

# NSZ818

TRINOCULAR ZOOM STEREO MICROSCOPE



**INSTRUCTION MANUAL**

**NSZ818**  
ZOOM STEREO  
MICROSCOPES

**Nexcope**<sup>®</sup>  
Scientific  research microscope

## INTRODUCTION

### MANY THANKS TO YOU

for the purchase of our professional trinocular zoom stereo microscope NSZ818. It has been carefully manufactured with materials of lasting value, and careful attention has been paid to function and reliability. This microscope is designed for a wide range of applications such as life sciences, research and development. It has a 18:1 extra-class zoom ratio that delivers images with outstanding sharpness. The integrated OIC (oblique coherent contrast) illumination in the stand base enhances the contrast of transparent specimen structures.

NEXCOPE microscopes are very robust, but need a certain amount of attention and care to guarantee their longevity. We therefore recommend that you read this user manual carefully and keep it within reach for your reference while working with the stereo zoom microscope. It contains all relevant information on operation, user safety and care. If you follow the guidelines, your microscope will function reliably and smoothly even after years of intensive use.

We wish you much success in your work with your new zoom stereo microscope!



The operating instructions can be downloaded from the following web address:  
[www.bresser.de/PNX60818](http://www.bresser.de/PNX60818)



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[www.bresser.de/warranty\\_terms](http://www.bresser.de/warranty_terms)

You can obtain additional information from your customer service:

**DE AT CH BE**

Bei Fragen zum Produkt und eventuellen Reklamationen nehmen Sie bitte zunächst mit dem Service-Center Kontakt auf, vorzugsweise per E-Mail.

E-Mail: [service@bresser.de](mailto:service@bresser.de)  
Telefon\*: +49 28 72 80 74 350

BRESSER GmbH  
Kundenservice  
Gutenbergstr. 2  
46414 Rhede  
Deutschland

\*Lokale Rufnummer in Deutschland (Die Höhe der Gebühren je Telefonat ist abhängig vom Tarif Ihres Telefonanbieters); Anrufe aus dem Ausland sind mit höheren Kosten verbunden.

**GB IE**

Please contact the service centre first for any questions regarding the product or claims, preferably by e-mail.

E-Mail: [service@bresseruk.com](mailto:service@bresseruk.com)  
Telephone\*: +44 1342 837 098

BRESSER UK Ltd.  
Suite G3, Eden House  
Enterprise Way  
Edenbridge, Kent TN8 6HF  
United Kingdom

\*Number charged at local rates in the UK (the amount you will be charged per phone call will depend on the tariff of your phone provider); calls from abroad will involve higher costs.

**FR BE**

Si vous avez des questions concernant ce produit ou en cas de réclamations, veuillez prendre contact avec notre centre de services (de préférence via e-mail).

E-Mail: [sav@bresser.fr](mailto:sav@bresser.fr)  
Téléphone\*: 00 800 6343 7000

BRESSER France SARL  
Pôle d'Activités de Nicopolis  
314 Avenue des Chênes Verts  
83170 Brignoles  
France

\*Prix d'un appel local depuis la France ou Belgique

**NL BE**

Als u met betrekking tot het product vragen of eventuele klachten heeft kunt u contact opnemen met het service centrum (bij voorkeur per e-mail).

E-Mail: [info@bresserbenelux.nl](mailto:info@bresserbenelux.nl)  
Telefoon\*: +31 528 23 24 76

BRESSER Benelux  
Smirnoffstraat 8  
7903 AX Hoogeveen  
The Netherlands

\*Het telefoonnummer wordt in het Nederland tegen lokaal tarief in rekening gebracht. Het bedrag dat u per gesprek in rekening gebracht zal worden, is afhankelijk van het tarief van uw telefoon provider; gesprekken vanuit het buitenland zullen hogere kosten met zich meebrengen.

**ES IT PT**

Si desea formular alguna pregunta sobre el producto o alguna eventual reclamación, le rogamos que se ponga en contacto con el centro de servicio técnico (de preferencia por e-mail).

E-Mail: [servicio.iberia@bresser-iberia.es](mailto:servicio.iberia@bresser-iberia.es)  
Teléfono\*: +34 91 67972 69

BRESSER Iberia SLU  
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P.I. Ventorro del Cano  
28925 Alcorcón Madrid  
España

\*Número local de España (el importe de cada llamada telefónica dependen de las tarifas de los distribuidores); Las llamadas des del extranjero están ligadas a costes suplementarios..



We recommend that you study this manual thoroughly before operating the microscope for the first time. It will help you become fully familiar with the equipment and achieve optimum performance. Keep this manual in an easily accessible place near the work area for future reference.

Changes in the interest of the technical development are reserved. These instruction manual is not subject to the revision service. The reproduction of this document as well as the use and communication of its contents are not permitted unless expressly permitted. Contraventions obligate to compensation for damages. All rights in the event of a patent being granted or utility model registration reserved.

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This chapter informs the user about the general instructions for the microscope and the important safety symbols.

**1.1. Imprint/validity information****Imprint**

Bresser GmbH  
Gutenbergstraße 2  
46414 Rhede Deutschland  
<http://www.bresser.de>

**For information regarding liability claims or service requests, please refer to chapters "Warranty" and "Service" in this documentation. Errors reserved - technical specifications subject to change.**

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**Validity information**

This documentation is valid for the products with the article numbers listed below:  
NSZ818

**Manual version:** v072022a

**Manual description:** Manual\_NX60818\_NSZ818\_en\_NEXCOPE\_v072022a

For any inquiries, please state these information.

**1.2. About this instruction manual/intended use****About this instruction manual**

These operating instructions are to be considered a component of the device.

**PLEASE READ THE SAFETY INSTRUCTIONS AND THE OPERATING INSTRUCTIONS CAREFULLY BEFORE USE.** Keep these instructions available for

further reference when using the microscope. When the device is sold or given to someone else, the instruction manual must be provided to the new owner/user of the product.

**Intended use**

- This product is intended for private and corporate use.
- It was developed for the magnified display of things in nature.
- The device is intended only for indoor use.



This device is not intended for use by individuals (including children) with limited physical, sensory or mental capabilities or those lacking in experience and/or knowledge, unless they are supervised by an individual responsible for their safety or have received instructions from them regarding the use of the device.

### 1.3. General safety instructions

#### Danger of an electronic shock!

This device contains electronic components that operate via a power source (power supply and/or batteries). In case of any improper use of this device, there is a risk of an electric shock. An electric shock can cause severe injury or even death. Therefore please read the safety instructions below to avoid an explosion.

- Disconnect the device from the power supply by pulling the power plug when it is not used or in case of longer interruption of operation and before starting any work on maintenance and cleaning.
- Position your device so that it can be disconnected from the power supply at any time. The wall socket you use should be located near the device and easily accessible, since the plug on the power cable serves as a disconnecting device for the power supply.
- Always pull on the plug to separate the device from the power supply. Never pull on the cable.
- Before operating, check the device, cables and connections for damage.
- Never use a damaged unit or a unit with damaged power cables. Damaged parts must be exchanged immediately by an authorised service centre.
- Only use the device in complete dry environment and do not touch it with wet or moist parts of your body.
- The microscope is equipped with a power supply unit which allows the use of mains voltage values of 12 V; 2 A.
- To avoid electric shock, connect the supplied power cord to a properly grounded power outlet on. These mains cables are fitted with three-pin plugs to ensure proper earthing.



#### Danger of choking!

In case of any improper use of this device, there is a risk of choking, especially for children. Therefore please read the safety instructions below.

- Keep packaging material, like plastic bags and rubber bands, out of the reach for children, as these materials pose a choking hazard!
- This product contains small parts that can be swallowed by children! There is a risk of choking!
- If small parts are swallowed, consult a doctor immediately!

#### Danger of explosion!

In case of any improper use of this device, there is a risk of an explosion. Therefore please read the safety instructions below to avoid an explosion.

- Do not expose the device to high temperatures. Use only the supplied power adapter. Do not short-circuit the device or throw them into a fire. Excessive heat or improper handling could trigger a short-circuit, a fire or an explosion.
- Do not use the microscope and the accessories supplied with them in potentially explosive atmospheres, in the presence of flammable solvents such as alcohol, petrol or volatile anaesthetics, etc..



#### CAUTION: Danger of injury!

This device contains components and/or accessories that can cause minor to severe injuries in case of any improper use. Therefore please read the safety instructions below to avoid any bodily injury.

- Tools with sharp edges and points are often used when working with this device. Because there is a risk of injury from such tools, store this device and all the tools and accessories in a location that is out of the reach of children.
- Children must not have access to the included chemicals and liquids. Do not drink the chemicals. Wash hands thoroughly with running water after using the chemicals. In the event that the chemicals come into contact with your eyes or mouth, rinse thoroughly with water. If you are in pain after exposure, contact a doctor immediately and take the substances with which you came into contact with you.



#### CAUTION: Fire hazard!

In case of any improper use of this device, there is a risk of fire. Therefore please read the safety instructions below to avoid the initiation of burning.



#### NOTICE: Risk of property damage!





In case of any improper use of this device and/or its accessories, there is a risk of property damage. Therefore only use the device according to the safety instructions below.

- Do not disassemble the device. In the event of a defect, please contact your dealer. The dealer will contact the Service Centre and can send the device in to be repaired, if necessary.
- Do not expose this device to higher temperatures and protect it from water and high humidity.
- Protect the device from severe shocks!
- For this device only use accessories and spare parts that comply with the technical information.
- Always use the power cord supplied by Nexcope. If an unsuitable power cord is used, Nexcope can no longer guarantee the electrical functionality and safety of the microscope.
- Use these microscope and the original accessories only for the applications described in this manual.
- The manufacturer does not accept any liability for any other application, possibly also for individual assemblies or individual parts. This also applies to all repair and service work that is not carried out by authorised service personnel. Therefore all guarantee / warranty claims expire.
- Zoom stereo microscope NSZ818 is not equipped with any special device to protect against corrosive, toxic, potentially infectious or radioactive samples or other samples that are harmful to health equipped. All legal requirements, in particular national regulations for accident prevention, must be observed when handling such samples.

