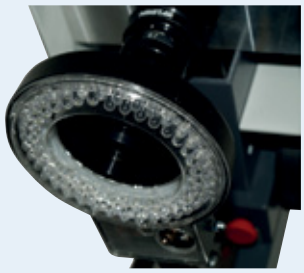
PRODUCT ADVANTAGES

Six step **Navitar Zoom lens-Objektiv** with 0.7-4.5x magnification

Motorized Navitar Zoom lens

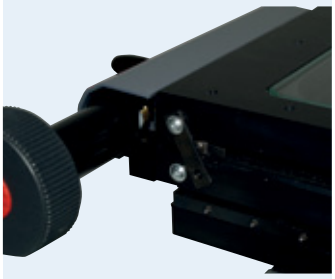
Stabile Z-column, 150 mm vertical movement (optional : can be extended by 200 mm, also available with a measuring system)

Height adjustment (fine / coarse; on both sides) for precise focusing



Quadrant **LED ring light** (optional: coaxial incident light for optimum illumination on plain-colored surfaces)

LED transmitted light (optional: telecentric transmitted light for more focused measurement of rotationally symmetric parts)



Clamping

Quick setting for fast bridging over large distances

Sturdy granite base

Fine adjustment for more accurate positioning

Workshop Measuring Microscope MarVision MM 420 with M3-Software and a Touchscreen-PC

MM 420

M3-Touchscreen-PC

Zoom stages	Depiction in display	Field on image*
0.7x	35x	9.4 x 7.0 mm²
1.0x	50x	6.5 x 4.9 mm²
2.0x	94x	3.2 x 2.4 mm²
3.0x	142x	2.1 x 1.6 mm²
4.0x	195x	1.6 x 1.2 mm²
4.5x	225x	1.3 x 0.9 mm²

* Approximate values (mm x mm = mm²)

Technical Data

Measuring range X/Y#	mm	100 / 100	200 / 100	250 / 170	400 / 250
Measuring table dimensions	mm	270 x 210	370 x 210	420 x 280	600 x 480
Max. table load	kg	20			
Measuring system:		built-in incremental measuring scale			
- Resolution	mm	0.001			
- MPE E_1 X / Y in µm (L in mm)		1.9 +(L/100)			3.9 +(L/100)
- MPE E_2 XY in µm (L in mm)		2.9 +(L/100)			4.9 +(L/100)
Field of view		see table on page 25			
Max. height of test piece	mm	115			290
Max. height of test piece / 0.5x	mm	20			200
Max. height of test piece with coax.	mm	85			260
200 mm Extension Z	mm	315 / 220			–
Illumination		LED Incident and transmitted light, variable			
Dimensions* H x w x D	mm	700 x 480 x 430	700 x 650 x 550	700 x 700 x 600	800 x 1000 x 900
	Magnification* **				
Order no. mit M3 (220 V)	Zoom 35-225x	**4247600**	**4247601**	**4247602**	**4247603**
Order no. mit M3 (100 V)	Zoom 35-225x	**4247605**	**4247606**	**4247607**	**4247608**

** Measuring table is centered* *** on screen* *# Specialized table sizes are available upon request, up to 1000 x 250 mm travel path*

Applications

- For measuring and / or the determination of geometric elements (points, lines, circles, distances, intersection etc.) via automatic edge detection, for example: punched and flexible parts, plastic components as well as electronic circuit boards.

See Industrial branch based solutions, from page 32 ff

Features

Measuring Microscope

- Integrated 1.3 Megapixel color camera
- Zoom lens is both mechanical and motorized
- LED ring light: 1 ring and 4 segments, each can be individually switched on/off or dimmed
- LED transmitted light: dimmable
- Sturdy granite base
- Stable XY table precision mounted
- Quick and fine adjustment of the axis
- Excellent accuracy and reliability due to the optical incremental measuring system
- Laser pointer for positioning asisstance
- Supplied with: Measuring Microscope, Stop bar standard, M3-Software with Touchscreen PC
- Controller box, keyboard and mouse
- Operating instructions in a PDF file
- Test certificate

Operating and Display Unit M3-Software with Touchscreen PC

- 23" Touchscreen with keyboard a mouse
- Based on Windows; therefore additional software can be installed
- Operated via the Multi-Touch on the monitor or via mouse/ keyboard
- Large video image
- Target / actual evaluation with tolerance data
- Protocol print out with company logo
- Represented graphically with dimensions
- Automatic edge detection even with low constrast parts
- Statistics functions
- Stiching (combining several images)
- Options:
  - Coaxial light
  - Telecentric transmitted light
  - Automatic comparison of contours
  - Integration of DXF-files (creation and reading)
  - Training
  - Calibration
  - Maintenance

Optional Optics

		Order no.
TV-Adaptor 0.67x for zoom lenses additional cost to the standard TV-Adaptor (1.0)	**320 tv0,67**	**4247027**
Motorized Navitar Zoom Lens 6.5:1, additional cost to the Zoom lens (0.7x - 4.5x)	**320 zmo**	**4247028**
Motorized Navitar Zoom Lens 6.5:1, additional cost to the Zoom lens (0.7x - 4.5x) with coaxial Illumination	**320 zmk**	**4247029**

Optional Illumination

		Order no.
Telecentric LED transmitted light illumination for measuring rotationally symmetric parts	**200 ld**	**4247050**
Coaxial LED top light for measuring plain-colored surfaces (e.g. ceramic gage blocks) and optionally for measuring the Z-Axis	**320 kaz**	**4245300**

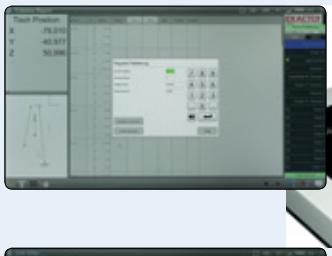
Optional Z-Axis

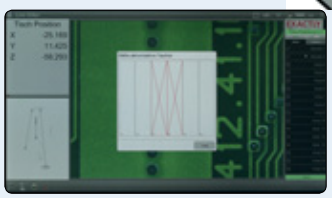
		Order no.
Z-Axis extended by 200 mm	**320 zv**	**4246051**
Z-Axis with measuring system	**320 zm**	**4246050**
Z-Axis extended by 200 mm with measuring system	**320 zvm**	**4246052**
Z-Axis extend the measuring system by 200 mm for larger tables (standard extension)	**320 zvl**	**4246054**

Note: Microscopes with a measuring the Z-Axis, a coaxial incident light is recommended!

Workshop Measuring Microscope MarVision MM 420 CNC with M3-Software and a Touchscreen-PC

MM 420 CNC





Serial components can be simply measured using palletization.

Zoom stages	Depiction in display	Field on image*
X1	35x	9.5 x 6.9 mm²
X2	50x	6.8 x 5.0 mm²
X3	73x	4.5 x 3.3 mm²
X4	140x	2.4 x 1.7 mm²
X5	225x	1.6 x 1.1 mm²

* Approximate values (mm x mm = mm²)

Technical Data

Measuring range X / Y / Z	mm	200 / 100 / 200	250 / 170 / 200
Measuring table dimensions	mm	370 x 210	420 x 280
Max. table load	kg	20	
Measuring system:		built-in incremental measuring scale	
- Resolution	mm	0,001	
- MPE E_1 X / Y in µm (L in mm)		1,9 +(L/100)	
- MPE E_2 XY in µm (L in mm)		2,9 +(L/100)	
Field of view		see table on page 25	
Max. height of test piece	mm	200	
Max. height of test piece / 0.5x	mm	110	
Max. height of test piece with coax.	mm	200	
Max. height of test piece with coax. / 0.5x	mm	110	
Illumination		LED Incident and transmitted light, variable	
Dimensions* H x W x D	mm	880 x 450 x 400	880 x 500 x 510
	Magnification**		
Order no. mit M3	Zoom 35-225x	**4247701**	**4247702**

** Measuring table is centered ** on screen*

Applications

- For measuring and / or the determination of geometric elements (points, lines, circles, distances, intersection etc.) via automatic edge detection, for example: punched and flexible parts, plastic components as well as electronic circuit boards.

