

Epimakroskop

WILD M450

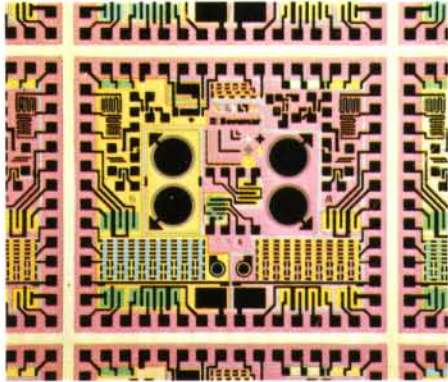
WILD
HEERBRUGG



Wild M450 Epimakroskop

New contrasts for industrial specimens

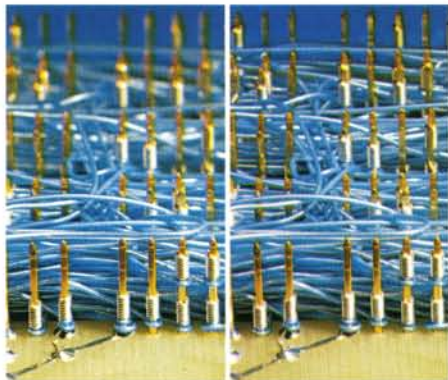
Coaxial, precisely vertical incident illumination for recognising fine structures



The Wild M450 Epimakroskop has a powerful 6V/20W built-in halogen illuminator, so highly-reflecting objects can be examined.

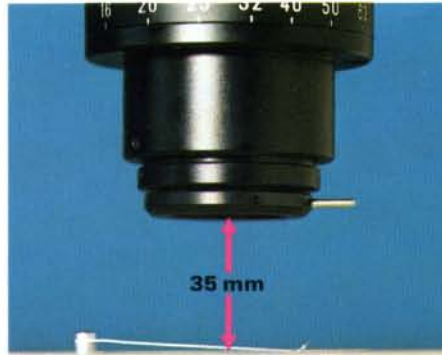
The light is coaxial (i. e. the illumination train coincides with the optical path), so fine structures show up in strong contrast. The Epimakroskop is therefore useful in electronics and metallurgy.

Depth of field adjustable with iris diaphragm



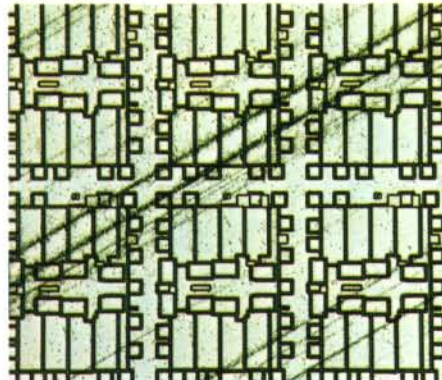
The built-in iris diaphragm of the Epimakroskop enables the depth of field to be matched to the topography of the specimen. Open it completely, and the Epizoom objective is functioning at maximum aperture. Close it, and the depth of field is increased. Set it to the click-stop position, and the image brightness remains constant over the whole zoom range.

Constant working distance



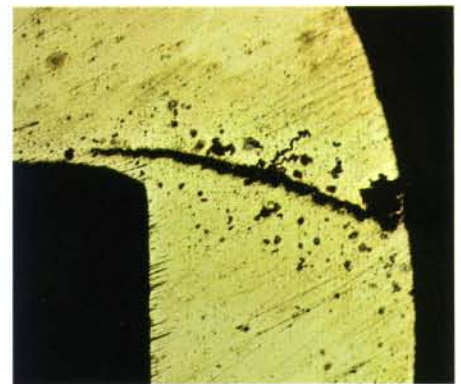
The large free working distance of the Epimakroskop (35 mm at all magnifications) enables the specimen to be readily manipulated during observations. Tools and supplementary instruments can be used.

High resolution for examining finest details



The high resolution of the Epimakroskop (up to 690 line pairs / mm) means that features down to 0.002 mm can be seen. This remarkable performance is due to the high maximum aperture (0.23) and excellent optical contrast transfer characteristics of the zoom system, which was developed specifically for this instrument and is manufactured in the Wild Heerbrugg factory using modern optical technologies.