#### Note!




If you have any complaints or queries please contact your national service centre by telephone. The address is included in these instructions.

### 1.4. Safety symbols used in the manual

<b>Danger symbols</b> Hazard symbols are recognisable symbols intended to warn of hazardous materials, objects or places, including electric currents, radioactivity and poisons.	
	<b>Warning of a danger point</b> This symbol indicates information that must be read and observed. Non-observance can lead to: o Risk of injury o Malfunctions or equipment damage
	<b>Warning of dangerous electrical voltage</b> This symbol precedes information that must be read and observed. Non-observance can lead to: o Risk of injury o Malfunctions or equipment damage
<b>Warning symbol</b> Warning symbol indicates a possible source of danger.	
	<b>General warning</b> This symbol indicates information that must be read and observed. Failure to follow the warnings may result in injury to the user and/or damage to the microscope (including nearby objects).
<b>Note symbol</b> The hint symbol provides you with important additional information and tips about the microscope.	
	<b>Important additional hint</b> Accompanying instructions serve to simplify operation and maintenance.

### 1.5. Symbols on the microscope

The following symbols are located on the microscope/accessories and should always be observed:

	Dispose of the packaging materials by type. Contact your local waste-disposal service or environmental authority for information on the proper disposal.
	Do not dispose of electronic devices in the household garbage! According to the European Directive 2002/96/EU on Waste Electrical and Electronic Equipment and its transposition into national law, used electrical equipment must be collected separately and recycled in an environmentally sound manner.
	<b>EC DECLARATION OF CONFORMITY</b> A "Declaration of conformity" in accordance with the applicable directives and corresponding standards has been prepared by Bresser GmbH.

### 1.6. Sustainability

**The protection of our environment is close to our heart.**  
That is why this manual is printed on 100% recycled paper.

### 1.7. Check scope of delivery and handling

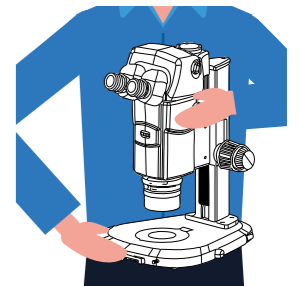
- Open the packaging with care. Avoid fingerprints and sweat on the objective lens and the glass plate. Prevent the objective and the glass plate from falling and being damaged.
- Remove all components from the packaging and check for completeness according to the delivery note. The microscope could be packaged in more than one carton depending on the model or accessories.
- Handle the microscope with care and always protect it against violent impact and vibrations.
- Keep the original packaging for possible longer storage or return of the device to the supplier in case a repair or revision is needed.



Never lift the microscope by the trinocular viewing head or coarse/fine focusing knobs. This can damage the microscope!



- Always carry the microscope with both hands.
- It is recommended to carry the microscope by the carrying handle, stand base as well as by the stand column.



### 1.8. Site location

#### BEFORE SETTING UP THE MICROSCOPE: select a suitable location.

Place the microscope on a resistant surface away from strong sunlight, heat sources, high humidity, high dust exposure as well as strong vibration.



- The ambient temperature range of the microscope is 5°C to 40°C (41°F to 109°F)!
- If the device is exposed to temperatures outside this range, this will cause irreparable damage to optical and/or mechanical parts which are not covered by warranty.

- Place the microscope on a surface that meets the following criteria:
  - › Flat
  - › Vibration-free
  - › Level
  - › Hard surface and non-flammable
  - › Stable (the unit weighs approximately 10.5 kg)
- Chemical and mechanical resistant
- Place the microscope so that:
  - › There is at least 10 cm clearance around the device or to other devices or the wall.
  - › You can disconnect it from the mains at any time.
- The mains cable must be freely accessible at all times, as the mains cable is intended as a disconnecting device from the mains.
- Make sure the residual moisture is fully eliminated before use.
- For use in warm and humid climates, all optical components of the microscope are already equipped with protection against fungus infestation.

### 1.9. Cleaning/maintenance/transport



**IN THE EVENT OF A LONG OPERATING INTERRUPTION** and especially maintenance and cleaning work, disconnect the power supply by pulling out the mains plug.



**BEFORE EVER CLEANING:** Dismantle optical elements (e.g. objective, eyepiece, etc.).



**BEFORE USING THE MICROSCOPE:** The residual moisture should be completely removed.



**DO NOT USE ORGANIC SOLVENTS** (e.g. alcohol, ether, acetone, xylol or other dilutions) to clean lacquered parts or plastic parts!



**ALCOHOL IS HIGHLY FLAMMABLE!**



**AVOID DAMAGE TO THE ELECTRONICS:** by not using cleaning fluid.



**IF YOU USE PREPARATIONS** that pose a potential risk of infection, all parts that have come into contact with the preparation must be thoroughly cleaned.



The PLAN APO 1x objective, the zooming body, the coarse/fine focusing mechanism and the aperture diaphragm are precisely designed and matched to each other. Please avoid disassembling the components. This will affect the performance of the microscope.



**TRANSPORT:** Please remove all loose parts (e.g. glass plate, eyepieces) and the object to be observed from the glass plate. Only use the original packaging for transport.

### Cleaning microscope body / optical elements

- Only use a dry cloth to clean the exterior of the device.
- BEFORE CLEANING: Disassemble optical elements (e.g. objective, eyepiece, etc.).
- Blow away loose dust from the lens surfaces first.
- Use a soft disposable paper cloth soaked in 30%-70% pure alcohol (available at the pharmacy or drugstore). Do not apply the cleaning solution directly to the optical parts. Gently wipe the lens surface by cleaning the surface with circular movements from the centre to the edge of the optic. Apply light pressure to the optics while doing this.

### 1.10. Protection and storage

- PROTECT THE DEVICE against dust and moisture.
- AVOID PUTTING FINGERPRINTS and equal contaminations on any optical surfaces.
- PULL A DUST PROTECTION COVER OVER THE MICROSCOPE. Before covering the microscope, always check that the microscope is also switched off.
- IT IS RECOMMENDED to store this microscope in a protected place where there are no acid gases, alkalis, organic solvents and other harmful substances in the vicinity.
- STORE THE MICROSCOPE in a closed container at a dry and mould-free place.
- STORE THE MICROSCOPE AND THE ACCESSORIES in the relevant containers when they are not used for a longer time.
- IT IS RECOMMENDED to store also the objective and the eyepieces in closed containers with desiccant.



A dust protection cover is included in delivery.



**REMEMBER:** A well maintained microscope will keep its optical quality for years and thus maintain its value.



### 1.11. Disposal

Dispose of the packaging materials properly, according to their type, such as paper or cardboard. Contact your local waste-disposal service or environmental authority for information on the proper disposal.

Please take the current legal regulations into account when disposing of your device. You can get more information on the proper disposal from your local waste-disposal service or environmental authority.

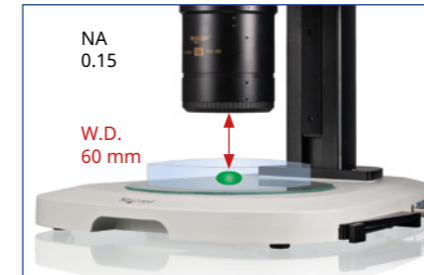


#### **DO NOT DISPOSE of electronic devices in the household garbage!**

As per Directive 2002/96/EC of the European Parliament on waste electrical and electronic equipment and its adaptation into German law, used electronic devices must be collected separately and recycled in an environmentally friendly manner.

## 2. INTRODUCTION

### 2.1. What you can expect



Zoom ratio	18:1
Zoom range	0.75x-13.5x
Total magnification	7.5x-135x
Working distance (W.D.)	60 mm
Field of view (FOV)	
Objective	31.4 mm
Eyepiece	23 mm



#### **OUTSTANDING OPTICAL ZOOM PERFORMANCE**

- The stereo microscope offers a zoom ratio of 18:1
- High resolution and 18x zoom ratio, with 7.5x to 135x zoom range under 10x eyepiece
- PLAN APO 1x objective with numerical aperture (NA) up to 0.15 provides excellent images with lifelike colours

#### **LARGE RADIUS OF OPERATION**

- The 1x objective offers a working distance (W.D.) of 60 mm to facilitate sample placement and movement.
- The large field of view (FOV) allows you to cover a larger and more comprehensive sample area.

#### **EXTRA WIDE STAND BASE WITH EASY TO USE OIC ILLUMINATION**

- The extra wide stand base provides stable support for the microscope.
- LED stand base supports OIC illumination (illumination method using oblique light to enhance contrast of colourless, transparent specimen structures).
- Three-dimensional LED illumination base has a long life and generates low amounts of heat.

