

Microscope for a field researcher: MBU-4 modification

by Felipe A., Luis, Peru (luisf@mail.ru)

The series of the microscope MBU-4A (Simplified Biological Microscope, 1960's to 1980's) of Soviet origin ¹ built to satisfy the education sector and small laboratories.

This design derives from the "stand E" of Zeiss of 1927, exactly from EB 14, according to catalog ² It was made by different manufacturers: NPZ, LZOS, ZOMP, ZENITH, GEOFIZIKA, etc., who built the supports and supplied the basic optics with 8X and 20X lenses (or initially 8X and 40X, like Zeiss) and with 7X, 10X lenses, 15X, yes, without nosepiece and extensible eye tube, which were relegated to research microscopes (such as the M9 or M10) much more expensive. In addition, they lack an Abbe-type condenser, exhibiting instead a laminar clip that holds one of the three diaphragms (37 mm in diameter) with which the equipment was supplied (1; 4- and 6-mm holes).

As is known, in industrial and commercial issues, lower the cost of some equipment, force to produce the so-called "basic" that preserve the "skeleton" and on which other parts can be assembled according to the needs or the availability of money, thanks to this idea it is possible to modify the MBU-4A.

1. Nosepiece

The tube, which is 160 mm long, has a threaded extension of approx. 14 mm and that is the thickness that the lens holder must have (RMS thread), so it is possible to adapt one of two, three or four holes, the one seen in the photograph has an unknown origin.



Photo 1. Nosepiece

1 <http://www.microscopy-uk.org.uk/mag/indexmag.html?http://www.microscopy-uk.org.uk/mag/artaug10/dw-TOE-Lomo.html>

2 <http://echo.mpiwg-berlin.mpg.de/ECHOdocuView?url=/permanent/vlp/lit17688/index.meta&pn=1>

2. Condenser

This device (KON-3, OI-14, OI-13, of LOMO) is possible to add directly under the plate thanks to the laminar loop, but it is very insecure, and it is better to opt for another solution. The lower part of the microscope, where the mirror goes, is composed of a threaded part; When this is removed, it is possible to fix the condenser holder of a BIOLAM microscope and secure it firmly, after aligning it correctly.



Photo 2. Various views of the condenser

3. Mobile Stage

Even if you have not checked the removal of the stage and place the one of a BIOLAM R-11 microscope, it is possible to place the ST-12 mobile stage, which fits perfectly in the holes provided.



Photo 3. Mobile stage

Under these conditions it is possible to use other objectives comfortably, illuminate and move the samples with ease, as well as using other attachments: cameras in the eyepiece (for example, the MFN-12), eyepieces of measurement, eyepieces of compensation of different graduation with a only target each time, use color filters, etc.



Photo 4. Attachments

This is how a humble microscope from a small laboratory or secondary education reaches an acceptable level (like an E116 by Carl Zeiss) for a field researcher or an amateur such as the one who writes these lines.

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