Zoom objective for both the general and the specific



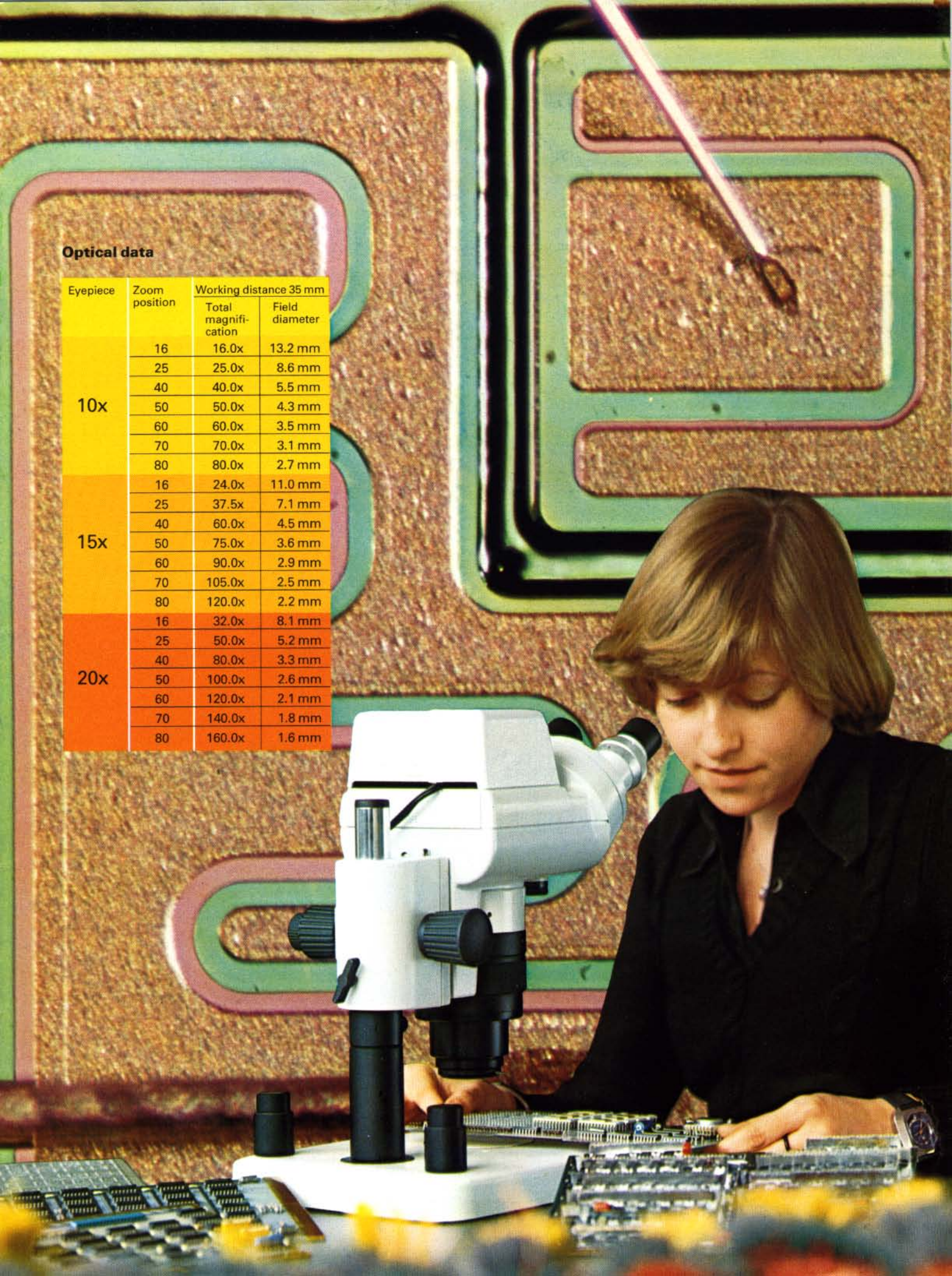
To get the magnification or specimen area required, just turn the setting ring of the zoom objective. The high mechanical and optical quality of the Epimakroskop ensure that the image stays crisp from the general panorama to the detailed blow-up.

The zoom range is 1:5. The actual magnification range obtained depends on the eyepieces selected and is 16× – 80× with 10× eyepieces, 24× – 120× with 15× eyepieces, and 32× – 160× with 20× eyepieces.

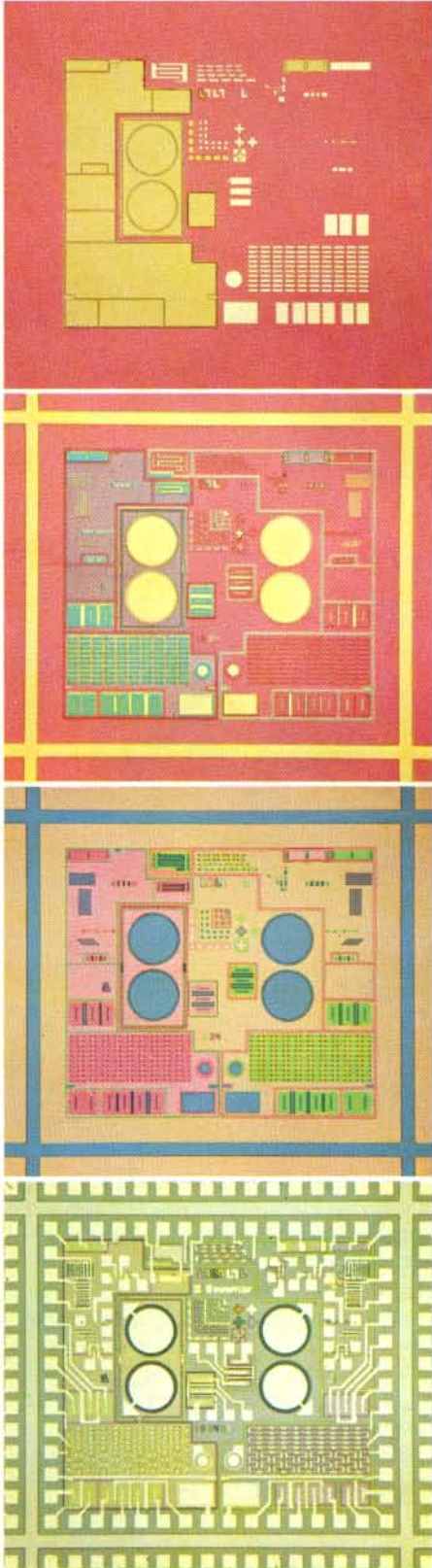
When the magnification is altered, the setting of the coaxial 6V/20W halogen illuminator becomes matched to the new field of view, which it always illuminates completely. The illumination is quickly centred by means of a control on the lamp housing.