#### **COMFORTABLE IN LONG-TERM OBSERVATION**

Trinocular viewing head

- By quickly attaching a camera, you can create a sharp image of the sample to be observed at any time
- Wide-field 10x eyepieces with 23 mm field of view (FOV)
- Adjustable diopter and interpupillary distance on both eyepieces
  - › Minimize user fatigue through long-term observation

#### **WIDE RANGE OF APPLICATION**

- Life Sciences
- Research
- Development



## 3. DESIGN OF TRINO ZOOM STEREO MICROSCOPE

## 3.1. Product image NSZ818 – Zoom stereo microscope

## A NSZ818 Front/Side view

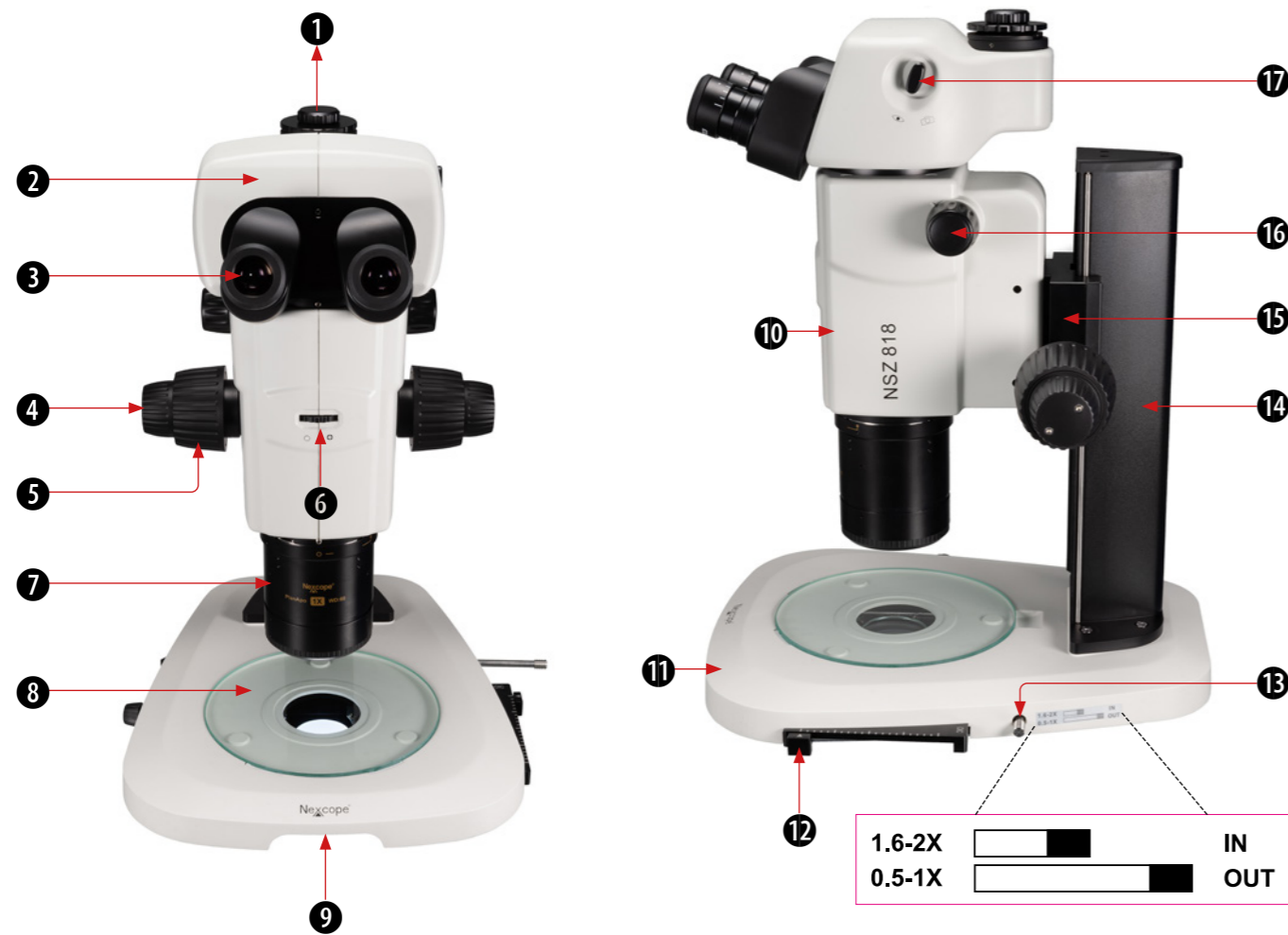
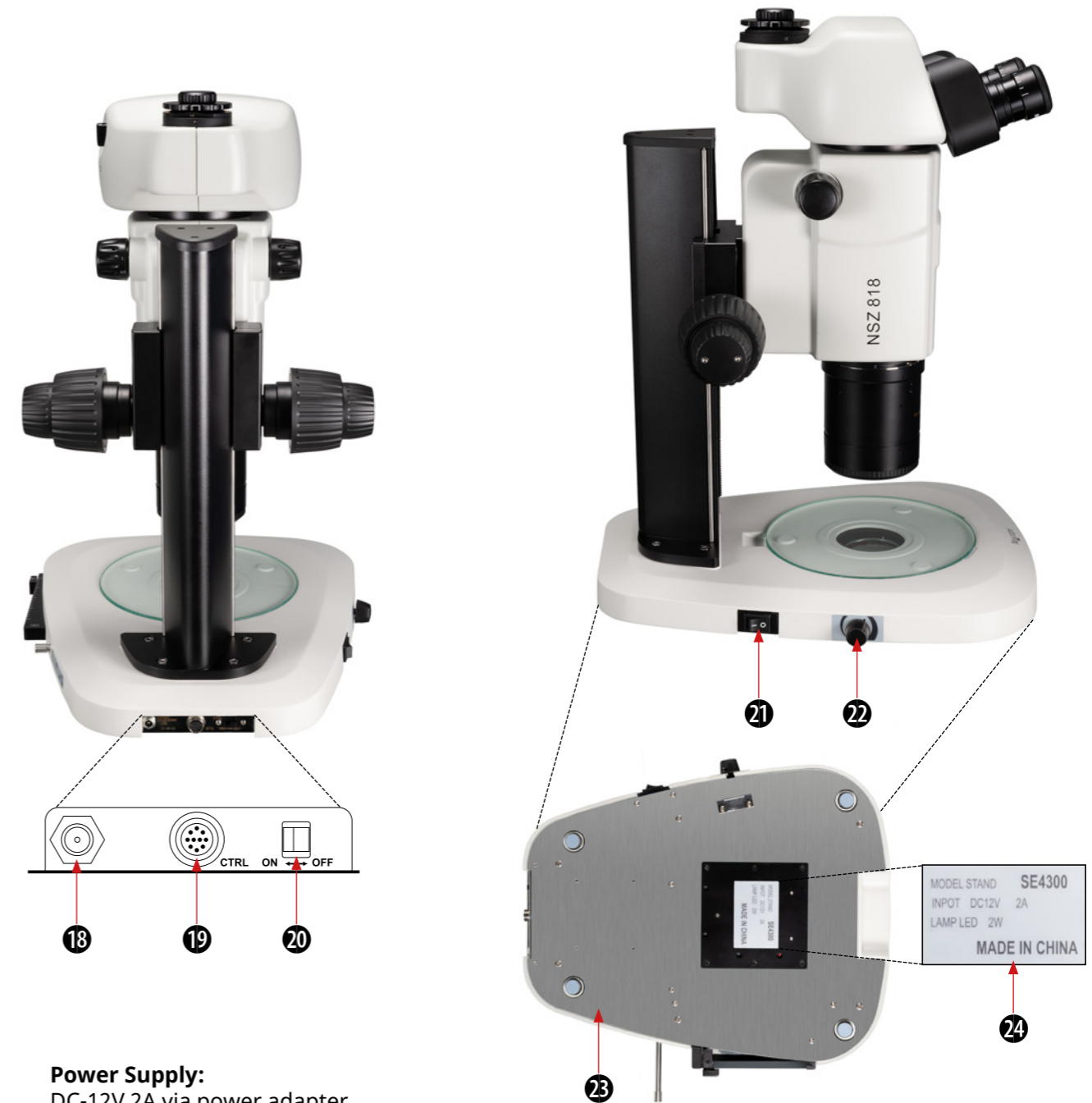


Illustration 001: Product image: NSZ818 front/side view.

## Equipment

- |                                 |  |
|---------------------------------|--|
| 1. 1x C-mount photo adapter     | 10. Zoom unit                                    |
| 2. Trinocular viewing head      | 11. Stand base                                   |
| 3. Eyepiece                     | 12. OIC adjustment slider                        |
| 4. Fine focusing knob           | 13. Rod without function (in development)        |
| 5. Coarse focusing knob         | 14. Stand column                                 |
| 6. Aperture diaphragm handwheel | 15. Holder for zoom unit                         |
| 7. 1x Objective (Plan Apo)      | 16. Zooming knob (range: 0.75x-13.5x)            |
| 8. Glass plate                  | 17. Switching lever for visual observation/photo |
| 9. Carrying handle              |  |

## B NSZ818 Back/Side View



**Power Supply:**  
DC-12V 2A via power adapter

Illustration 002: Product image: NSZ818 back/side view.

## Equipment

- |   |   |
|---|---|
| 18. AC adapter input terminal               | 22. Brightness control knob (Transmitted light) |
| 19. Connection for fluorescent controller   | 23. Subplate                                    |
| 20. LED brightness control selection switch | 24. Type plate with important information       |
| 21. Main power switch ON/OFF                |   |

### 3.2. Assembly of the NSZ818 zoom stereo microscope

The diagram below shows the sequence of assembly of the various modules. The numbers indicate the order of assembly.

