UltraZoom

High-magnification zoom stereo microscope



euromex
microscopes holland

user manual

v.631391

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1 Introduction

Thank you for purchasing the Euromex UltraZoom. This high-performance zoom stereo microscope offers excellent image clarity and precise focusing for detailed observation and inspection of a wide variety of specimens. The UltraZoom is available with a standard or ergonomic trinocular head, both suitable for digital imaging with a camera. The microscope features adjustable aperture control and transmitted illumination with Oblique Contrast Illumination (OIC) for enhanced contrast. Optional fluorescence illumination is available for specific applications.

Before using the microscope, please read this manual carefully to ensure safe operation and optimal performance

- The contents of this manual are subject to change without prior notice.
- The actual product may differ from the illustrations in this manual.
- Not all components and accessories are included with every configuration.
- Keep this manual for future reference.

**All technical specifications stated are nominal values and are provided for reference purposes only. No rights or claims may be derived from these values. Euromex Microscopen makes no warranty as to the exact accuracy or achievement of these values*

2 General safety instructions

Intended use: a non-medical device
This device is intended for general observation of cells and tissues, with transmitted/reflected illumination and with the specimen fixed on a slide

2.1 Suffocation hazard

The packaging can contain protective plastic bags without perforations, as well as dust protection bags that could be pulled over the head of a child. To avoid danger of suffocation:

- Keep the bags away from babies and children
- Tie a knot in plastic bags before throwing them out
- Plastic bags should be stored out of reach of children
- The installation and use of this product must always be supervised by a qualified adult

2.2 Dangers associated with the operation

- Improper use could result in injury, malfunction or damage to property. It must be ensured that the operator informs every user of existing hazards
- Danger of electrocution. Disconnect the power to the entire lighting system before installing, adding or changing any component
- Not to be used in corrosive or explosive environments
- Avoid direct exposure of eyes to the collimated light beam or direct light from the light guides or fibres
- To avoid a hazard to children, account for all parts and keep all packing materials in a safe place

2.3 Photobiological safety LED, important safety instructions

- Avoid direct eye exposure to any LED light source while switched on
- Before looking through the eyepieces of the device, lower the intensity of the LED illumination
- Avoid long and high-intensity exposure to LED light because this may cause acute damage to the retina of the eye

2.4 Prevention of biological and infectious hazards

Infectious, bacterial or viral biohazard substances under observation may be a risk to the health of humans and other living organisms. Special precautions should be taken during in vitro medical procedures:

- **Biological hazards**: keep a logbook of all the biological substances or pathogenic microorganisms that were under observation with the device and show it to everybody before they use the device or before they do some maintenance work on the device! Agents can be bacterial, spores, enveloped or non-enveloped virus particles, fungi or protozoa
- **Contamination hazard:**
  - A sample that is properly enclosed with a cover glass never comes in direct contact with the device parts. In that case prevention of contamination lies in the handling of the slides; as long as the slides are decontaminated before use and are undamaged and treated normally, there is virtually zero risk of contamination
  - A sample that is mounted on a slide without cover glass, can come in contact with components of the device and may be a hazard to humans and/or the environment. Therefore, check the device and accessories on possible contaminations. Clean the device's surfaces and its components as thoroughly as possible. Should you identify a possible contamination, inform the local responsible person in your organisation
  - Operators could be contaminated from other activities and cross-contaminate components of the device. Therefore, check the device and accessories on possible contaminations. Clean the device's surfaces and its components as thoroughly as possible. Should you identify a possible contamination, inform the local responsible person in your organisation. it is recommended to wear sterile gloves when preparing the slides and handling the device in order to reduce contamination by the operator
- **Infection hazard:** direct contact with the focusing knobs, stage adjustments, stage and eyepieces/tubes of the device can be a potential source of bacterial and/or viral infections. The risk can be limited by using personal eyeshades or eyepieces. You can also use personal protections such as operation gloves and/or safety goggles, which should be changed frequently to minimize the risk

- **Disinfectant hazards:** before cleaning or disinfecting, check if the room is adequately ventilated. If not, wear respiratory protective gear. Exposure to chemicals and aerosols can harm human eyes, skin and respiratory system. Do not inhale vapours. During disinfection, do not eat, drink or smoke. Used disinfectants must be disposed of according to local or national regulations for health and safety

