Leitz

INDUSTRIAL APPLICATION

of the

LEITZ ULTROPAK ILLUMINATOR

The Illuminator:

The Leitz ULTROPAK is the ideal illumination device for opaque objects of low reflecting and rough surfaces. Although the vertical illuminator is used successfully for the illumination of polished and etched metal surfaces being smooth and highly reflecting, it fails if used for the illumination of many opaque non-metallic objects. This is due to the fact that with the vertical illuminator, the objective serves not only as observation system but also as condenser. The various lens surfaces cause a partial reflection of light which is visible as a haze and which reduces the contrast considerably. When observing objects with low reflecting surfaces, this haze may be so strong that structural details become entirely undistinguishable.

The ULTROPAK avoids the double passage of light through the objective and creates an illumination with perfect contrast and entirely free of any haze. Although the character of the image of highly reflecting smooth surfaces may be compared to that of a darkfield, this comparison can no longer be made if objects with rough, diffusely reflecting surfaces, are observed. Depending upon the nature of the object, the illumination may create a great variety of effects: some structures may appear as in brightfield while others may even be revealed by a combined effect of bright and darkfield. The true character of the image, however, is such that it presents the object in its most natural aspect.

Application:

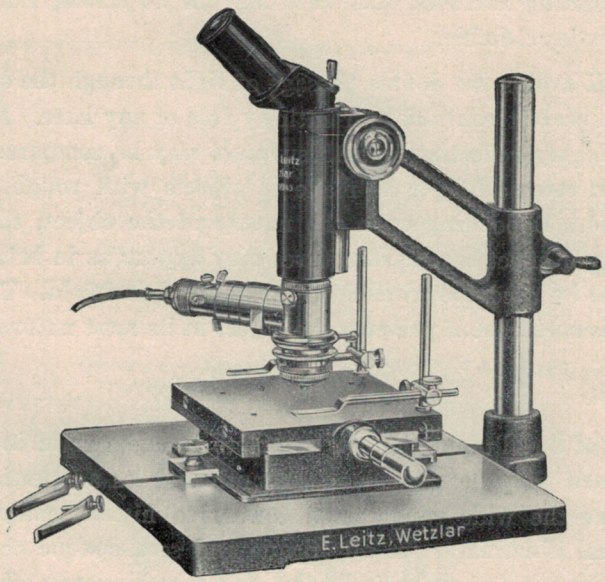
The uniformity of the illumination, its complete freedom from internal reflection, its adjustability in regard to penetration and azimuth and its adaptation to the nature of the object as well as the wide range from lowest to highest magnification make the ULTROPAK the ideal illuminator for all opaque and semi-opaque objects of low reflecting power. *Thus it has opened an entirely new field to microscopy which is of inestimable value in all technical laboratories.*

The adaptability of the ULTROPAK to many special microscope stands makes observations of very large objects easily possible. It is particularly suitable for examination of textiles, paper, wood, leather, lacquered surfaces, coal, rubber, enameled surfaces, tools, etc. and it can also be made available for the examination of inside surfaces of hollow objects such as cylinders, spinnerets, drill holes, etc. without the necessity of first preparing these objects.

ULTROPAK Measuring Microscope:

This simple microscope combines greatest flexibility with the possibility of making accurate measurements. A large rectangular base plate of 9x10 in. serves for the support of objects of considerable dimensions. This stage plate is provided with a groove for a clamp which can hold a special measuring object stage. The microscope tube with coarse adjustment is mounted with an arm to a vertical pillar permitting adjustment in height within wide limits so that also objects which extend considerably in the upward direction can be examined. The tube is provided with an inclined eyepiece to make observation more comfortable. The ULTROPAK has at its upper end a standard society thread with clamping screw. It can be removed from the microscope tube if it is intended to attach it to any other tube of a standard microscope. At its lower end, the ULTROPAK is provided with a clutch for quick change of objectives.

Two types of Measuring Stages are offered, viz.: one of them having one micrometer spindle whereas the other one has two micrometer spindles arranged perpendicular to each other. Each spindle has a range of movement of 25mm and the graduations permit readings of 0.01mm. These object stages are also provided with special object clamps.



Measuring Microscope with Object Stage Having One Micrometer Spindle with ULTROPAK and Inclined Monocular Tube

