

Inverted Microscope

Instruction Manual



Model pictured:
Inverted Microscope (L1M-B04A-DPHK)



Introduction

The Inverted Biological Microscope is designed for excellent performance. It has a long working distance and is able to perform intricate and varied applications for vital tissue cultures. It is suitable for phase contrast, micro-photo, and fluorescent applications. The LW101 is equipped for use by research, medical, educational, and agricultural institutions.

Unpacking and Setup

LW Scientific packs each microscope with utmost care. Examine the outer and inner containers for any visual damage. Retain all of the packing material until you have examined and tested your new microscope. If there is damage, please contact the shipping company, as our warranty does not cover shipping damage. Please retain all packing material for future use.

Carefully unpack the LW101 Inverted Microscope using the following checklist for all the parts and accessories:

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| 1 - Microscope (including main body, mechanical stage, nosepiece, and holder) | 6 - Eyepieces: (10X wide field eyepieces entering eyepiece, photo eyepiece 2.5X, photo-eyepiece 6.3X) |
| 2 - Illumination lamp housing | 7 - Filters (green and blue) |
| 3 - Phase contrast condenser | 8 - Dust cover |
| 4 - 4 Objectives: (Plan achromatic 4X, achromatic phase contrast 10X, Plan achromatic phase contrast 20X, and Plan achromatic 40X) | 9 - Immersion oil |
| 5 - Trinocular head | 10 - Spare bulb |
| | 11 - Camera tube |

Assembly

- 1 Main Body** - Remove the main body and place it on a table.
- 2 Illumination Lamp Housing** - Connect the lamp housing to the top of the microscope body.
- 3 Trinocular Head** - Loosen the thumb screw on the body and carefully attach the trinocular head to the body. Secure the trinocular head by tightening the thumb screw.
- 4 Objectives** - Remove the objectives from the packing box and install them in such a way that when you turn the nosepiece clockwise you are moving from the 4x, to the 10x, to the 20x, and finally to the 40x objective.
- 5 Phase Contrast Condenser** - Loosen the thumb screw on the condenser holder, insert the condenser from above, and secure it. When using 10X or low power objective the raise condenser with condenser elevating knob if the view is not evenly illuminated.
- 6 Filters** - Filter holder is located between the illumination lamp housing and the body. Each kind of filter can be inserted or removed for various applications.
- 7 Eyepiece** - Insert the eyepieces into the eyetube.

Cleaning & Upkeep

An alcohol pad is best for removing dirt from the stage and from the other metal parts, but is not recommended for use on the lenses. Use lens cleaning solution and lens paper to clean off the objective. Warning: Damage to any objective due to oil immersion is not covered under warranty.

Dust in the nosepiece or ocular tubes should be blown out using filtered air. Canned air dusters work well for this job.

Operation

Note: If your microscope has been exposed to cold weather, please allow time for all the parts to come to room temperature before switching on the power. Excess cold can fog the lenses and may cause the lamp to fail.

- 1** Plug the power cord into the appropriate electrical outlet. Turn the light on using the white rocker switch on the front of the base. The green "On" light will be illuminated. Adjust the light intensity to the appropriate brightness by moving the slider switch on the side of the microscope base.
- 2 Stage** - To view a specimen of an active organism and fluid sediment, use the square or round plate to conveniently place utensil or bottle on the stage.
- 3 Focusing** - Coarse adjustment: rotate the coarse adjustment knob clockwise to lower the objectives. Lift the objective by rotating the knob counter-clockwise. After lowering the objective, place the specimen in the center of stage and look at the specimen using the 10X objective and 10x eyepiece. Focus the specimen with fine adjustment knob.
- 4 Attention:**
In order to avoid damage to the specimen or an objective, please follow the focusing procedure as below:
View the specimen from the side without looking through the eyepiece. Rotate the coarse adjustment knob counter-clockwise to raise the objective slowly until the objective is approaching, but not touching, the specimen. Observe specimen through eyepiece and rotate the fine adjustment knob counter-clockwise until the image is clear.
- 5 Trinocular Head** - Once you are comfortably seated, look into the oculars and move the eyepiece tubes together or apart until you see only one complete circle of light. You have now adjusted your interpupillary distance.
- 6 Diopter Adjustment** - Since you are using a binocular microscope, you need to adjust for the normal difference in vision between your two eyes. This is a simple but critical adjustment! Set both diopters to "0." Close your right eye and look into the left ocular with your left eye. Adjust the fine focus to give you the best image. Then, look at the ocular tube on the right. You will see that the ocular tube has a built-in adjustment ring. Now, close your left eye and look with your right eye into the right ocular. Using the diopter adjustment ring on the right ocular tube, adjust the focus until you see a clear, focused field.
- 7 Dust Cover** - Cover the microscope with the dust cover when not in use.
- 8 Filters** - Use the neutral filter to have the entire field illuminated evenly. If the light is too yellow, you may select blue filter. When using phase contrast, the green filter can lesson the eyestrain when working for long periods of time.
- 9 Changing the Bulb** - Caution: Unplug the microscope and let it cool (if recently in use) before opening the light housing of the microscope. When handling a new quartz lamp, be sure not to touch the new lamp with your fingers. Oil or moisture on the bulb may cause it to explode or shatter as it heats up.
- 10 Maintenance and Repairs** - To keep your microscope in top condition for years, LW Scientific recommends that you have the microscope professionally serviced once a year.



Power

The circuit board, in the base of the unit, contains all the electrical functions. There are no user repairable parts on the circuit board. If you suspect a faulty board, call LW Scientifics' technical service department.

INPUT: AC90-240/50-6- HZ

OUTPUT: 6V/30W to a quartz halogen lamp (LW Scientific replacement part number: R-6V/30W)

FUSE: One 2-amp fuse protects the circuit board from electrical overload. The fuse is located in the snap-out fuse panel next to the on/off switch. There is also a spare fuse located inside the same panel. When replacing the fuse, always install a new one of the same size and amperage.

Maintenance

- 1 Always cover your microscope with the dust cover when not in use.
- 2 When cleaning the lenses, use lens paper or a cotton swab dipped in lens cleaning solution.
- 3 Excess oil should be cleaned off your 100x objective and stage at once. An alcohol pad is best for removing oil from the stage and on the other metal parts, but is not recommended for use on the lenses. Use lens cleaning solution and lens paper to clean off your objectives.
- 4 Dust in the nosepiece or ocular tubes should be blown out using filtered air. Canned air dusters work well for this job.
- 5 Whenever you remove an objective, we recommend that you place it back into the original plastic shipping vial until ready to be placed back on the microscope.
- 6 To keep your microscope in top condition for years, LW Scientific recommends that you have the microscope professionally serviced once a year.
Warning: The 40x objective is not sealed for oil immersion. Damage to the 40x objective due to oil immersion is not covered under warranty.

Specifications

Nosepiece

Quintuple nosepiece

Head

Trinocular head

Ideal for video/photography

Centering eyepiece for phase objective

EW 10X /22 extra wide field eyepieces

Illumination

6V/30W halogen bulb

Stage

Stage, 160x250mm

Auxiliary stage, 70x180mm

Coaxial drive controls

Optional mechanical stage available:

X-Y Coaxial control

Range of traverse: 120x78mm

Objectives

Infinity Optical System

Objectives: (Plan achromatic) 4X and 40x,

(Plan phase contrast) 10x and 20x

Condenser

Abbe condenser with 20X phaser

Dimensions and Weight

Weight:24.0 lbs.