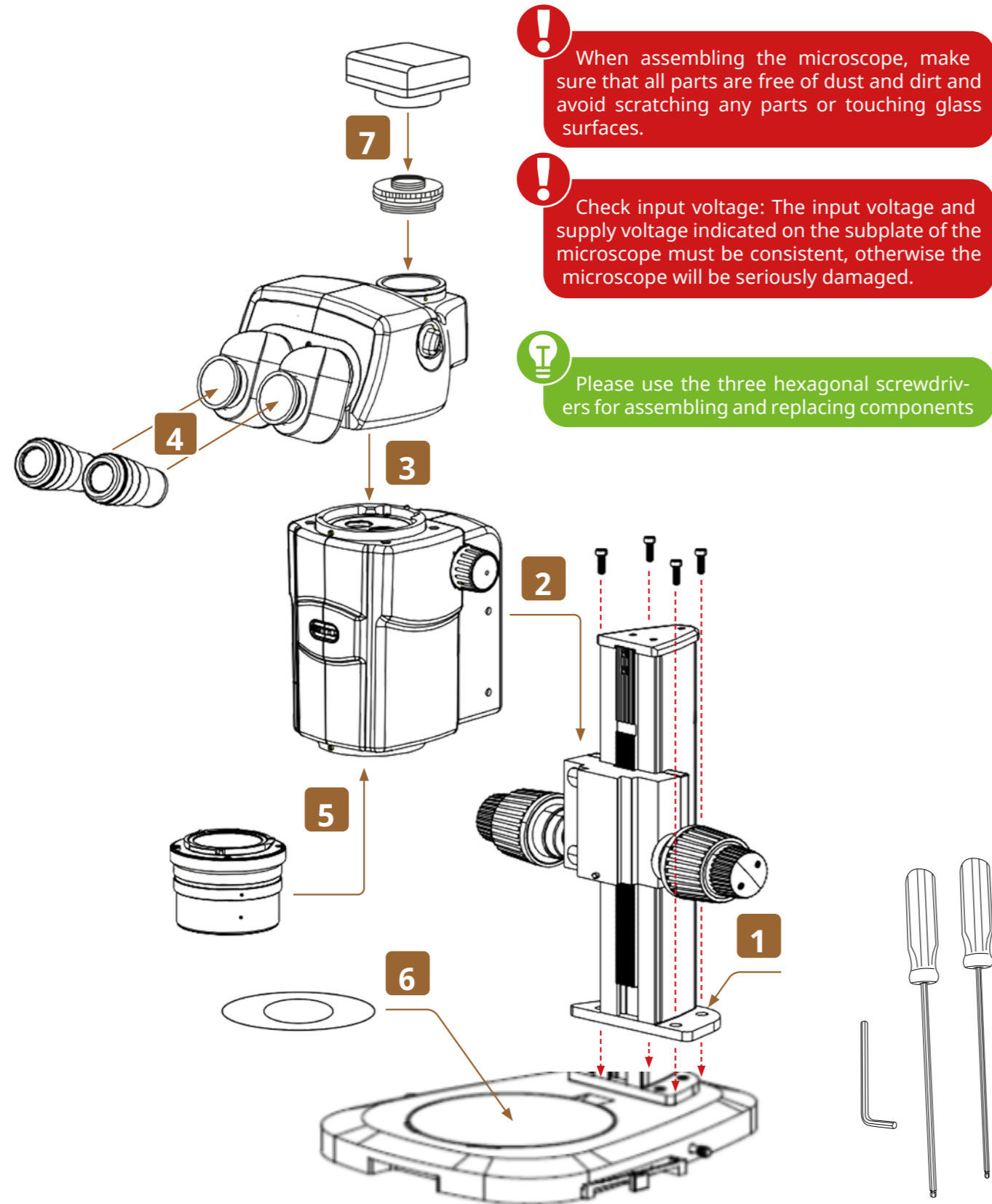


Illustration 003: Assembly of zoom stereo microscope NSZ818.

Three hexagonal screwdrivers.

#### 3.2.1. Detailed assembly procedure

##### 1 Mounting the stand column

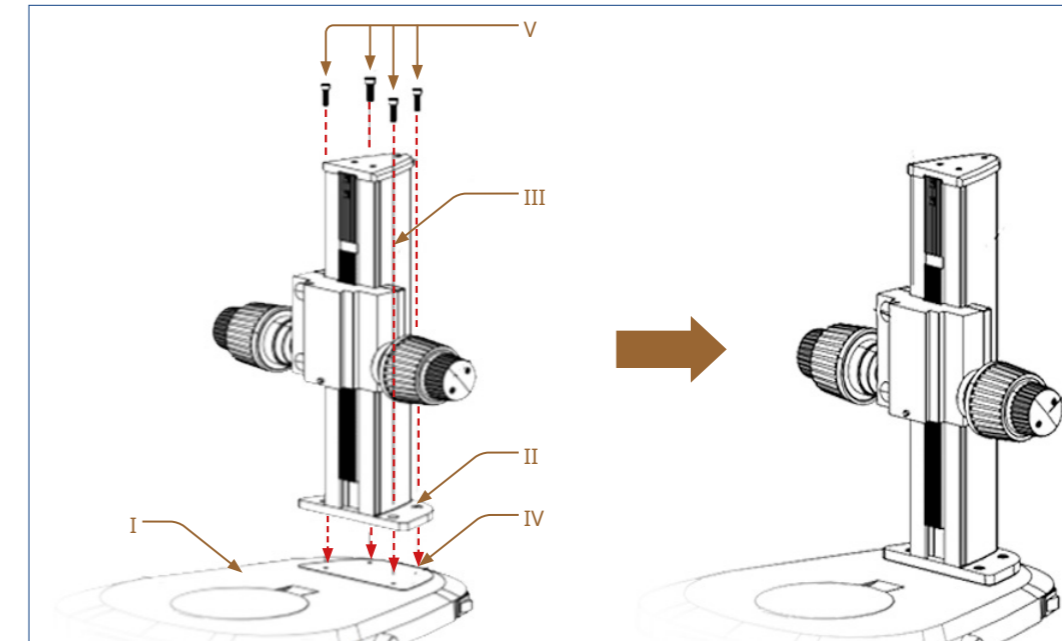


Illustration 004: Mounting the stand column.

**BEFORE YOU START:** Select a location free of vibration. Put the stand base (I) flat on the workbench.

base and the stand column firmly.

**USE** the supplied hexagonal screwdriver for assembling.

Align the connecting plate (II) of the stand column (III) with the mounting plate (IV) of the stand base (I).

Use the four supplied hexagon socket head screws (V) to connect the stand

## 2 Mounting the zoom unit

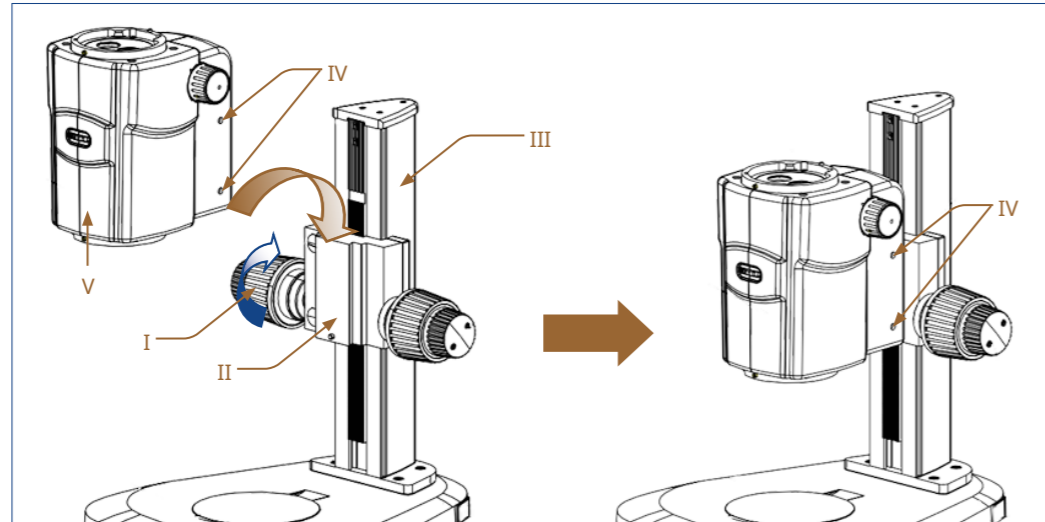


Illustration 005: Attaching the zoom unit.

Turn the coarse focusing knob (I) to place the holder for the zoom unit (II) to the upper range of the stand column (III).

Loosen the two set screws (IV) on the right side of the zoom unit (V).



**USE** the supplied hexagonal screwdriver.

Place the dovetail groove of the zoom unit onto the dovetail of the holder for the zoom unit. Firmly tighten the two set screws.

## 3 Attaching the trinocular viewing head

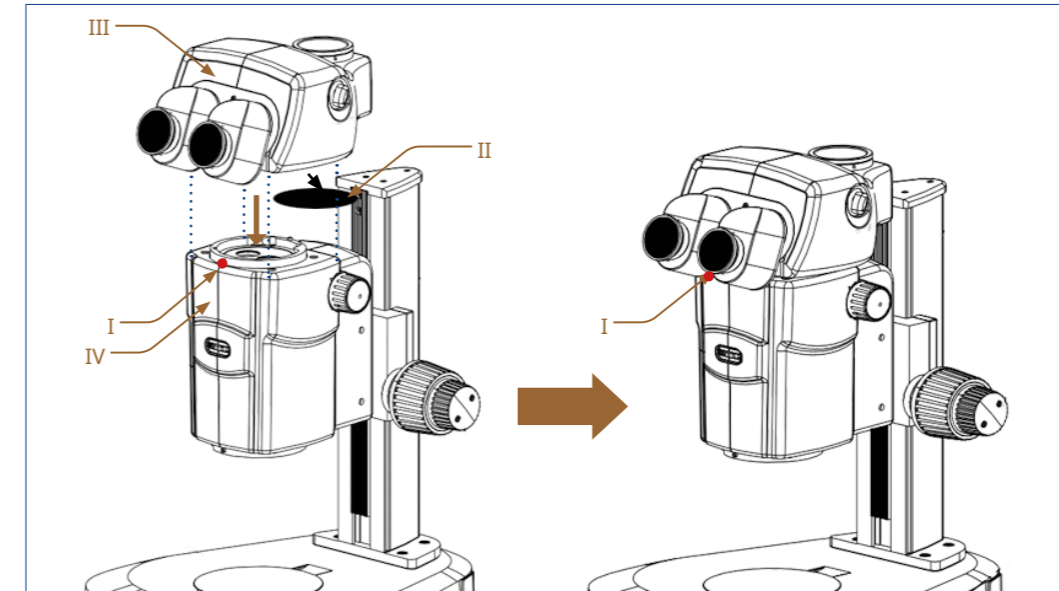


Illustration 006: Attaching the trinocular viewing head.

Completely loosen the viewing head holding screw (I).



**USE** the supplied hexagonal screwdriver.

If present, pull off the black protective cap (II) from the tube lens at the bottom of the trinocular head (III).



**MAKE SURE** not to touch any optical lenses.

Place the trinocular viewing head (III) into the round dovetail of the zoom unit (IV) so that the eyepieces are in front.



**ENSURE CORRECT ALIGNMENT** along the microscope body (blue lines).

Fasten the viewing head by tightening the viewing head holding screw.

