



Mikroskop Technik Rathenow

Transmitted Light Microscope

Piccolo Plus



for school, studies & education

Users manual

For your Safety!

WARNING! Read the following information before using the unit and its supplemental equipment !

1. This unit was constructed and checked according to the safety regulations for electronic measuring devices of publication IEC 348 and VDE 041, and was delivered in a secure fashion. This user's manual contains information and warning notices that should be heeded by the operator.
2. The unit is a light microscope, drafted according to the newest scientific and technical knowledge for the visual, micro photographic and video-technical investigation of microscopic objects. The unit should only be used for the designated purpose. All other uses (also the insertion of single components not designated by the manufacturer) constitute a misuse of the product. We are not liable for any damages caused by this misuse. This unit is not meant for unattended continuous operation.
3. The microscope does not have any special safeguards against samples with caustic toxic, radioactive or other hazardous materials. The allowed sample amount may not be exceeded.
4. The unit may only be operated on the voltages indicated on the unit. Please heed the instructions in the user's manual! We are not liable for any damages caused by the disregard of these instructions.
5. The following regulation apply to units of Safety Class II with the symbol.... . The plug has no grounded wire and may be inserted in an underground outlet. The safety measures are guaranteed as long as the unit is unopened and none of the isolation coverings are damaged or have been removed.
6. If the unit is connected to voltage, contact clamps can lead to dangerous voltages and opening the coverings or removing parts can uncover a piece under a dangerous voltage. The unit must be disconnected from power before it can be opened for adjustments, replacements, servicing or repairs.
7. Existing ventilation slits should not be obstructed. This also applies for ventilation slits on the bottom of the unit. No tools, loose objects or liquids should enter the unit through ventilation slits or other openings in the unit.

Do not touch ventilation slits or light cases when operating the unit as these tend to become extremely hot. This is especially true for the lamp and surrounding area of open lights. When changing lamps, allow the lights to first cool to room temperature.

8. Only fuses with the required nominal current may be used as substitutes for the prescribed use. It is prohibited to use makeshift fuses or short-circuit the fuse support.
9. If safety is endangered, the unit must be removed from use and secured against unattended operation. The unit should then be sent to the production factory or a competent service technician.
10. Before switching on the unit, set the controller for the illumination intensity to the rear position in order to prevent blinding.

Overview:



Binocular transmitted light microscope: Piccolo Plus

Applications:

This microscope is widely used in biological, pathological, pharmaceutical research and clinic examination, and is most suitable for school teaching, education and studies.

Specifications:

1. mechanical tube length..... 160 mm

2. eyepiece – correction length..... 10 mm

3. achromatic objectives:

magnification	N.A.	working distance (mm)	correction
4x	0.1	19	0,17
10x	0.25	6,5	0,17
40x	0.65	0.5	0,17
100x Oil	1.25	0.2	0,17 Oil

4. eyepieces:

magnification	diameter of field (mm)
10x	Ø 18
16x	Ø 11

5. Abbe – condenser..... N.A. 1.25 with iris diaphragm & filter

6. focusing range..... 10 mm

7. plain stage..... 120 mm x 125 mm

8. separate coarse & fine adjustment

9. interpupillary distance..... 55mm – 75mm

10. illumination, adjustable..... halogen bulb 6V/20W G4

11. wall power supply 220V/50Hz

12. weight..... app. 4 kg

Operation Instructions:

1. Put the binocular tube into the bended arm's seat and tighten the lock screw.
2. Screw objectives into nosepiece, from low-magnification to high magnification.
3. Put a specimen into the fastening unit on mechanical stage.
4. Turn on light. (Power switch is on the right side of the microscope)
5. Turn the condenser to elevate the condenser. By seeing the iris diaphragms image in the binocular tube (without eyepieces) you turn the condenser as long as the diaphragms image is finally clear and coincide with the aperture of the objective.
6. Insert the pair of eyepieces into the binocular tube.
7. To focus:
Chose the objective 10x and observe with the right eye. Turn the coarse focusing knob until a image is seen and turn the fine focusing knob until the image is sharp and clear. Afterwards adjust the dioptré ring of left eyepiece until the image appears as clear as in the right eyepiece.
8. Adjust the interpupillary distance to meet your eyes, thus the specimen's image is clear in both of your eyes.
9. To meet special demand for magnification, you can turn the nosepiece and select the needed objective.
10. To reach a optimal image adjust the:
 - condenser,
 - iris diaphragm,
 - illumination intensity,
 - and dioptré ring
11. By using the objective "100x Oil" put a little bit of cedar oil between the condenser and the objective. For an optimal image put the same oil between the condenser and the object slide. (After work clean all parts with oil on the surface)
12. To avoid danger to the object slide the upper elevating height is limited by an adjusting screw. (already adjusted)