Optical data

Eyepiece	Zoom position	Working distance 35 mm	
		Total magnification	Field diameter
10x	16	16.0x	13.2 mm
	25	25.0x	8.6 mm
	40	40.0x	5.5 mm
	50	50.0x	4.3 mm
	60	60.0x	3.5 mm
	70	70.0x	3.1 mm
	80	80.0x	2.7 mm
	15x	16	24.0x
25		37.5x	7.1 mm
40		60.0x	4.5 mm
50		75.0x	3.6 mm
60		90.0x	2.9 mm
70		105.0x	2.5 mm
80		120.0x	2.2 mm
20x		16	32.0x
	25	50.0x	5.2 mm
	40	80.0x	3.3 mm
	50	100.0x	2.6 mm
	60	120.0x	2.1 mm
	70	140.0x	1.8 mm
	80	160.0x	1.6 mm



Calculator chip:
showing various process steps



An erect, laterally-correct image

The image, as seen down the binocular tube which is inclined at a comfortable 30° , is erect and laterally correct. The interpupillary distance can be varied between 54 mm and 75 mm. Because of its low and compact design, the Epimakroskop is fatigue-free and comfortable to work at.

Convenient focusing with diopter rings and coaxial controls



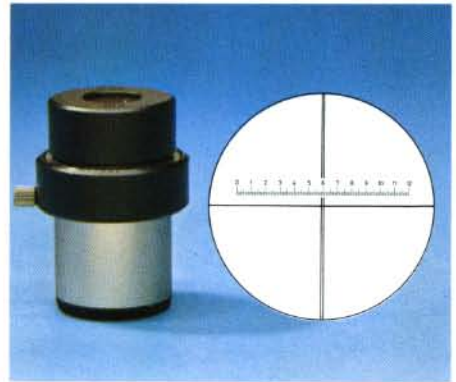
Two diopter rings enable differences between the eyes to be accommodated while at the same time ensuring that precise focusing is maintained over the whole zoom range. The Wild M450 Epimakroskop has a bearing-mounted, maintenance-free drive housing with coaxial coarse and fine drive. The fine movement enables the specimen to be focused accurately at high magnifications.

Building-block principle adapts the Epimakroskop to requirements



The Epimakroskop and its stand have been designed as separate units. Four different stands with various characteristics and illumination possibilities ensure that the instrument is set up in a manner appropriate to the needs of the job and to the space available.

You can measure too



There are two reasons why the Epimakroskop is particularly suitable for measurement work. Firstly, the vertical beam path ensures that the subject is viewed directly from above so that there are no parallax effects or disturbing shadows. Secondly, the zoom changer can be set to a magnification at which one interval in the measuring eyepiece corresponds to a round number of metric units, and then secured in that position.

WILD M450

Choice of three standard outfits

Wild M450 incident-light outfit

In addition to the basic components, which are identical for all standard outfits (Wild M450 Epimakroskop with built-in coaxial halogen illuminator, maintenance-free drive housing, 1:5 Epizoom objective, 10× eyepieces, eyecups and 6V/50VA regulating transformer), Outfit 1 includes an incident-light stand with rectangular baseplate.



Wild/Igl-Design

Stand

The incident-light stand comprises a stable rectangular baseplate and a 250 mm column. A cutout in the baseplate accepts a reversible stage plate which is black on one side and white on the other. Two stage clips are also supplied. One of a number of interchangeable stages can be substituted for the stage plate. A sleeve and a safety ring protect the Epimakroskop from damage due to misuse.

Additional inclined illumination

On each side of the baseplate is a stud to which a lampholder with low-voltage lamp can be attached.

Wild M450 incident-light outfit with swinging-arm

Outfit 2 is used for very large objects and in situations In addition to the basic components (Wild M450 Epimakroskop with built-in coaxial halogen illuminator, maintenance-free drive housing, 1:5 Epizoom objective, 10× eyepieces, eyecups and 6V/50VA regulating transformer), Outfit 2 includes a large swinging-arm stand or the large table-clamp stand.