#### 4 Inserting the eyepieces

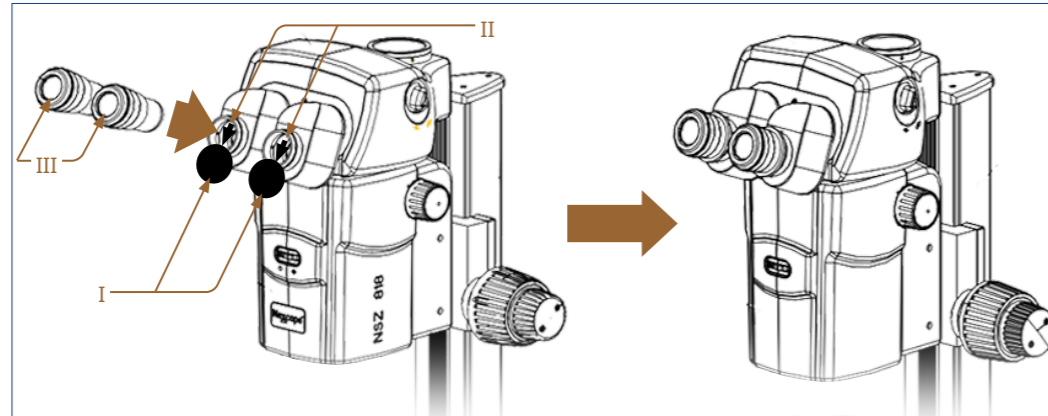


Illustration 007: Inserting the eyepieces.

Remove the black protective caps (I) from the eyepiece sleeves (II). Press eyepieces (III) gently into the eyepiece sleeves.

#### 5 Attaching the plan Apo 1x objective



##### HANDLE THE 1X OBJECTIVE WITH CARE

The objective is very heavy. Therefore, make sure that you hold it with both hands when you tighten or loosen the objective holding screw.



**BEFORE EACH USE**, check the front lens of the objective for dirt. A contamination will degrade the microscope images. Therefore clean the objective regularly.

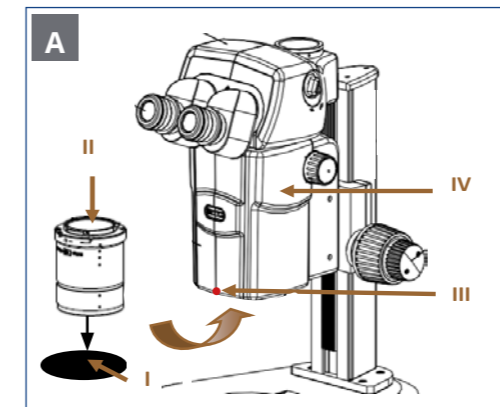


Illustration 008 A: Loosen the objective holding screw on the zoom unit.

If present, remove the protective cap (I) from the 1x objective lens (II). Completely loosen the objective holding screw (III) on the lower front of the zoom unit (IV).



**USE** the supplied hexagonal screwdriver.

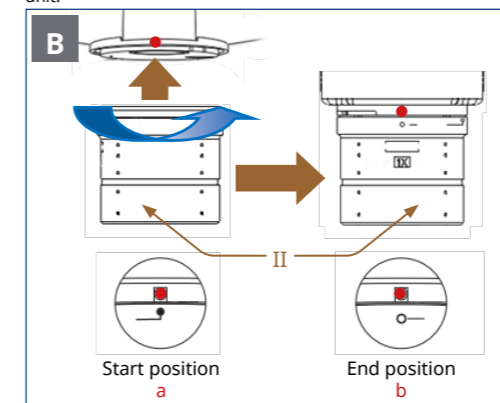


Illustration 008 B: Aligning the objective with the zoom unit.

Insert the 1x objective (II) loosely into the fixture without pushing it upwards. Align the mark on the top of the objective according to the starting position a. Rotate the objective in the direction of the arrow until the mark on top of the objective aligns exactly according to the end position b.

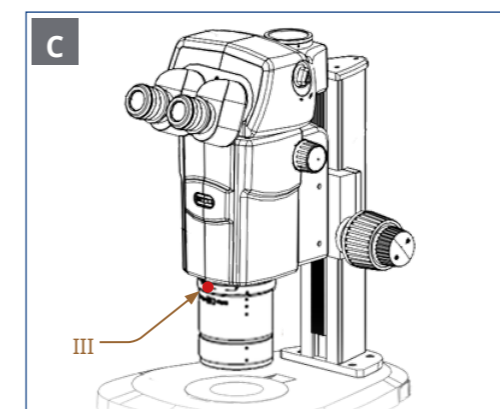


Illustration 008 C: Fixing the objective and the zoom unit.

After the 1x objective is properly seated and aligned with the zoom unit, tighten the objective holding screw (III).

### 6 Placing the glass plate

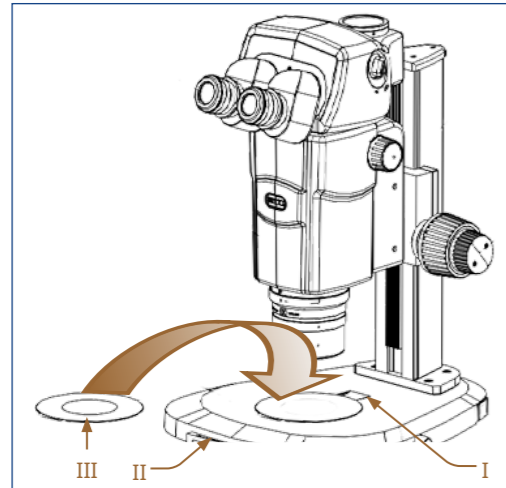


Illustration 009: Placing the glass plate.

### 7 OPTIONAL - Capturing images

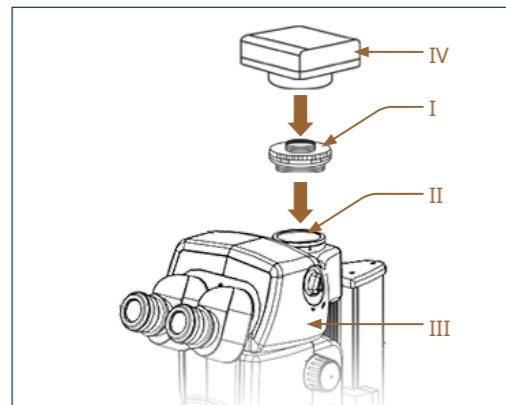


Illustration 010: Attaching a camera.



**BE CAREFUL WITH THE GLASS PLATE.** First assemble all other components before placing the glass plate on the stand base to avoid glass breakage.

Use the recess (I) in the rear part of the stand base (II) to place the glass plate (III) securely.



**NOTE:** The glass plate only rests loosely on the stand base. It is not additionally fastened.



A 1x C-mount photo adapter (I) is already attached to the microscope imaging interface (II) of the trinocular viewing head (III).

You can put a suitable C-mount camera (IV) on the photo adapter to take photomicrographs or performing videomicrography.



When installing the camera, please always make sure that you **HOLD IT FIRMLY IN PLACE** to protect it from damage due to dropping.



**NOTE:** A camera is not included in the scope of delivery.



**REMEMBER:** Cameras usually show a smaller image section than eyepieces. This is partly due to the sensor size and cannot be changed.

## 4. ADJUSTING THE MICROSCOPE

This chapter describes the individual microscopy steps.

### 4.1. Quick Guide

1	<b>Setting up power supply and start-up</b>
2	<b>Placing the specimen on the glass plate</b>
3	<b>Switching on the lighting and brightness control</b>
4	<b>Direct light to the eyepieces or to the camera</b>
5	<b>Settings on the trinocular viewing head</b> a) Adjusting the interpupillary distance b) Diopter adjustment
6	<b>Settings on the zoom unit</b> a) Adjust the focus using the focusing knobs b) Set desired magnification on the zooming knob with scale c) Contrast adjustment by means of aperture diaphragm (condenser diaphragm)
7	<b>Further adjustment options on the stand base</b> a) OIC (oblique coherent contrast) illumination b) Rod without function (in development)
8	<b>AFTER OBSERVATION: Switch off the microscope</b>

## 4.2. Detailed description of the Quick Guide steps

## 1 Setting up the power supply and start-up

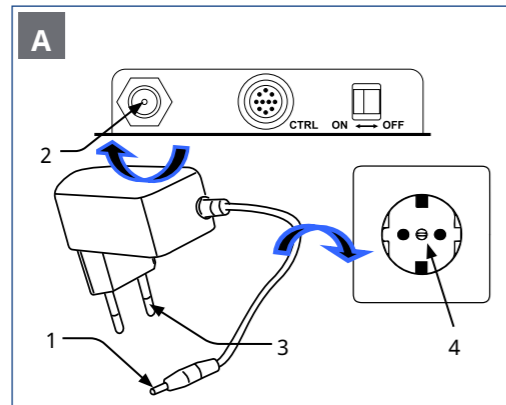


Illustration 011 A: Setting up power supply.

**Setting up the power supply**

Connect the AC adapter (1) of the power supply to the AC adapter input terminal (2) on the back of the microscope.

Insert the main power plug (3) into the power socket (4).



**MAKE SURE** the supplied voltage matches the instrument specifications: DC 12 V; 2 A.



The unit may only be operated with the mains adapter supplied.

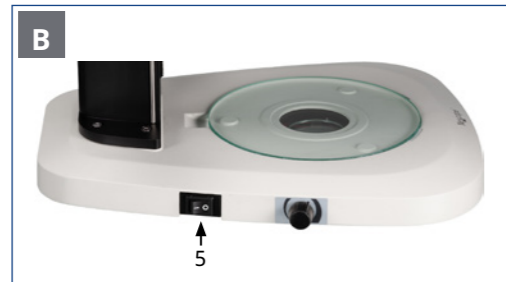


Illustration 011 B: Starting up the microscope.

**Start-up**

Move the main power switch (5) to position I (ON) to turn on the device.



**MAKE SURE** that the main power switch ON/OFF is set to O (OFF) before connecting the power plug.



Cables and cords are vulnerable when bent or twisted. Never subject them to excessive force.

## 2 Placing the specimen on the glass plate

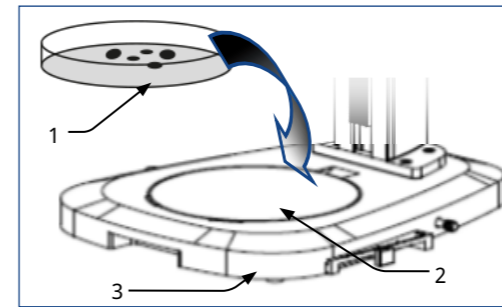


Illustration 012: Placing the specimen on the glass plate.