2.5 Disinfection and decontamination:

- Exterior casing and mechanical surfaces must be wiped with a clean cloth, dampened with a disinfectant
- Soft plastic parts and rubber surfaces can be cleaned by gently wiping a clean cloth, dampened with a disinfectant. Alcohol may cause discoloration
- The front lens of eyepieces and objectives are sensitive to chemicals. We recommend not to use aggressive disinfectants but to use lens paper or a soft fibre-free tissue, dampened in cleaning solution. Cotton swabs may also be used. We recommend you use personal eyepieces without eyeshades in order to minimize risk
- Never immerse or dip the eyepiece or objective into a disinfectant liquid! This will damage the component
- Never use abrasive compounds or cleaners that may damage and scratch optical coatings
- Properly clean and disinfect all possible contaminated surfaces of the device or contaminated accessories before storing for future use. Disinfection procedures must be effective and appropriate
- Leave the disinfectant on the surface for the required exposure time, as specified by the manufacturer. If the disinfectant evaporates before the full exposure time, reapply disinfectant on the surface
- For disinfection against bacteria, use a 70% aqueous solution of isopropanol (isopropyl alcohol) and apply for at least 30 seconds. Against viruses, we recommend to refer to specific alcohol or non-alcohol based disinfection products for laboratories

Before returning a device for repair or maintenance through a Euromex dealer, an RMA (return authorization form) together with a decontamination statement must be filled in! This document - available from Euromex for any reseller- must be shipped together with the device at all times

Handle with care

- This product is a high quality optical instrument. Delicate handling is required
- Avoid subjecting it to sudden shocks and impacts
- Impacts, even small ones, can affect the precision of the instrument

Handling the LED

Note: Always disconnect the power cord from your device before handling the LED bulb and power unit and allow the system to cool down approximately 35 minutes to avoid burns

- Never touch the LED with your bare hands
- Dirt or fingerprints will reduce the life span and can result in uneven illumination, lowering the optical performance
- Use only original Euromex replacement LEDs
- The use of other products may cause malfunctions and will void warranty
- During use of the device, the power unit will get hot; never touch it while in operation and allow the system to cool down approximately 35 minutes to avoid burns

Dirt on the lenses

- Dirt on or inside the optical components, such as eyepieces, lenses, etc., affects the image quality of your system negatively
- Always try to prevent your device from getting dirty by using the dust cover, prevent leaving fingerprints on the lenses and clean the outer surface of the lens regularly
- Cleaning optical components is a delicate matter

2.6 Environment, storage and use

- This product is a precision instrument and it should be used in a proper environment for optimal use
- Install your product indoors on a stable, vibration free and level surface in order to prevent this instrument to fall thereby harming the operator
- Do not place the product in direct sunlight
- The ambient temperature should be between 5 to +40°C and humidity range should be within 50% and 80%
- Although the system is anti-mold treated, installing this product in a hot, humid location may still result in the formation of mold or condensation on lenses, impairing performance or causing malfunctions
- Never turn the right and left focus knobs in opposite directions at the same time or turn the coarse focus knob past its farthest point as this will damage this product
- Never use undue force when turning the knobs
- Make sure that the device can dissipate its heat (fire hazard)
- Keep the device away from walls and obstructions for at least approximately 15 cm
- Never turn the device on when the dust cover is in place or when items are placed on the device
- Keep flammable fluids, fabric, etc. well out of the way

Disconnect power

Always disconnect your device from power before doing any maintenance, cleaning, assembling or replacing LEDs to prevent electric shocks

Prevent contact with water and other fluids

Never allow water or other fluids to come in contact with your device, this can cause short circuiting your device, causing malfunction and damage to your system