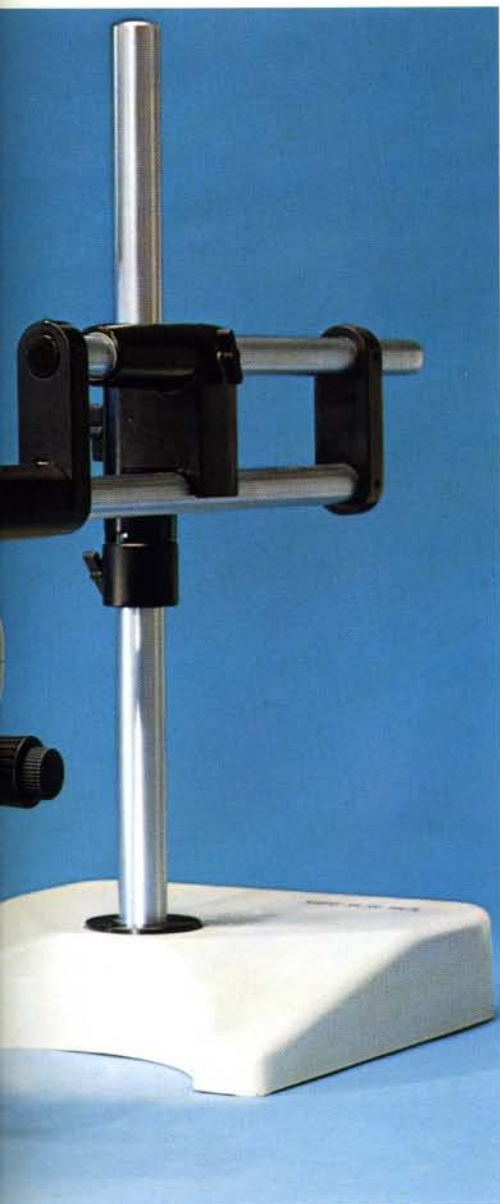
Large swinging-arm stand

The large swinging-arm stand comprises a firm 310 × 330 mm base with incorporated counterweight, a 530 mm long vertical column, and a clampable horizontal arm of 540 mm maximum overhang with a carrier rod to take the Epimakroskop. The sliding double bar of the horizontal arm, and its Teflon gliders, render the instrument readily movable without torsion. The horizontal arm can be positioned at any height on the vertical column.

Large

The
the
a ca
stan

Swinging-arm stand or table-clamp stand
situations which require a large overhang.
Wild M 450 Epimakroskop with built-in coaxial
illuminator, 1:5 Epizoom objective, 10× eye-
pieces, eyecups and 6V/50VA regulat-
ing transformer), the outfit includes either the
table-clamp stand.



Large table-clamp stand

The table-clamp stand is identical to the swinging-arm stand, but instead of a cast base it has a clamp for fixing the stand to tables 20–50 mm thick.

Wild M 450 outfit for combined transmitted light (bright and dark field) and incident light

Outfit 4 comprises the basic components common to all outfits (Wild M 450 Epimakroskop with built-in coaxial halogen illuminator, maintenance-free drive housing, 1:5 Epizoom objective, 10× eyepieces, eyecups and 6V/50VA regulating transformer) and a unique transmitted-light stand for immediate switchover from bright to dark field and 12V/100VA regulating transformer.



Stand

The bright field/dark field stand is made up of a non-tilt base and a 250 mm column. The entire field of view is uniformly illuminated by a built-in 12V/100W halogen lamp. The setting is altered from bright field to dark field by means of a lever. The stand is supplied with two stage clips, and with a clear glass stage plate which can be replaced with one of the stages. A sleeve and a safety ring protect the Epimakroskop from damage due to misuse.

Accessories

Eyepieces for various magnifications



The Wild M 450 Epimikroskop is routinely supplied with 10× wide-field eyepieces which result in a basic total magnification range of 16× – 80×. The 15× and 20× wide-field eyepieces enable the maximum magnification to be increased to 120× and 160× respectively (see table on page 3). For research purposes the wide-field eyepieces 15× S and 20× S are recommended. 10× and 20× wide-field measuring eyepieces, which can be fitted with various scales and grids, are designed for measuring and counting. They are to be calibrated against a stage micrometer.

Stages for incident- and transmitted-light stands



Gliding stage

Specimens on the gliding stage can be quickly moved in any direction and rotated. This stage will accept a black/white stage plate (for observations in incident light) or a glass stage plate (for transmitted light).



Stage carrier with attachable mechanical stage Cp

This stage combination is useful for systematically scanning material mounted on standard 3 × 1" glass slides.



Centring rotating Pol. stage

The centring rotating Pol. stage has a swing-out polariser and a clear glass stage plate, and accepts the attachable mechanical stage Cp.



