

AmScope™



B110C

AmScope 40X-1000X dual LED, Ergonomic, Lab Binocular Compound Microscope
with 3D Two-Layer Mechanical Stage

Product Manual

Introduction

This manual will provide information pertaining to the setup and operation of the B270 biological compound microscope. Please familiarize yourself with the necessary precautions and procedures prior to operating this instrument. Certain features and specifications are subject to change.

Safety

Before using your AmScope microscope, please read the following safety precautions carefully to avoid causing damage to your AmScope product, or injury to yourself or others.

Turn off the power if the instrument exhibits unusual or dangerous behavior such as emitting smoke or unusual odors. These can be indications of electrical problems, in which case the instrument should be disconnected from any power source if safe to do so. Other indicators can be a loud buzzing sound or crackling. Contact AmScope to report such behavior.

Do not use flammable liquids or gases. Electric instruments can ignite flammable substances which could result in an explosion or fire.

Do not use in a wet environment. Electrical components of the instrument can discharge when exposed to water, potentially resulting in damage to the instrument, or injury to yourself or others.

Do not dismantle. Dismantling can result in damage to the instrument, and potential exposure to dangerous materials or electric current.

Notices

AmScope reserves the right to change specifications of the product at any time without notice. Continuous efforts are made to improve performance and reliability, which can result in changes to design and compatibility. Please contact Am-Scope for any concerns regarding such changes.



Proposition 65 Notice for California Residents

Cables included with the products described in this manual can expose you to chemicals including lead, which is known by the state of California to cause cancer, birth defects or other reproductive harm. Visit www.P65Warnings.ca.gov for more information.

B110 Microscope Specifications	
Optical System	Finite conjugate
Mechanical Tube Length	160mm
Head	Binocular, 30° incline, 360° rotation
Interpupillary Adjustment	Siedentopf, 48-75mm
Ocular Diameter	23.2mm
Objective Lenses	DIN standard
Objective Parfocal Distance	45mm
Objective Mounting Thread	RMS 20.32mm
Objective Turret	Forward orientation triple
Focusing System	Coaxial coarse and fine focus, upper limit-stop
Fine Focusing Precision	0.002mm
Stage Design	Double-layer with caliper
Stage Vertical Stroke	25mm
Stage Dimensions	118mm x 127mm
X-Y Translation Range	70mm x 21mm
Transmitted Illumination	Variable-intensity 1W LED
Light Condenser	NA1.25 Abbe condenser with iris diaphragm
Sub-stage Condenser-holder	Rack and pinion, centerable
Power	100-240VAC 50/60Hz

What's In The Box

The B110C* standard outfit includes:

- One microscope
- Three objective lenses: 4X, 10X, 40X
- Two pairs of eyepieces: 10X & 25X
- One dust cover
- One AC power cord

*Additional items may be included depending on the model.



1. Assembly and Setup



The Siedentopf binocular head has a comfortable 38° incline, can be rotated 360°, and provides interpupillary and dioptic adjustments to suit any user.

CAUTION: Never lift the microscope by the head. If the head is not properly seated, it can become separated, causing the body to fall, or otherwise damage the coupling mechanism. During transport, hold the microscope by the body in an upright position to prevent the head, eyepieces, or other parts from falling.

1.1 Eyepieces

This microscope uses 23.2mm eyepieces which can be easily mounted to or unmounted from the ocular tubes on the front of the head. During transportation, the eyepieces should not be mounted to the head to avoid falling. Dust caps should be inserted into the ocular tubes, or alternatively an anti-static cover can be placed over the head to prevent dust contamination. To use this instrument for standard observation, eyepieces must be attached to produce a viewable image.



Insert a pair of eyepieces into the ocular tubes. Ensure that the eyepieces have matching magnification, as some models contain multiple pairs of eyepieces with different magnifications. Once attached, adjust the diopter ring on the left ocular tube until it is neutrally aligned (no dioptic adjustment).

The dioptic adjuster can be used if your eyes do not focus the same. This process requires a specimen to be in place with the illuminator active. Begin the process by setting the dioptic adjuster on the left ocular tube to a neutral position. Next, use the focus knobs to bring the image to sharp focus for your right eye. Once the right eye attains sharp focus, rotate the dioptic adjuster until the left eye achieves sharp focus.

1.2 Objective Lenses



The microscope is equipped with three objective lenses which are mounted to a rotating turret between the head and the specimen stage. Should the lenses be removed for transport, they are mounted and unmounted by rotating each lens clockwise or counter-clockwise respectively. The lenses are typically mounted in order from 4X to 40X, but can be interchanged as desired. This microscope is compatible with DIN-standard objective lenses, which allows aftermarket lenses to be used as needed. These lenses must comply with the following DIN* specifications:

- 20.32mm RMS mounting thread
- 160mm mechanical tube-length
- 45mm parfocal distance

*DIN stands for Deutsches Institut für Normung which is a German standards organization. Microscopes and objective lenses which are DIN compliant will use the aforementioned specifications.

1.3 Specimen Stage



The stage has an adjustable height limit. This is used to prevent the stage from being raised too high which could result in damaging the specimen or even the objective lenses. The adjustment screw is located on the body just behind the stage.

