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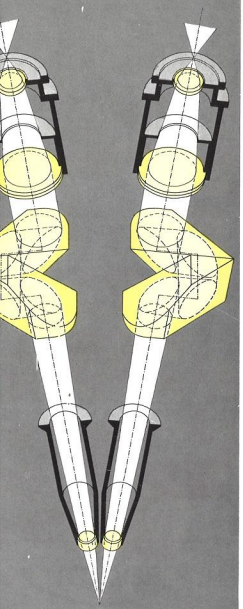
Mak



Mak **STEREOSCOPIC**

GREENOUGH

CONSTRUCTION

Two optically independent microscopes are so mounted that their optical axis include an angle of 15° and converge on a point in the object plane. The two eyes therefore observe the object from two directions inclined at 15° and the images in the focal planes of the two eyepieces combine to give a pronounced 3-dimensional effect. This effect is particularly enhanced since the convergence of the eye axis corresponds to observation with the naked eyes at a point 250 mm (10 inch) from the observer.

Each of the two separate microscopes contains a Porro prism system which produces an erect and unreversed image.

Our Stereoscopic Microscopes feature:

- 3-dimensional upright and unreversed images with a total magnification from 6,3 × to 200 ×.
- Long free working distance between object and objective, leaving sufficient space for dissection and manipulation even at the highest magnifications.
- Good depth of focus with all objectives: irregularly shaped objects with large differences of height can be examined readily without refocusing the microscope.
- Large field of view due to the use of special eyepieces.

APPLICATIONS

The stereoscopic microscope has the widest application of all the microscopes produced for research, medical and engineering purposes. Among its many uses we need only mention:

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- INDUSTRY AND METALLURGY

Steelworks, rolling mills, wire mills, lamp manufacture, clocks and watches, paint and plastics, pottery, ceramics and abrasives, tanning and leather manufacture, textiles, food and confectionery, wood pulp and paper.

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- BIOLOGY AND MEDICINE

Botany, Zoology, Entomology, Parasitology, Bacteriology, Anatomy, Embryology, Pathology, Dermatology, Histology.

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- PETROGRAPHY AND MINERALOGY

For the examination and assessment of mineral samples.

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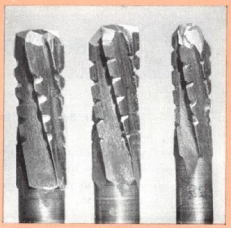
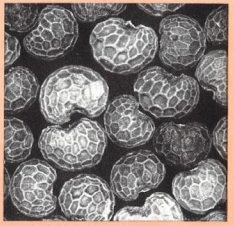
- AGRICULTURE, ARCHAEOLOGY, PALAEONTOLOGY, CRIMINOLOGY, etc.

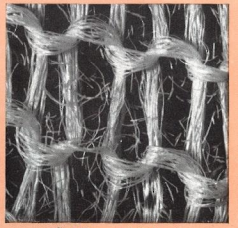


Tooth-drill
Magnification 10 ×

Red ant (Formica rufa)
Magnification 25 ×



Seed of opium poppy (Papaver somniferum
Magnification 18 ×



Signs of wear on knitted goods
Magnification 18 ×

Binocular Body with Inclined Eyepiece Tubes and Nosepiece

The inclined eyepiece tubes of the binocular body allow the observer to maintain a natural position and thus avoid fatigue during prolonged observation. The dovetail slide of the binocular body fits all stands listed in this catalogue; one binocular body can therefore be used with several stands.

The Porro prisms are housed in 2 drum-shaped boxes which are arranged for rotation about their eccentric axes. Their rotation adjusts the instrument for the interpupillary distance of the observer. To compensate for any differences in vision between the eyes, one of the eyepieces can be independently adjusted and clamped in the desired position.

For coarse focusing, the whole body of the stereoscopic microscope is moved up or down and clamped in the dovetail slide of the stand. Fine focusing is by rack and pinion. The total vertical movement of the body is 80 mm ($3^1/_4$ inch), half of which is accounted for by the fine focusing motion.

The paired objectives are mounted on a triple revolving nosepiece, and the required pair of objectives is readily swung into position. Individual objective pairs are supplied mounted on a slide which can be fitted to the body in place of the triple revolving nosepiece.

Objectives and Eyepieces

The paired achromatic objectives provided with the stereoscopic microscopes have great depth of focus and a long working distance; the eyepieces have a very wide field of view.

