

## RESEARCHER BINO/TRINO

Durchlichtmikroskop  
transmitted light microscope

Art. No. 5722100  
5723100



**DE** Besuchen Sie unsere Website über den folgenden QR Code oder Weblink um weitere Informationen zu diesem Produkt oder die verfügbaren Übersetzungen dieser Anleitung zu finden.

**EN** Visit our website via the following QR Code or web link to find further information on this product or the available translations of these instructions.

**FR** Si vous souhaitez obtenir plus d'informations concernant ce produit ou rechercher ce mode d'emploi en d'autres langues, rendez-vous sur notre site Internet en utilisant le code QR ou le lien correspondant.

**NL** Bezoek onze internetpagina via de volgende QR-code of weblink, voor meer informatie over dit product of de beschikbare vertalingen van deze gebruiksaanwijzing.

**ES** ¿Desearía recibir unas instrucciones de uso completas sobre este producto en un idioma determinado? Entonces visite nuestra página web utilizando el siguiente enlace (código QR) para ver las versiones disponibles.

**IT** Desidera ricevere informazioni esaustive su questo prodotto in una lingua specifica? Venga a visitare il nostro sito Web al seguente link (codice QR Code) per conoscere le versioni disponibili.

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[www.bresser.de/P5722100](http://www.bresser.de/P5722100)



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## Recyclage (Triman/France)



Points de collecte sur [www.quefairedesdechets.fr](http://www.quefairedesdechets.fr)  
Privilégiez la réparation ou le don de votre appareil !

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**Fig. 1**



**Fig. 2**



## CAUTION!

To work with this microscope, sharp and pointed aids are being used. Please take care that this microscope and its accessories are stored at a place out of reach of children. Let children only work with this microscope under an adult's supervision! Keep packing material (plastic bags etc.) away from children!

## General Information

### About this Instruction Manual

Please read the safety instructions in this manual carefully. To avoid damage to the unit and the risk of injury, only use this product as described in the manual.

Keep the instruction manual handy so that you can easily look up information on all the functions.



#### DANGER!

You will find this symbol in front of every section of text which deals with the risk of severe injury or even death in the event of improper use.



#### CAREFUL!

You will find this symbol before every section of text that deals with the risk of minor to severe injuries resulting from improper use.



#### NOTE!

You will find this symbol in front of every section of text which deals with the risk of damage to property or the environment.

### Intended Use

This product is intended only for private use.

It was developed for the magnified display of things in nature.



### General Warning



#### DANGER!

Tools with sharp edges and points are often used when working with this device. For this reason, store this device and all accessories and tools in a location that is out of the reach of children. There is a RISK OF INJURY!



#### DANGER!

This device contains electronic components which operate via a power source (power supply and/or batteries). Do not leave children unattended when using the device. Only use the device as described in the manual, otherwise you run the RISK of an ELECTRIC SHOCK.



#### DANGER!

Do not expose the device to high temperatures. Use only the supplied power adapter. Do not short circuit the device or batteries, or throw them into a fire. Excessive heat or improper handling could trigger a short circuit, fires or even explosions.



#### DANGER!

Never bend, pinch, pull or run over the power and connecting cables or extensions/adapters. Protect the cables from sharp edges and heat. Before operation, check the device, cables and connections for damage.

Never use a damaged unit or a unit with damaged power cables, etc. Damaged parts must be exchanged by an authorized service centre immediately.



#### DANGER!

Children should only use the device under adult supervision. Keep packaging material (plastic bags, rubber bands, etc.) out of the reach of children! There is a RISK OF CHOKING!



#### CAREFUL!

Children must not have access to the included chemicals and liquids. Do not drink the chemicals. Wash hands thoroughly with running water after use. In the event of contact with the eyes or mouth, rinse thoroughly with water. In the event of pain, contact a doctor immediately and take the substances with you.



#### NOTE!

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.

### Scope of delivery (Fig. 1)

Microscope (A), power cable (B), spare fuse (C), immersion oil (D), dust cover (E)

### All parts (Fig 2+2a)

- ① Eyepiece
- ② Binocular attachment
- ③ Eye distance adjustment
- ④ Diopter adjustment
- ⑤ Microscope stand
- ⑥ Rotatable objective nose piece with 4 holders
- ⑦ Microscope table (cross-stage with vernier scale)
- ⑧ X-axis adjustment of the cross-stage
- ⑨ Y-axis adjustment of the cross-stage
- ⑩ Condenser with ⑩a Condenser diaphragm
- ⑪ Condenser height adjustment
- ⑫ Coarse focusing
- ⑬ Fine focusing
- ⑭ On/off switch (illumination)

\*not included in the scope of delivery

- 15 Rotary control (brightness setting/dimmer)
- 16 Locking screw for binocular attachment
- 17 Table height limitation
- 18 C13 connection socket
- 19 Fuse holder
- 20 Trinocular attachment/extension tube with 20a receptacle adapter (23.2mm) and 20b C-mount connection part
- 21 Counter ring

## 1. General/Location:

Before you set up the microscope, you must choose a suitable location. Firstly, you must make sure that your microscope is on a stable and solid surface. For observations with the electric illumination an electrical power outlet is required.