Place the sample vessel with the sample to be examined (1) on the glass plate (2) of the stand base (3).



## 3 Switching on the lighting and brightness control

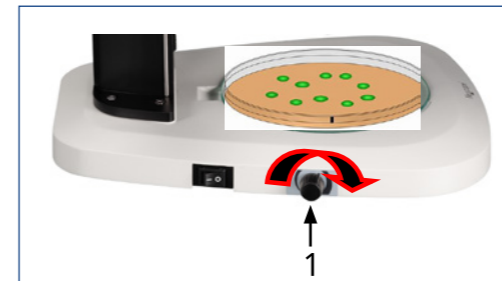


Illustration 013: Adjusting the brightness.



This microscope has an illumination unit with a permanently installed LED light source.

To adjust the brightness, proceed as follows:

Turn the brightness control knob (1) in the direction of the arrow → the light intensity increases and vice versa.



#### 4 Direct light to the eyepieces or to the camera

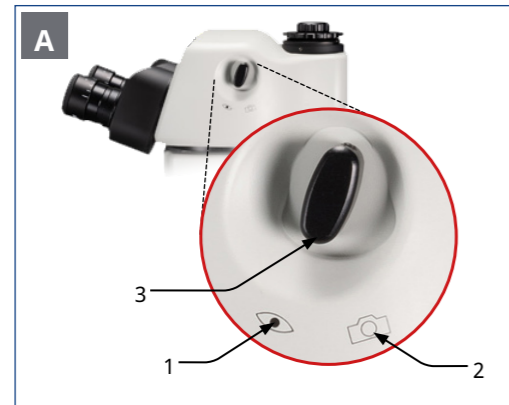
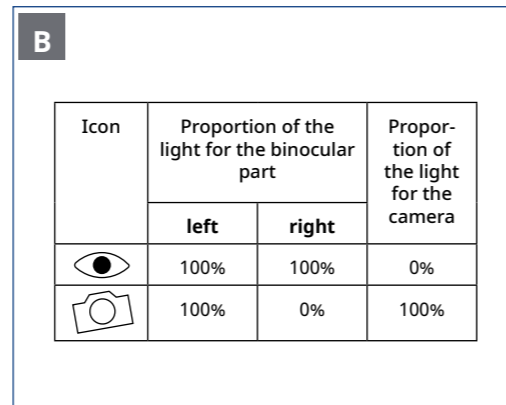


Illustration 014 A/B: Light path of the trinocular viewing head.

You have the option of directing the light either to the eyepieces of the binocular part (1) or to the camera (2) via the switching lever for visual observation/photo (3). To microscope the specimen set the lever to 100% to the eyepieces of the binocular part.



**CONSIDER:** The light amount of the left eyepiece is always 100%. The light amount of the right eyepiece is diverged to the photo adapter. Only the images of the right eyepiece optical path are recorded by camera. To do this, flip the switching lever for visual observation/photo to the symbol.



#### 5 Settings on the trinocular viewing head

Trinocular viewing head with 20° fixed inclined eyepieces.

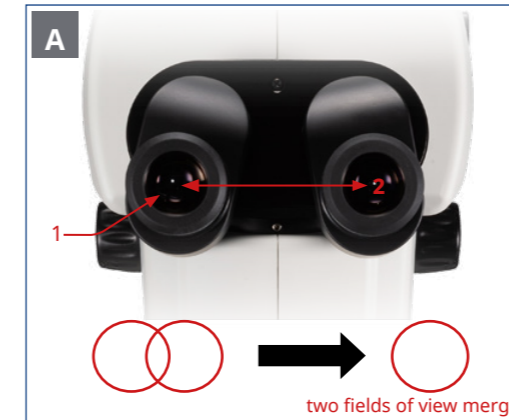


Illustration 015 A: Adjusting the interpupillary distance.

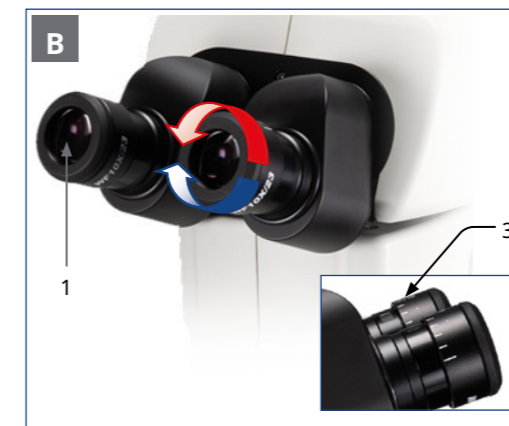


Illustration 015 B: Diopter adjustment.

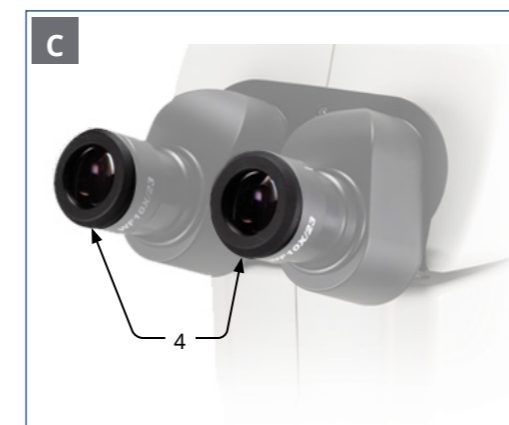


Illustration 015 C: Eyepieces with rubber cups.

##### Adjusting the interpupillary distance (Distance between the eyepieces)

Look through the eyepieces (1) and adjust the interpupillary distance (2) so that the left and right fields of view are completely aligned.



**NOTE:** Proper interpupillary distance is crucial to the comfort of the user.

##### Diopter adjustment

Look through one of the eyepiece (1) and focus the image (eyepiece freely selectable). Then look through the other eyepiece with the other eye and turn only the diopter adjustment ring (3) on this eyepiece to focus the sample.



**THE DIOPTRIC COMPENSATION** is an adjustment possibility on both eyepieces and serves to compensate for near - or farsightedness (max. +/-8 dpt. difference between both eyes can be compensated). If the difference is higher, or if you suffer from astigmatism etc. we recommend observing with your prescribed glasses on.



**DIOPTRIC COMPENSATION** is possible on both eyepieces but is only performed on one eye if the difference is +/- 4 dpt. or lower.

##### ADDITIONAL FEATURE:

##### Protection through rubber cups

Both eyepieces are suitable for spectacle wearers. They are protected with rubber cups (4) so that the user's eyeglasses are not damaged when accidentally coming in contact with the eyepiece.



## 6 Settings on the zoom unit



### a) Adjust the focus using the focusing knobs

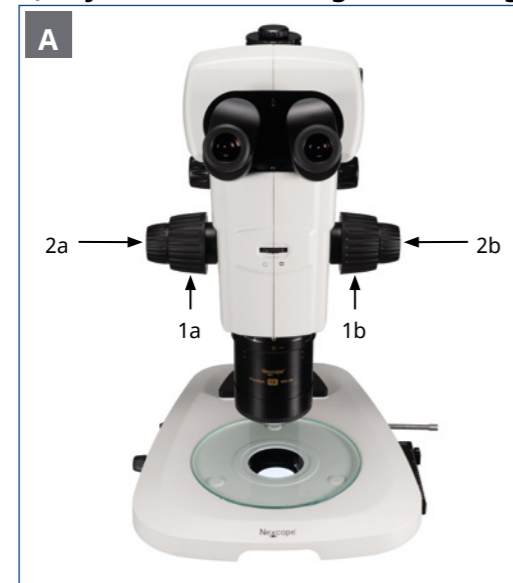


Illustration 016 A: Focusing controls.

#### Focusing controls

To adjust the focus, rotate the focusing knobs (1,2) on the right and left sides of the stereo microscope.

#### Coarse focusing knobs (1a, 1b):

Pre-focusing, large distance between specimen and objective.

#### Fine focusing knobs (2a, 2b):

The fine focus is used for image sharpness. Fine and precise regulation of the distance between the specimen and the objective.

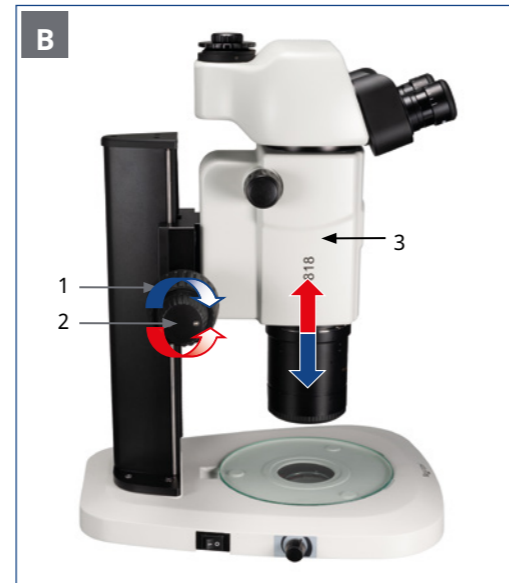


Illustration 016 B: Relationship between focusing knobs and zoom unit.

#### Relationship between focusing knobs and zoom unit



**NOTE:** Familiarize yourself with the correlation between the direction of rotation of the focusing knobs and the vertical movement of the zoom unit.

Turning the focusing knobs (1,2) forward  
→ Zoom unit (3) moves downwards

Turning the focusing knobs (1,2) backward  
→ Zoom unit (3) moves upwards

### b) Set desired magnification on the zooming knob with scale

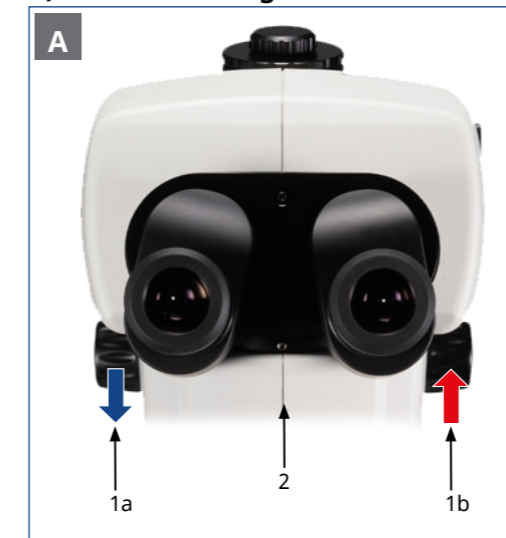


Illustration 017 A: Zooming knobs.