See Industrial branch based solutions, from page 32 ff

Note:
Use a 2x objective only upon request

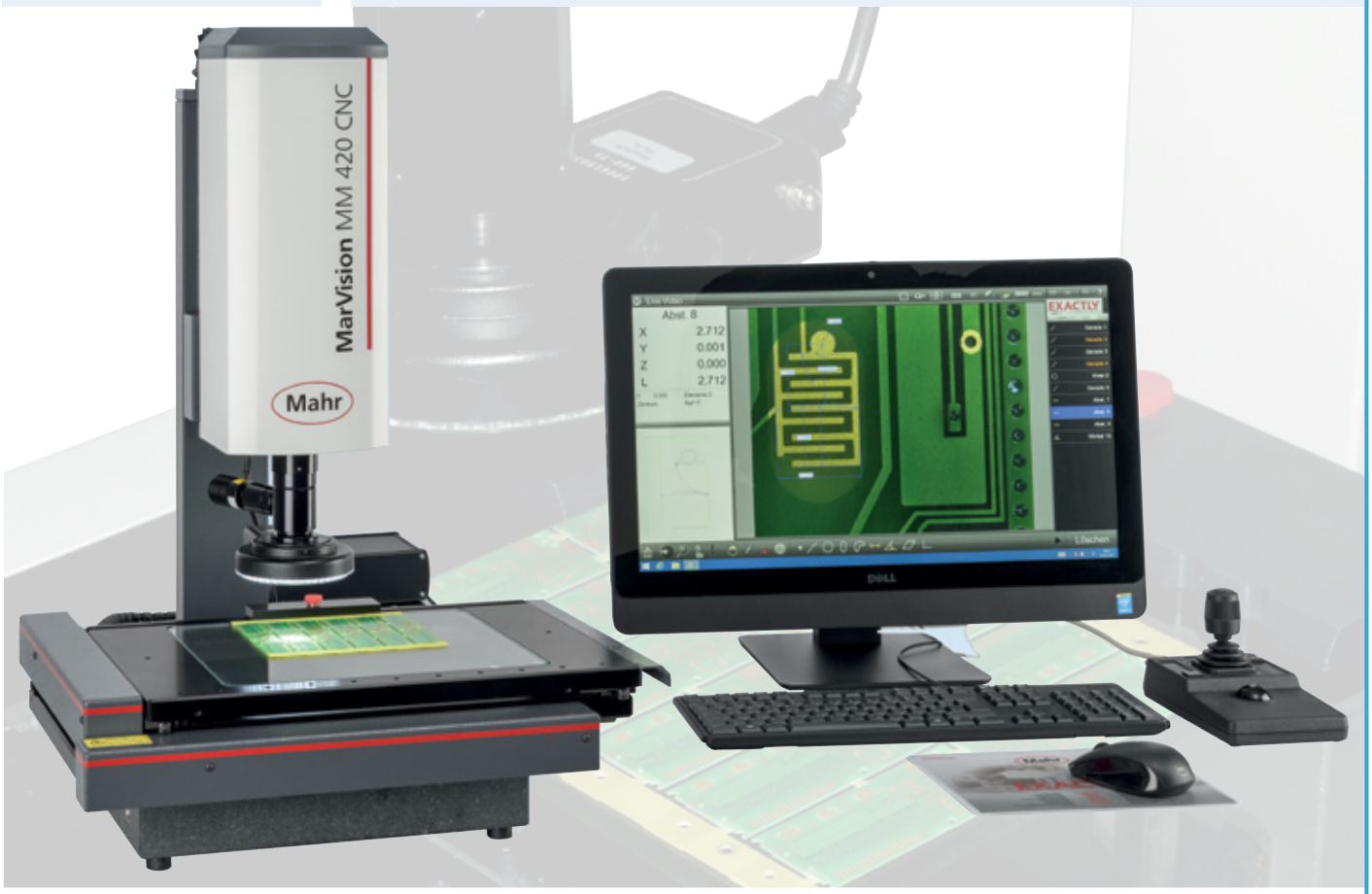
Features

Measuring Microscope

- 3-Axis CNC-controller with a servo motor and joystick
- Control the axis movement and gegulate the speed with the joystick
- Integrated color camera
- Motorized zoom lens
- LED ring light: 1 ring and 4 segments, each can be individually switched on/off or dimmed
- LED transmitted light: dimmable
- Massive Basis aus Granit
- Sturdy granite base
- Stable XY table precision mounted
- Quick and fine adjustment of the axis
- Excellent accuracy and reliability due to the optical incremental measuring system
- Laser pointer for positioning asisstance
- Supplied with: Measuring Microscope, Stop bar standard, M3-Software V2 with Touchscreen PC
- Keyboard / mouse/ joystick, Controller and control box
- Operating instructions in a PDF file
- Test certificate

Operating and Display Unit M3-Software with Touchscreen PC

- 23" Touchscreen with keyboard and mouse
- Based on Windows; therefore additional software can be installed
- Operated via the Multi-Touch on the monitor or via mouse/ keyboard
- Large video image
- Stiching (combining several images)
- Target / actual evaluation with tolerance data
- Protocol print out with company logo
- Represented graphically with dimensions
- Automatic edge detection even with low constrast parts
- Statistics functions
- Options:
  - Coaxial light
  - Telecentric transmitted light
  - Automatic comparison of contours
  - Integration of DXF-files (creation and reading)
  - Training
  - Calibration
  - Maintenance



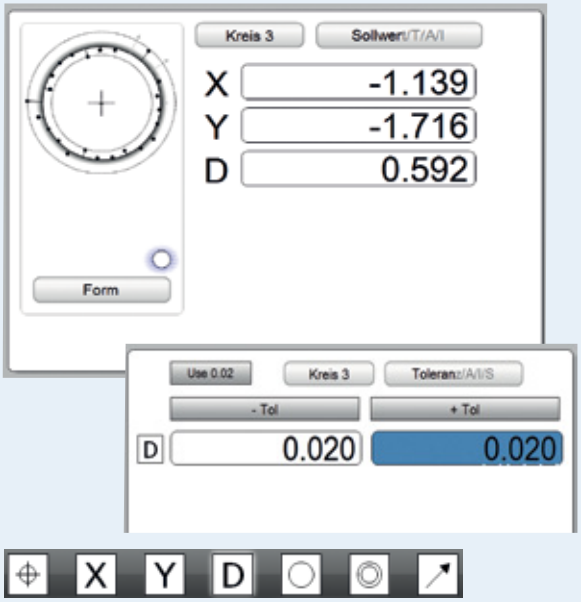
MM 420 CNC Measuring station

Workshop Measuring Microscope MarVision MM 420 / MM 420 CNC with image processing

M3-Software

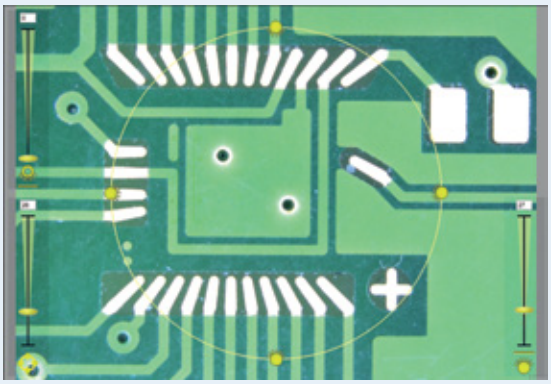
View – Measure – Detailed – Dimensioned – Evaluate – Record

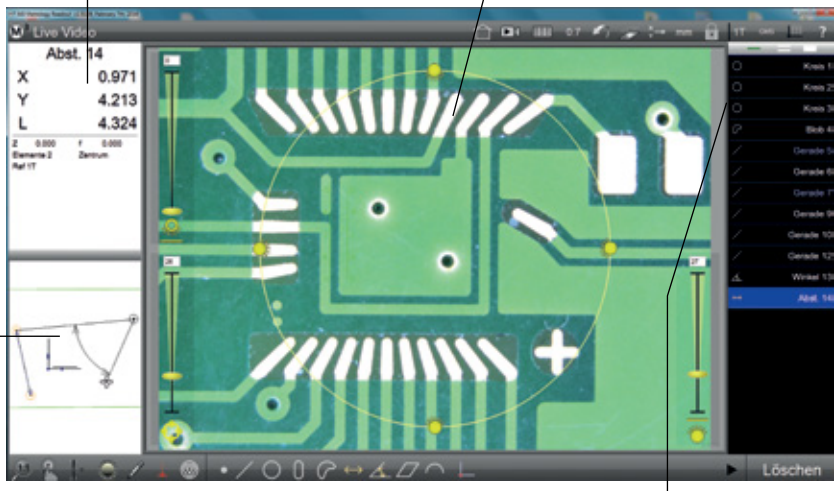
Coordinates window



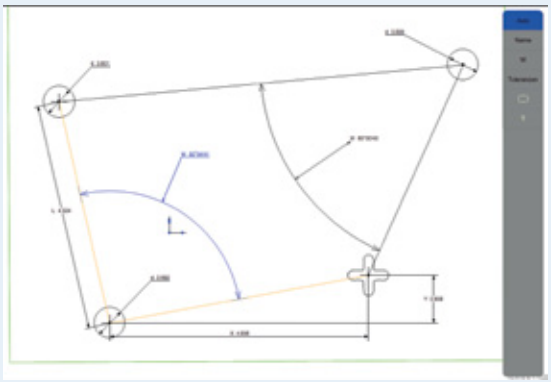
Form and Location tolerances

Live Video Imaging



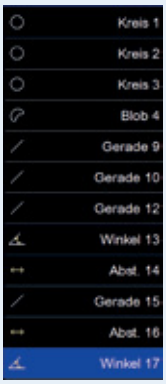


View of parts with dimensions



Protocol

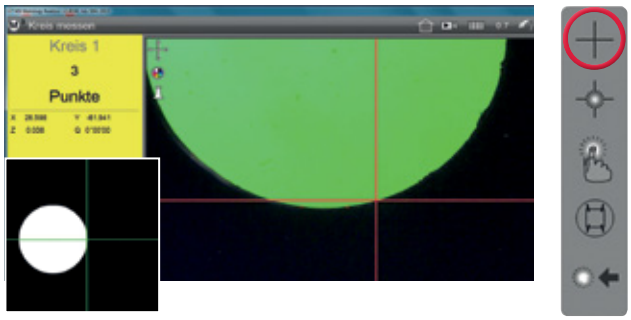
List of features



Measuring Tools

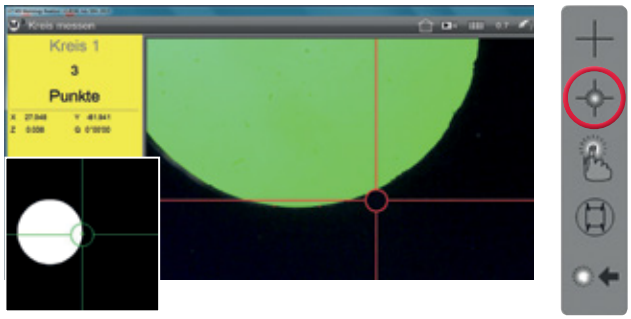
Reticule / Cross Hair

- Manual measurement with a cross hair
- Move to defined positions
- Rotate to a defined angle