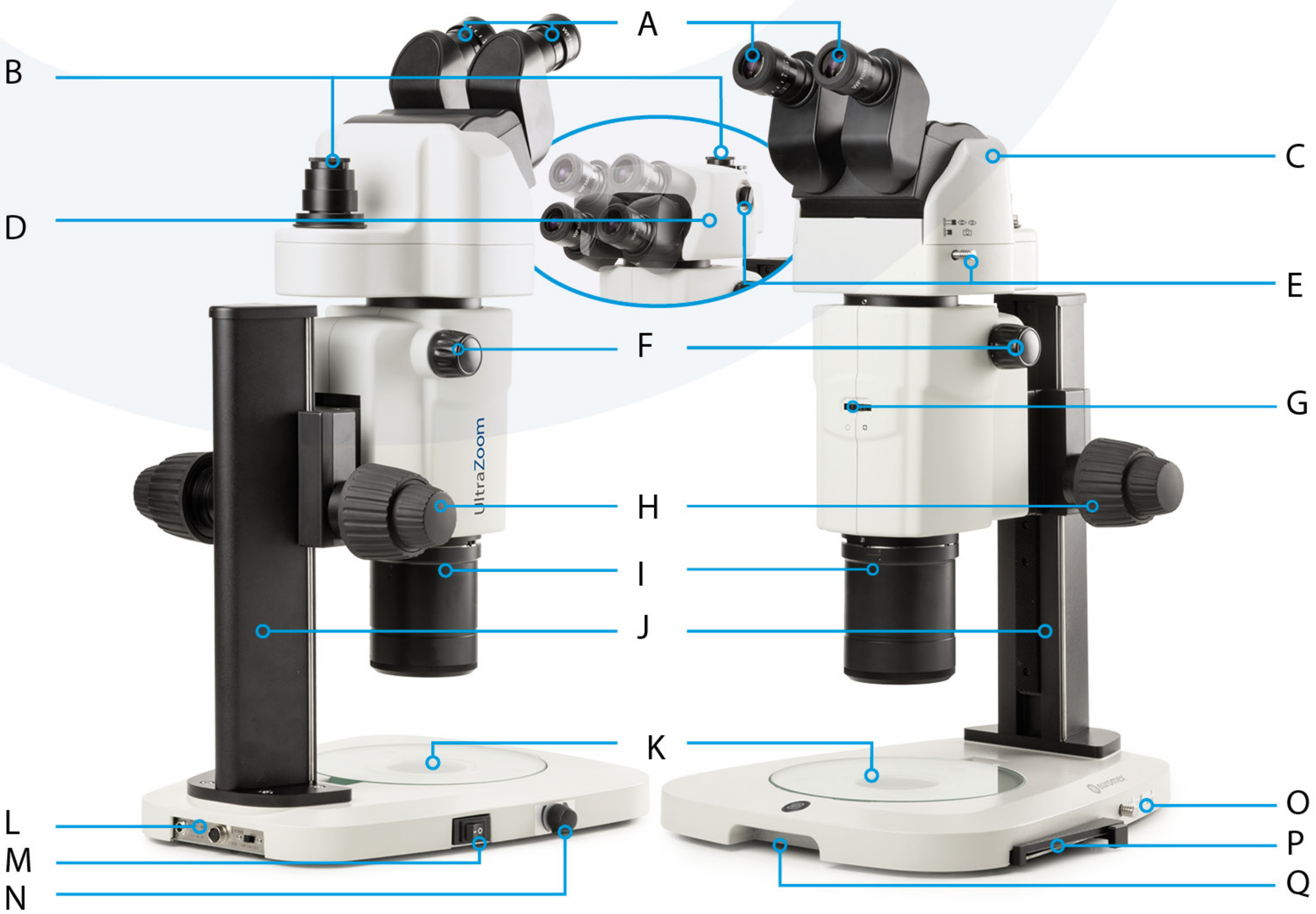
Moving and assembling

- This device is a relatively heavy system, consider this when moving and installing the system
- Always lift the device by holding the main body and base of the device
- Never lift or move the device by its focusing knobs, stage or head
- When needed, move the device with two persons instead of one

3. Configuration, construction and controls

This chapter describes the main parts and functions of the UltraZoom

A. Eyepieces
B. Camera port
C. Ergonomic trinocular head
D. Standard trinocular head
E. Eyepiece/camera switch lever
F. Zoom adjustment knob
G. Iris diaphragm
H. Coarse and fine focusing knobs
I. 1x objective
J. Rack-and-pinion stand
K. Transparent stage plate
L. Power socket
M. Power switch
N. Light intensity control
O. Prism pull rod
P. Oblique Contrast Illumination (OIC) slider
Q. Carrying handle



