

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.com, WebCode 11125

► | 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 microscopes 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 facilities and training centers also use Mahr microscopes in order to attain precise measuring results at an interesting price.

► | MarVision. Optical Measuring Instruments

Overview

MarVision Optical Measuring Instruments

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Workshop Measuring Microscope

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MarVision QM 300

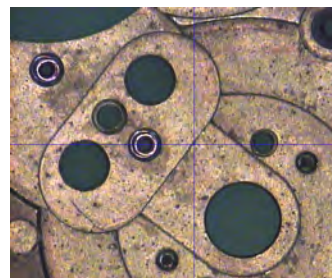
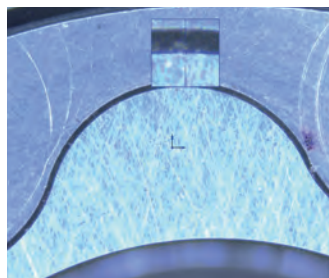
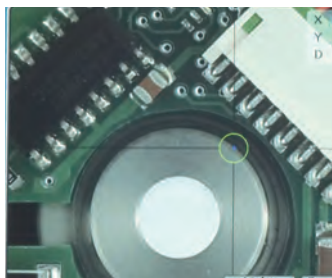
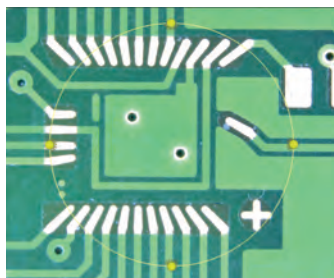
Video Workshop Measuring Microscope

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MarVision. Measuring Microscopes for Shop Floor and Laboratory

MOBILE AND FAST QUALITY CONTROL

► | The product group MarVision offers you the best Optical Measuring Instruments for every application imaginable: starting from the simplest Illuminated Magnifiers up to the high-end Workshop Measuring Microscope with a Touchscreen PC for the determination of geometric elements with automatic edge detection. | ◀

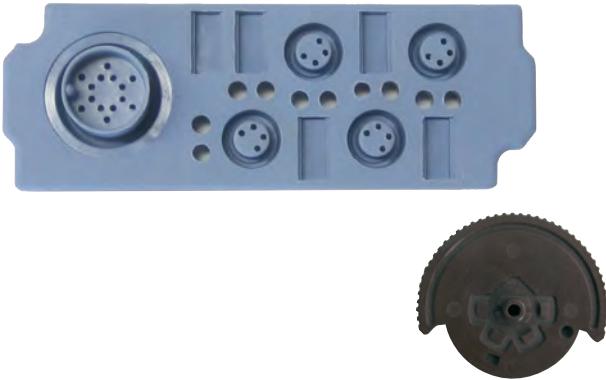


Simply scan the QR-Code and watch in the **Mahr YouTube-channel** a video about the Measuring Microscope MarVision MM 320.



Industrial branch based solutions

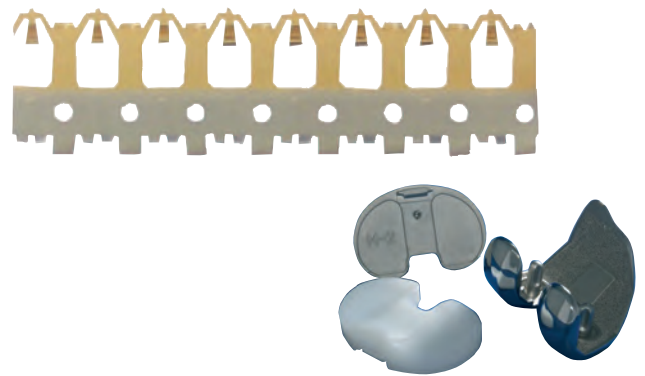
Plastics Industry



In the synthetics industry there are numerous thin-walled components that cannot be measured using tactile measuring instruments.

The MarVision MM 320 makes fast, non-contact measurements of plastic or rubber parts possible so that whereby the workpieces are not deformed. The color camera and the LED ring light ensure an optimum color depiction.

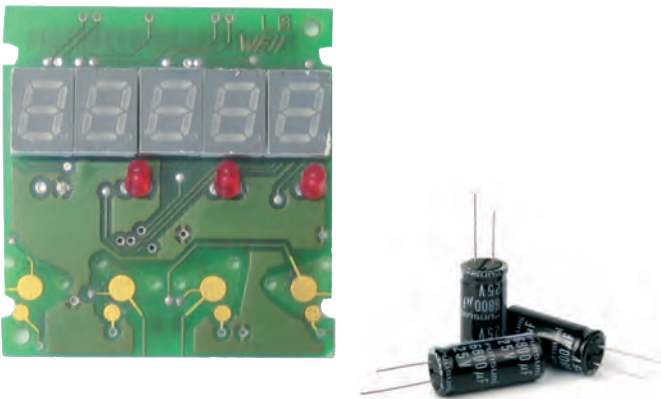
Medical Technology



Medical technology demands high-precision measurements on delicate components. The measuring objects are often very small. Measuring microscopes offer a high number of measuring points despite their smaller dimensions, and thus giving more reliably measuring results. Programming for the measuring parts simplifies the measurement of recurring parts.

The operator is optically led, and settings such as light and number of measuring points are saved in the measuring program, so that the measurements are always performed under the same conditions.

Electronics Industry



The measuring microscopes are excellently suited to test the distances of small bores and PCB tracks as well as for optical inspection.

The MarVision MM 320 with the M3 Software and the Touchscreen PC offers image processing, that is to view, measure, detail, dimension, evaluate and record geometric elements.