## 2. Inserting eyepieces

For observation with this microscope, two eyepieces (1) are required. With the eyepiece and with a chosen objective lens, you can choose the magnification of the microscope. The eyepiece is inserted into the head from above.



### TIP:

Begin each observation with the lowest magnification. So, the centering and focusing of the object to be viewed is easy.

## 3. Commissioning & illumination

Insert the C14 plug of the power cable (B) into the C13 connection socket (18) on the back of the microscope. Then insert the mains plug of the power cable into a suitable socket (230V/50Hz).

Move the on/off switch (14) of the microscope to the „I“ position to switch on the illumination.

The LED illumination is equipped with a rotary control (15) for infinitely variable brightness adjustment (dimmer) for optimum illumination of the preparation. The lamp can be made brighter or darker by turning the rotary control.

The condenser (10) is part of the lighting. Adjust it using the height adjustment (11) so that you get a well-illuminated image. Most observations require the condenser to be in the highest position. The condenser diaphragm (10a) is used to adjust the illumination according to the aperture of the objectives. Correct diaphragm setting ensures optimum resolution. At higher magnifications, the diaphragm must be opened further (turn lever to the left). A (too wide) closed condenser diaphragm will increase contrast and depth of field, but fine details will be lost.

## 4. Adjust the interocular distance

The interocular distance varies from person to person. In order to achieve a perfect interaction between your eyes and the eyepieces, the eyepiece distance should be adjusted before the first observation. Look through the eyepieces and adjust the interocular distance control (3) until you reach a single, round image. Keep the value on the scale in mind for a faster adjustment the next time.

## 5. Observation

- You begin each observation with the lowest magnification (eyepiece 10x and objective 4x). So that the object to be viewed is centred and properly focussed.
- The higher the magnification the more light is required for good picture quality.
- The use of the 100x objective is intended exclusively for examinations with oil immersion.

Begin with a simple observation.

Turn the nosepiece (6) onto the smallest magnification and insert the 10x eyepieces. Now, place a prepared slide under the objective on the microscope table (7). Move the preparation on the table with the two adjusting screws (8 and 9). Now, look through the eyepieces (1) and turn the coarse adjustment (12) carefully until the image becomes visible. The definition is applied by the fine adjustment (13). Make sure that you never overtighten the fine adjustment. If you don't reach a sharp image after the fine adjustment, you may adjust the diopter setting (4) until it matches your eye. For this, turn the diopter setting (4) to 0, look through the eyepieces and close your left eye. Focus the object for your right eye using the coarse and fine focussing wheels (12 and 13). Now, close your right eye and look only with the left eye through the left eyepiece. If the image isn't sharp, turn the diopter setting (4) to get a sharp image.

## 6. The microscope table

With the microscope table (7), you can look at your preparation in a precise position and to the exact millimeter. The object is placed between the clamps on the microscope table. Move the object, with help of the axis-adjustments (8 and 9), directly under the objective. With the built-in vernier at both axes you can now specifically set and shift the object. Your sample can now be viewed with different magnifications.

## 7. Oil immersion

Directions for observation with oil immersion. Put a drop of immersion oil (16) onto the upper lens of condenser and raise the condenser by using the height adjustment (11) until the oil touches the slide from below. Centre your object, with middle magnification, and with the light illumination on. Move the nosepiece with the coarse focusing wheel up high and screw in the 100x objective. Take a drop of immersion oil and place it on the preparation. Move the objective down carefully with the coarse adjustment, until it touches the immersion oil. Look through the eyepiece and focus with the fine adjustment. Do not forget to clean the objective, the preparation, and the condenser after the observation with some alcohol.

## 8. Replacing the fuse (Fig. 2)

The microscope is equipped with a fuse to protect it from voltage damage. If this has been triggered, you must replace it to ensure continued operation.

Disconnect the mains plug of the power cable (B) from the socket and carefully lay the microscope on its side. Use a small flat-blade screwdriver to loosen the fuse holder (19) marked with „FUSE“. Apply slight pressure to the holder when turning it and the holder will automatically pop out a little and you can carefully pull it out.

Remove the old fuse and insert a new one of the same type.

Retighten screw and fuse again. The microscope is now ready for use again.

## 9. Using the trinocular attachment for photography (only for model 5723100)

With the trinocular attachment (20) you are able to add an SLR cameras, a BRESSER MikrOkular or C-mount cameras to the microscope for photography.

### Connection of a BRESSER MikrOkular

The attachment is designed so that the MikrOkular and the eyepieces can provide a homofocal image.