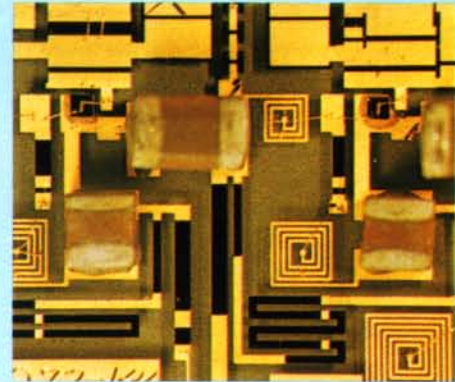
Inclined incident illumination for all stands

The inclined incident illuminator comprises a lampholder, a 6V/15W low-voltage lamp, and a regulating transformer (6V/50VA). The lampholder, in conjunction with a 25 mm adapter, can be mounted on the column of the stand, on a stud of the baseplate, or on a free-standing cast base.

You select the illumination technique which reveals the particular features you want to see

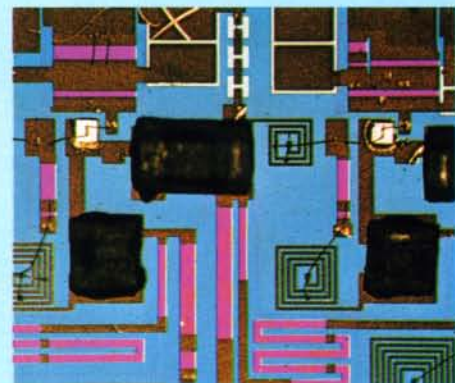
Inclined incident illumination

Uneven, light-scattering objects, such as contacts and connections on electronics components, are best examined in inclined incident light. The combination of highlights and shadows produces a strong spatial effect, and irrelevant features are masked. The light source consists of one or more 6V/15W low-voltage lamps.



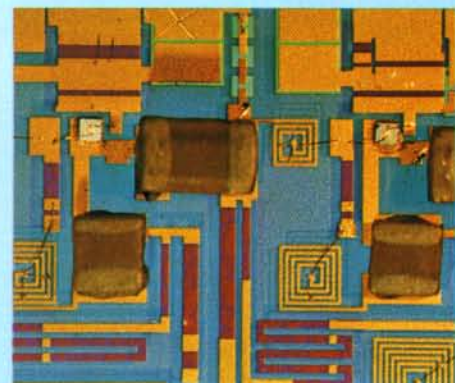
Coaxial incident illumination

The coaxial illuminator built into the Wild M 450 Epimikroskop is used for examining flat, highly-reflecting objects such as semiconductor components and polished metal sections, and also for observing features located in depressions. The light source is a powerful 6V/20W halogen lamp.



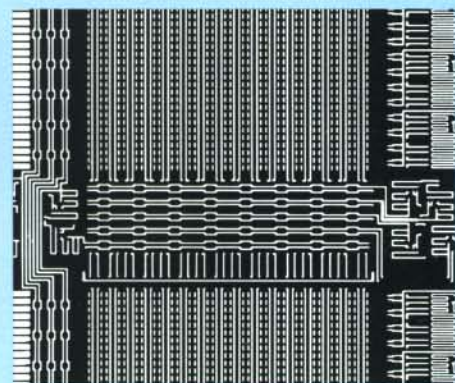
Combined coaxial and inclined illumination

This type of combined illumination is suitable for objects which contain both uneven dispersive surfaces and flat reflecting components. The coaxial incident illumination is supplemented by the light from a low-voltage lamp. Compound objects, such as combinations of hybrid circuits and mechanical components (normally examined by coaxial and inclined light respectively) can thus be satisfactorily inspected.



Transmitted-light illumination

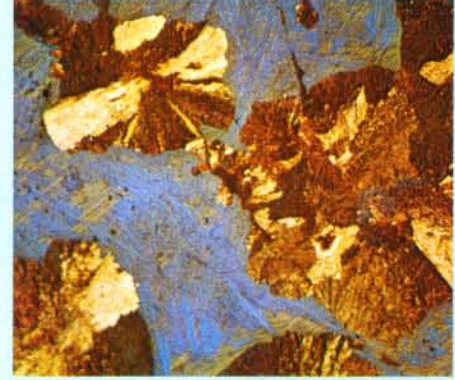
The Wild M 450 Epimikroskop can be furnished with a transmitted-light base for examining in transmitted light objects such as the masks used in semiconductor manufacture. The transmitted-light base for bright and dark field gives two very different types of contrast.



Get the most out of each specimen with the rotatable quarter-wave plate of the Wild M450 Epimakroskop

So that no disturbing reflections arise which could adversely affect the contrast, the coaxial illuminating light is polarised.

A rotatable quarter-wave plate is located in front of the zoom objective. When it is turned, the contrasts between different types of feature (e. g. between layers and particles) are changed and the components can be distinguished better.