An integrated laser pointer makes orientation on the large components easy.

Mechanical Engineering



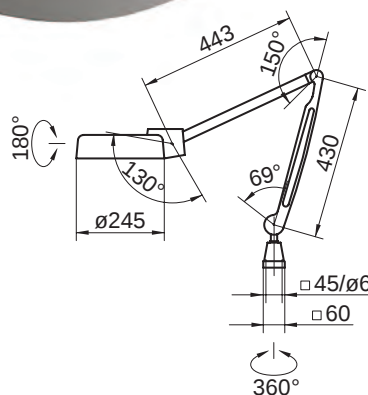
Tolerances are becoming increasingly smaller, especially in the field of mechanical engineering. Optical measuring instruments offer a high accuracy with short measuring time. The Optical Measuring Microscopes from MarVision are the cost effective solution for entering optical metrology; the broad range of accessories enables a greater flexibility. Turned parts, for example, can thus be sharply depicted with transmitted light.

Illuminated Magnifier MarVision 130 WR*



130 WR

130 t



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: excludes 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

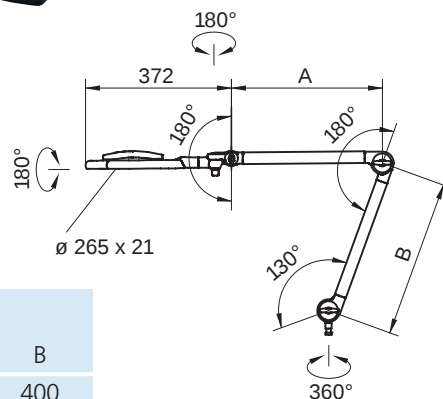
Accessories

		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 of up to 50.000 hours
- Color reproduction 1A
- Large field of vision, with $\varnothing 153$ mm for distortion 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	Output	Order no.
130 LR	LED-48x	100-240 VAC / 50-60Hz	3.5/11.5	Max 14 V	4299350

Accessories

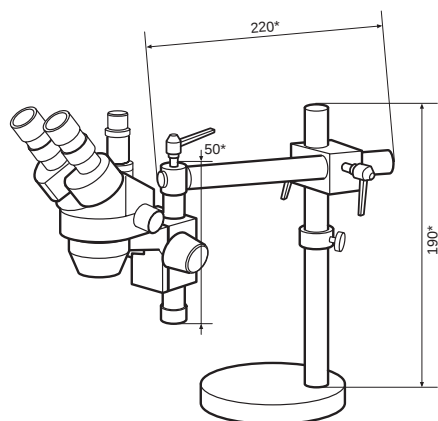
		Order no.
Table clamp for 130 LR	130 Tk	4299355
Table mount for 130 LR*	130 Tb	4299356
Additional magnifier for 130 LR with 3.5 diopter	130 Zi	4299357

* Included in the scope of supply

Stereo-Zoom Microscopes 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

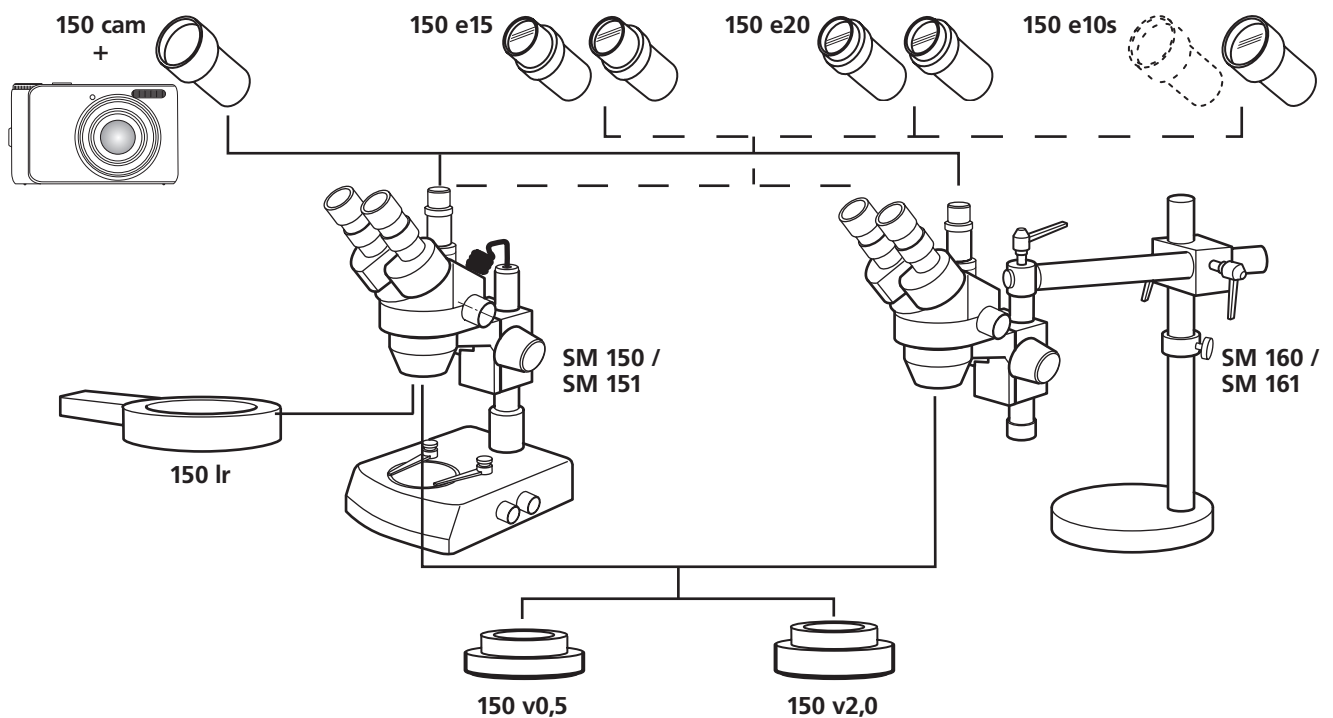
Features

- 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 dioptic 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	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

