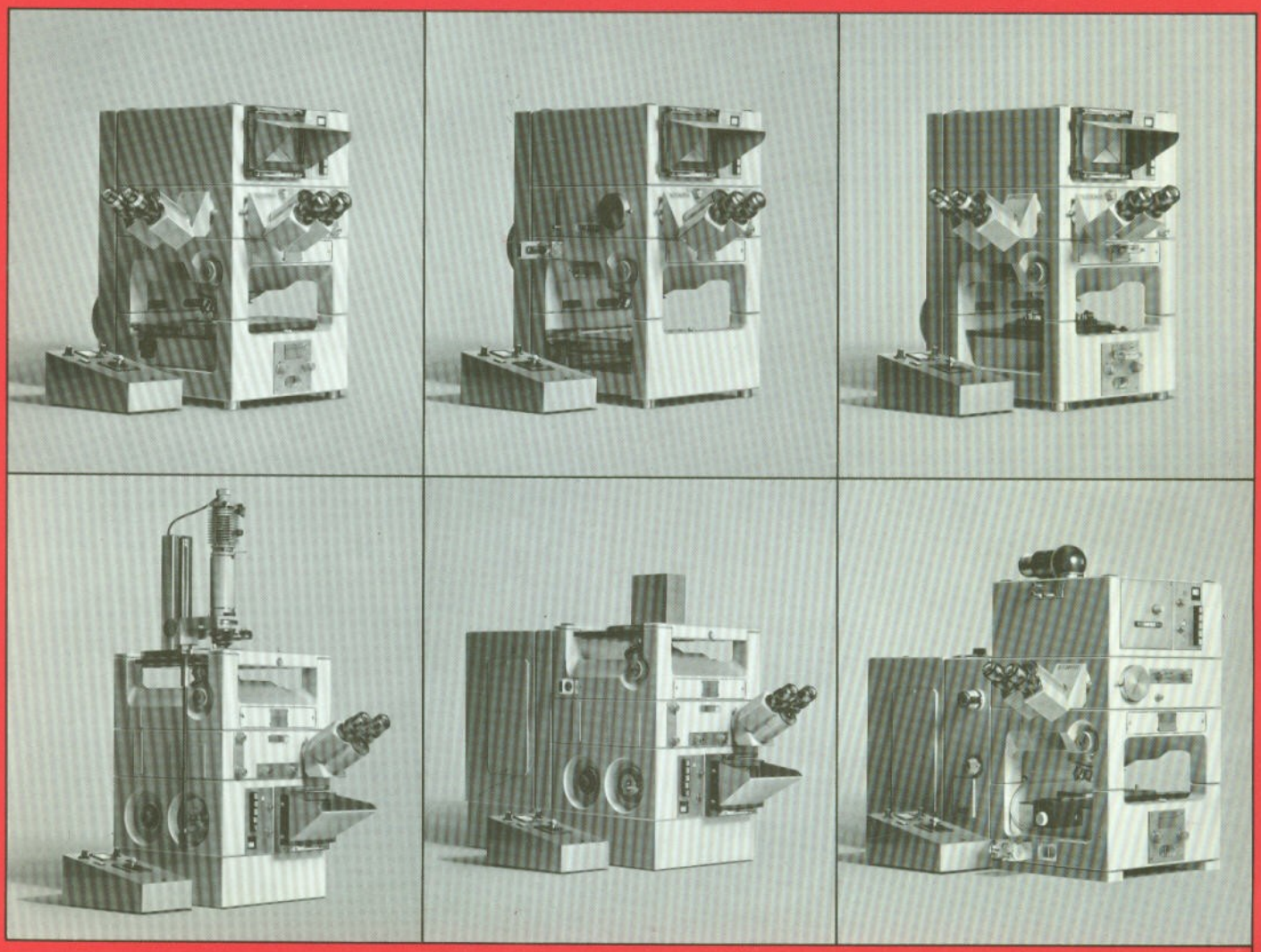
ZEISS AXIOMAT

ZEISS

West Germany



ZEISS AXIOMAT NDC
Upright transmitted light microscope
for routine and research work

ZEISS AXIOMAT NAC
Upright reflected light microscope
for specimens up to 90 mm high

ZEISS AXIOMAT NDC Pol
Upright transmitted light microscope for
quantitative polarizing microscopy

ZEISS AXIOMAT IDC
Inverted transmitted light microscope
to study tissues, sediments, etc.