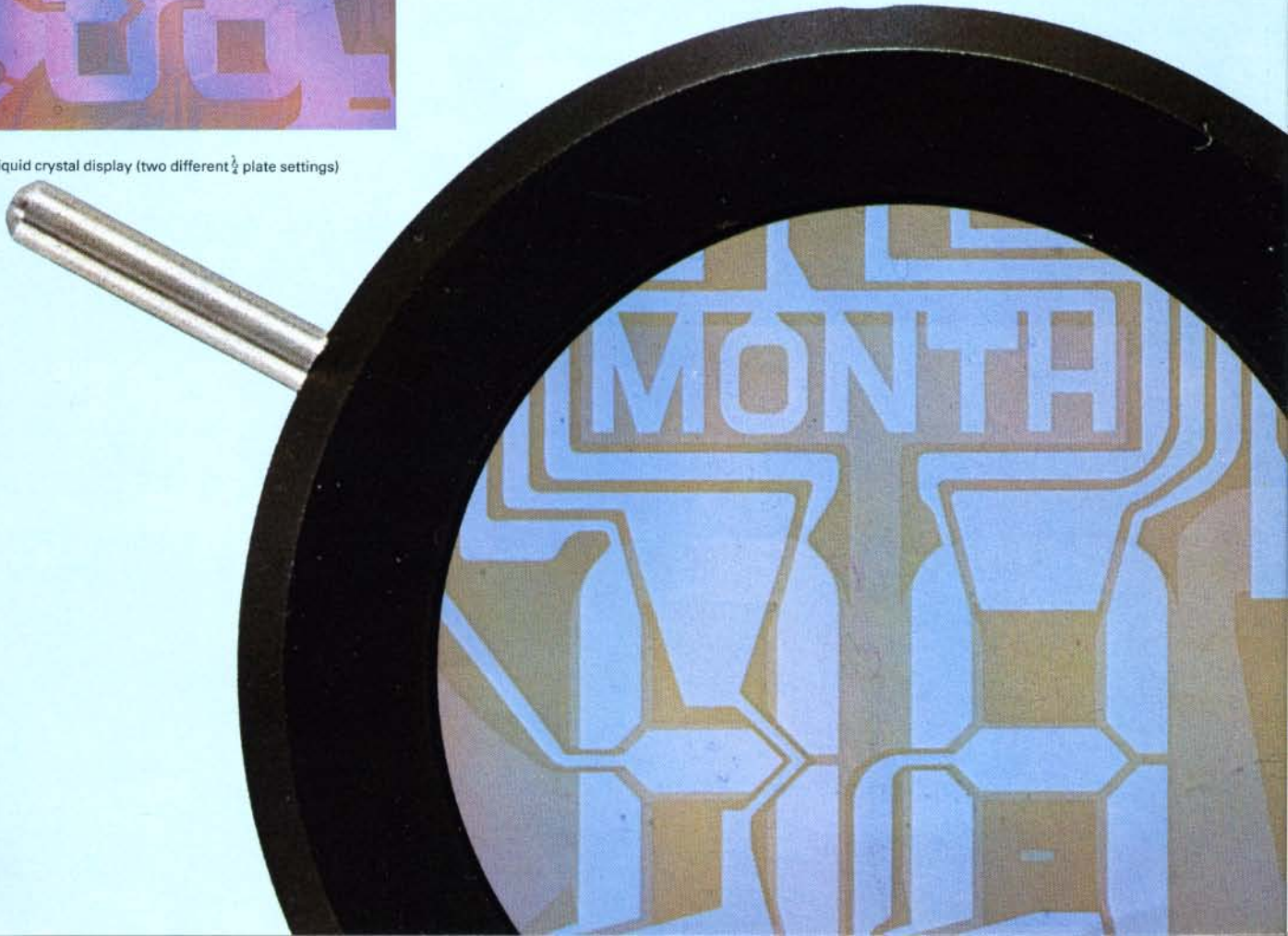
Copper alloyed with 11.8% aluminium
(two different $\frac{1}{4}$ plate settings)

For example:

- Some inclusions in polished metal sections can be caused to appear bright.
- The individual layers on LCDs (liquid crystal displays) can be differentiated as a result of interference effects.



Liquid crystal display (two different $\frac{1}{4}$ plate settings)



Catalogue references Wild M450 Epimakroskop



- 304068 1 M 450 Epimakroskop Outfit 1,** comprising:
304070 1 M 450 optics carrier with drive housing, built-in vertical incident illuminator 6V/ 20W, Epizoom objective 1: 5 and inclined binocular tube
304066 1 Incident-light stand, rectangular, with 250/25 mm column, black/white stage plate and two stage clips
362658 2 Halogen bulb 6V/20W
181972 1 Regulating transformer 0–7V/50VA, prim. 110–240V, with mains cable
192620 2 Wide-field eyepiece 10×
184506 2 Eyecup
126273 1 Dust cover