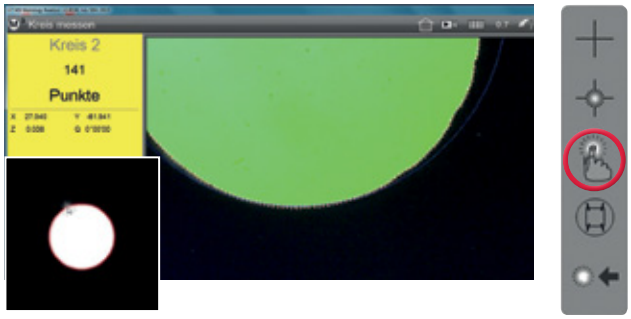
Active Cross Hair

By clicking on the edge of the element the dynamic cross hair automatically detects the edge, thus increasing the speed of measurement and improving measuring accuracy.



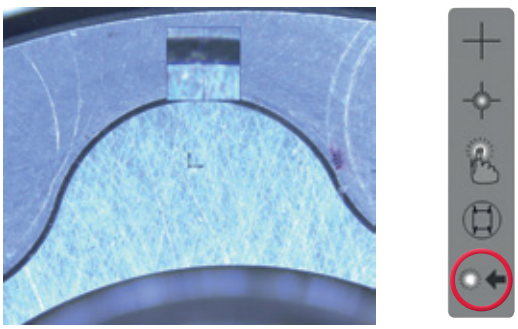
Multi-Point Measurement

Automatically detect the features. Simply click on the element edge in the Camera window; elements such as circles, straight lines, grooves and also free outlines (contours) can then be determined quickly.



Automatic Contrast Detection

- Learn and recognize constrast between 2 elements.



Workshop Measuring Microscope MarVision MM 420 / MM 420 CNC with image processing

M3-Software - Additional Functions

Dimensioning during Live Imaging, e.g. Pitch measurement

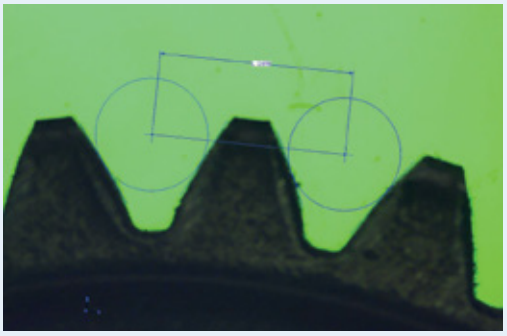
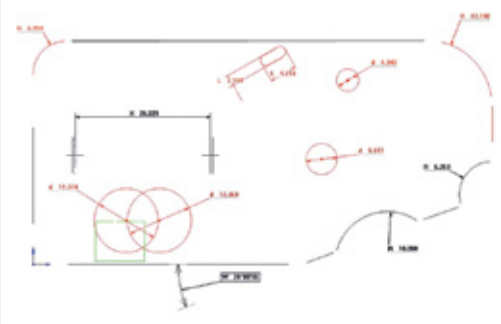
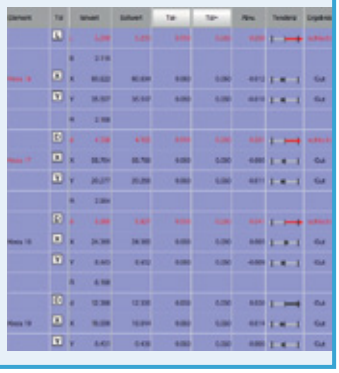


Diagram with dimensions

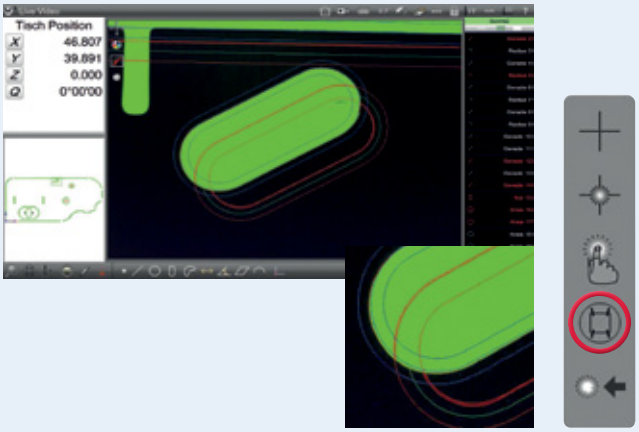


List of results with targeted and actual evaluation

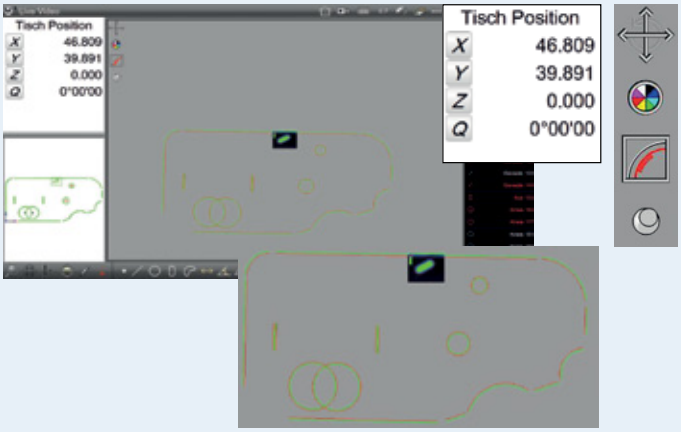


Software Option DXF

Define the tolerance bands

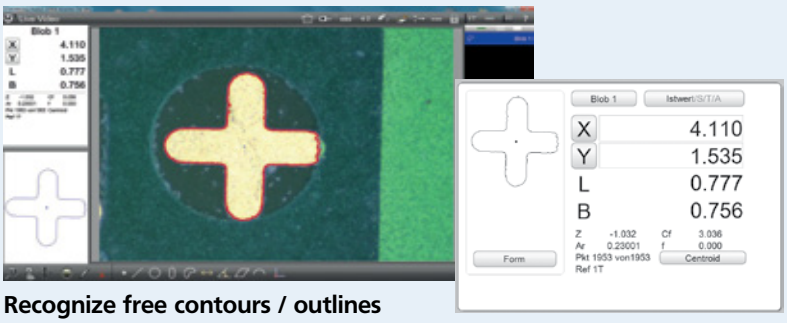


Export and import DXF files



Create overlays (e.g. cross hairs)