ZEISS AXIOMAT IAC
Inverted reflected light microscope,
accepts even heavy specimens

ZEISS AXIOMAT UV-NDPC Scan
Upright transmitted light UV microscope for specimen scanning
with UV camera and photometer

The new-era microscope

For over 100 years microscopes have been built according to scientifically computed formulae. And although new techniques in quantitative microscopy have constantly evolved, and technical progress has presented the microscopist with increasingly complex problems, the original design principle has remained virtually unchanged. Advanced microscope techniques meant specially designed instruments for specific purposes, the use of complex accessory equipment and as a result compromising on simplicity, stability, economy and precision. Reliable results became less of a certainty.

ZEISS sought a way to eliminate these problems once and for all and their researches culminated in a revolutionary new design principle. The basic functions of a microscope have been incorporated in square blocks which can be screwed together in varying combinations—depending on the function wanted. The result is a whole series of microscopes—upright, inverted and horizontal, transmitted and reflected light—of unparalleled mechanical and thermal stability. The configurations of the modules can be altered as you like; and one module replaced by another.

The outstanding feature of the instrument, whatever the configuration, is that the optical axis is coincident with the axis of symmetry of the modules. Thus a design principle from the early days of microscopy makes its reappearance in this brand new instrument.

The optics have been recomputed and the objectives corrected for infinity. Image aberrations have been corrected to an unprecedented extent, producing superb quality pictures of king-size panorama format, fully utilized by the OPTOVAR zoom system. Parts which have to be moved for focusing the image have been kept to a minimum.

Two fully automatic camera systems, for 35 mm and 4 x 5″ are combined in one unit, both ever ready but never in the way, meaning a fast reliable pictorial record. Large easily accessible operating elements make for rationalized work. All accessories—filters, condensers, pointers, micrometers, reflectors, compensators, analyzers, diaphragms, rétardation plates, polarizers, and interference equipment—are arranged in smooth-action slides, inserted in the respective module. There are two easily accessible real intermediate image planes, one before and one after the OPTOVAR zoom system, which means every possible measuring device can be introduced with or without zoom effect. With the OPTOVAR system magnifications can be set so that one interval of the reference scale corresponds exactly to one unit of measurement in the object or a multiple of it. No more bothersome calculations.

If a system for the intermediate imaging of the pupil is used, the object image can be affected in various ways, permitting, for instance, phase contrast viewing with normal brightfield objectives.

With its cubic form the ZEISS AXIOMAT is functionalized to the maximum. Its clear-cut lines makes for direct, easy and space-saving

attachment of peripheral equipment such as monochromators, TV cameras etc.