- 304069 1 M 450 Epimakroskop Outfit 2,** comprising:
304070 1 M 450 optics carrier with drive housing, built-in vertical incident illuminator 6V/ 20W, Epizoom objective 1: 5 and inclined binocular tube
374924 1 Large swinging-arm stand
362658 2 Halogen bulb 6V/ 20W
181972 1 Regulating transformer 0–7V/50VA, prim. 110–240V, with mains cable
192620 2 Wide-field eyepiece 10×
184506 2 Eyecup
126273 1 Dust cover

- 328240 1 M 450 Epimakroskop Outfit 4,** comprising:
304070 1 M 450 optics carrier with drive housing, built-in vertical incident illuminator 6V/ 20W, Epizoom objective 1:5 and inclined binocular tube
373769 1 Transmitted-light stand (bright/dark field), with 250/25 mm column, regulating transformer 110–240V
362658 2 Halogen bulb 6V/ 20W
181972 1 Regulating transformer 0–7V/50VA, prim. 110–240V, with mains cable
192620 2 Wide-field eyepiece 10×
184506 2 Eyecup
126273 1 Dust cover

Accessories

- Stands**
304066 1 Incident-light stand, rectangular, with 250/25 mm column, black/white stage plate and two stage clips
376207 1 Incident-light stand, rectangular, with 350/25 mm column, black/white stage plate and two stage clips
373769 1 Transmitted-light stand (bright/dark field) with 250/25 mm column, regulating transformer 0–12V/100VA, prim. 110–240V, spare bulb and two stage clips
376209 1 Transmitted-light stand (bright/dark field) with 350/25 mm column, regulating transformer 0–12V/100VA, prim. 110–240V, spare bulb and two stage clips
377584 1 Handrest for transmitted-light stands
213013 1 Adapter for handrest
374924 1 Large swinging-arm stand with inclinable carrier rod diam. 25 mm
374927 1 Large table-clamp stand with inclinable carrier rod diam. 25 mm

- Stages**
153419 1 Black/white stage plate
234460 1 Glass stage plate, clear
108122 1 Glass stage plate, frosted
198275 1 Acrylic plastic stage plate, opal
234461 1 Gliding stage
181971 1 Stage carrier with attachable mechanical stage Cp
368078 1 Centring rotating Pol. stage with polariser and clear glass stage plate
382130 1 Attachable mechanical stage Cp for centring rotating Pol. stage and for stage carrier
365088 1 Metal insert for centring rotating Pol. stage
177165 1 Stage clip

- Optics**
192620 1 Wide-field eyepiece 10×/21
175133 1 Wide-field eyepiece 15×/17
202210 1 Wide-field eyepiece 20×/13
343000 1 Wide-field eyepiece 15×S/17
342980 1 Wide-field eyepiece 20×S/13
Measuring
202216 1 Wide-field measuring eyepiece 10×, for graticules diam. 23 mm