Main details of objectives and eyepieces:

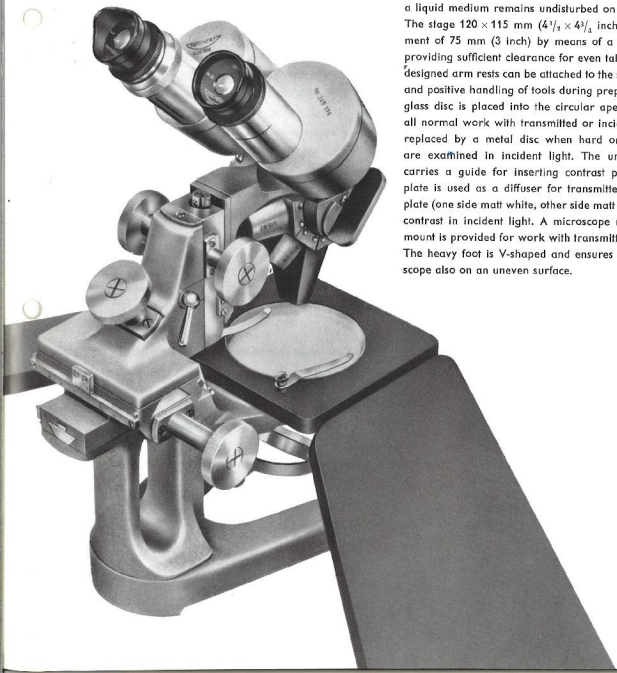
Objective pairs		Wide-field eyepiece pairs			
Objective Magnification / Numerical Aperture	Working Distance mm	6.3× w. s.	10× w. s.	Orth. 16× w. s.	Orth. 20× w. s.
		Diameter of field of view in mm			
1/0.02	43	24	21	10	9.2
2/0.06	49	12	10.4	5.2	4.6
4/0.08	47	6.1	5.2	2.6	2.3
8/0.08	25	3.1	2.6	1.3	1.2
10/0.08	20	2.4	2.1	1.0	0.9

Total Magnifications from 6,3× to 200×

STEREOSCOPIC MICROSCOPE for incident and transmitted light

Mak MS

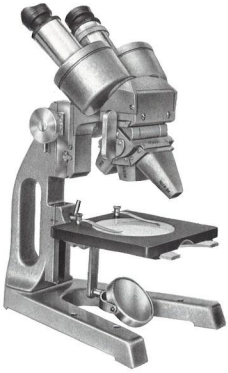
The co-ordinate motions of the upper portion of the stand permit complete exploration and systematic scanning for all types of stereomicroscopic investigations.



The upper portion of the stand with the vertical dovetail slide for the binocular body can be moved by 60 mm ($2^1/_2$ inch) in two directions at right angles by means of rack-and-pinion drives. Such movement can be read on scales with verniers to 0.1 mm. The co-ordinate motions and the scales permit systematic scanning and measurements on specimens and since it is the binocular body that is moved the specimen which may be in a liquid medium remains undisturbed on the stage.

The stage 120 × 115 mm ($4^1/_2 \times 4^3/_4$ inch) has a height adjustment of 75 mm (3 inch) by means of a slide and clamp, thus providing sufficient clearance for even tall specimens. Carefully designed arm rests can be attached to the stage to permit precise and positive handling of tools during preparative work. A clear glass disc is placed into the circular aperture of the stage for all normal work with transmitted or incident light; this can be replaced by a metal disc when hard or sharp-edged objects are examined in incident light. The underside of the stage carries a guide for inserting contrast plates; a frosted glass plate is used as a diffuser for transmitted light while a metal plate (one side matt white, other side matt black) gives increased contrast in incident light. A microscope mirror in a fork type mount is provided for work with transmitted light.

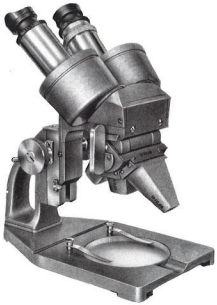
The heavy foot is V-shaped and ensures stability of the microscope also on an uneven surface.