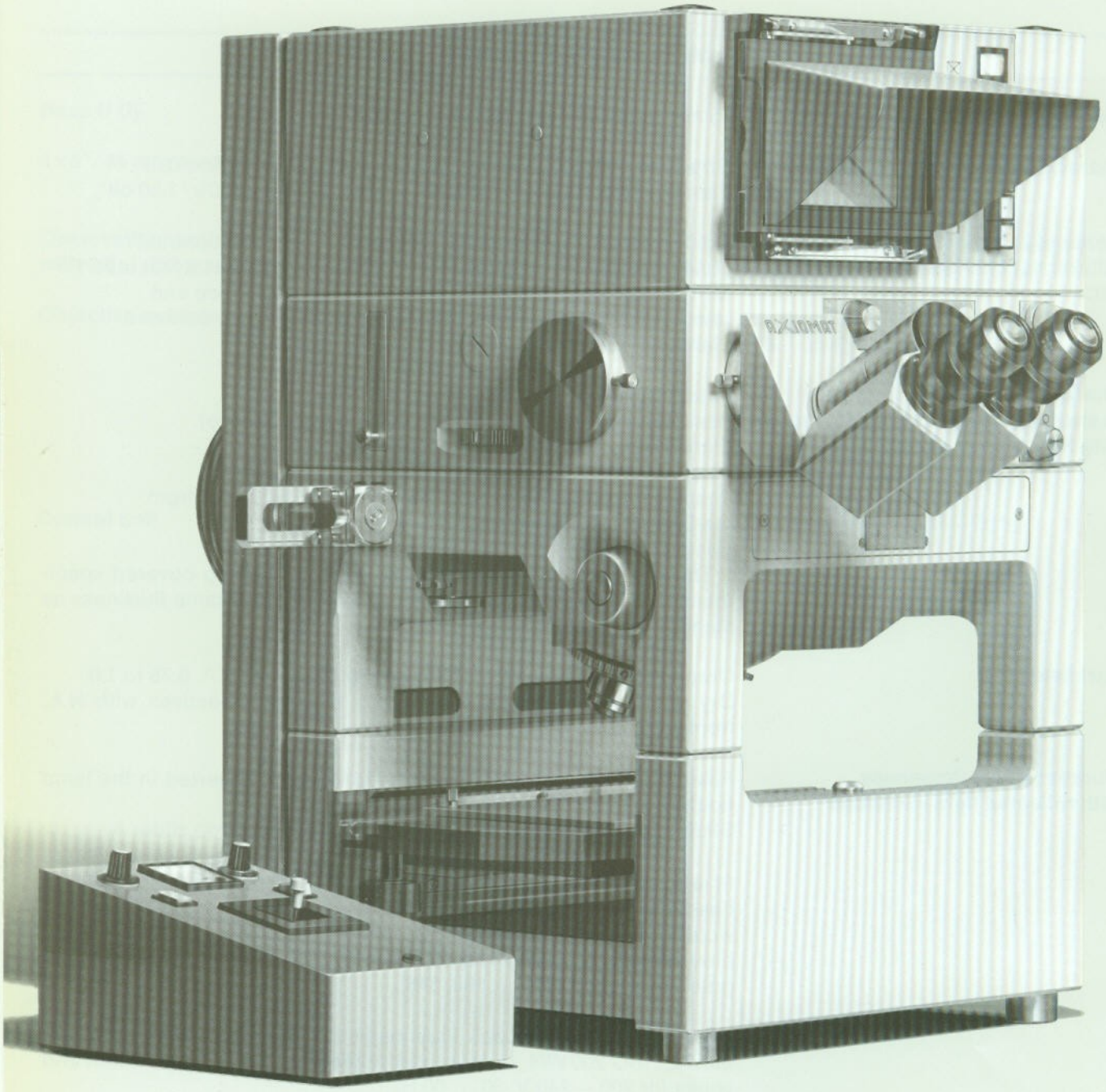
This is the great advantage: the ZEISS AXIOMAT can keep pace with new developments whatever the technique—with minimum outlay. It already offers brightfield, darkfield, phase contrast, differential interference contrast, fluorescence, polarization, multi-beam interference, object scanning, photometry, spectrofluorometry, TV image analysis and UV and IR microscopy.

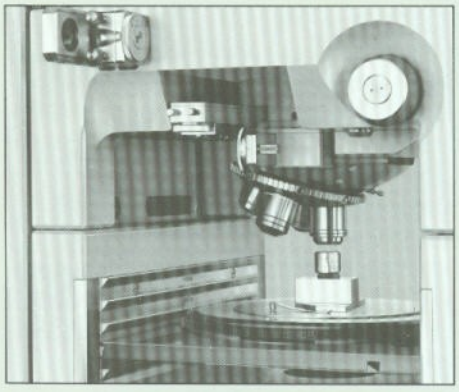
Tomorrow will bring completely new techniques to further broaden the microscopist's range.