#### Zooming knobs

Turn the zooming knobs (1a, 1b) on the right and left of the zooming body (2) to change the magnification.

Turning the knob forward  
→ Magnification decrease

Turning the knob backward  
→ Magnification increase

The magnification values are marked on the right-hand zooming knob (1b).

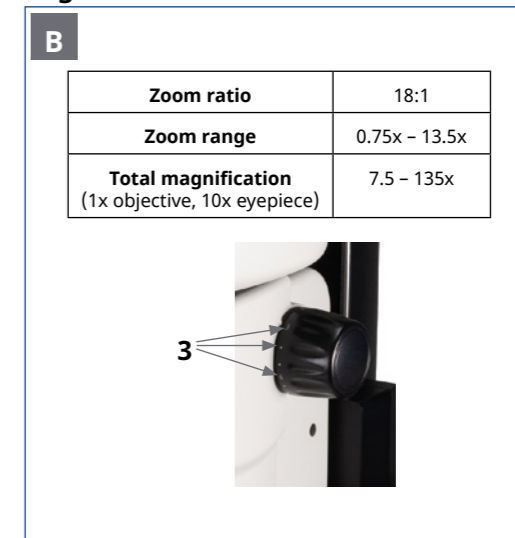


Illustration 017 B: Magnification details.

#### Magnification values

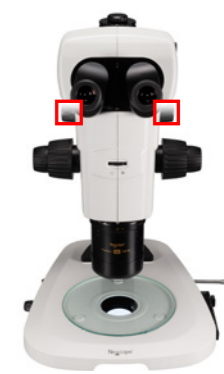
Turning the zooming knobs cause the magnification to change in the range from 0.75x to 13.5x (18:1 zoom ratio).

The following magnification steps (3) are possible:

0.75x, 1x, 2x, 3x, 4x, 5x, 6x, 7x, 8x, 9x, 10x, 11x, 12x, 13x and 13.5x



**NOTE:** At the following magnification steps, the zooming knobs engages with an audible "click": 0.75x (starting position), 1x, 2x, 3x, 6x, 10x, 13.5x (final position).







### c) Contrast adjustment by means of aperture diaphragm (condenser diaphragm)

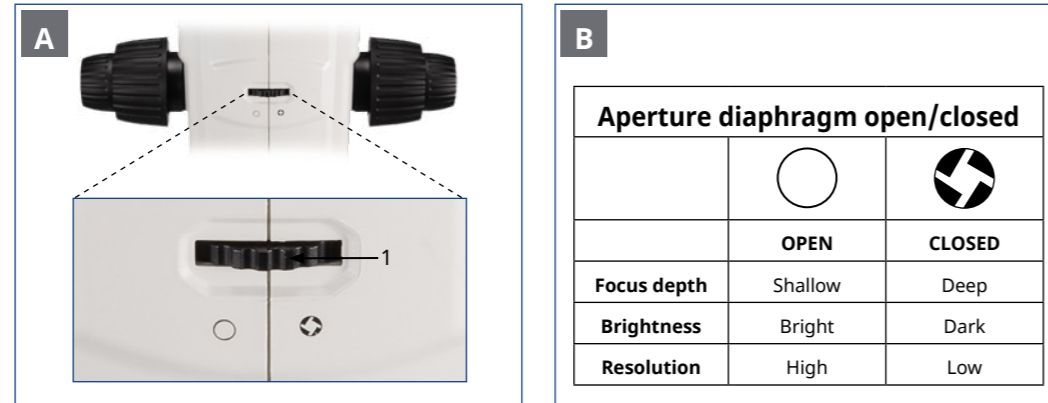


Illustration 018 A/B: Adjust the aperture diaphragm.

#### Aperture diaphragm handwheel

The zoom unit contains an aperture diaphragm. The aperture diaphragm can be adjusted with the help of the aperture diaphragm handwheel (1).



**NOTE:** Adjust the aperture diaphragm opening according to the characteristics of the specimen.

#### Position of the aperture diaphragm

Opening and closing the aperture diaphragm causes a change in focus depth, brightness and resolution.

### 7 Further adjustment options on the stand base

#### a) OIC (oblique coherent contrast) illumination

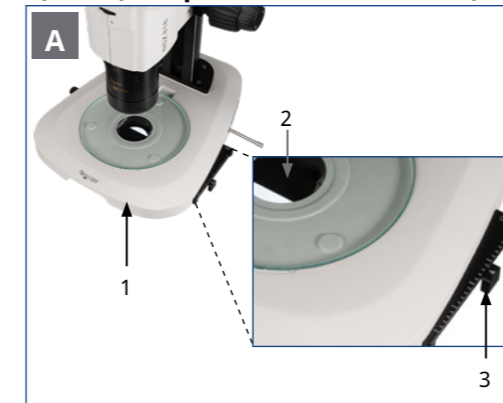


Illustration 019 A: OIC illumination.

#### OIC adjustment slider

The stand base (1) supports OIC illumination.

OIC means oblique coherent contrast illumination. An illumination method in which contrast gain is achieved by partial or complete coverage of the normal illumination beam path. For this purpose, a black OIC plate (2) is brought into the beam path that can be moved via the OIC adjustment slider (3) on the right-hand side of the stand base (1). The specimen is then radiated through at an angle, resulting in a shadow cast on the fine structures of the preparation. This enables the observation of colorless, transparent samples structures with relief and high contrast.

#### OIC illumination settings

Move the OIC adjustment slider (3) along the scale (4). You can observe how the black OIC plate (2) moves into the beam path.

Adjust until the optimum observation condition is reached in combination with the selected magnification and the sample to be examined.

#### • OIC plate completely out of the beam path

(OIC adjustment slider either at the furthest or closest position on the scale)

→ No contrast and relief enhancement visible

#### • OIC plate partially in the beam path

→ Contrast and relief enhancement of colourless and transparent sample structures visible

#### • OIC plate completely in the beam path

(OIC adjustment slider in the middle position of the scale)

→ Completely darkened beam path



**Helpful:** Thanks to the graduation on the scale, you can save and reproduce the desired lighting setting.

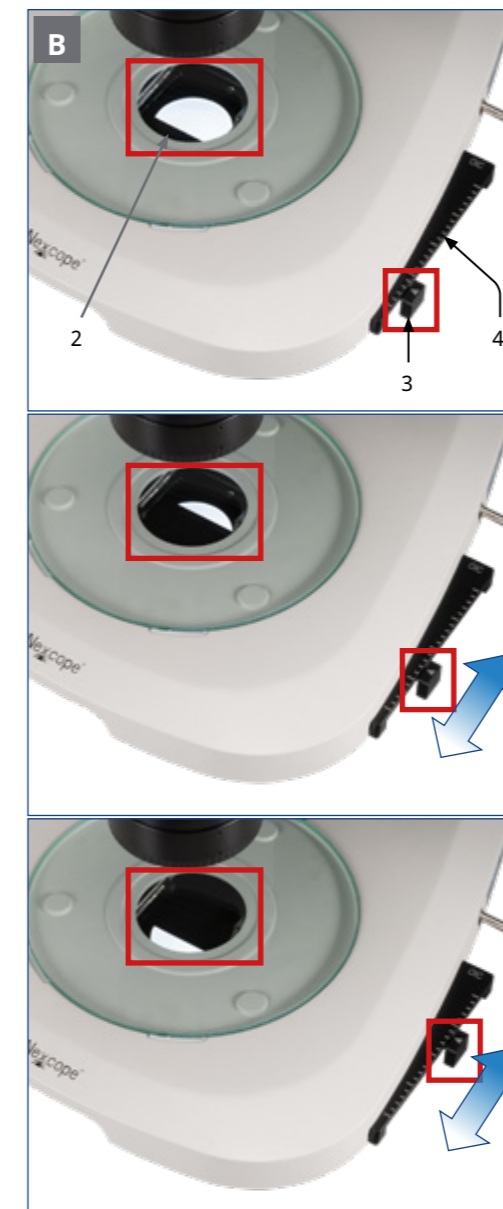


Illustration 019 B: OIC illumination settings.





### b) Rod without function (in development)

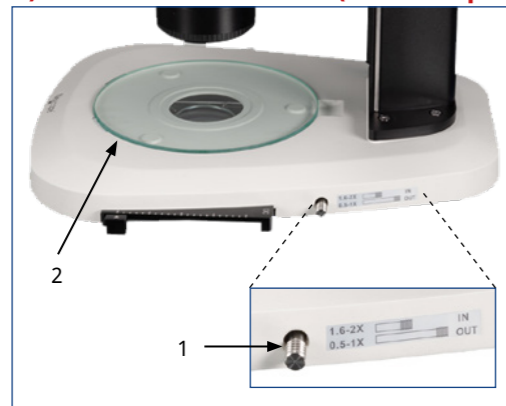


Illustration 020: Rod currently without function.

#### Rod without function

At present, the rod (1) on the right-hand side of the stand base (2) is without function.

It is intended for future accessories and is currently still under development.



**NOTE:** As soon as the model is equipped with an additional function, you will find information about it on our website: <https://www.bresser.de>.

## 8 AFTER OBSERVATION: Switch off the microscope



Illustration 021 A: Switch off the microscope.

#### Switch off the microscope

Switch the microscope off using the main power switch ON/OFF (1). To do this, select position O (OFF).