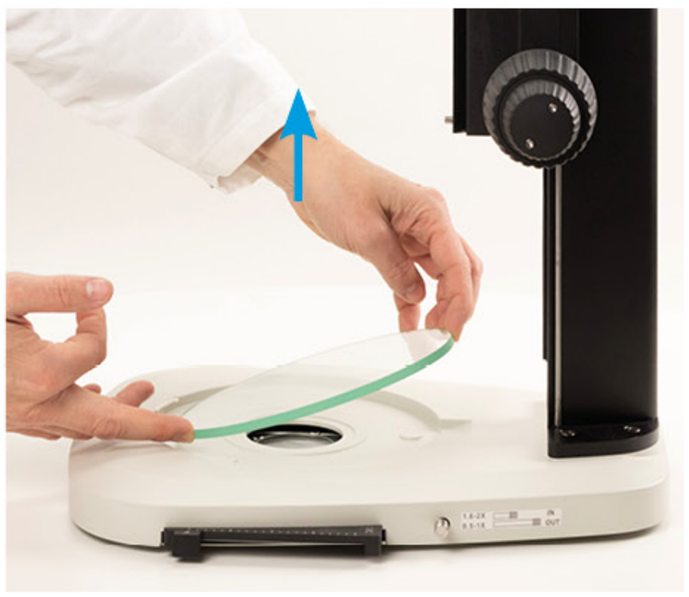
4. Assembly

Before assembling the Euromex UltraZoom, carefully unpack all components and check that they are complete and undamaged.

Place the microscope on a stable, level surface and ensure that the power cable is disconnected during assembly.

Depending on the configuration, certain components and assembly procedures may differ. Follow the illustrations and instructions applicable to your microscope configuration.

4.1 Placing the glass object plate and attaching the body







4.2 Attaching the objective







4.3 Placing the head







4.4 Placing the eyepieces







4.5 Attaching the power cable

Power input



1. Power input
2. For future use
3. On/off switch
4. Light intensity control

4.6 Attaching the camera

The UltraZoom is available with a standard or ergonomic trinocular head. Both configurations allow the attachment of a digital camera, but the parfocality adjustment differs between the two observation heads



Ergonomic trinocular head (Fig. 1)

1. Remove the protective cap from the camera port.
2. Attach the camera to the C-mount thread (1″ × 1/32″).
3. First, focus the specimen through the eyepieces. Then rotate the upper part of the camera tube to adjust parfocality (±2 mm) until the camera image is sharp
4. If necessary, loosen the Allen screw, adjust the camera orientation and retighten the screw

Standard trinocular head (Fig. 2)

1. Remove the protective cap from the camera port
2. Attach the camera to the C-mount thread (1″ × 1/32″)
3. First, focus the specimen through the eyepieces. Then rotate the large adjustment ring to adjust parfocality (±2 mm) until the camera image is sharp
4. If necessary, loosen the Allen screw, adjust the camera orientation and retighten the screw
5. If necessary, adjust the three centering screws to align the camera with the optical axis

Note: *Parfocality adjustment ensures that the image remains in focus when switching between observation through the eyepieces and the camera*