Total magnification, object field and resolution (eyepieces: 10x and 16x):

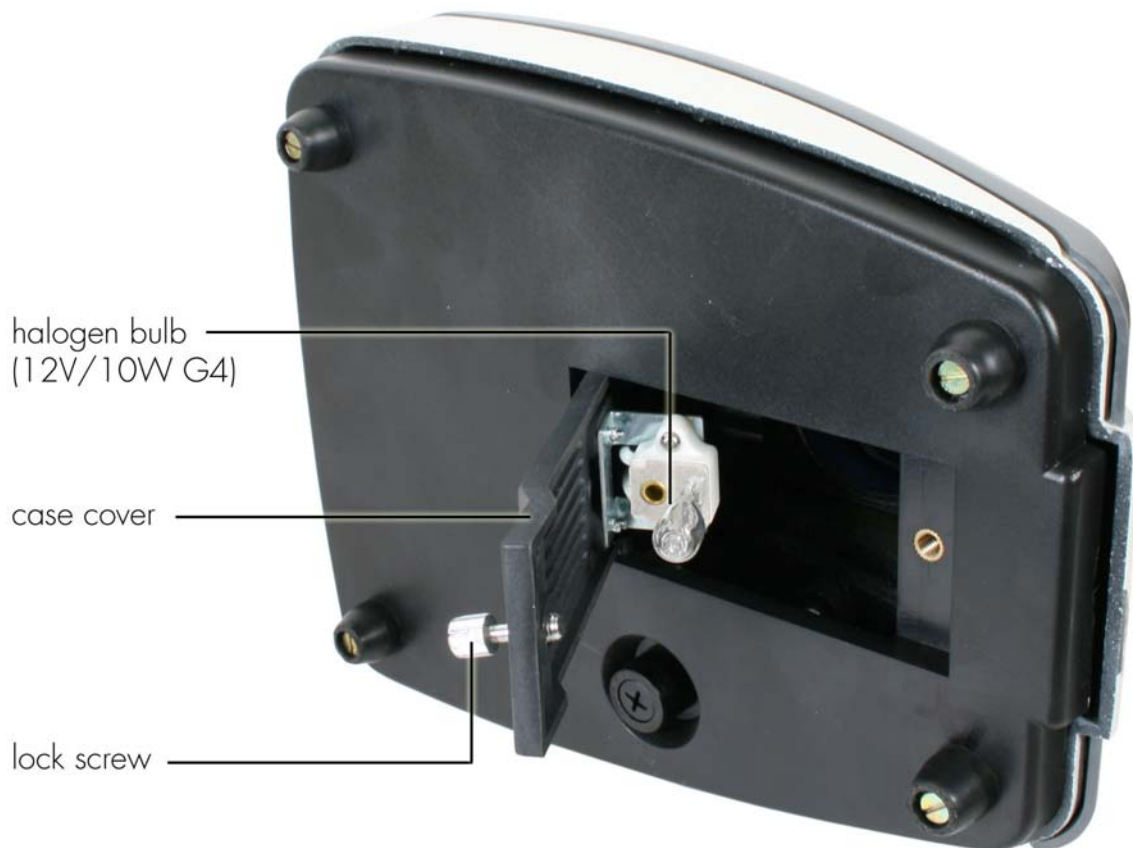
objective	total magnification	∅ object field (mm)	resolution (µm)
4x	40x / 64x	4,5 / 2,8	3,39
10x	100x / 160x	1,8 / 1,1	1,35
40x	400x / 640x	0,45 / 0,28	0,52
100x Oil	1000x / 1600x	0,18 / 0,11	0,27

Complete set of the instrument:

Parts	Info	Qty
stand		1
plain stage	120 x 125 mm	1
binocular tube		1
objective	4x	1
objective	10x	1
objective	40x	1
objective	100x Oil	1
eyepieces	WF 10x/18	2
condenser	N.A.:1,25	1
dust cover		1
spare bulb	6V/10W G4	1
wall power supply	220V/50Hz	1
mirror		1
users manual		1

Maintenance:

1. Keep the instrument in dry and cool place, and keep away from acid or alkali. Put a dust cover over the instrument when it is not used.
2. Keep lenses clear, and wipe the lenses with soft brush if there is dust or dirt on it.
3. Before the exchange of a bulb let it cool down and pull the power plug. Turn the microscope to the side and open the black case at the bottom by loosening the lock screw. Exchange the bulb very carefully and close the case. Don't touch the new bulb with your fingers. Fingerprints & dirt on the glass bulb obstruct the light performance and significantly decrease the life of the lamp.



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