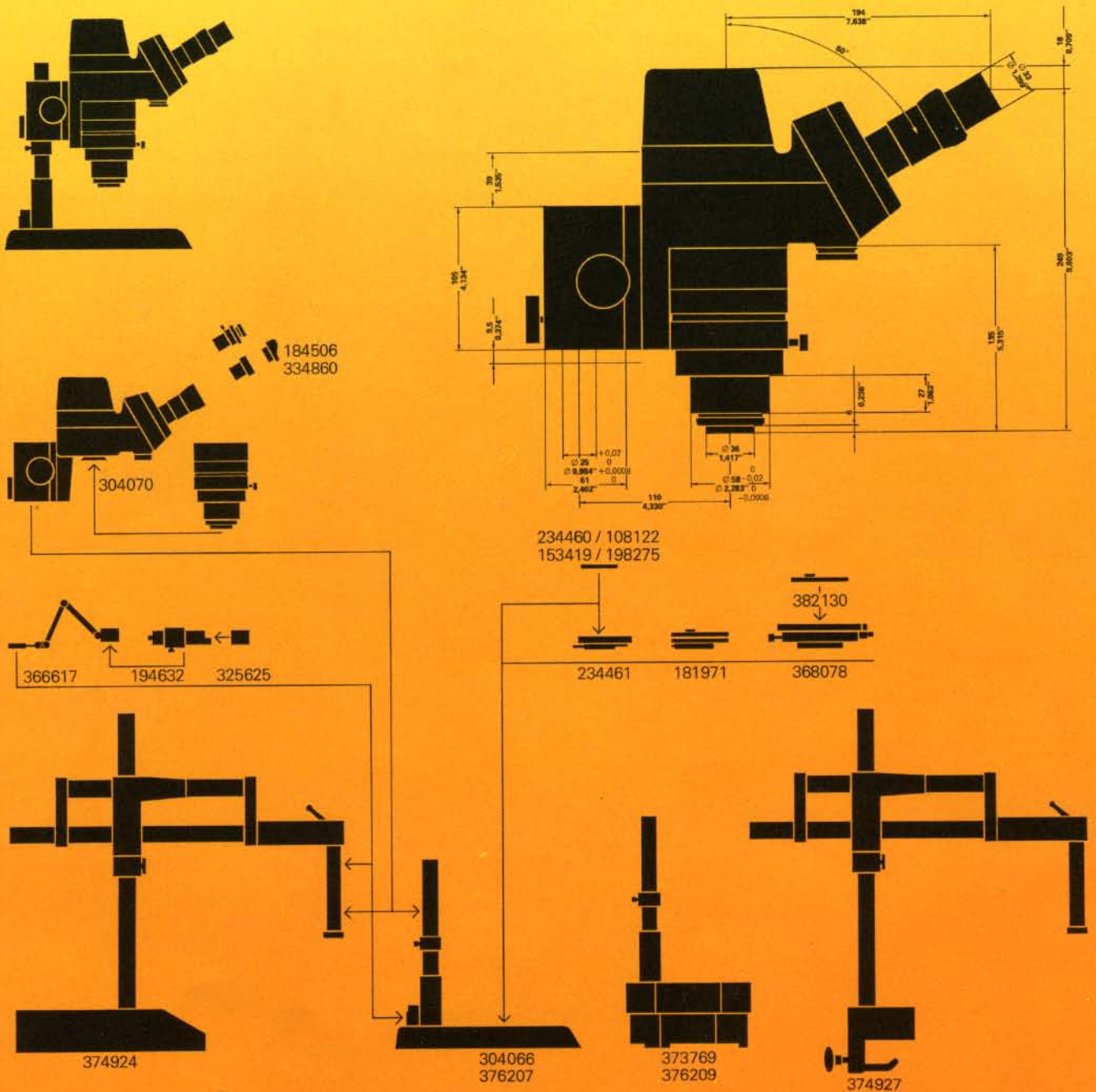
- 255501 1 Wide-field measuring eyepiece 10× with scale 12 mm :120 and crosshair**
255502 1 Wide-field measuring eyepiece 10× with crosshair
175135 1 Wide-field measuring eyepiece 20×, for graticules diam. 16 mm
255503 1 Wide-field measuring eyepiece 20× with scale 5 mm :100
213092 1 Wide-field goniometer eyepiece 10×
127580 1 Graticule with scale 12 mm :120 and crosshair, diam. 23 mm
127581 1 Crosshair graticule, diam. 23 mm
127578 1 Graticule with grid 100 × 1mm², diam. 23 mm
127579 1 Graticule with grid 400 × 0.25 mm², diam. 23 mm
128402 1 Graticule with scale 10mm :100, diam. 16 mm
127572 1 Graticule with scale 5 mm :100, diam. 16 mm
175141 1 Graticule with grid 25 × 1 mm², diam. 16 mm
175143 1 Graticule with grid 100 × 1 mm², diam. 16 mm
175145 1 Crosshair graticule, diam. 16 mm
310345 1 Stage micrometer, 50 mm scale with 0.1 mm divisions

- Illuminators**
- 366617 1 Lampholder for columns, diam. 25 mm
 - 194632 1 Low-voltage lamp 6V/15W
 - 325625 1 Filter-securing ring for filter holder of low-voltage lamp 6V/15W
 - 166324 1 Bulb 6V/15W, clear
 - 362658 1 Halogen bulb 6V/20W
 - 313443 1 Halogen bulb 12V/20W
 - 193049 1 Halogen bulb 12V/100W
 - 315271 1 Cast base for lampholder 366617
 - 181972 1 Regulating transformer 0-7V/50VA, prim. 110-240V, with mains cable

- 352318 1 Regulating transformer 0-12V/100VA, prim. 110-240V, with mains cable

- Miscellaneous**
- 184506 1 Eyecup
 - 334860 1 Eyecup for spectacle wearers
 - 126273 1 Dust cover
 - 126269 1 Dust cover for large swinging-arm and table-clamp stands

Assembly diagram for the Wild M 450



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In the interest of our customers, we reserve the right to make modifications resulting from technical developments. Illustrations and specifications are therefore not binding and are subject to change without notice.

A complete range



Wild M1A/Wild M1B



Wild M3



Wild M5A



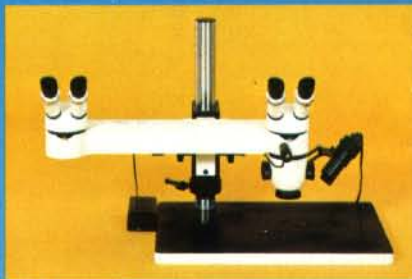
Wild M7A



Wild M7S



Wild M8



Wild Discussion Stereomicroscope



Wild Photomakroskop M 400



Wild M8
with Coaxial Incident Light Housing



Heerbrugg factory



World-wide guaranteed service

In microscopy, surveying and photogrammetry, Wild Heerbrugg is the hallmark of dependable precision instruments. Incorporating the most modern technology, Wild products are designed by specialists in the fields of optics, electronics and precision engineering. Wild's international service and consulting network is available to customers in 128 countries the world over.