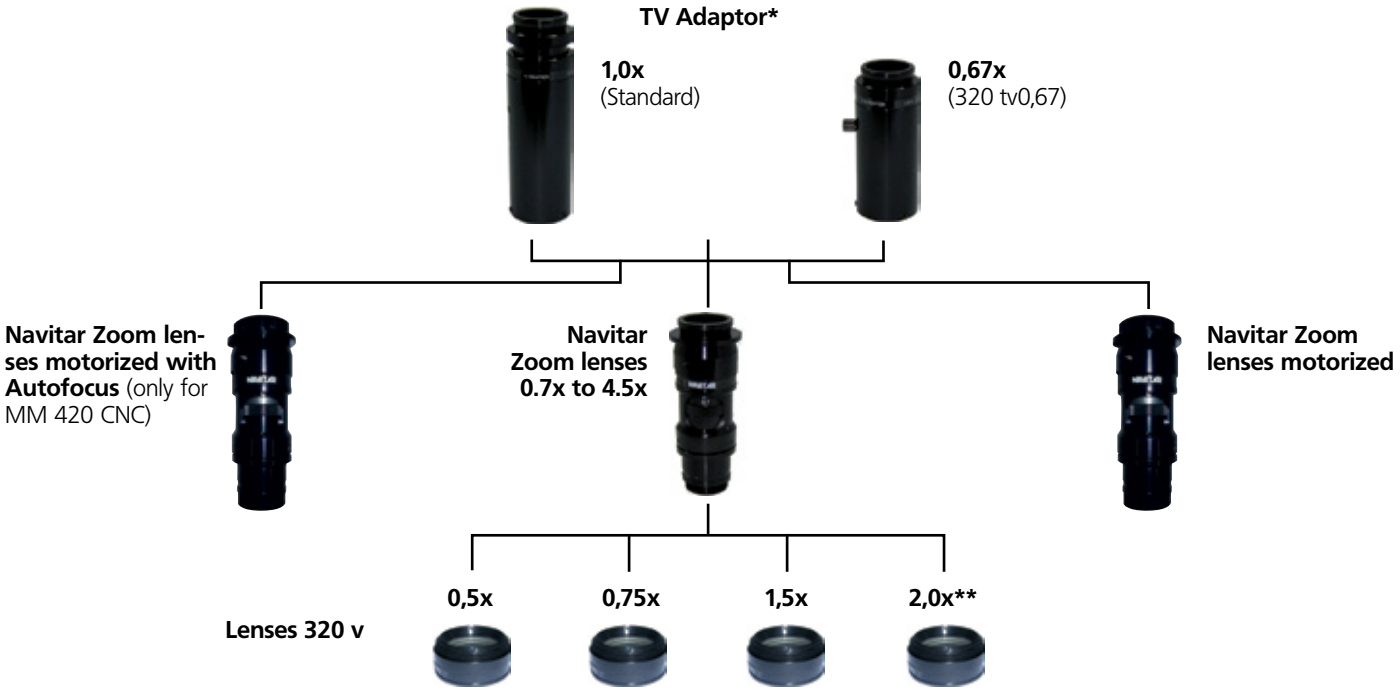
Images details can be used to learn diagrams



Recognize free contours / outlines

Calculate the circumference and determine the area

Configuration of the Optics for MarVision MM 420 / MM 420 CNC



* When placing an order please state the configuration
** Ancilliary lens 2.0x for the MM 420 CNC only on request

Ancilliary Lenses

		Order no.
Magnification 0.5x	**320 v0,5**	**4247020**
Magnification 0.75x	**320 v0,75**	**4247021**
Magnification 1.5x	**320 v1,5**	**4247022**
Magnification 2.0x	**320 v2,0**	**4247023**

Magnification / Image details

		Zoom Magnification*					
TV Adaptor	**Lenses**	0.7x 👁 / ○	1.0x 👁 / ○	2.0x 👁 / ○	3.0x 👁 / ○	4.0x 👁 / ○	4.5x 👁 / ○
0.67	–	23 / 14.3	34 / 10.3	67 / 5.4	101 / 3.6	134 / 2.5	151 / 2.2
0.67	0.5	12 / 28.7	17 / 20.6	34 / 10.7	50 / 7.2	67 / 5.1	75 / 4.5
0.67	0.75	18 / 21.5	25 / 15.4	50 / 8.1	75 / 5.4	101 / 3.8	113 / 3.4
0.67	1.5	35 / 10.7	50 / 7.7	101 / 4.0	151 / 2.7	201 / 1.9	226 / 1.7
0.67	2.0	47 / 7.2	67 / 5.1	134 / 2.7	201 / 1.8	268 / 1.3	302 / 1.1
1.0	–	35 / 9.6	49 / 6.9	94 / 3.6	141 / 2.4	200 / 1.7	225 / 1.5
1.0	0.5	18 / 19.2	25 / 13.8	47 / 7.2	71 / 4.8	100 / 3.4	113 / 3.0
1.0	0.75	26 / 14.4	37 / 10.4	71 / 5.4	106 / 3.6	150 / 2.6	169 / 2.3
1.0	1.5	53 / 7.2	75 / 5.2	150 / 2.7	225 / 1.8	300 / 1.3	338 / 1.1
1.0	2.0	70 / 4.8	98 / 3.5	188 / 1.8	282 / 1.2	400 / 0.9	450 / 0.8

👁 Magnification on screen ○ Field of view in mm * Approximate values (mm x mm = mm^2)

Workshop Measuring Microscope MarVision MM 420 / MM 420 CNC with image processing

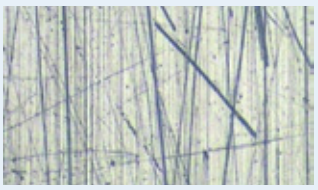
Accessories

LED transmitted light (telecentric is optional for more focused measurement of rotationally symmetric parts).

with telecentric transmitted light

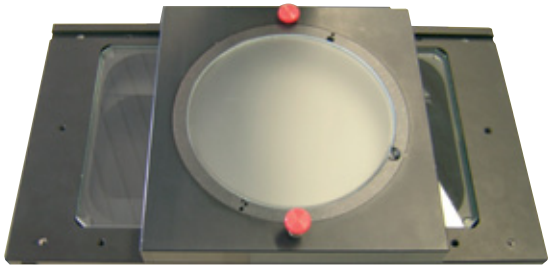
without telecentric transmitted light

Optional coaxial incident light for ideal illumination of plain-colored surfaces (e.g. gauge blocks), and optionally for measuring the Z-Axis

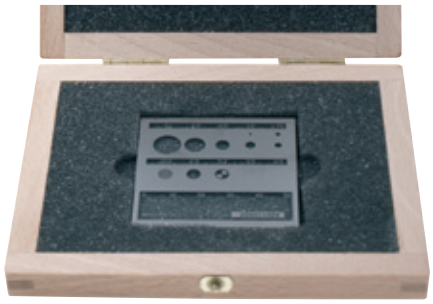


with coaxial incident light

without coaxial incident light



Rotary glass plate



Calibration standard with certificate

Option Illumination

		Order no.
Telecentric LED transmitted light illumination for measuring rotationally symmetric parts	**200 ld**	**4247050**
Coaxial LED top light for measuring plain-colored surfaces (e.g. ceramic gage blocks) and optionally for measuring the Z-Axis for MM 420	**320 kaz**	**4245300**
Coaxial LED top light only for MM 420 CNC	**320 kac**	**4245302**

Für Messtisch

		Order no.
Rotary glass plates D=100 mm for measuring table 200 x 100 mm	**220 dk**	**4246920**
Rotary glass plates D=100 mm for measuring table 250 x 170 mm	**220 dg**	**4246921**
Rotary glass plates D=100 mm for measuring table 400 x 250 mm	**220 db**	**4246922**

Calibration Standards

		Order no.
Calibration standard with circles incl. calibration certificate	**320 nkz**	**4246901**

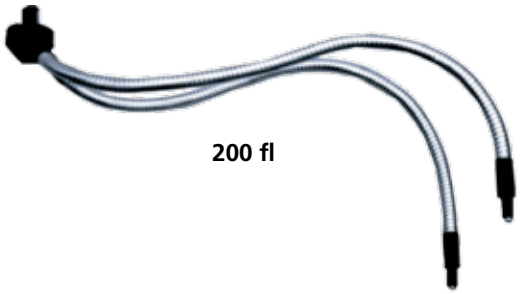
Dust Covers*

	Order no.
Dust cover for measuring ranges 100 / 100 and 200 / 100	**4246071**
Dust cover for measuring ranges 250 / 170	**4246072**
Dust cover for measuring ranges 400 / 250	**4246073**

* *Not suitable for extended Z-Axis*

Cold Light Sources for MarVision Measuring Microscopes

200 fs



200 fl

Features

Cold light source 200 fs
- Extremely bright
- With 30% more light efficiency due to electronic control setting
- Offers colder color temperature for the measurement of colored surfaces
- Even illumination due to the patented light distribution

Technical Data

		For Microscope				
	Catalog no.	SM 150 / 160	MM 200	MM 220	MM 420	Order no.
Cold light source Luminance / brightness 8 Mlx Output 30 W Power input 50VA / 240V	**200 fs**	●	●	●	●	**4245043**
Flexible fiber optic light guide 2-Arm, L=500 mm, D=4 mm	**200 fl**	●	●	●	●	**4245042**

Clamping Elements

220 p

220 sp

220 as 90

Features

- For clamping, centering work-pieces

Technical Data

		Order no.
Pair of V-blocks 200 x 100 with clamping bracket	**220 p**	**4246801**
Pair of V-blocks 250 x 170 with clamping bracket	**220 p**	**4246831**
Pair of V-blocks 400 x 250 with clamping bracket	**220 p**	**4246832**
Pair of center supports 200 x 100 with moveable chucks	**220 sp**	**4246802**
Pair of center supports 250 x 170 with moveable chucks	**220 sp**	**4246833**
Pair of center supports 400 x 250 with moveable chucks	**220 sp**	**4246834**
Center support rotary 200 x 100, H=50 mm, distance between centers 130 mm	**220 sps**	**4246806**
Center support rotary 250 x 170, H=50 mm, distance between centers 130 mm	**220 sps**	**4246807**
Center support rotary 400 x 250, H=50 mm, distance between centers 130 mm	**220 sps**	**4246808**
Stop bar 90° with object clamps	**220 as 90**	**4246821**