1. Insert the BRESSER MikrOkular without any additional accessories directly into the screwed-on receptacle adapter (20a) of the trinocular attachment (20).
2. Focus the image in the eyepieces.
3. Look at the live view of the camera and carefully loosen the counter ring (21) on the extension tube. By gently turning the extension tube (20) you can adjust the focus of the camera on the eyepieces.
4. Tighten the counter ring after you have adjusted the focus.

**NOTE: For optimum focus adjustment, it is best to use the 10x or 40x objective.**

### Connection of an SLR camera

**NOTE: An additional photo adapter\* and a camera-specific T2 ring\* are required for the use of an SLR camera!**

1. Mount the T2 ring\* on the objective thread of the camera.
2. Screw the photo adapter onto the T2 ring.
3. Insert the combination of camera, T2 ring and photo adapter into the screwed-on receptacle adapter (20a) of the trinocular attachment (20).

**NOTE: Possibly the image sharpness can not be set correctly through the camera. In this case, loosen the screw of the table height limitation (17) until the required table height can be reached.**

**IMPORTANT: After loosening the table height limitation, make sure that you do not turn the microscope table too high so that you do not hit the specimen with the objectives!**

**When changing objectives, you should lower the microscope table as far as possible!**

### Connection of a BRESSER MikroCam or C-mount camera

1. Unscrew the receptacle adapter (20a) of the trinocular attachment (20).
2. Screw the BRESSER MikroCam or another camera with a compatible C-mount connection thread directly onto the thread of the C-mount connection part (20b).

## 10. Cleaning & Maintenance

1. Avoid disassembling the microscope!

Because of being a precise optical instrument, do not disassemble the microscope. That may cause serious damage to its performance. Do not disassemble the objectives.

2. Avoid contamination!

You should make sure that dust or moisture do not come in contact with your microscope. Avoid putting fingerprints on any optical surfaces! If dust or dirt nevertheless have gotten onto your microscope, or the accessories, remove it as described below.

3. Cleaning non-optical parts:

Disconnect the plug from mains socket before cleaning non-optical parts of the microscope (e. g. the frame or the stage). Firstly, remove dust or dirt from your microscope, or accessories, using a soft brush. Then clean the soiled area with a soft, lint-free cloth; the cloth may be moistened with a mild detergent solution. Be sure that the microscope is dry before using. For cleaning the painted parts or plastic components, do NOT use organic solvents such as alcohol, ether, acetone, xylene or other thinner etc.!

4. Cleaning optical parts:

In order to enhance the optical quality, the lenses of eyepieces or objectives are coated. They should not be wiped because dry dirt or dust may scratch the coating. It is best to remove the parts to be cleaned from the frame prior to cleaning. Always blow loose dust away first. Use lens tissue of good quality or soft fabric moistened with a small amount of pure alcohol (available in the chemist's shop); wipe the lens surface clean.

5. Cleaning the oil immersion lens:

After working with oil immersion, the immersion oil should be removed from the lens of the 100x objective at the end of each workday. In order to do this, use a lens tissue moistened with a small amount of pure alcohol (available in the chemist's shop). Don't forget to clean the preparation, too.

6. When not in use:

After usage, cover the microscope with the dust cap (made of plastic) and place it where it is dry and mouldless. In the case of non-use for a longer time, you should stow the microscope and the accessories in their correct containers again. We suggest the storage of all objectives and eyepieces in a closed container with drying agent.

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

## 11. Technical data:

57-22100: Binocular head  
57-23100: Trinocular head  
Mechanical desk (with vernier alignment)  
Eyepieces: DIN WF 10x  
Objectives: DIN 4x / 10x / 40x / 100x  
Magnification: 40x -1000x  
Illumination: LED  
Fuse/Type: Microfuse, 5x20 mm, 1A

## 12. Aperture:

The numerical aperture (the unit of measurement for the resolution factor of the objectives) is engraved beside the magnification sign on the objectives.

### **13. Calculating the magnification**

Formula:

Eyepiece magnification x objective magnification  
= total magnification

Example:

10x-eyepiece x 40x-objective = 1000x total magnification

### **14. Disposal**



Dispose of the packaging materials properly, according to their type (paper, cardboard, etc). 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! As per the 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. Empty old batteries must be disposed of at battery collection points by the consumer. You can find out more information about the disposal of devices or batteries produced after 01.06.2006 from your local waste disposal service or environmental authority.

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.

### **15. CE Declaration of Conformity**



Bresser GmbH has issued a "Declaration of Conformity" in accordance with applicable guidelines and corresponding standards. The full text of the CE declaration of conformity is available at the following internet address:

[www.bresser.de/download/5722100/CE/5722100\\_CE.pdf](http://www.bresser.de/download/5722100/CE/5722100_CE.pdf)

[www.bresser.de/download/5722100/CE/5723100\\_CE.pdf](http://www.bresser.de/download/5722100/CE/5723100_CE.pdf)

### **16. Warranty & Service**

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).

# 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 3G, 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**  
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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)  
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\*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..