Fig. 1

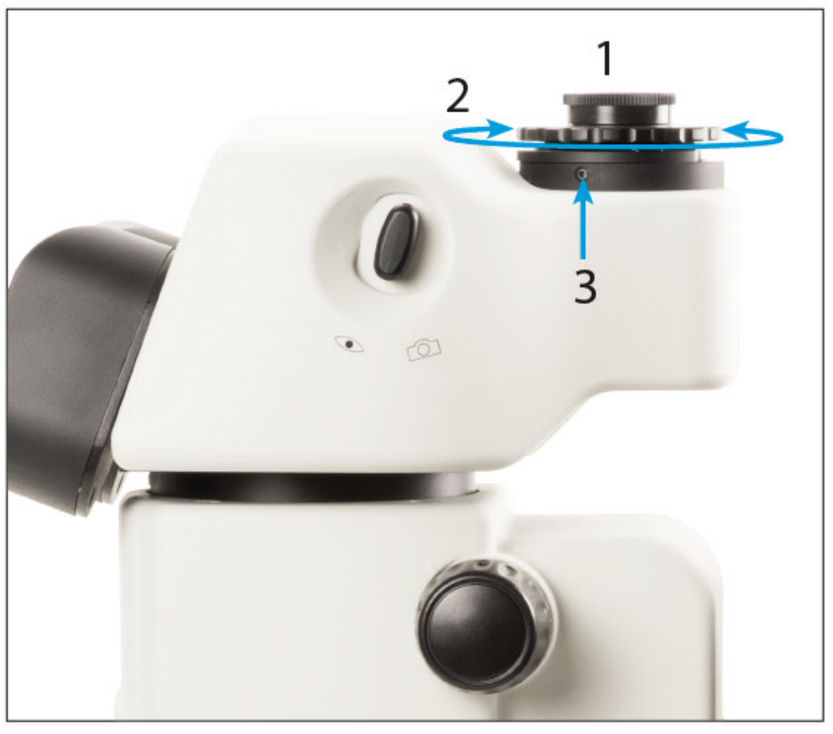


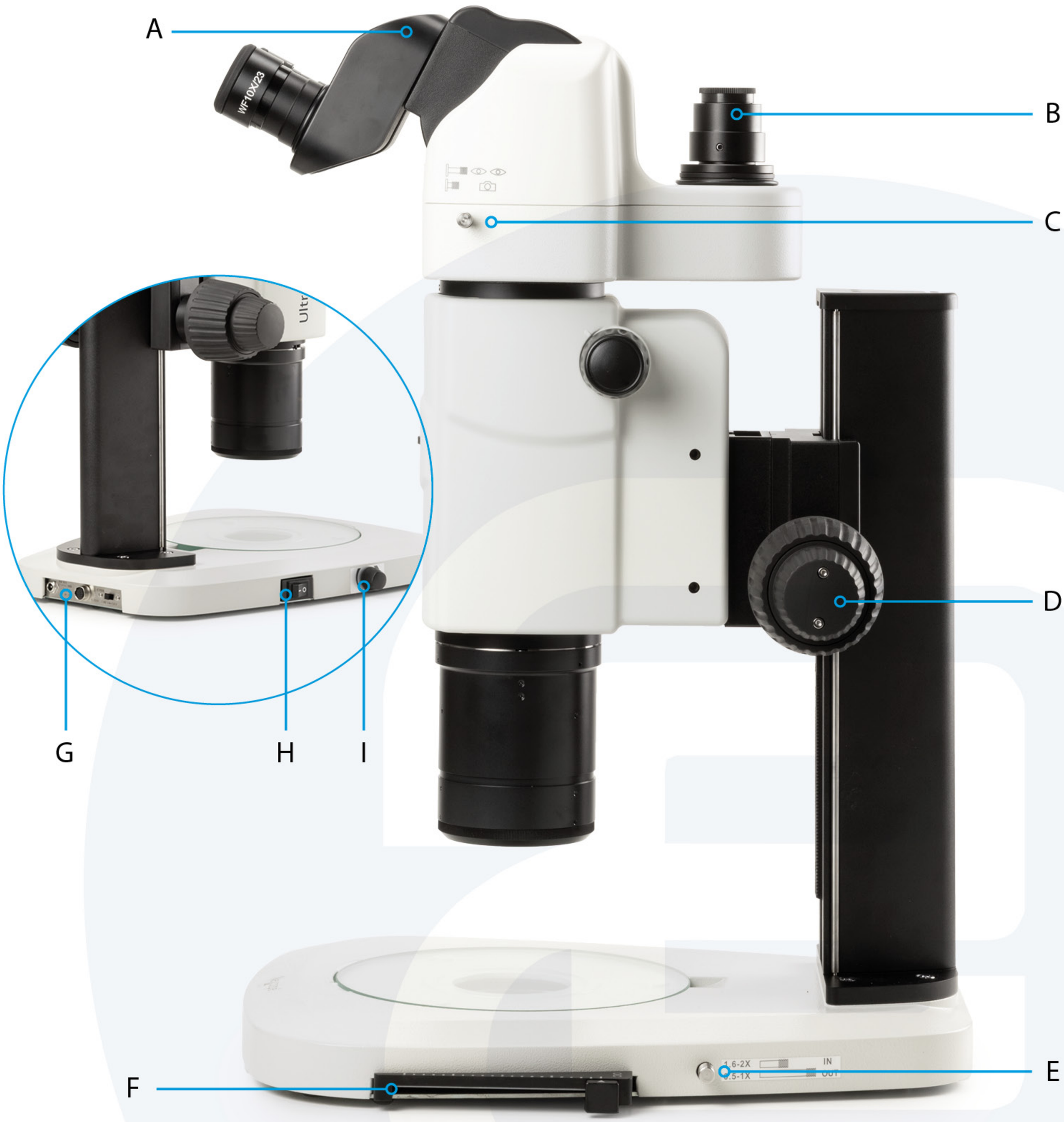
Fig. 2

5. Operating controls

5.1 Operating controls – UZ.1808

The following section describes the main operating controls and functions of the Euromex UltraZoom UZ.1808 stereo microscope. Depending on the configuration, certain controls and adjustment procedures may differ. Refer to the illustrations and instructions applicable to your microscope model

A. Interpupillary distance adjustment
B. C-mount camera port
C. Eyepiece/camera switch lever
D. Coarse/fine focus knob
E. Prism pull rod
F. OIC slider
G. Power socket
H. Power switch
I. Light intensity control



5.2 Operating controls – UZ.1803

The following section describes the main operating controls and functions of the Euromex UltraZoom UZ.1803 and stereo microscope. Depending on the configuration, certain controls and adjustment procedures may differ. Refer to the illustrations and instructions applicable to your microscope model

A. Interpupillary distance adjustment
B. C-mount camera port
C. Eyepiece/camera switch lever
D. Coarse/fine focus knob
E. Prism pull rod
F. OIC slider
G. Power socket