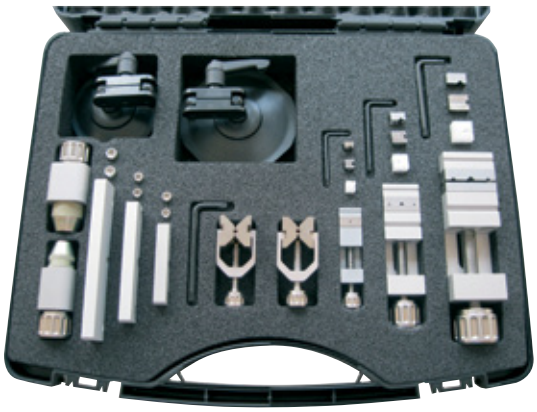
Mini Precision Vise MarTool 109 PS in set

Features

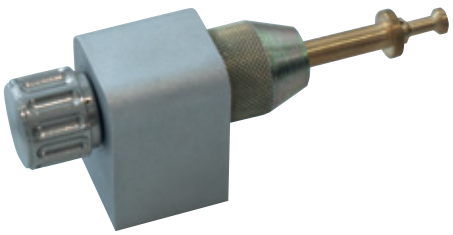
- With mini precision vises. Depending upon set are clamping prisms, support plates., stands and mini dividing attachments. Supplied in a plastic case

Technical Data

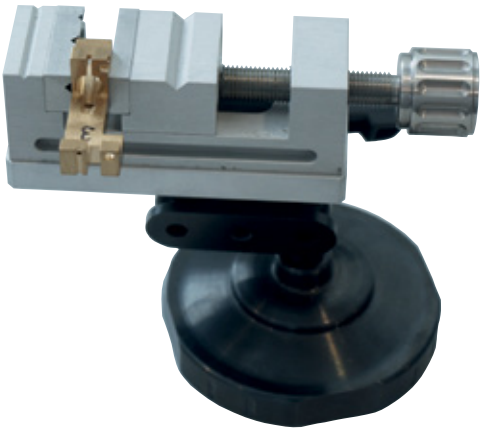
Case set	Order no.
Width of jaws 15 / 25	**4246816**
Width of jaws 25 / 35	**4246817**
Width of jaws 15 / 25 / 35 incl. stand, clamping prism	**4246818**
Width of jaws 15 / 25 / 35 additional mini dividing attachments	**4246819**



Applications



Mini rotary table, available in 2 sizes

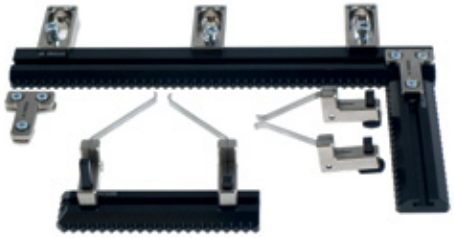


Precision vise with stand, available in 3 sizes

Prism with clamping bracket

Clamping Elements

Set 1



Set 2

Set 3

Features

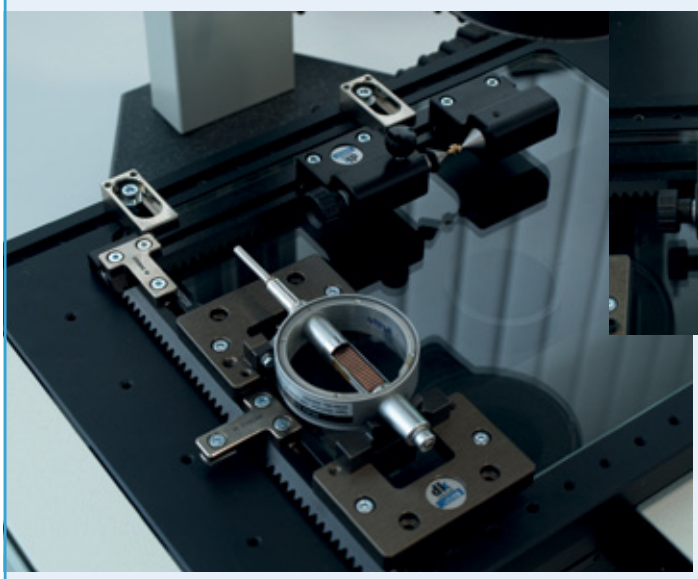
- **Set 1:** Clamping Set in a wooden case
- **Set 2:** Base Rail Set in different sizes
- **Set 3:** V-Block Support, three-jaw chuck and tailstocks as accessories for base rail sets

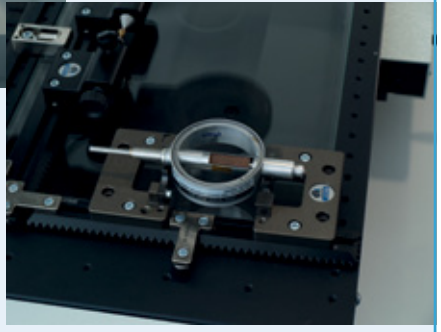
Technical Data

		Order no.
Clamping Set in a wooden case	**220 Set 1**	**4246850**
Base Rail Set for measuring ranges 200 x 100 mm	**220 Set 2/1**	**4246851**
Base Rail Set for measuring ranges 250 x 170 mm	**220 Set 2/2**	**4246852**
Base Rail Set for measuring ranges 400 x 250 mm	**220 Set 2/3**	**4246853**
V-Block Support, three-jaw chuck and tailstocks	**220 Set 3**	**4246854**
Rotary Swivel Mount without jaw chuck or rails	**220 ds**	**4246855**

Rotary swivel mount for small diameters. Illustration: with jaw chuck and rails

Applications





Illuminated Magnifier MarVision 130 WR*

Features

- Aid for visual spot checks, adjustments, assembly of small parts and all types of precision work
- Illumination head with swiveling arm has to be used either with Table base 130 t or Table clamp 130 kl
- 3D-joint illumination head can be positioned at any level
- Spring-relieved joints for easy positioning over a large-scale action range without any re-adjustments
- Large-diameter, cut glass lenses with sharpness to the edge provides distortion free magnification
- Lenses diameter 120 mm with double magnification
- Fluorescent tubes provide a bright, almost shadow free illumination of objects and working area
- Low energy consumption due to energy-saving lamp

- Supplied with: exludes base (optional required accessory), fluorescent tube and operating instructions

*** Not for Sale in North America (230 Volts only)**

Illuminated Magnifier 130 WR with circular fluorescent tube
For checking sunken surfaces, e.g. bores, internal threads, etc.

Attention:
Table base 130 t or Table clamp 130 kl are required!

Technical Data

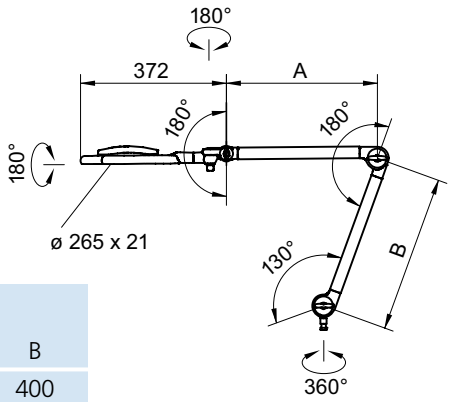
	Type of lamp	Power supply	Dioptric power	Magnification	Order no.
130 WR	Circular fluorescent tubes	230 V~ / 50 Hz	4	2	**4299300**

Accessories

		Order no.
Table base for stable installation on working table	**130 t**	**4298310**
Table clamp for mounting on work bench or working table clamping range: 0 – 140 mm	**130 kl**	**4298320**
Circular fluorescent tube for **130 WR**		**4299005**

130 kl

Illuminated Magnifier MarVision 130 LR



Dimensions		
mm	A	B
130 LR	384	400

Features

- Aid for visual spot checks, adjustments, assembly of small parts and all types of precision work
- Head of the magnifier can be positioned at all levels due to the 3D-joint
- Large radius due to the movement head joint
- Completely scratch resistant glass magnifier
- Made from sturdy aluminum and high-performance plastic
- High quality LED technology with 48x LEDs
- 4 segments, 3 can be individually switched ON/OFF ideal for high contrast or shadow free observation
- Continuously dimmable
- Maintenance-free – LEDs have a life span up to 50.000 hours
- Color reproduction 1A
- Large field of vision, with ø153 mm for disortion free vision, 3.5 diopters and with an additional bonded on lens with 11.5 diopters
- Powerful, up to 6.000 lx for only 14 W
- Save up to 40 % more energy compared to traditional magnifiers
- Various fastenings are also available as accessories

- Supplied with: Table mount 130 Tb, magnifier cover and operating instructions

Technical Data

	Type of lamp	Power supply	Dioptric power	Leistung	Order no.
130 LR	LED-48x	100-240 VAC / 50-60Hz	3.5/11.5	Max 14 V	**4299350**