**MAKE SURE** the supplied voltage matches the instruments specifications: DC 12 V; 2 A

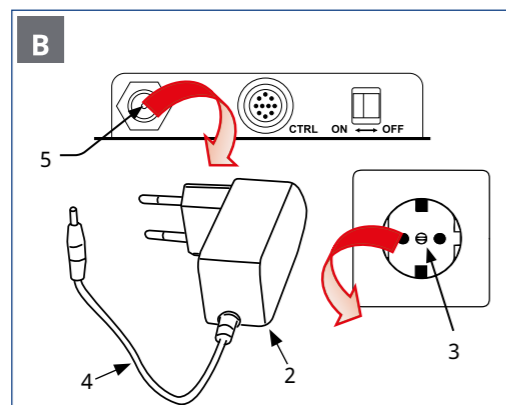


Illustration 021 B: Disconnect the microscope from the power supply.

#### Disconnect main power supply

Disconnect the main power plug (2) from the power socket (3).

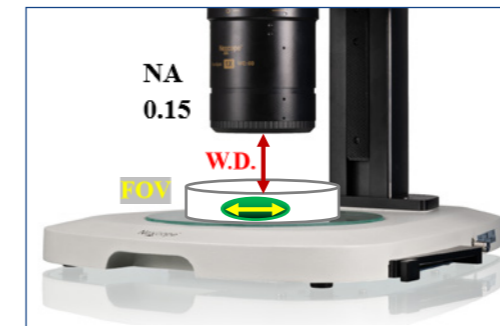
Disconnect the AC adapter (4) of the power supply from the AC adapter input terminal (5) on the back of the microscope.



Cables and cords are vulnerable when bent or twisted. Never subject them to excessive force.

## 5. OPTICAL DESIGN: PARALLEL LIGHT (ZOOM TYPE)

NSZ818 is a parallel microscope, using plan apochromatic optical system and can obtain perfect high three-dimensional and visual softer image. Large zoom range and field of view may be applied to imaging and observation of the image from macro to micro. It has an 18:1 high zoom ratio, providing superior optical system, high resolution and ergonomic design.



Zoom ratio	18:1
Zoom range	0.75x-13.5x
Total magnification	7.5x-135x
Working distance (W.D.)	60 mm
Field of view (FOV)	
Objective	31.4 mm
Eye-piece	23 mm

### Long working distance (W.D.) and large field of view (FOV)

Plan Apo 1x objective to provide a working distance (W.D.) of 60 mm. Up 0.15 numerical aperture (NA) offers you a clarity to study in-depth. The objective's wide field of view (FOV) of 31.4 mm enables to see a wider and more comprehensive sample area.

### Plan apochromatic 1x objective

The newly developed plan apochromatic 1x objective with a high numerical aperture of 0.15 is used as the optical system. This ensures a uniform brightness of the field of view and a clear and reliable image at high magnification in bright field mode as well as at lowest magnification.

## 6. SCOPE OF DELIVERY

- 1x Trinocular zoom stereo-microscope (stand base, stand column, zoom unit, trinocular viewing head) (total magnification: 7.5x-135x)
- 1x Plan APO 1x objective
- 2x Eyepieces WF 10x/23
- 1x Glass plate
- 1x C-mount photo adapter
- 1x Nexcope power cord
- 3x screwdrivers
- 4x Hexagon socket head screws for the attachment of the stand column
- 1x Dust cover
- 1x Manual instruction

## 7. TECHNICAL SPECIFICATIONS

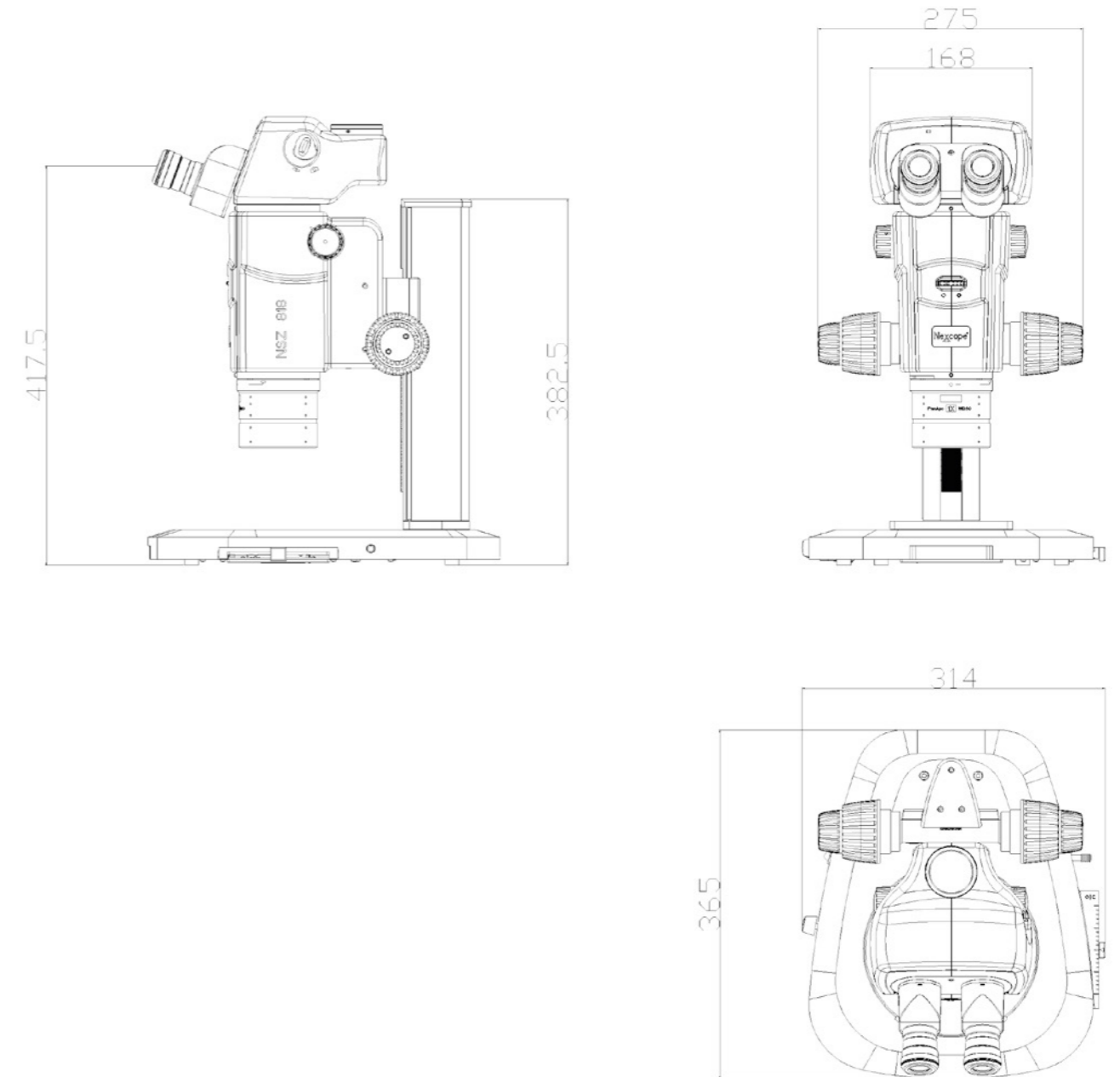
Device	Technical Specifications
<b>Zoom</b>	
Optical system	Parallel light (zoom type) apochromatic optical system
Manual	Zoom
Zoom ratio	18:1
Zoom range	0.75-13.5x
Objective lens NA, WD	PLAN APO 1x 0.15, 60 mm
Total magnification (1x large object, 10x eyepiece)	7.5-135x
<b>Eyepiece (FOV mm)</b>	10x (23)
<b>Lens tube (eye-piece/port)</b>	Trinocular 20° fixed inclination lens barrel (100/0, 0/100)
<b>Focusing device (stroke)</b>	60 + 99 mm
<b>Adapter</b>	DC 12V, 2A
<b>Base</b>	LED three-dimensional lighting base (OIC built-in illuminator)
<b>Observation method</b>	Bright field, oblique illumination
<b>Observation methods with optional accessories</b>	Fluorescence, simple polarized light, dark field
<b>Weight (approx.)</b>	10.5 kg
<b>Power consumption (approx.)</b>	10 W
<b>Operating environment</b>	<ul style="list-style-type: none"> <li>• Indoor use</li> <li>• Altitude: up to 2000 meters</li> <li>• Ambient temperature: 5°C~40°C (41°F~109°F)</li> <li>• Maximum relative humidity: relative humidity at a temperature of 31°C (88°F) 80%, then linearly decrease</li> <li>• The relative humidity is 70% when the temperature is 34°C (93°F)</li> <li>• The relative humidity is 60% when the temperature is 37°C (99°F)</li> <li>• The relative humidity is 50% when the temperature is 40° C (104° F)</li> <li>• Pollution degree: Level 2</li> <li>• Atmospheric pressure: 80kPa~106kPa</li> <li>• Overvoltage category: Class II</li> </ul>

## 8. TROUBLESHOOTING GUIDE

Under certain conditions performance of the unit may be adversely affected by factors other than defects. If problems occur, please review the following list and take remedial action as needed. If you cannot solve the problem after checking the entire list, please contact Bresser GmbH for assistance.

TROUBLE	CAUSE	SOLUTION
<b>The field of view is still dark</b>	The power supply unit is not connected to the socket or the input connector AC adapter	Check the connection between the main power plug and the power socket as well as the connection between the AC adapter and the AC adapter input terminal
	The light intensity is adjusted too low	Adjust the light intensity accordingly via the brightness control knob
<b>There is dirt in the field of view</b>	Dirt/dust on the sample	Please use clean samples
	Dirt/dust on the eyepiece	Wipe the eyepiece
<b>The two images do not match</b>	Improper interpupillary distance adjustment	Correct interpupillary distance
	Improper diopter adjustment	Readjust
	The left and right eyepieces have different magnifications	Change to the same eyepieces
<b>The image is out of focus</b>	Incorrect focus	Adjust the focus via the coarse focus-ing knob and fine focusing knob so that the sample can be clearly seen

## 9. DIMENSIONS



## 10. WARRANTY

The regular guarantee period is 2 years and begins on the day of purchase. To benefit from an extended voluntary guarantee period as stated on the gift box, registration on our website is required. You can consult the full guarantee terms as well as information on extending the guarantee period and details of our services at [www.bresser.de/warranty\\_terms](http://www.bresser.de/warranty_terms).

