

The Leica BF200 Compound Microscope

Instruction Manual




Leica

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Contents

1.0 Introduction1
2.0 Unpacking1
3.0 Preparation For Use	3.1 Objectives.....1
	3.1.1 Viewing Body.....1
	3.2 Eyepiece.....2
	3.3 Substage Condenser.....2
4.0 Operation	4.1 Illumination.....2
	4.1.1 Built-in Illumination.....2
	4.1.2 External Illuminator.....2
	4.2 Stage Preparation.....2
	4.3 Focusing.....2
	4.4 Examining the Specimen at High Power.....3
	4.5 Oil Immersion Technique.....3
5.0 Care of Microscope	5.1 General.....3
	5.2 Mechanical Maintenance.....3
	5.3 Lamp Replacement.....4
	5.4 Electrical Considerations/ Equipment Ratings.....4
6.0 Fuse Placements4
7.0 Notes4

Explanation of Warning Symbols

	<i>CAUTION: Replace with same type and rating fuse 2x 0.5 AT 250V</i>
	<i>CAUTION: Risk of electric shock</i>
	<i>CAUTION: (Refer to accompanying documents)</i>

1.0 Introduction

The Leica BF200 Compound Microscope is designed specifically for student use in secondary schools. High quality glass optics and a variety of accessories make the BF200 Compound Microscope the ideal choice to meet diverse applications.

2.0 Unpacking

The Leica BF200 Compound Microscope is available in preconfigured models. Check the components against the standard equipment list below.

The standard Leica BF200 Compound Microscope components are:

1. Stand - includes supporting arm, focusing mechanism, stage, condenser or disc diaphragm, nosepiece and illumination system (mirror or in base illuminator)
2. Viewing Body - monocular, binocular, or monocular teaching, as ordered
3. Objectives - as ordered
4. Eyepiece(s) - as ordered
5. Immersion Oil - as ordered
6. Dust Cover
7. Allen wrench
8. Adapter - (for monocular teaching head)

Optional accessories such as a mechanical stage attachment and a carrying case are not part of the standard Leica BF200 Compound Microscope components. If ordered, these items will be shipped separately.

3.0 Preparation for Use

3.1 Objectives

For easy identification, the objectives are color-coded as follows:
4x = red 10x = yellow 40x = dark blue 60x=light blue 100x (oil) = white

3.1.1 Viewing Body

Binocular Head: Locate the knurled screw on the top right of the microscope stand and loosen it. Rotate the viewing body to the desired position. Tighten the knurled screw firmly but without overtightening. The viewing body is now precisely located on the optical axis regardless of the selected orientation.

Monocular and Monocular Teaching Heads: The viewing bodies can be secured to the stand by tightening the body set screw then reversing it one-half turn. This permits the viewing body to rotate 360°, but prevents it from being removed.

3.2 Eyepiece

The eyepiece is secured on the eyepiece tube by inserting it into the monocular viewing tube and tightening the eyepiece set screw. Binocular viewing bodies do not utilize set screws to secure the eyepieces.

3.3 Substage Condenser

The Leica BF200 Compound Microscope is equipped with one of two available substage condensers:

- 0.65 N.A. condenser, a five-position aperture diaphragm, or
- 1.25 N.A. (fixed) Abbe Condenser on a spiral mount.

4.0 Operation

The Leica BF200 Compound Microscope should always be used on a hard, stable and level surface such as a laboratory table or work bench.

4.1 Illumination

4.1.1 Built-in Illumination System

The Leica BF200 Compound Microscope should only be plugged into a suitably grounded electrical outlet.

To turn on the electrical power, flip the switch located on the right side of the base of the Leica BF200 Compound Microscope.

4.1.2 External Illuminator and Mirror

Position the external illuminator approximately 5cm (2") in front of the mirror.

NOTE: *Not all Leica BF200 Compound Microscopes are equipped with a mirror. While looking through the eyepiece adjust the mirror to provide the brightest and most evenly illuminated field-of-view.*

4.2 Stage Preparation

NOTE: *Numerical aperture (N.A.) identifies certain characteristics of an objective lens. The greater the N.A., the greater the resolving power of the objective and the brighter and crisper image it produces. An objective with a high numerical aperture produces a shallow depth of field which requires more careful focusing.*

Lower power objectives have a greater depth of field and are generally used for initial focusing and viewing. The lower the objective power, the greater area of specimen surface will be seen in the field of view.

Before placing a specimen on the stage, rotate the nosepiece until the lowest power objective is in the viewing position.

Be certain that the stage surface is free of dust, grit, or any other material. These will scratch the slide or stage or may interfere with the movement of a slide across the surface of the stage.

Place the slide under the stage clips with the cover glass facing upward. If using a graduated mechanical stage, place the slide between the stage fingers.

Position the specimen area of the slide over the center of the stage aperture. When using a graduated mechanical stage, use the stage control knobs to move the specimen slide.

Raise the stage by turning the coarse focus knob until the stage reaches the upward stop. Do not view the slide through the eyepiece at this point.

The Leica BF200 Compound Microscope is ready to be focused.

4.3 Focusing

Using the 4x or 10x objective, focus the Leica BF200 Compound Microscope by looking through the eyepiece and turning the fine focus knob. Continue to view the specimen through the eyepiece until a crisp, clear image appears. Image clarity depends on the size of the aperture. As the aperture becomes smaller, the contrast and depth of focus increase, but the resolving power decreases.

If using slides thicker or thinner than a standard 1mm slide, the auto-focus knob may need to be readjusted. Simply focus the instrument with the 10x objective in place and turn the auto focus knob clockwise to the stop position.