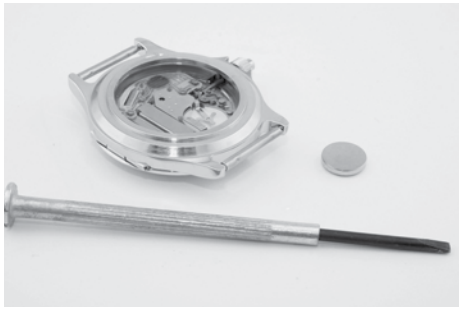
Accessories

		Order no.
Table clamp for 130 LR	**130 Tk**	**4299355**
Table mount for 130 LR*	**130 Tb**	**4299356**
Additional magnifier for 130 LR with 3.5 diopter	**130 Zl**	**4299357**

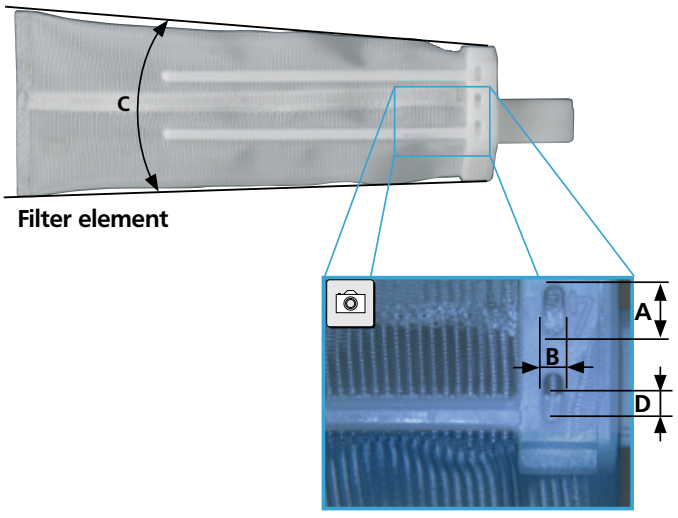
* *Included in the scope of supply*

MarVision Industrial branch based solutions

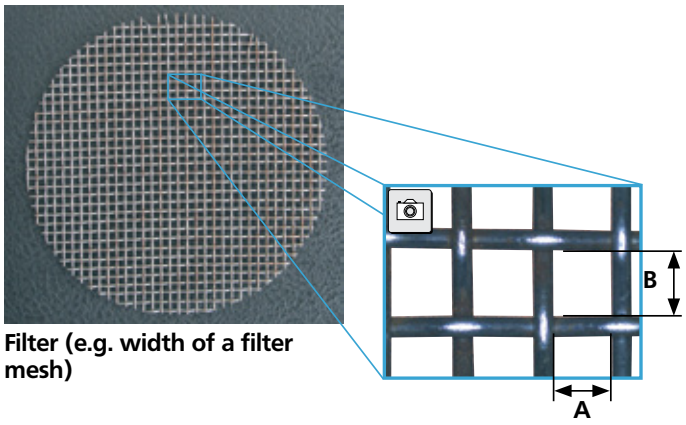
▶I In all branches, quality control in production is changing: Workshops need to measure faster, more precisely and at the same time even more economically. This is where the modern concept of measuring micrscopes from Mahr comes in. They can control, for example, the distances of bores, form, angle or radii of workpieces, measure contact-free the smallest components or PCB tracks. Measuring microscopes are in use in almost all branches: in mechanical engineering or electronics just as in the plastics industry or in medical technology, and even in the food and pharmaceutical industries or in forensic laboratories. Testing and calibration labs, research labs, research facilites and training centers also use Mahr microscopes in order to attain precise measuring results at an interesting price. I◀



Industrial branch based solutions - Medical Technology (filters)



Filter element



Filter (e.g. width of a filter mesh)

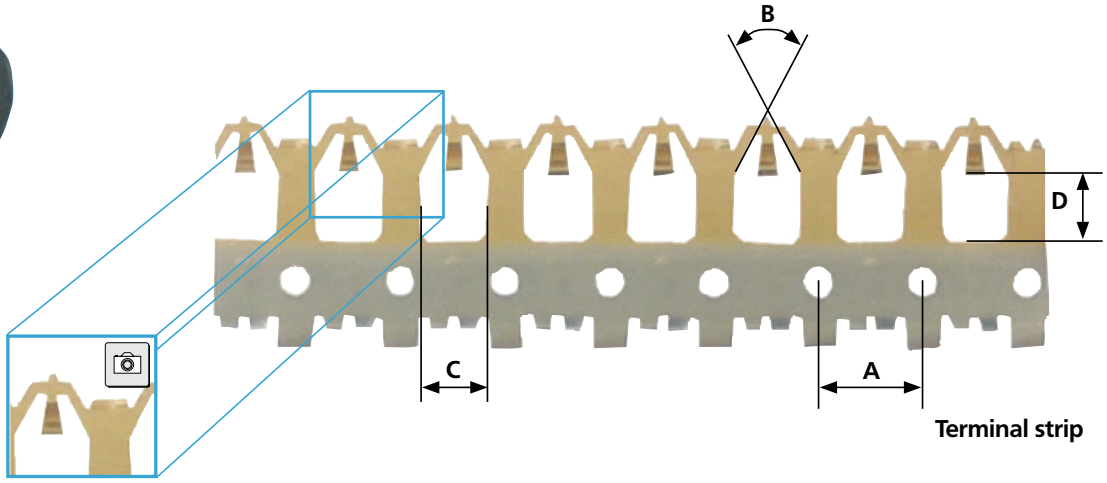
Recommended accessories:
• Ancilliary lens 2.0x

	Optical inspection	Save image	A	B	C	D
SM 150	●					
SM 151	●	●				
SM 160	●					
SM 161	●	●				
MM 200	●		●	●		
MM 220	●		●	●	●	●
MM 420	●	●	●	●	●	●
MM 420 CNC	●	●	●	●	●	●
QM 300	●	●	●	●	●	●

Industrial branch based solutions - Medical Technology

Artificial knee joint

Cannulae / Needles



Terminal strip

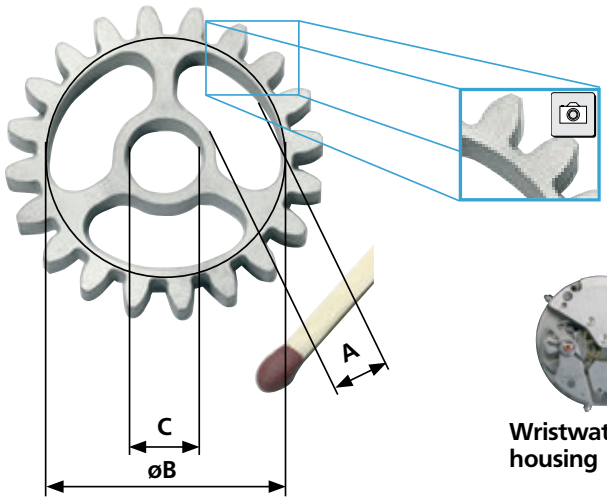
Recommended accessories:
- Telecentric LED transmitted light
- Prisma

Optical inspection

Save image

	Optical inspection	Save image	A	B	C	D
SM 150	●					
SM 151	●	●				
SM 160	●					
SM 161	●	●				
MM 200	●				●	●
MM 220	●		●	●	●	●
MM 420	●	●	●	●	●	●
MM 420 CNC	●	●	●	●	●	●
QM 300	●	●	●	●	●	●

Industrial branch based solutions - Precision Engineering



Micro gears

Vibrating motor for a mobile phone

Hard disk drive

Wristwatch housing

A microdrive casing

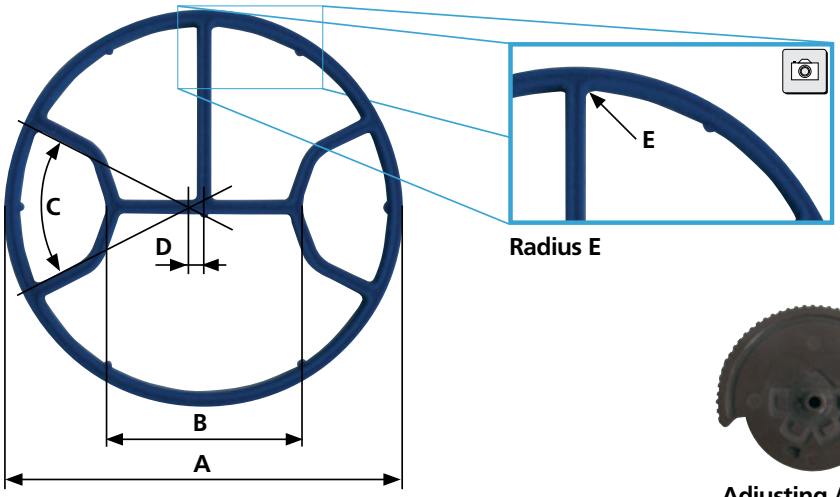
Recommended accessories:
- Ancilliary lens 2.0x

Optical inspection

Save image

	Optical inspection	Save image	A	B	C
SM 150	●				
SM 151	●	●			
SM 160	●				
SM 161	●	●			
MM 200	●				●
MM 220	●		●	●	●
MM 420	●	●	●	●	●
MM 420 CNC	●	●	●	●	●
QM 300	●	●	●	●	●

