

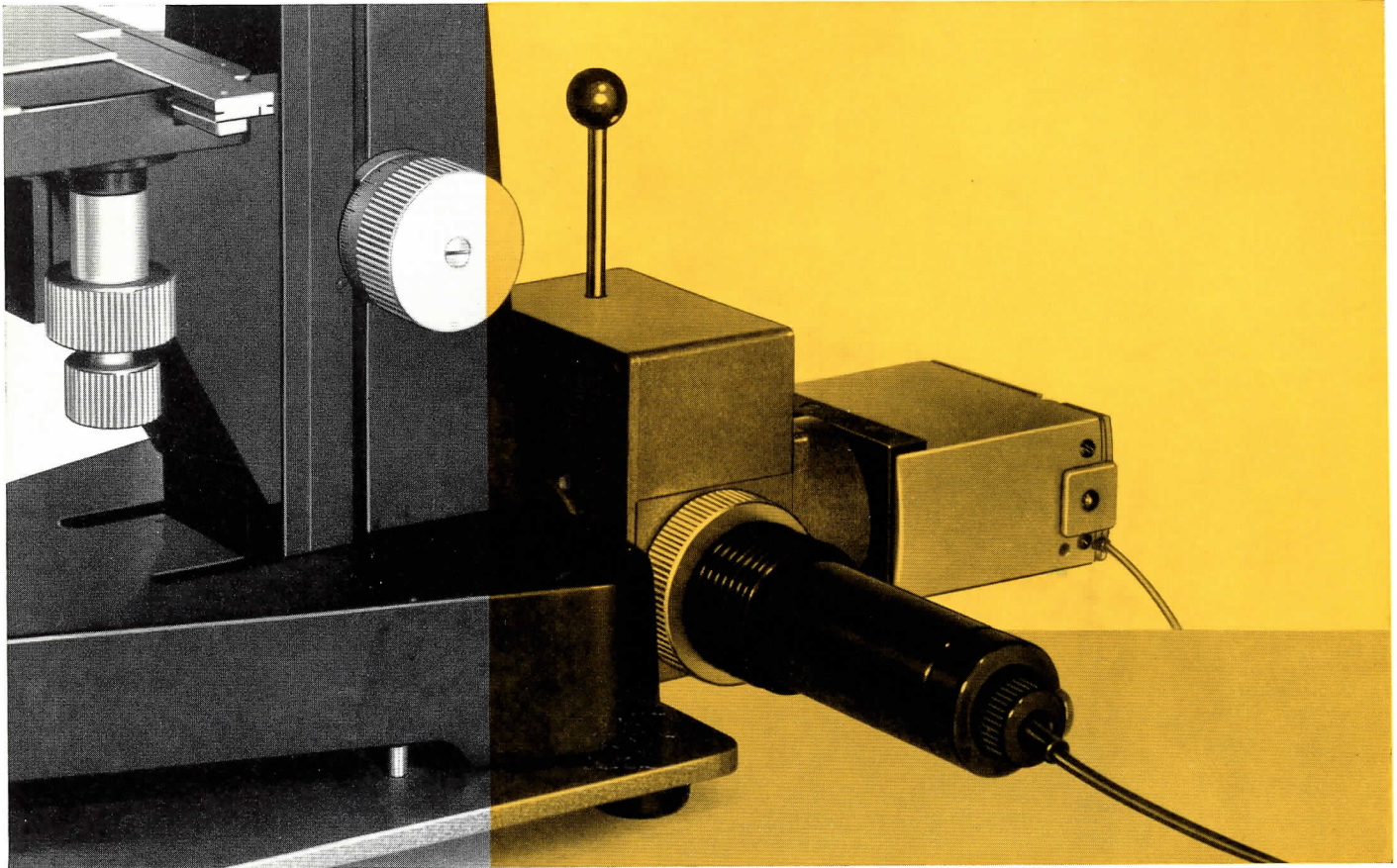
# Micro-flash device

for photomicrography





# Micro-flash device



Micro-flash device on the LABORLUX

The new micro-flash device is a compact, powerful accessory for the photomicrography of living or moving objects, of crystallization and melting processes, thermal effects on metals and non-metals etc. The micro-flash is as easy to operate as a low-voltage lamp. It is pushed into the foot of the microscope in place of the microscope lamp and plugged into the mains. After the warning light lights up, the instrument is ready for action. The 30 W or 15 W low-voltage lamp of the microscope which is inserted in the side of the mirror housing of the flash unit is used for focusing the object, observation etc. Both lamp and flash tube have their own adjustable collectors with index marks, making it possible to form the image of both light sources in practically the same plane; this ensures perfect illumination of the object.

The micro-flash is used preferably in connection with the LEITZ LABORLUX®, ORTHOLUX®, and ORTHOPLAN® microscopes.