Accessories



Illumination

		Order no.
LED ring light , adjustable D= 75 mm, incl. mains adaptor, 90 - 265 V	150 lr	4245030
Cold light source luminance / brightness 8 Mlx, Output 30 W, Power input 50VA / 240 V	200 fs*	4245043
Cold light source luminance / brightness 8 Mlx, Output 30 W, Power input 100 - 200 V	200 fs*	4245053
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

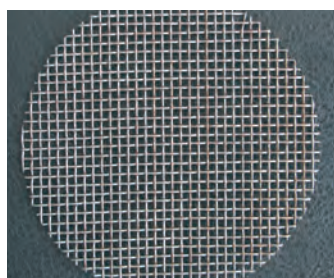
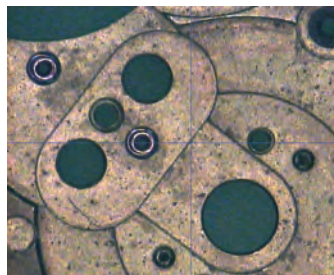
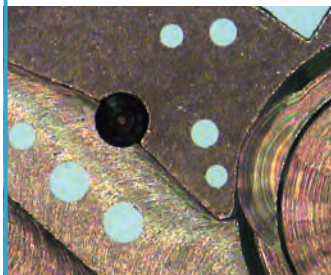
Camera

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

* See page 18-8 ** Only for SM 151 and SM 161

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 objective to the microscope for high-quality microscopic photographs for the documentation of workpieces. Similar to illustration

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
Working distance	mm	75	
Max. height of test piece	mm	190	
Illumination		LED Incident and transmitted light, individually adjustable	
Interfaces		USB or 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

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
Z travel	mm	200 / 400**		
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 8 - 40x (0.8 / 1 / 1.25 / 1.6 / 2 / 2.5 / 3.2 / 4)		
Field of view	mm	23 - 4		
Working distance	mm	75		
Max. height of test piece	mm	180 / 330**		
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	4246100	4246101	—
Order no. with QC 100	110 V	4246105	4246106	—
Order no. with QC 200	220 V	4246200	4246201	4246202
Order no. with QC 200	110 V	4246205	4246206	4246207

* Measuring table is centered

** Option

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 dioptic 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



Optional Illumination

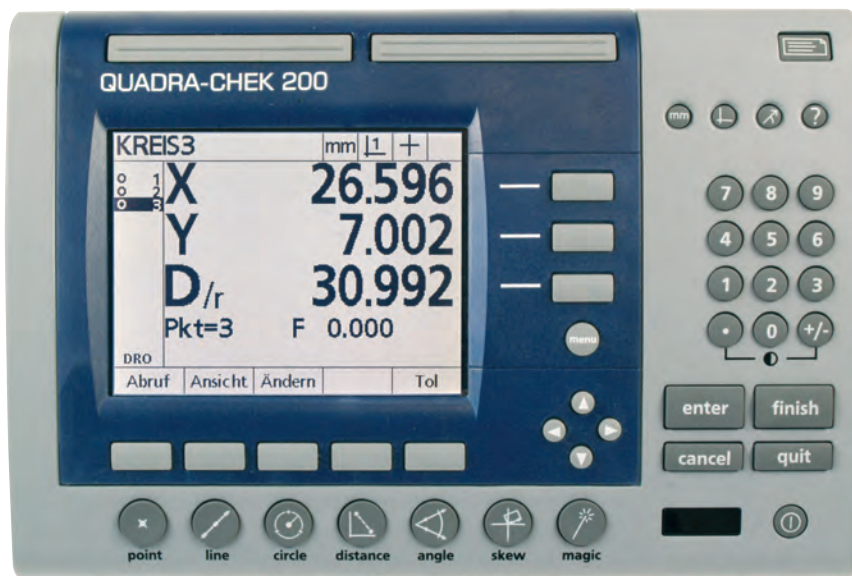
		Order no.
Telecentric LED transmitted light for measuring rotationally symmetric parts	200 ld	4247050
Iris diaphragm		4246250

Optional Z-Axis

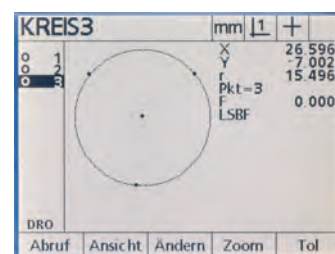
		Order no.
Z-Axis extension 200 mm	320 zv	4246051