ZEISS AXIOMAT: Milestone in modern microscopy.
New optics, panoramic field of view, mechanical and thermal stability unparalleled in light microscopy, convenient dimensions, two separate viewing tubes.
This is technical progress with tomorrow's look—for seeing more—more clearly than ever before. For probing the unknown—with total objectivity.

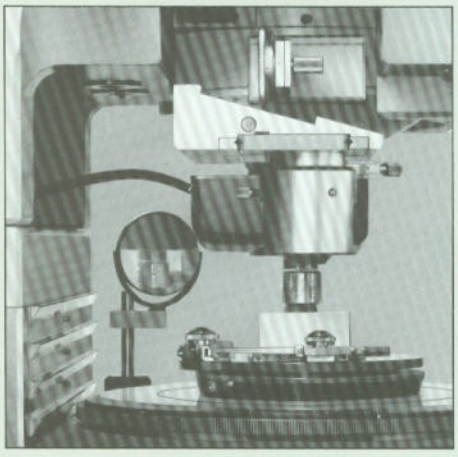
ZEISS AXIOMAT NAC

Normal upright reflected light microscope
with 4 x 5″/35 mm camera



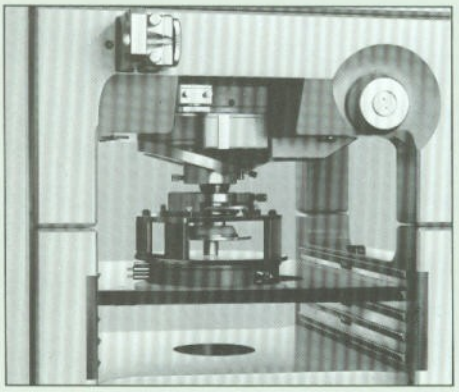


Reflected light examination of specimens up to 90 mm high
The stage module A (R) has 5 dovetail bars so that the specimen stages can be inserted in steps at 18 mm intervals. The objectives have a vertical adjustment range of 20 mm—permitting specimens of up to 90 mm height to be examined.



Microhardness Tester
The Microhardness Tester has an EPIPLAN 80/0.9 objective and a diamond indenter. The load exerted on the specimen is monitored on a meter whose scale is expandable in 6 load ranges 0 . . . 5 / 10/ 20 / 50 / 100 / 200 pond. Exchange between diamond pyramid and measuring objective is electric. Accuracy $\pm 0.5\ \mu m$.

Superb contrast with Normarski differential interference contrast. A scanning objective can be screwed to both sides of the Microhardness Tester.



Multi-beam interference device
Attachment for measuring vertical differences in specularly reflecting surfaces: smoothness of polished sections, residual roughness of finished surfaces, depth of surface layers etc.
EPIPLAN LD objectives exchangeable with constant specimen focus and with the multi-beam interference device. Can be combined with Nomarski differential interference contrast for better discrimination between fine and coarse unevennesses in the specimen.

ZEISS AXIOMAT NAC

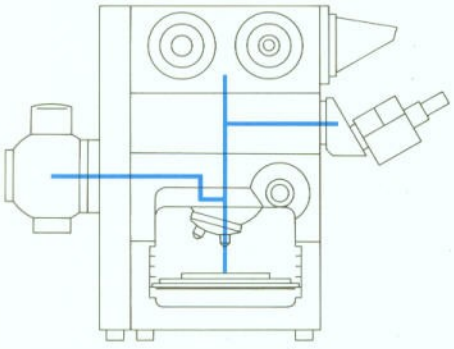


Diagram of the beam path in the normal upright ZEISS AXIOMAT NAC for reflected light viewing of objects up to 90 mm high.