Industrial branch based solutions - Plastics



Radius E

Catheter cap

Adjusting / locating disk

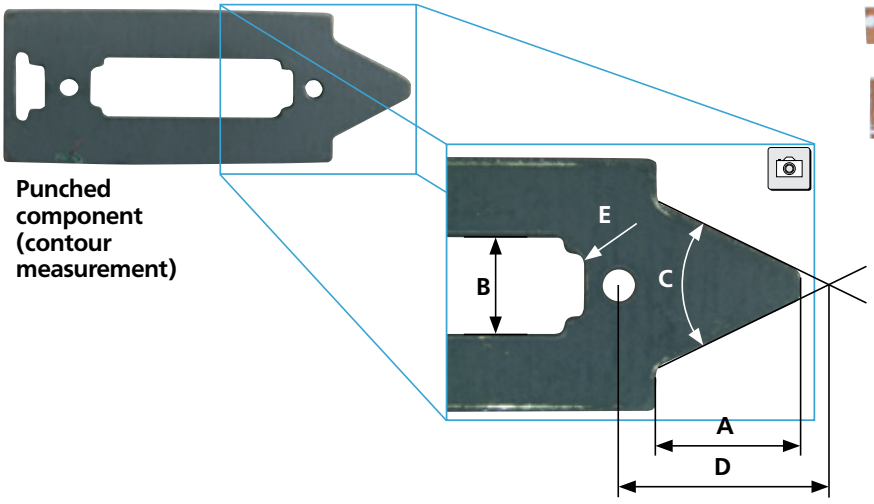
Gasket / Seal

			A	B	C	D	E
SM 150	●						
SM 151	●	●					
SM 160	●						
SM 161	●	●					
MM 200	●		●	●			
MM 220	●		●	●	●	●	●
MM 420 CNC	●	●	●	●	●	●	●
MM 420	●	●	●	●	●	●	●
QM 300	●	●	●	●	●	●	●

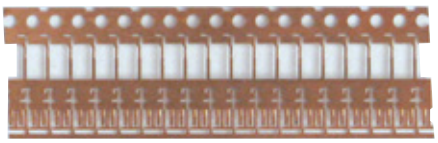
Optical inspection

Save image

Industrial branch based solutions - Engineering (punched parts)



Punched component (contour measurement)



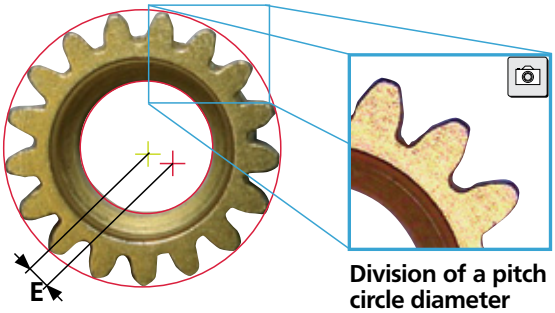
Recommended accessories:
- Stop bar 90°
- Ancilliary lens 0.5x
- Ancilliary lens 2.0x

			A	B	C	D	E
SM 150	●						
SM 151	●	●					
SM 160	●						
SM 161	●	●					
MM 200	●		●	●			
MM 220	●		●	●	●	●	●
MM 420	●	●	●	●	●	●	●
MM 420 CNC	●	●	●	●	●	●	●
QM 300	●	●	●	●	●	●	●

Optical inspection

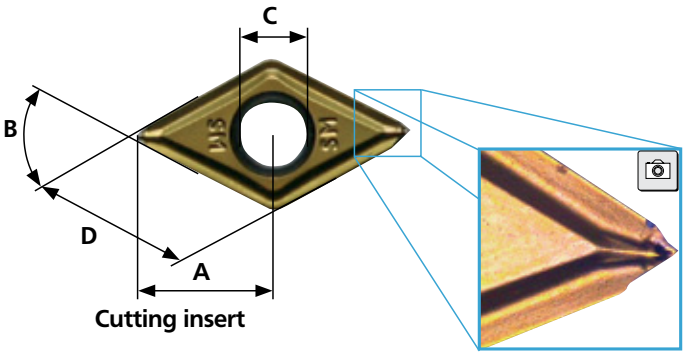
Save image

Industrial branch based solutions - Engineering



Gear wheel (wristwatch housing)

Division of a pitch circle diameter



Cutting insert

Blanking die

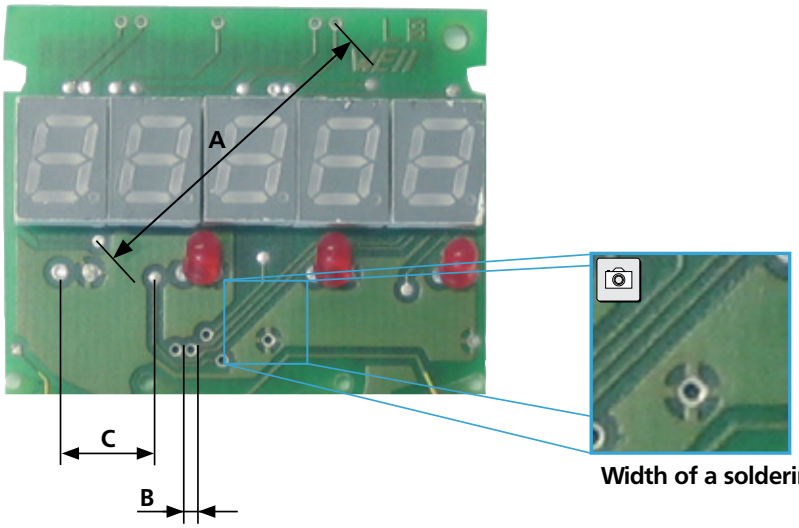
Recommended accessories:
- Telecentric LED transmitted light
- Precision Vise

Optical inspection

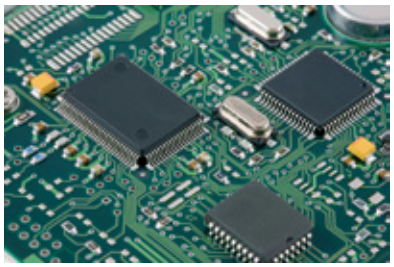
Save image

			A	B	C	D	E
SM 150	●						
SM 151	●	●					
SM 160	●						
SM 161	●	●					
MM 200	●				●		
MM 220	●		●	●	●	●	●
MM 420	●	●	●	●	●	●	●
MM 420 CNC	●	●	●	●	●	●	●
QM 300	●	●	●	●	●	●	●

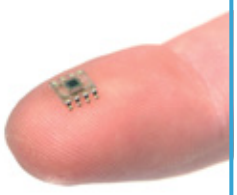
Industrial branch based solutions - Electronics Industry



Width of a soldering line



Circuit boards



Micro chip

Recommended accessories:
- Ancilliary lens 0.5x
- Ancilliary lens 2.0x

Optical inspection

Save image

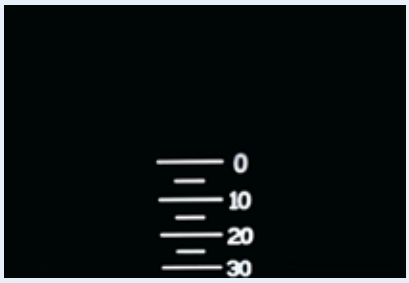
			A	B	C
SM 150	●				
SM 151	●	●			
SM 160	●				
SM 161	●	●			
MM 200	●			●	
MM 220	●		●	●	●
MM 420	●	●	●	●	●
MM 420 CNC	●	●	●	●	●
QM 300	●	●	●	●	●

MarVision. Video Workshop Measuring Microscope QM 300

PRODUCT ADVANTAGES

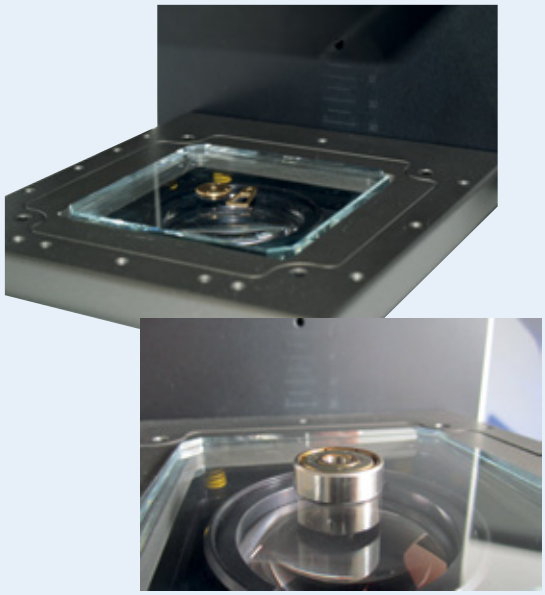
►| The Video Workshop Measuring Microscope MarVision QM 300 features "One-Shot" technology, the simplest and quickest method to measure and assess small components; the work piece only has to be measured once. With just one click or fully automatically within a matter of seconds, the components are recognised, measured and recorded regardless of how they are positioned. This is guaranteed by the high resolution USB color camera with telecentric fixed lens. The high illumination is provided by the long lasting dimmable LED transmitted light and LED ring light. |◄

LED Ring light
Optional: with height adjustment



Visual indicator of the height adjustment

Large supporting surface



Measure different work pieces in a matter of seconds

Height adjustment has a large transmission

Video Workshop Measuring Microscope MarVision QM 300 with M3-Software and Touchscreen PC

Within seconds the "One-Shot" captures the entire parts geometry due to the recording of Live video images and the simultaneous evaluation of the items and links.