## Brief technical comments

- Micro flash for photo micrography of living or moving objects
- Suitable for LEITZ LABORLUX, ORTHOLUX and ORTHOPLAN microscopes
- Commercially available capillary flash tube 25 Ws with collector lens of large opening
- Increased brightness by a cylindrical mirror behind flash tube
- Sequence of flash 8 seconds
- Duration of flash  $\frac{1}{1000}$  second
- No disturbing short exposure time effect
- Does not affect microscopic work with filament light illumination

## Main technical features

### Flash unit and mirror housing

The flash device consists of the flash unit with collector, and the mirror housing for the various microscope stands. A special adapter is not required. All electronic components including flash tube, collector, and reflector are housed in the small unit (7x7.5x4cm) and in the plug of the mains cable.

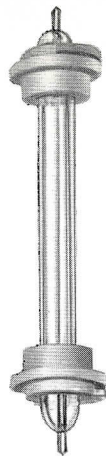
The mirror housing contains a beam-splitting glass plate inclined to the beam at  $45^\circ$  and a hinged mirror. It has a special aperture with clamping device for the low-voltage lamp required for aligning and focusing the object.

The microscopist will work generally with the mirror turned out. In this position 10% of the available halfwatt light and 90% of the flash light will be directed to the object by a beam splitter. As a result of this favourable distribution almost the entire intensity of the flash is utilized, while the adjustable proportion of halfwatt light is sufficient for focusing etc., in brightfield. In very weak lighting conditions (darkfield or phase contrast) observation is possible at the full intensity of the halfwatt light by turning in the mirror. This facility of adjustment has the additional advantage that the flash device can remain on the microscope also during general investigations. Matched index marks on the collector of the flash and on that of the low-voltage lamp ensure uniform focusing of both light sources. Normally (Köhler's illumination) both collectors are set at zero.



Complete equipment for flash photography with the ORTHOLUX, consisting of: – Micro-flash device, micro-attachment for the LEICA®, LEICA, MICROSIX®-L exposure meter.





## Flash tube

The flash tube is very small (capillary flash tube) and located precisely in the focal point of a large-aperture collector. A cylindrical reflector is situated behind the flashtube, forming an image of the tube in the tube itself. This optical arrangement increases the luminous density considerably so that correctly exposed flash photographs are possible even in darkfield or with phase contrast. The flash duration of 1/1000 sec. ensures complete absence of movement blur even during rapid events. On the other hand, the duration of the flash is long enough to avoid the disturbing reciprocity law failure.

The colour temperature of 6000°K permits the use of daylight colour films without conversion filters.

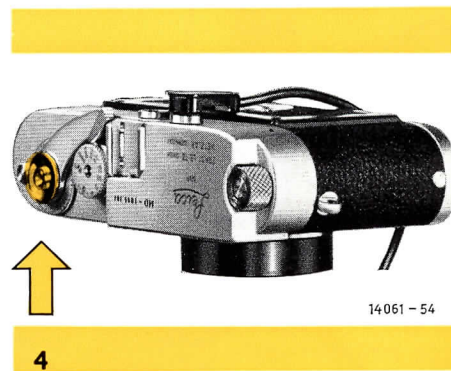
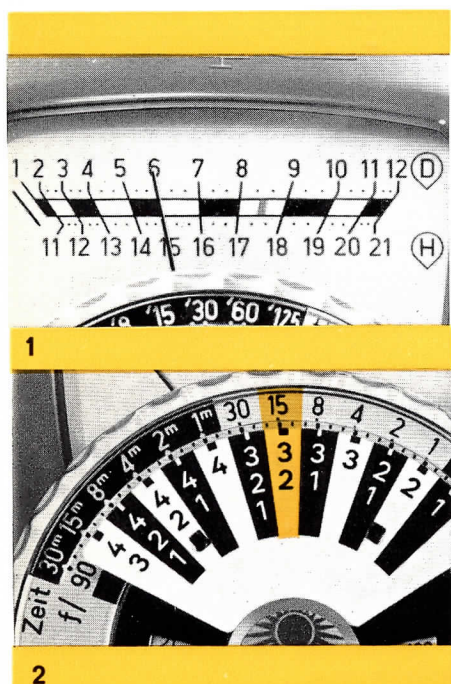
## Filters

The light intensity of each flash is constant, but the optical combinations, the methods of illumination and the film speed vary. Furthermore, the absorption of the preparations to be examined also varies a great deal. A very precisely graduated reduction of the lighting intensity is therefore necessary to obtain correct exposures. For this purpose the micro-flash device is supplied with four grey filters ranging from 50 % to 0.4 % light transmission, providing a 1 : 2 reduction of the flash intensity. Their function can be compared with that of a set of weights. An additional filter of 70 % transmission further halves each step. The filters are completely neutral, so that they do not affect the colour reproduction of colour films.

## Exposure measurement

The correct light intensity for flash photography is determined indirectly with the aid of an exposure meter. Basically the process involves the measurement of the image brightness in halfwatt illumination with the MICROSIX-L exposure meter. The result of the measurement evaluated on the flash scale of the exposure meter directly indicates the correct grey filter combination. The procedure occupies a few seconds only: -

- 1) Determine the measuring value with the MICROSIX-L
- 2) Read off the filter or filter combination
- 3) Place filter in position
- 4) Release the flash



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