H. Power switch
I. Light intensity control



6. Operating instructions

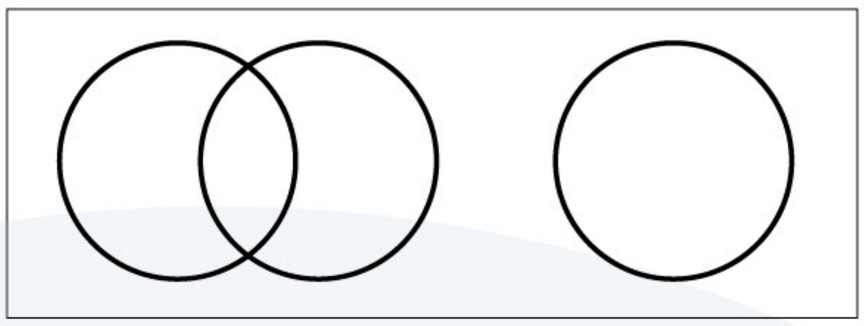
6.1 Adjusting the observation head

The UltraZoom is available with either a standard trinocular head or an ergonomic trinocular head. Both configurations allow the interpupillary distance and eyepiece position to be adjusted for comfortable observation



Fig. 1

Fig. 2



1. Interpupillary distance (Fig. 1)

Adjust the distance between the eyepieces (55–75 mm) until the two images merge into a single circular field of view

2. Rotating the eyepiece tubes (Fig. 1)

The eyepiece tubes can be rotated through 180° to adjust the viewing position on both observation head configurations

3. Viewing angle adjustment (Fig. 2)

On the ergonomic trinocular head, the viewing angle can be adjusted between 0° and 30° for a comfortable observation position

6.2 Eyepiece/camera switch

The trinocular observation heads allow the light path to be switched between the eyepieces and the camera

Ergonomic trinocular head (Fig. 3)

- Pull the selection lever out to direct 100% of the light to the eyepieces
- Push the lever in to direct 100% of the light to the camera