QM 300

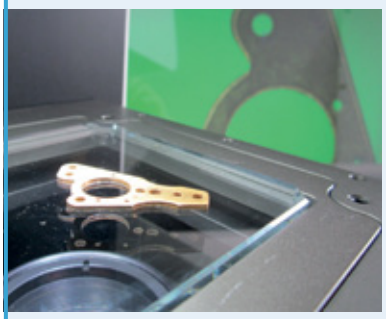
High resolution camera plus LED incident and transmitted light

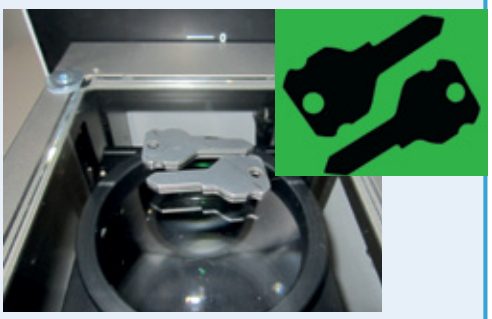
User friendly measurement software

23" Touchscreen-PC

Illustration: Similar to illustration (depends upon the PC manufacturer)

Example of Applications





Laser and punched parts

Technical Data

Measuring range / image field	mm	32 x 24	57 x 42	96 x 72
Height adjustment	mm		30	
Measurement error E_2		4.0+L/50 (L in mm)	4.5+L/50 (L in mm)	7.5+L/50 (L in mm)
Camera system			5 Megapixel USB 3	
Incident light			LED ring light	
Transmitted light			LED telecentric	
Dimensions QM 300, D x W x H	mm	330 x 230 x 580	330 x 240 x 720	340 x 250 x 820
Order no.		**4247800**	**4247801**	**4247802**

Video Workshop Measuring Microscope MarVision QM 300 with M3-Software and Touchscreen PC

Applications

- For measuring and / or the determination of geometric elements (points, lines, circles, distances, intersection etc.) via automatic edge detection, for example: punched and flexible parts, plastic components as well as electronic circuit boards.

See Industrial branch based solutions, from page 32 ff

Features

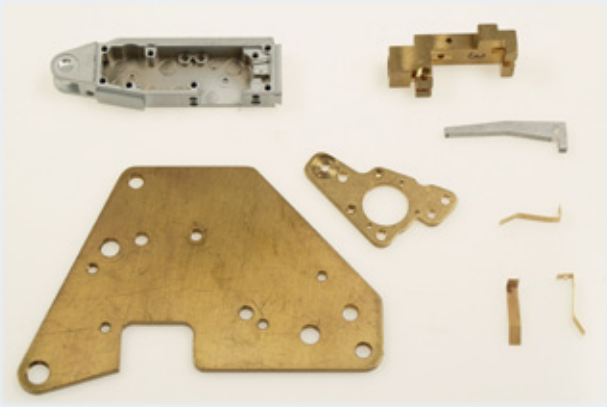
- Telecentric fixed lens
- Integrated 5 Megapixel USB-color camera
- LED ring light with optional height adjustment (96 x 72 mm)
- LED transmitted light: dimmbar
- Height adjustable measuring table
- Large, high contrast backlit color LCD display
- Automatic edge detection
- Automatic measurement of all features of a component within the image field
- Depth of focus ca. 10 mm
- DXF function: compares measurement with the CAD drawing
- Measurement and evaluation functions for points, lines, circles, angles, distances and intersecting straight lines. "Magic" function is a time saving feature which automatically recognizes the geometric pattern of data points
- Simply create a measuring program with the Teach-In mode
- Easy program sequence due to on screen graphic guidance
- Lighting controls
- Operator prompts are available in several languages
- USB printer port
- USB port
- Updates can be obtained via an USB stick, thus future is secured
- Supplied with: Measuring Microscope, M3 Software V2 with Touchscreen PC
- Operating instructions in a PDF file
- Test certificate

Accessories

		Order no.
Ring light height adjustment for measuring ranges 95 x 72 mm	**QM 300 hr**	**4247822**
Glass plate 122 x 122 x 10 mm	**QM 300 gs**	**4247823**

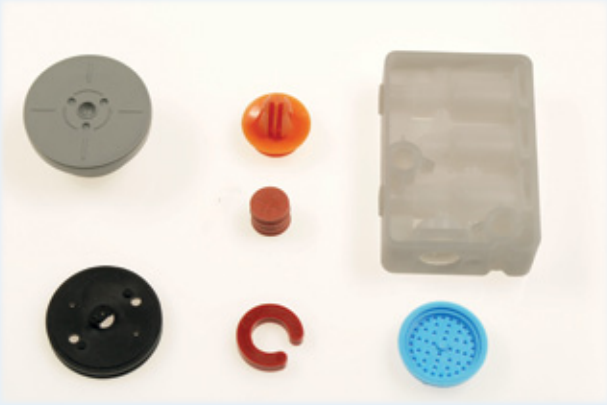
Range of Parts

Turned parts



Punched parts

Gears

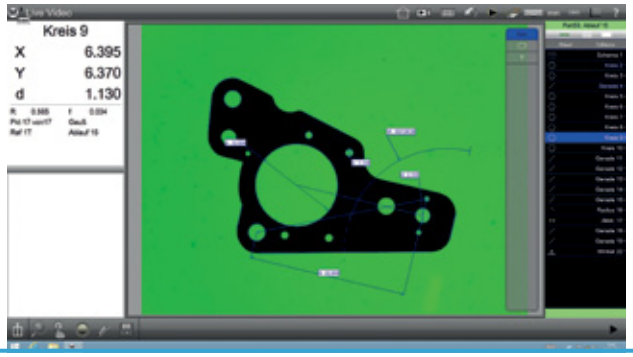


Plastic components

Measurement is even faster

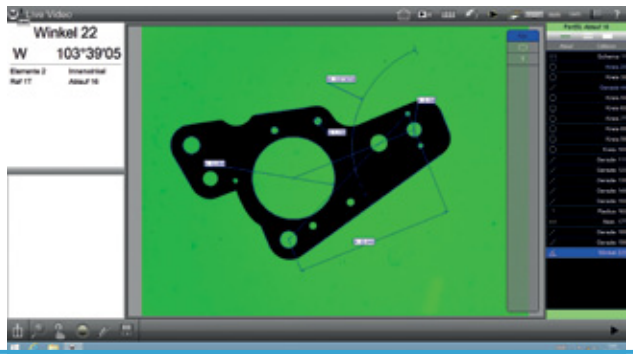
Scan all objects and simultaneous measures all features

By capturing the complete work piece in one image, all the selected features can be simultaneously measured and recorded. The results are shown in the Live video image or can be viewed on a drawing. Measurement is therefore: fast, simple and uncomplicated.



Alignment is not required due to automatic pattern search

Regardless of the position of the work piece, the stored pattern is automatically recognised and is measured. An alignment of the work piece is conducted once, when first setting the features; further alignment before measurement is no longer required.

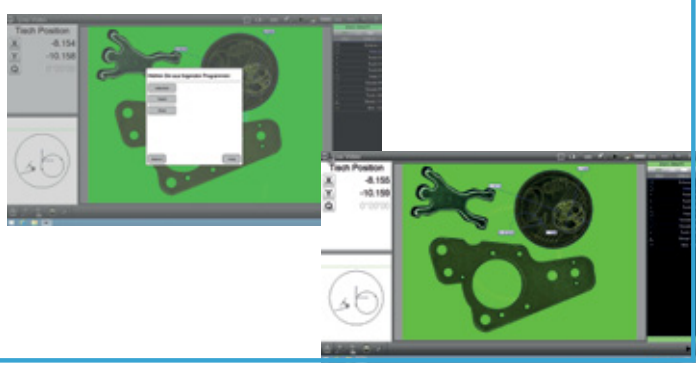


Measure several common parts simultaneously

The features of all the work pieces in the field of view are measured simultaneously. Even if the work pieces are randomly positioned, their position and alignment are automatically recognised and subsequently measured. Once measured, the results are automatically allocated a number which is shown and saved.

Measure various work pieces

Various work pieces can be positioned on the measuring surface, the software detects the stored work pieces and selects the appropriate measuring program(s). Subsequently the respective program is automatically selected and the work pieces are measured.



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Mahr

EXACTLY

Simply scan the QR-Code and find out more about **Mahr** in our **YouTube-channel**.

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