The ZEISS AXIOMAT NAC is an upright microscope for all work in reflected light of opaque specimens.
The compact microscope consists of 4 modules:
Stage module A (R) forms the base, carrying the stable generous-sized specimen stage which can be inserted at 5 different levels depending on the specimen height.
On top of this is the objective module with the electrically and manually focusable image forming systems.
The third block is the observation module. According to the setting of the beam splitting system the image is transmitted to the respective receiver—the eye, the camera or a photometric detector. The 0.8 . . . 3.2 x OPTOVAR zoom system and a focusing Bertrand lens are contained in the observation module. Final block in this setup is the 4 x 5″/35 mm camera. With fully automatic exposure, always ready for use and never obstructing other microscope functions, it records at the press of a button whatever is visible in the tubes.

ZEISS AXIOMAT NAC with Microhardness Tester
For checking the hardness of materials in minutest dimensions a Microhardness Tester is used on the ZEISS AXIOMAT NAC, taking the place of the revolving nosepiece. Its 80 x / 0.9 EPIPLAN objective and diamond indenter are attached beside each other on a common mount, ensuring that the objective aperture is fully utilized. The mount is moved by a motorized drive over the distance from diamond point to objective axis with an accuracy of $\pm 0.5\ \mu$m. Either the tetragonal (Vickers) diamond indenter or the rhombic (Knoop) pyramid can be used.
Six load ranges can be selected on the meter—from 0 to 5 — 10 — 20 — 50 — 100 — 200 pond respectively. Each range is then displayed over the entire scale width, permitting a high degree of reading accuracy and easy control of loading speed.
With the hardness measuring insert the length of the diagonal indents is rapidly determined and read off in the tube to an accuracy of 0.2 μm.
Apart from the actual Microhardness Tester the microhardness insert can take two viewing objectives which are brought into the light path by shifting them between two stops.

ZEISS AXIOMAT NAC

	Standard equipment, Cat. No. 49 56 32
Stage module A (R)	with 5 dovetail slide rails for the mechanical stage (at 18 mm intervals) for viewing of objects up to 90 mm high. 60 x 120 mm mechanical stage with coaxial drive and specimen plate A.
Objective module	with sextuple revolving nosepiece. EPIPLAN 5 x / 0.12 HD – 10 x / 0.25 HD. Epiplanapochromat 25 x / 0.65 HD – 50 x / 0.95 HD – 100 x / 1.30 HD oil. Reflected light mirror with sliding tube, HPL + D reflector, lamp field stop slider A, aperture diaphragm slider and slider with four filters.
Observation module with 0.8 . . . 3.2 x zoom OPTOVAR	with binocular tube, two 10 x / 25 Br wide-angle eyepieces and slider with focusing reticle (9 x 12 cm [4 x 5″]–35 mm).
4 x 5″ / 35 mm camera	35 mm film cassette with exposure counter, 9 x 12 cm (4 x 5″) double cassette.
Illuminating equipment	Cable box, lamp holder, 250 W illuminator and 12 V 100 W low-voltage filament lamp with socket.
Control unit	and power supply unit 100 – 110 – 115 – 127 – 220 – 240 V, 50 . . . 60 Hz, 190 VA, in housing, mains cable.

	Parts supplied separately:
For entry of reference scales or identification data	35 mm magazine with data recording.
Extra objectives	Objective insert with EPIPLAN 1.25 x / 0.03 + 2.5 x / 0.07 for low-power magnifications. Planachromat 16 x / 0.30 (19 mm working distance).
Nomarski differential interference contrast	Quadruple revolving nosepiece with interference contrast prisms for EPIPLAN 10 x / 0.25 HD objectives and Epiplanapochromat 25 x / 0.65 HD – 50 x / 0.95 HD – 100 x / 1.30 HD oil. Reflected light polarizer and analyzer insert.
Microhardness Tester	Rotary Pol stage with graduation, specimen plate A and attachable mechanical stage needed for the section tilt attachment. Changer with microhardness tester and accessories. NEOFLUAR 80 x / 0.9 with Vickers pyramid. Hardness measuring insert, insert with reference scale. Reflected light polarizer, analyzer with sliding tube. On request: 80 x / 0.9 NEOFLUAR with Knoop pyramid.
Illuminating equipment	Illuminators, light sources with varying intensity and chokes: see under Accessories.