Workshop Measuring Microscopes MarVision MM 200 / MM 220

Operating and Display Unit QC 200



Digital display



Graphic mode

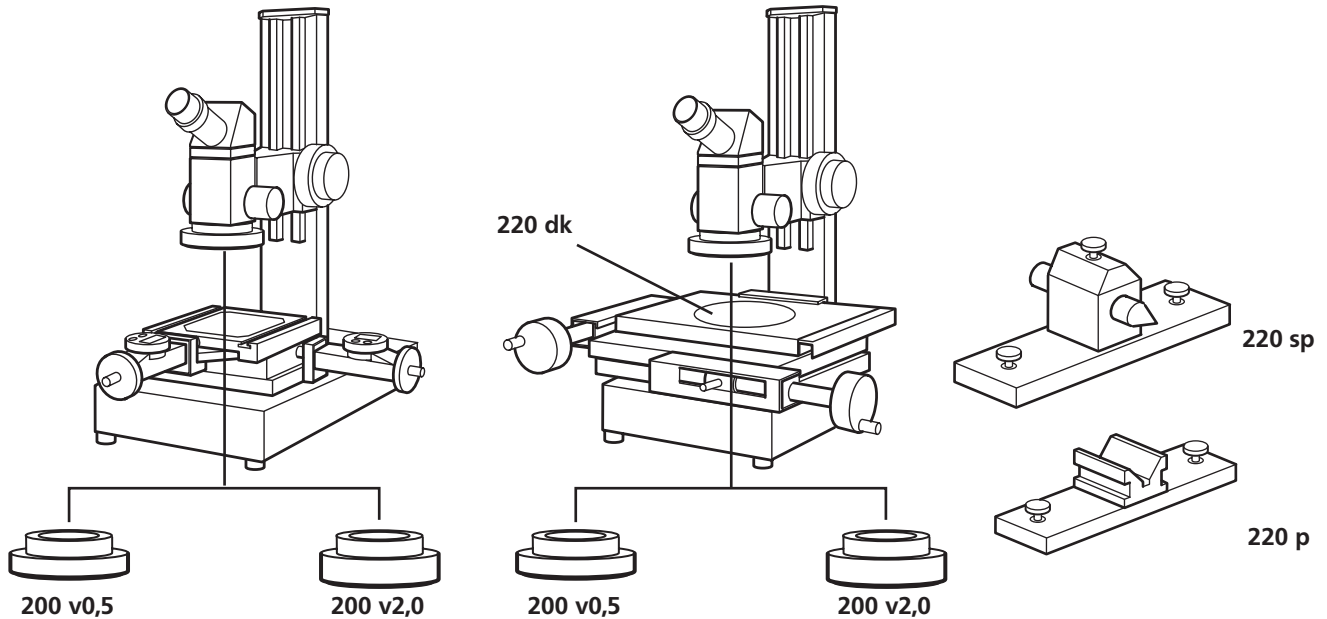
Measurement and Evaluation Functions

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

Accessories for MarVision MM 200 / MM 220



Optics / Ancillary 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	4245020
Magnification 2.0x	200 v2,0	4245021

Illumination MM 200 / MM 220

		Order no.
Cold light source luminance / brightness 8 Mlx, Output 30 W, Power input 50VA / 240 V	200 fs	4245043
Cold light source luminance / brightness 8 Mlx, Output 30 W, Power input 100 - 200 V	200 fs	4245053
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

Workshop Measuring Microscope MarVision MM 320 with M3-Software and a Touchscreen-PC



MM 320



M3-Touchscreen-PC

Zoom stages	Depiction in display	Field on image
0.7 x	35 x	9.4 x 7.0 mm ²
1.0 x	50 x	6.5 x 4.9 mm ²
2.0 x	94 x	3.2 x 2.4 mm ²
3.0 x	142 x	2.1 x 1.6 mm ²
4.0 x	195 x	1.6 x 1.2 mm ²
4.5 x	225 x	1.3 x 0.9 mm ²

Technical Data

Measuring range X/Y [#]	mm	100 / 100	200 / 100	250 / 170	400 / 250
Z travel	mm	200 / 400**			
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 18-19			
Working distance	mm	85			
Max. height of test piece	mm	ca. 65 / 300**			300
Illumination		LED Incident and transmitted light. individually adjustable			
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***		Zoom 35-225x			
Order no. with M3	220 V	4247500	4247501	4247502	4247503
Order no. with M3	110 V	4247505	4247506	4247507	4247508

* Measuring table is centered ** extensions are optional *** 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.



For further applications and industrial branch based solutions see Webcode: 12464

Features

Measuring Microscope

- Integrated color camera
- Zoom lens
- 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 assistance
- Supplied with: Measuring Microscope, Stop bar standard, M3-Software with Touchscreen PC
- 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 contrast parts
- Options:
 - Integration of DXF-files
 - Training
 - Calibration
 - Maintenance

Optional Optics

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

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!

M3-Software

View – Measure – Detailed – Dimensioned – Evaluate – Record

Kreis 3 Sollwert: I/A/I

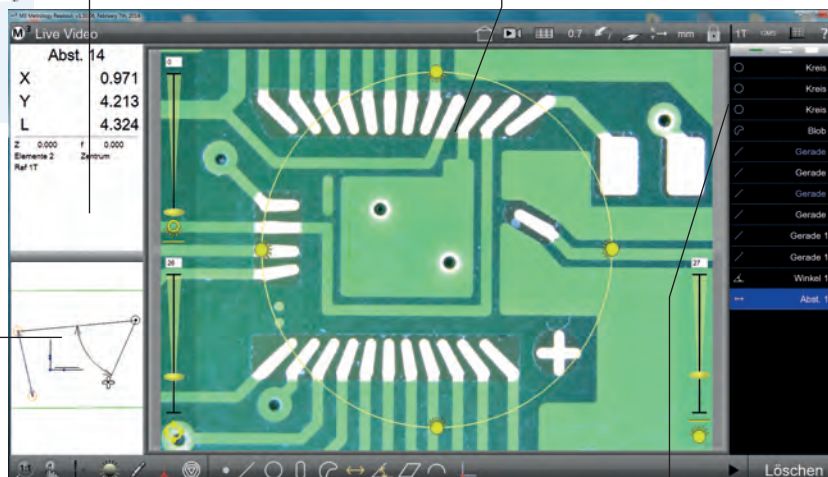
X: -1.139

Y: -1.716

D: 0.592

Form

Form and Location tolerances



The diagram shows a four-bar linkage mechanism with the following dimensions and angles:

- Link 1 (Ground): Length 1.400
- Link 2 (Coupler): Length 1.300
- Link 3 (Follower): Length 1.300
- Link 4 (Ground): Length 1.300
- Angle 1: 100° (between Link 1 and Link 2)
- Angle 2: 100° (between Link 2 and Link 3)
- Angle 3: 100° (between Link 3 and Link 4)
- Angle 4: 100° (between Link 4 and Link 1)

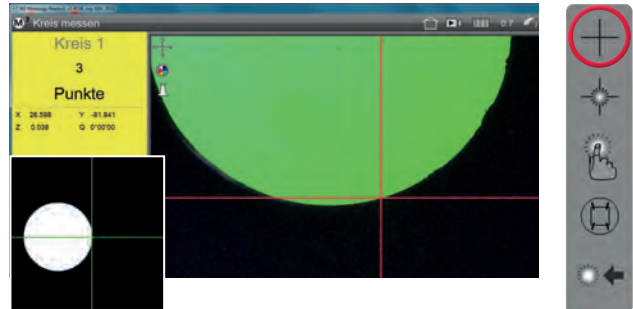
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	Kreis 1
	Kreis 2
	Kreis 3
	Blob 4
	Gerade 9
	Gerade 10
	Gerade 12
	Winkel 13
	Abst. 14
	Gerade 15
	Abst. 16
	Winkel 17

Measuring Tools

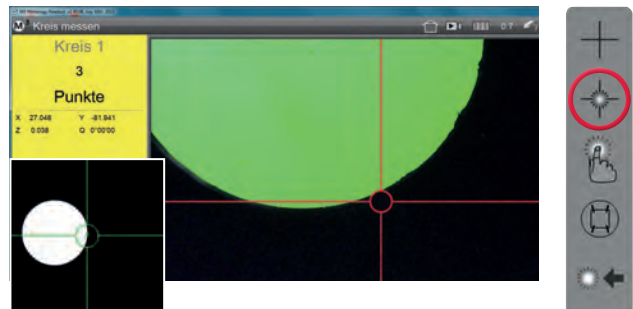
Reticule / Cross Hair

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



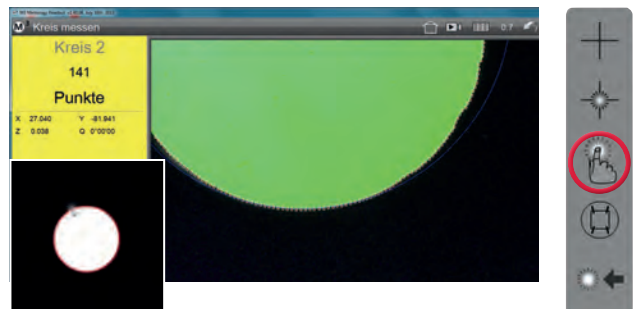
Active Cross Hair

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.



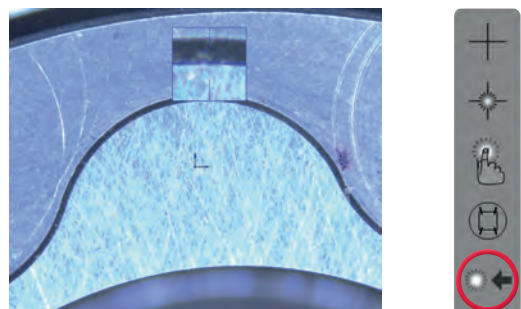
Multi-Point Measurement

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 contrast between 2 elements.



Workshop Measuring Microscope MarVision MM 320 with image processing

M3-Software - Additional Functions

Dimensioning during Live Imaging, e.g. Pitch measurement

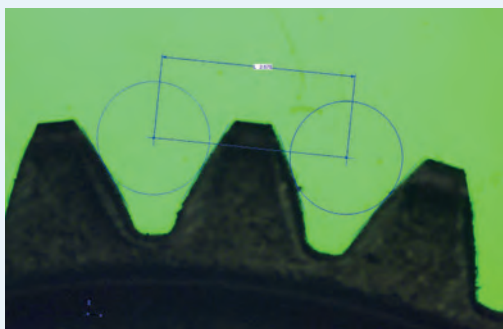
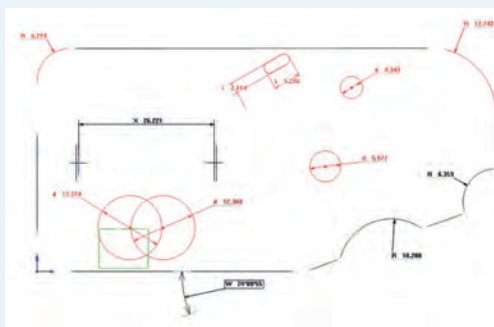