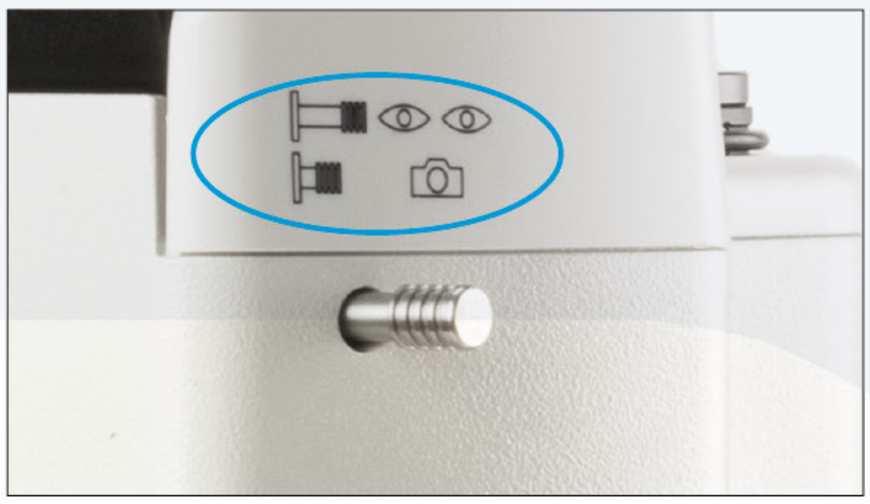


Fig. 3

Standard trinocular head (Fig. 4)

- Turn the selection switch to the left to direct 100% of the light to the eyepieces
- Turn the selection switch to the right to direct 100% of the light to the camera



Fig. 4

6.3 Coarse and fine focusing (Fig. 5)

The UltraZoom is equipped with coarse and fine focusing knobs for precise focusing.

- Use the coarse focusing knob (A) to bring the specimen approximately into focus
- Use the fine focusing knob (B) to sharpen the image
- Adjust the focusing tension to ensure smooth movement and prevent unintended movement of the microscope body

Note: *Avoid applying excessive force when adjusting the focusing mechanism*

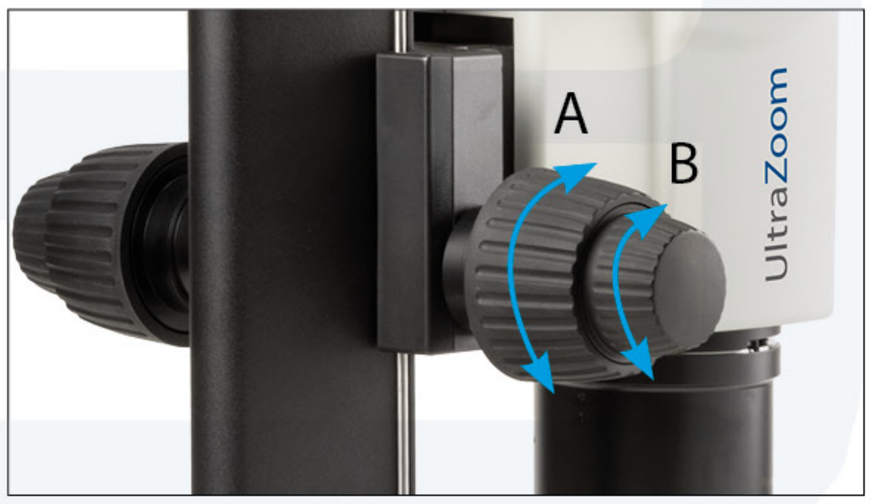


Fig. 5

6.4 Diopter adjustment (Fig. 6)

The diopter adjustment compensates for differences in vision between the user's eyes and helps maintain a sharp image throughout the zoom range

1. Set the diopter adjustment rings to '0'
2. Place a suitable specimen on the stage
3. Select the highest zoom setting and focus using the focusing knobs
4. Select the lowest zoom setting without changing the focus
5. Look through each eyepiece separately and adjust its diopter ring until the image is sharp
6. Return to the highest zoom setting and check that the image remains sharp through both eyepieces



Fig. 6

6.5 Zoom adjustment (Fig. 7)

The UltraZoom features a continuous zoom system with a magnification factor ranging from 0.75x to 13.5x

- Rotate the zoom adjustment knob to increase or decrease the magnification
- The selected zoom factor is indicated by the marking on the zoom knob
- Start with a low magnification to locate the specimen and gradually increase the magnification for detailed observation



Fig. 7

Note: *The total magnification depends on the zoom setting, objective and eyepieces used*

