

FACT SHEET  
DIALUX 20EB - DIALUX 20

The Dialux 20 is not just another laboratory microscope with some new features. Some of the basic concepts of this instrument are different and it must, therefore, be regarded as a major Leitz development.

Dialux - Dialux 20 Comparison:

The Dialux 20 is more impressive in appearance, image of stability, simply more microscope.

Dialux 20 and Dialux 20EB are separate microscopes which cannot be converted into each other.

No interchangeability of accessories with existing microscopes. Lamp, condenser, nosepieces and tubes are different.

DIALUX 20 EB

Base:

High intensity because of 20W halogen lamp, built-in transformer and voltmeter, completely enclosed for dust protection, large base and, therefore, high stability.

Stand:

Coarse and fine adjustment as known from Wild microscopes which means 35mm fine adjustment range, graduated in 2 $\mu$ m intervals. Dovetail for condenser centerable. Condensers fixed. Field diaphragm moveable for fine centration. Adjustable stop for condenser motion in the Z direction.

Condenser:

Standard condenser SK; provides Koehler illumination for objectives 1.6:1 to 100:1 without refocusing the condenser, dry and oil immersion darkfield condenser caps.

Universal condenser UK; interchangeable turret for phase contrast and differential interference contrast. Centering keys permanently attached. Condenser can be used for bright-field, darkfield, various phase contrast systems and differential interference contrast.

Stage:

Very large stage platform, wire bearings which are more accurate than conventional ball bearings, stage not interchangeable by customer. Also available circular mechanical stage which can be centered.

Nosepiece:

Five place nosepiece with internal click stops, available with 1x or 1.25x.

Tubes:

Binocular, S tube, FSA tube with three beam splitting positions; either 100%, 50% or 10% to observer. HU and SA tubes as listed in catalog will not be manufactured.

Objectives:

NPL Fluotars - Special glasses developed by Leitz with fluorite characteristics made the design of fluotars possible. Images of extremely high contrast so that full illumination aperture can be used, as flat as NPL's, color coded, objective sleeve rotatable for convenient reading.

Fluotar 40 - is not useable for blood counting chamber.

DIALUX 20

Empty but completely enclosed base. Lamp housing 102Z similar to lamp housing 100, however, much easier to interchange bulbs. Available accessories include Ploem illuminator, discussion tube, simple polarizing equipment. For photomicrography, systems camera, Combiphot and Orthomat. Wild MPS50 not yet available; expect delivery not before April 1977. Heating stages 80, 350 and 1350 can be used.

KAD

E. LEITZ, INC.

ROCKLEIGH, NEW JERSEY

INTER-OFFICE MEMORANDUM

TO: All Micro Salesmen

DATE: September 30, 1976

NO. 84

FROM: Laboratory for Applied Microscopy

SUBJECT: 160mm Mechanical Tube Length

The Dialux 20, as you know, is designed with a mechanical tube length of 160mm. This departure from 170mm traditional with Leitz will lead to questions by customers and dealers and our competitors will try to use this fact as an argument against us. It is the intention of this memo to clarify our position and to make sure that our answers are uniform.

The mechanical tube length is measured from the shoulder of the objective to the upper edge of the tube and in Leitz microscope it was always 170mm. The location of the intermediary image is 18mm below the upper edge of the tube or at 152mm distance from the shoulder of the objective (170 - 18 = 152mm). This image distance of 152mm is a critical dimension because it enters into the correction of the objective. A drastic departure from this distance can lead to a deterioration of the image. The degree of image deterioration depends on the length of departure and on the magnification of the objective.

The German Standard Commission has been involved in establishing standards in microscope design for many years. Representatives of the optical industry, of course including Leitz, form the pertinent committee. One of the standards, DIN 58887, deals with mechanical tube length and it states that the distance between the shoulder of the objective and the intermediary image, in short the image distance, should be 150mm. The intermediary image should be located 10mm below the upper edge of the tube. With the Dialux 20 we now start to comply with this standard. It should be mentioned that neither Zeiss originally complied with this standard because their image distance used to be 147mm (160 - 13). They, however, made the change many years ago.

Of course, the aim of this standard is to permit the microscopist to use on his microscope special microscope objectives of other manufacturers. The decision by Leitz to comply with the standard is based only on the desire to serve the interest of the microscope user and this is the way we should present the topic to the public. It was a courageous step which

entails some inconveniences for the entire Leitz organization but it was felt that there was absolutely no excuse not to comply at this time. I am convinced that this decision will benefit us in the long run and it certainly benefits the user immediately.

Please find below answers to some of the statements or questions which you may encounter.

1. The Dialux 20 with 160mm optics makes all other Leitz microscopes and 170mm objectives obsolete.

This is certainly not true. The NPL fluotars and all future objectives will, of course, be made available also for our research microscopes. In this connection, it should be realized that the difference between our objectives corrected for 160mm and corrected for 170mm is extremely small as explained above.

2. Why was 150mm image distance chosen as standard instead of 152mm?

Because this dimension was closer to a majority of manufacturers.

3. Can 160mm objectives be used on microscopes of 170mm tube length?

The answer is yes for objectives with magnifications 16:1 or higher. In these cases, the 2mm displacement of the intermediary image has no noticeable effect on image quality. Of course, one would have to use conventional eyepieces and not the Dialux 20 eyepieces. It might be worth mentioning in this connection that with binocular tubes which do not have a tube length correction for the interpupillary distance, the tube length changes by  $\pm 10$ mm. Versions of the low power NPL fluotar objectives corrected for 170mm tube length are in preparation.

4. Can 170mm objectives be used with a Dialux 20?

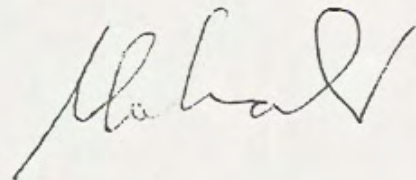
The answer is, again, yes. Please refer to the explanation above. Of course, in this case, one would have to use the Dialux 20 eyepieces.

5. Can conventional eyepieces be used on the Dialux 20?

Yes, but a special spacer ring must be used to place the eyepiece diaphragm into the proper plane.

6. Can Dialux 20 eyepieces be used on 170mm microscopes?

The answer is no. The image distance would become 160mm (170 - 10) which is not acceptable.

A handwritten signature in cursive script, likely reading "Michael", is written in the lower right quadrant of the page.

MN/dt