Diagram with dimensions

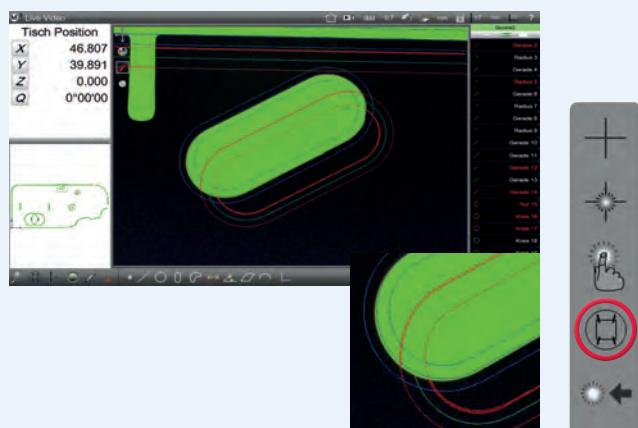


List of results with targeted and actual evaluation

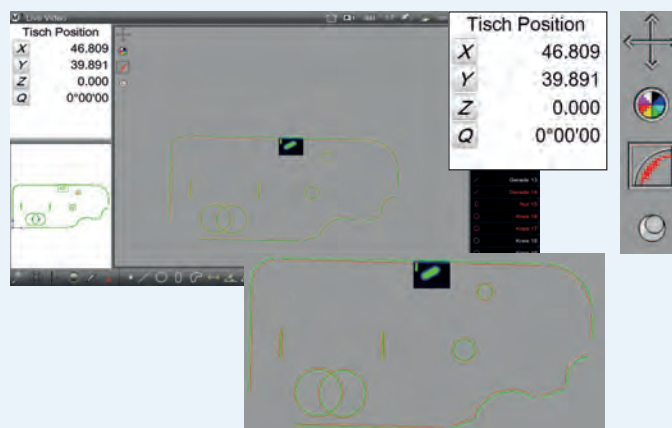
Element	Tol	Mean	Subst	Tol	Tol	Alte	Tolerance	Ergebnis
1	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
2	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
3	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015
4	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
5	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
6	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030
7	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035
8	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040
9	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045
10	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
11	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055
12	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060
13	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065
14	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070
15	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075
16	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080
17	0.085	0.085	0.085	0.085	0.085	0.085	0.085	0.085
18	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090
19	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095
20	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100

Software-Option-DXF

Define the tolerance bands

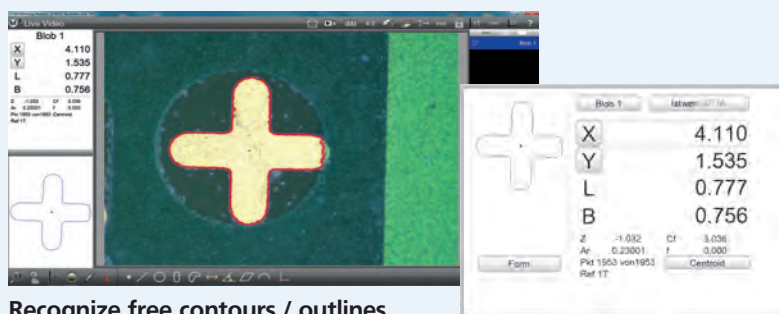


Export and import DXF files



Create overlays (e.g. cross hairs)

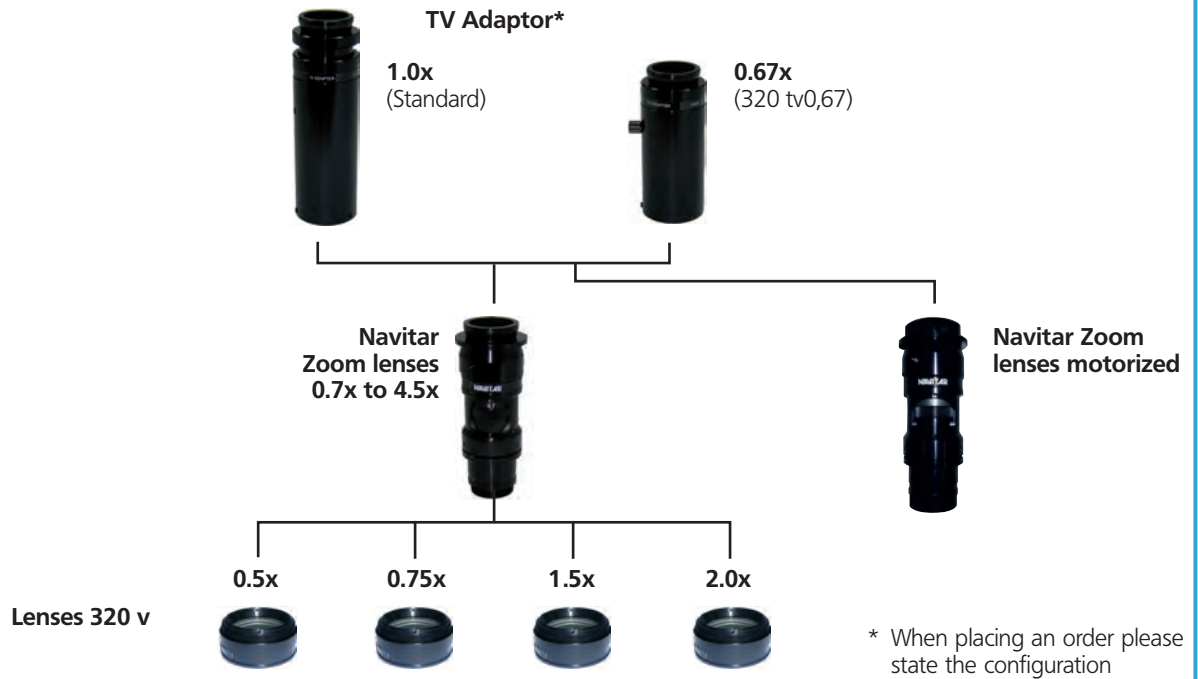
Images details can be used to learn diagrams