PRINTED PRICES VOID
SEE ENCLOSED PRICE SHEET
FOR CORRECT PRICES

Cat. No.	Code Word	Designation	Price
22-1	SAIEE	**ULTROPAK Measuring Microscope,** consisting of: base plate, upright tube-carrying arm, with rack and pinion coarse adjustment, monocular tube with inclined eyepiece, without ULTROPAK, without measuring stage.	$ 59.50
18-1	ABCEE	**ULTROPAK Illuminator** with thread to screw to microscope tube, rotatable, with clamp, with objective changer, slit for filters with cover; with filament lamp 8 volts, 0.6 amp. in centering sliding mount, including 2 spare bulbs, cord and plug, one each daylite, heat-absorbing, green and yellow filter, and two sector diaphragms **in case**	47.00
18-45	AIEES	**"UO" Achromatic Objective** 5X N.A. 0.15, with ring condenser K-5	22.00
18-55	AKEER	**"UO" Achromatic Objective** 11X N.A. 0.25, with ring condenser K-11	32.00
18-185	HYVIR	**Huyghenian Eyepiece 10X**	3.00
18-345	REKEY	**Adjustable Rheostat** with ammeter, for **110-Volt D.C.**	20.00
		NOTE: FOR A.C. WE RECOMMEND:	
18-355	BEEVY	**Adjustable Transformer** with ammeter for **110-220 Volt A.C.**	19.00
		FOR THE ABOVE MICROSCOPE, WE ALSO OFFER:	
22-3	SBEEI	**Measuring Stage** with **one** spindle: 25mm range	59.50
22-5	SCEEH	**Measuring Stage** with **two** spindles arranged at right angles to each other: 25x25mm range	119.00
18-360	LISEY	**Lamp Bulb,** 8-Volt 0.6 amp.	.75*

The following literature, describing
LEITZ INSTRUMENTS FOR INDUSTRIAL PURPOSES
will gladly be furnished upon request:

Catalog No. 18— "Leitz Ultropak"

" No. 52-B 1— "Leitz Large Micro-Metallograph MM-1"

" Metallo B 7231— "Leitz Simplified Micro-Metallograph MM-2"

Bulletin No. 20— "Vacuum Heating Chamber after Dr. Esser" (for microscopic observation at high temperatures with Leitz Micro-Metallographs)

Catalog No. 1093— "Leitz Grinding and Polishing Machines"

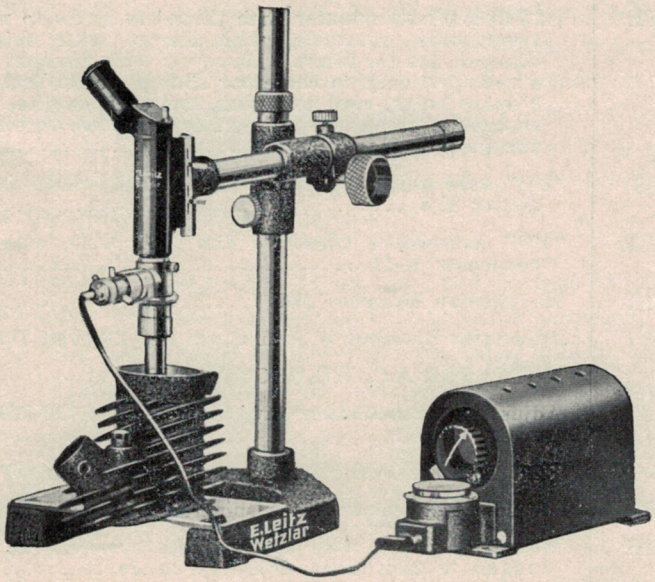
Bulletin No. 21— "Guthrie-Leitz Automatic Polishing Machine"

Catalog No. B-7262— "Leitz Dilatometers"

Catalog No. H-7229— "Leitz Profile (Contour) Projector"

MICROSCOPE FOR OBSERVATION OF INSIDE WALLS:

This microscope which is likewise equipped with the ULTROPAK Illuminator serves for the observation of abrasion grooves, cracks, casting defects or other imperfections of inside walls of cylinders of automobile and airplane motors.



Cat. No.	Code Word	Designation	Price
22-7	OIIFK	**Microscope Stand** with horseshoe foot, with removable metal plate, rotating stage as support for cylinders; vertical pillar with horizontal arm on angle piece, two rack and pinion motions for displacement in horizontal and vertical direction (focusing adjustment); inclined monocular tube, ULTROPAK illuminator with light-excluding tube and reflection mirror, special objectives 1X and 5X; Huyghenian eyepieces 5X and 10X, complete with adjustable rheostat for **110-220 Volt D.C.** .	$360.00
22-9	OIIEW	**Microscope Stand,** same as No. 22-7 but with adjustable transformer for **110-220 Volt A.C.**	360.00

PRINTED PRICES VOID
SEE ENCLOSED PRICE SHEET
FOR CORRECT PRICES

E. LEITZ, Inc.
730 FIFTH AVENUE
NEW YORK, N. Y.

E. LEITZ, INC.

60 EAST 10TH STREET, NEW YORK, N. Y.

WASHINGTON, D. C.
CHICAGO, ILL.

Branches:
LOS ANGELES, CALIF.
(SPINDLER & SAUPPE
811 West 7th Street)

SAN FRANCISCO, CALIF.
(SPINDLER & SAUPPE
86 Third Street)

May 1, 1939

E. LEITZ, Inc.
730 Fifth Ave.
New York, N.Y.

Price List for Bulletin No. 22
Industrial Application of the
Leitz Ultropak Illuminator

Cat. No.	Price
Page 3	
22-1	$ 63.00
18-1	47.00
18-45	22.00
18-55	32.00
18-185	3.00
18-345	25.00
18-355	25.00
22-3	71.50
22-5	137.00
18-360	.75*
Page 4	
22-7	340.00
22-9	340.00

Prices Are Subject to Change
Without Notice.

M-603