Adjust the fine focus knob to sharpen the image to the center of the field of view. Adjust the aperture disc diaphragm condenser to obtain the clearest possible image.

If using the 1.25 N.A. Abbe condenser, focus by moving it up and down in its spiral sleeve to the point at which the field is most evenly illuminated. Adjust the iris diaphragm by sliding the control lever to obtain the clearest image.

The position of the aperture must be reset when changing to higher power objectives. As magnification increases, the aperture diaphragm must be opened.

4.4 Examining Specimen at High Power

When examining a specimen at high magnification, position the slide so the feature is centered in the field of view. If the feature you want to observe appears to the left of the field of view, move the slide left to center it. If the feature you want to observe appears to the right of the field of view, move the slide to the right to center it.

By rotating the nosepiece, bring the higher power objective into viewing position. The objective is properly aligned when the nosepiece is interrupted by the click-stop.

4.5 Oil Immersion Technique

To utilize the full numerical aperture of an immersion objective (with inscription "oil"), the objective and specimen are immersed in an immersion oil in the following procedure:

1. Focus on the specimen with a low power objective (40x).
2. Put a drop of immersion oil on the specimen slide and the front lens of the immersion objective.
3. Turn the nosepiece to bring the immersion objective into the light path, and focus with the fine adjustment knobs.
 - Use of the prefocusing lever facilitates steps 2-3 above.
 - Care should be taken to prevent bubbles from forming in the oil, since they will deteriorate the lens performance. Simply reapply the immersion oil if bubbles form.

IMPORTANT: After each use of the 100x objective, use a lens tissue or soft cloth to wipe off all traces of oil from the objective and the slide.

5.0 Care of the Microscope

5.1 General

It is important to keep all optical components clean to obtain the best optical performance. Keep a dust cover on the microscope when it is not in use.

The objectives are easily subjected to dirt, dust and oil. Whenever lack of contrast, cloudiness or poor definition is encountered, carefully check the condition of the front objective lens with a magnifier. To assure all objective lenses are clean, periodically examine them with a magnifying glass.

If an optical surface becomes badly coated with dust or dirt, use an air-filled syringe or soft brush to remove it before wiping the surface clean.

IMPORTANT: Clean optical surfaces with a lint-free cloth, lens tissue or a cotton swab moistened with methanol or commercially available glass cleaner. Avoid excessive use of solvents. Interior surfaces can be loosened or badly damaged if solvents seep in around the lenses.

The higher magnification objectives use a small front lens. The surface of this front lens can be cleaned with a small cotton swab. Dampen the cotton tip with methanol and squeeze it dry. Wipe the front lens lightly. Make sure that the cotton tip contacts the lens surface. Check the objective with a magnifier after the cleaning.

IMPORTANT: If it is necessary to remove the viewing body, DO NOT TOUCH the outer surface on the underside of the viewing body. Finger prints on this surface will reduce the image clarity. This lens can be cleaned in the same manner as objectives and eyepieces.

5.2 Mechanical Maintenance

All non-optical components of the Leica BF200 Compound Microscope can be cleaned with soap and water. Avoid using all other harsh solvents or acetone-based products when cleaning.

The Leica BF200 Compound Microscope requires only routine maintenance. Neither the focusing mechanism nor the mechanical stage require lubrication. Contact your Leica customer service representative for more information.

5.3 Lamp / Fuse Replacement



The Leica BF200 Compound Microscope utilizes a 7 watt fluorescent lamp. It has a life expectancy of 10,000 hours. When replacement is necessary contact a qualified service technician.

5.4 Electrical Considerations / Equipment Ratings



CAUTION: *As a safety precaution, the power cord has been grounded to the microscope base. Never use a 2-prong adapter between the power cord and the power source; it will render the grounding feature ineffective.*



CAUTION: *Risk of electric shock. Removal of the bottom cover of the microscope exposes hazardous voltages, which if contacted, could cause injury or death. Please refer servicing to a qualified service technician.*

Supply Voltage and Range Supply Frequency

- 120V \pm 10% - 60Hz
- 230V \pm 10% - 50Hz
- Input Power - 30W

Range of Environmental Conditions

- Indoor use only
- Temperatures 5°C to 40°C (41°F to 104°F)
- Maximum Relative Humidity - 80% for temperatures up to 31°C (87.8°F) decreasing linearly to 50% relative humidity at 40°C (104°F)
- Installation Category II (Overvoltage Category)
- Pollution degree 2
- Altitude up to 2,000 meters

6.0 Fuse Replacement



CAUTION: *Replacement-The fuse is not user servicable. It must be replaced by qualified service personnel. The fuse can be replaced only with the same size and rating.*



5x20 Type T Rated 250mA T/250V.

7.0 Notes

Leica assures the quality of our instruments to be free of all faults in material and manufacturing. We do not, however, cover damage resulting from improper or careless handling. Contact your Leica representative for more information.

Due to a policy of continuous development, we reserve the right to change specifications without notice.

Aufgrund der fortlaufenden Neuentwicklungen behalten wir uns das Recht vor, jederzeit ohne Vorankündigung Änderungen vornehmen zu können.

En raison de notre politique de développement continu, nous nous réservons le droit de modifier les spécifications sans préavis.

En vista de nuestra política de desarrollo continuo, nos reservamos el derecho de modificar las especificaciones sin previo aviso.

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The Leica logo is written in a classic, elegant script font. The letters are black and have a slight shadow or depth, giving it a three-dimensional appearance. The 'L' is particularly large and stylized, with a long horizontal stroke that extends to the right. The 'e' is also stylized, with a small loop at the bottom. The overall look is professional and iconic.