Recognize free contours / outlines

Calculate the circumference and determine the area

Configuration of the Optics for MarVision MM 320



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

TV Adaptor	Lenses	Zoom-Magnification					
		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

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Accessories

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

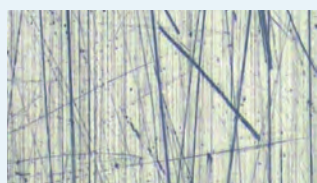


with telecentric transmitted light



without telecentric transmitted light

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



with coaxial incident light



without coaxial incident light



Rotary glass plate



Calibration standard with certificate

For Measuring Tables

		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
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

Calibration Standards

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

Dust Covers*

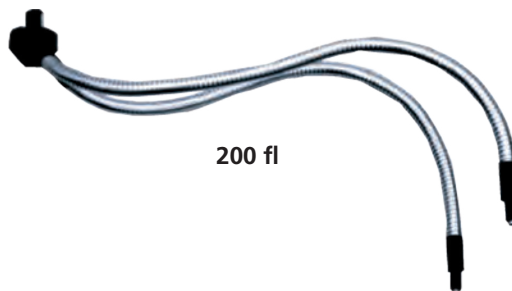
	Order no.
Dust cover for measuring ranges 100 / 100 and 200 / 100	4246071
Dust cover for measuring ranges 250 / 170	4246072
Dust cover for measuring ranges 400 / 250	4246073

* 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

	Catalog no.	For Microscope				Order no.
		SM 150 / 160	MM 200	MM 220	MM 320	
Cold light source						
Luminance / brightness 8 Mlx						
Output 30 W						
Power input 50VA / 240V	200 fs	•	•	•	•	4245043
Power input 100 - 200V	200 fs	•	•	•	•	4245053
Flexible fiber optic light guide	200 fl	•	•	•	•	4245042
2-Arm, L=500 mm, D=4 mm						

Clamping Elements



220 p



220 sp



220 as 90

Features

- For clamping, centering work-pieces

Technical Data

	Order no.	
Pair of V-blocks 200x100 with clamping bracket	220 p	4246801
Pair of V-blocks 250x170 with clamping bracket	220 p	4246831
Pair of V-blocks 400x250 with clamping bracket	220 p	4246832
Pair of center supports 200x100 with moveable chucks	220 sp	4246802
Pair of center supports 250x170 with moveable chucks	220 sp	4246833
Pair of center supports 400x250 with moveable chucks	220 sp	4246834
Center support rotary 200x100, H=50 mm, distance between centers 130 mm	220 sps	4246806
Center support rotary 250x170, H=50 mm, distance between centers 130 mm	220 sps	4246807
Center support rotary 400x250, 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

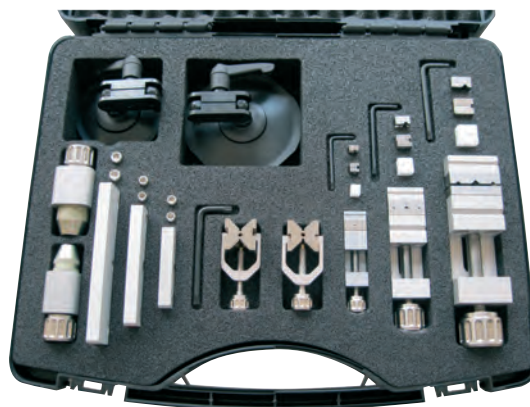


Features

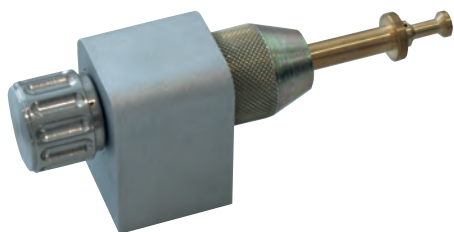
- With mini precision vises. Depending upon set are clamping prisms, support plates., stands and mini dividing attachments. Supplied in a plastic case

Technical Data

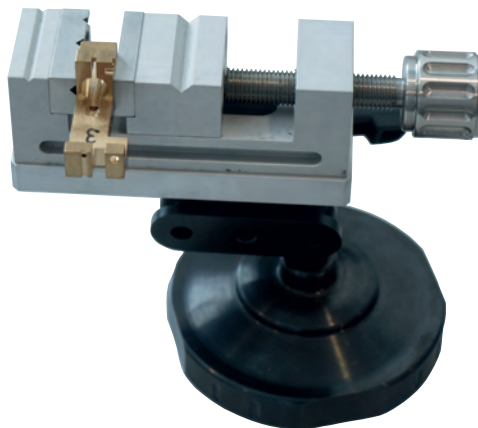
Case set	Order no.
Width of jaws 15 / 25	4246816
Width of jaws 25 / 35	4246817
Width of jaws 15 / 25 / 35 incl. stand, clamping prism	4246818
Width of jaws 15 / 25 / 35 additional mini dividing attachments	4246819