6.6 Iris diaphragm (Fig. 8)

The iris diaphragm controls the amount of light passing through the optical system and influences brightness, depth of field and resolution

Turning the adjustment dial to the left (opening):

- Increases image brightness
- Decreases depth of field
- Allows higher resolution

Turning the adjustment dial to the right (closing):

- Decreases image brightness
- Increases depth of field
- Reduces resolution

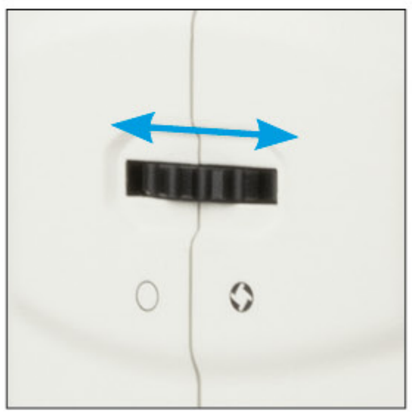


Fig. 8

Note: *The iris diaphragm can be adjusted from fully open to an aperture of approximately 2.5 mm*

6.7 Prism pull rod (Fig. 9)

The prism pull rod is used to adjust the optical configuration according to the objective magnification. The prism sheets help reduce shadows during observation

- 0.5× or 1× objective: Pull the prism lever out
- 1.6× or 2× objective: Push the prism lever in

Note: *Ensure that the lever is positioned correctly for the objective being used*



Fig. 9

6.8 Oblique Contrast Illumination (OIC) (Fig. 10)

Oblique Contrast Illumination (OIC) enhances the visibility of transparent or low-contrast specimens by partially blocking the transmitted light.

- Place the specimen on the stage and switch on the transmitted illumination
- Move the OIC adjustment slider to partially block the light path
- Adjust the slider position until the desired contrast and visibility are achieved

Note: *OIC can improve the visibility of fine structures that are difficult to observe using conventional transmitted illumination*

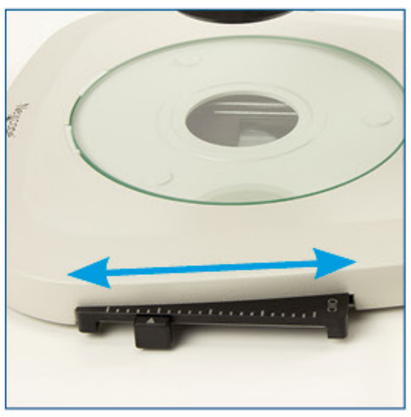


Fig. 10

7. Troubleshooting

7.1 Troubleshooting - Image observation

This section describes common problems that may occur during operation of the UltraZoom microscope, along with their possible causes and recommended solutions

Problem	Possible cause	Solution
Part of the field of view is missing	The microscope is not assembled correctly	Check and correct the assembly
Field of view is not visible	The optical path selection lever or switch is not correctly positioned	Move the lever or switch fully into the correct position
Field of view is not visible	The fluorescence illuminator* is not correctly positioned	Rotate the fluorescence illuminator into the correct position
Uneven brightness of the field of view	The objective is contaminated with dirt or dust	Clean the objective carefully
Uneven brightness of the field of view	The specimen is contaminated with dirt or dust	Clean or replace the specimen
Image is too dark	The aperture diaphragm is adjusted to its minimum opening	Adjust the aperture diaphragm to the appropriate opening
Image is too dark	The illumination intensity is too low	Increase the illumination intensity to the appropriate level

Only applicable to models equipped with the optional fluorescence illuminator

Notes

7.2 Troubleshooting – Operation

Problem	Possible cause	Solution
Binocular images do not merge into a single image	Incorrect interpupillary distance.	Adjust the interpupillary distance until both images merge.
Binocular images do not merge into a single image	Incorrect diopter adjustment.	Adjust the diopter setting.
Eye strain or dizziness during binocular observation	Incorrect interpupillary distance.	Adjust the interpupillary distance.
Eye strain or dizziness during binocular observation	Incorrect diopter adjustment.	Adjust the diopter setting.
Eye strain or dizziness during binocular observation	Insufficient illumination.	Adjust the illumination intensity to a comfortable level.
Image loses focus when changing magnification	Incorrect diopter adjustment.	Readjust the diopter setting.

Notes

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