Mak KS — STEREOSCOPIC MICROSCOPE for incident and transmitted light

The shape of the stand, the foot, the arm-rests and the stage are similar to the corresponding parts of the "Mak MS" described before, but the "Mak KS" is not fitted with co-ordinate motions. The objects must therefore be moved by hand across the stage during examination; this is less convenient but results in a lower price. The "Mak KS", too, can be used for both transmitted and incident illumination; a set of stage inserts and plates are provided as well as a microscope mirror in fork-type mount.

Mak GS — STEREOSCOPIC MICROSCOPE for incident light



This is a simple robust microscope, intended mainly for biological and industrial laboratories, workshops and for teaching. The stage is of the same size as on the "Mak MS" and "Mak KS" microscopes and serves also as microscope foot. After removing the stage insert the microscope can be placed directly onto the object to be examined (sheet metal, textiles, and other large flat objects may be examined very conveniently in this way).

The "Mak GS" is not suitable for use with transmitted light. Only the clear glass and metal stage discs and the metal contrast plate are therefore supplied with this stand.

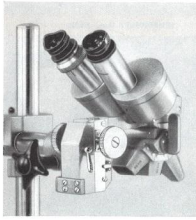
STEREOSCOPIC MICROSCOPE for incident light

Mak JS

The universal instrument for research institutes, workshops, laboratories, hospitals and general medical use.

The binocular body of the "Mak JS" stereoscopic microscope is mounted on a horizontal arm carried by a cross head on a vertical column, thus permitting extensive vertical and horizontal movement as well as rotation. It is therefore suitable for the examination of objects of any shape or size, such as machines, walls, rock, etc.; in addition there is a wide range of applications in veterinary medicine, dermatology and cosmetics.

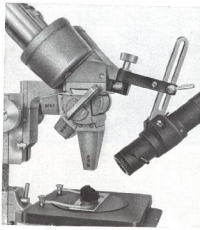
The vertical column mounted on a heavy circular base plate is 390 mm (15 1/2 inch) high; the horizontal arm is 350 mm (14 inch) long. The body of the microscope is mounted on the horizontal arm by either a co-ordinate motion or a rigid connecting link. The co-ordinate motion link provides a movement of the microscope through 60 mm (2 1/2 inch) in 2 perpendicular directions by means of rack and pinion drives; rotation about the axis of the horizontal arm is also possible. The co-ordinate movements can be read on millimetre scales by means of verniers to 0.1 mm. The rigid link permits only rotation of the body about the arm.



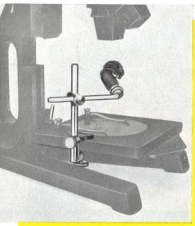
ACCESSORIES

Mak

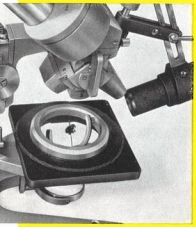
"Lux M" 15 Watt Microscope Illuminator



This illuminator is an essential accessory for the stereo-microscopes "Mak MS", "Mak KS", "Mak GS" and "Mak JS". The low-voltage lamp (6 Volt, 2.5 Amp) with its adjustable condenser is attached directly to the binocular body of the stereoscopic microscope by an adjustable arm which can be clamped in any position. The advantage with this arrangement in the case of microscopes "Mak MS" and "Mak JS" is that the lamp follows the microscope movement and the field of view remains illuminated at all times.



SCHEERPELTZ Insect Holder



THIRRING Insect Holder

Petri Dish Support

Insect Holders

The insect holders after SCHEERPELTZ and THIRRING are used for the examination and identification of insects or similar objects by means of the stereoscopic microscopes "Mak MS" and "Mak KS". For examination, the pinned objects can be brought into any position.

Petri Dish Support

It is inserted into the stage aperture of the stereoscopic microscopes "Mak MS" and "Mak KS". The spherical carrier can be moved in all directions on a slide and can be rotated on its base up to 45° from the horizontal. Two adjustable clamps are used to hold Petri dishes of between 50 and 120 mm (2—5 inch) diameter.

Measuring and Counting

The stereoscopic microscopes can be fitted with pairs of measuring and counting eyepieces with focusable eyelenses; eyepiece graticules with a linear scale or a counting grid are also available. The eyepiece graticules can be fitted into eyepieces having a magnification of up to 10×.

Photomicrography

The stereoscopic microscopes of the series "Mak S" can be fitted either with the camera attachment "Kam VBX", size $6^1/_2 \times 9$ cm, or with a miniature camera "REMICA III".

Further details will be given on request.

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