Applications



Mini rotary table, available in 2 sizes



Precision vise with stand, available in 3 sizes



Prism with clamping bracket

Clamping Elements



Set 1

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



Set 2



Set 3

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



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

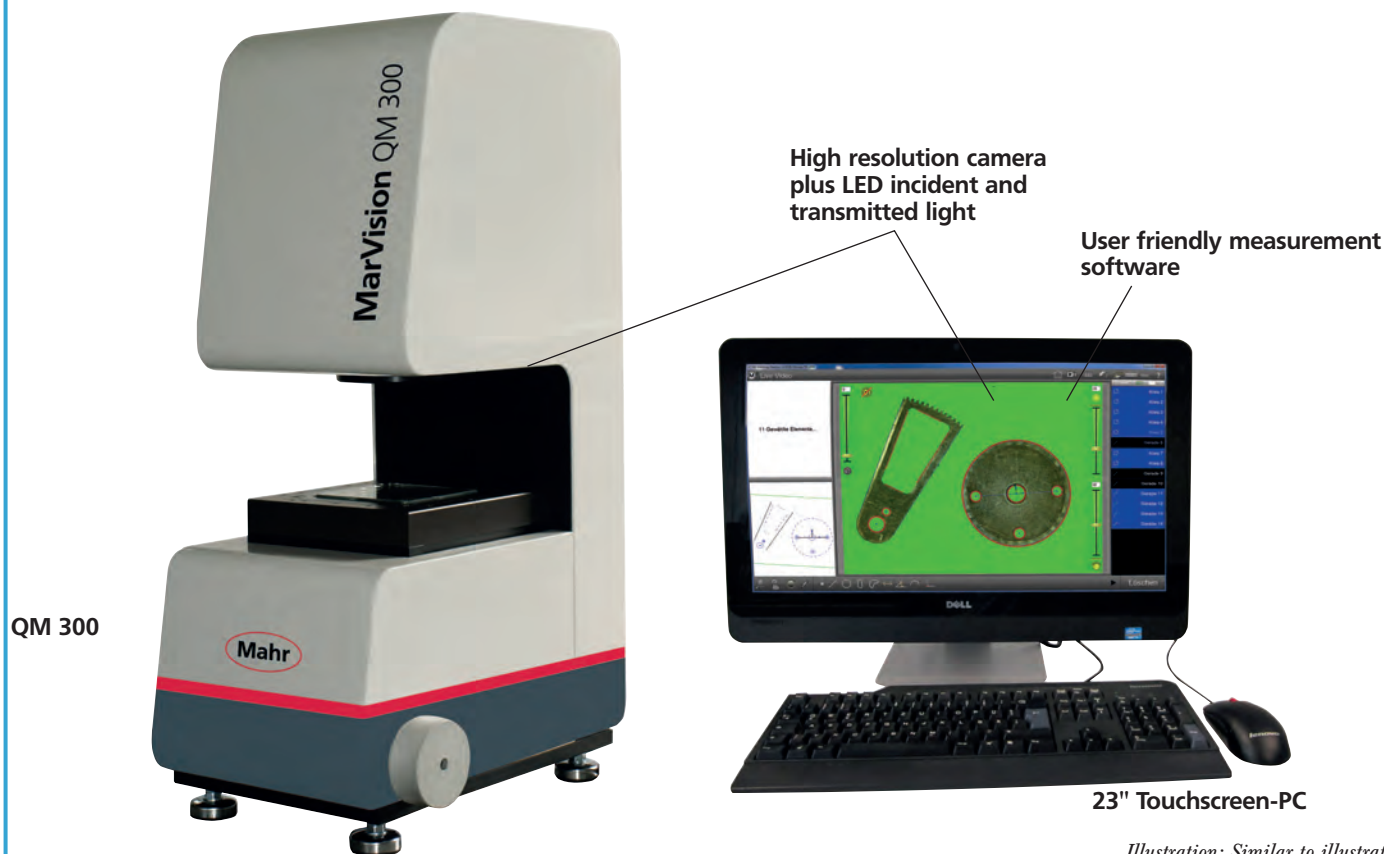


Illustration: Similar to illustration (depends upon the PC manufacturer)

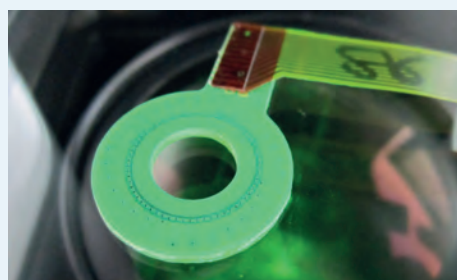
Example of Applications



Laser punched parts



Sieve



Circuit board

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.	220 V	4247800	4247801	4247802
Order no.	110 V	4247803	4247804	4247805

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.



For further applications and industrial branch based solutions see Webcode: 12464

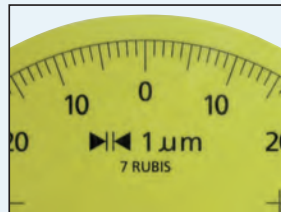
Features

- Telecentric fixed lens
- Integrated USB color camera
- LED ring light: dimmable
- LED transmitted light
- 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, operating instructions in a PDF file, test certificate and a dust cover

Range of Parts



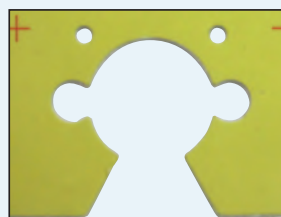
Punched parts



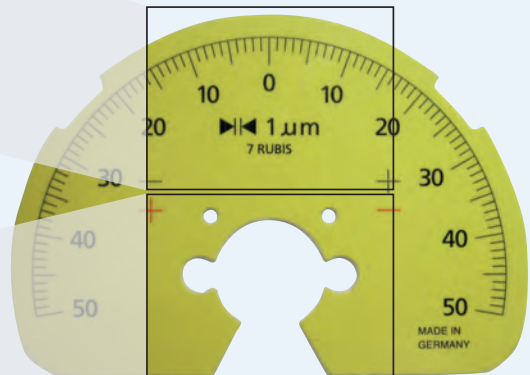
Scaling



Gears



Measure a section



Rubber seals



Incription