Rotate the objective turret until the 40X objective lens is in place. With a specimen mounted on the stage, slowly raise the stage using the coarse-focus knob until the specimen is a few millimeters from the lens. Use the fine-focus knob to continue raising the stage until the specimen barely comes in contact with the lens. The height-adjustment screw should be tightened to set the stopping position. If the specimen was too far from the lens, and could not make contact, loosen the adjustment screw slightly, then continue to make fine focus adjustments until the specimen is high enough. Once the height is properly set, tighten the adjustment screw.

1.4 Power



Before connecting the microscope to a power source, the power switch should be set to the “O” (off) position. Do not use the instrument near flammable materials, nor in wet environments.

Attach the provided power cable, ensuring that the cable is fully inserted with a firm connection. Plug the cable into an AC outlet, then set the power switch to the “–” (on) position to activate the built-in illumination.

This microscope can also function with three AAA batteries. Remove the bottom cover and insert batteries in the correct orientation. Batteries are not included.

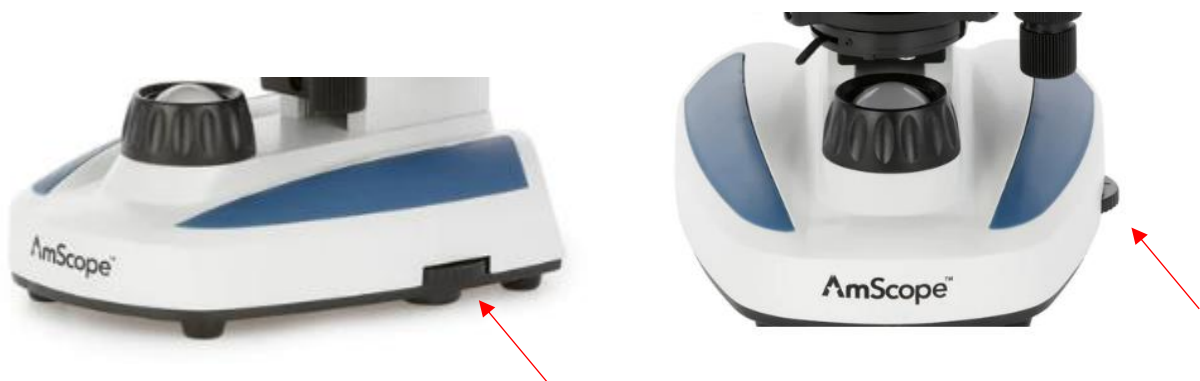
2. Operation

2.1 Mounting a Specimen



This microscope is designed to view translucent specimens mounted primarily on 3" x 1" glass slides. A metal template with caliper is attached to the top of the stage. A prepared slide can be placed on the stage by pushing the caliper lever outward to open the caliper, then sliding the slide in place so the long edge is flush against the back edge of the template. Gently releasing the caliper will secure the slide in place.

2.2 Illumination



The microscope's power switch is located on the rear of the body. Turn on the microscope's illumination by pressing the power switch to the "—" (on) position. As magnification increases, more light will be necessary to view the specimen. Use the wheel on the right side of the microscope's base to adjust the illuminator's brightness as needed. Avoid using the microscope for long durations with excessive brightness, as this can strain the eyes.

2.3 Locating the Specimen and Focusing



With the specimen mounted on the stage, and the illuminator turned on, use the stage's X-Y control knobs under the right side of the stage to adjust the position of the specimen. The larger knob will move the specimen forward and backward, while the smaller knob will move the specimen left and right. Compound microscopes produce inverted images due to the nature of the optical system. Sliding the specimen towards the front of the microscope will result in the viewed image moving in the opposite direction. Use the knobs until the specimen appears to be centered under the objective lens. This will be the starting point.

Observation should typically begin at the lowest magnification. This provides the broadest view of the specimen. Rotate the objective turret to set the lowest magnification lens in place. The condenser is typically designed with a range of aperture values ranging from approximately 0.10 to 1.25. If using a 4X objective lens with a 0.10 aperture, adjust the condenser's aperture using the lever on the outside of the condenser to reduce the size of the aperture. This will maximize the focus depth. When higher magnifications are used, the aperture should be adjusted more open to better match the objective lens' aperture.

Look through the eyepieces, adjusting the interpupillary adjusters as needed to achieve proper alignment. Both eyes should see the same image with a bright, round background. If the image appears offset or obscured, you should continue to adjust the interpupillary distance until the image appears correct. The left ocular tube also has a dioptic adjuster which can be used if the eyes do not focus the same. If the eyepieces are properly aligned, but the light-source appears offset, use the two centering screws attached to the condenser holder to adjust the condenser's position until it is centered.

The stage should be set to a low position when mounting the specimen. Gradually raise the stage using the coarse-focus knob. If you have already performed the height-limit adjustment, the specimen should come into focus near the maximum height. Once you begin to see shapes through the eyepieces, use the fine-focus knobs to adjust the focus until you can see details with clarity. Use the X-Y control knobs to reposition the specimen until the area of interest is in view. You can increase magnification as needed by rotating the objective turret. When doing so, it is advisable to watch the lens as it is set in place to ensure it will not collide with the specimen. Slight adjustments to focus should be made at each magnification, as well as to the condenser's aperture and the illuminator's brightness.