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Mode d'emploi

Microscope K series

Motic® Microscopes

Instruction Manual

K Series

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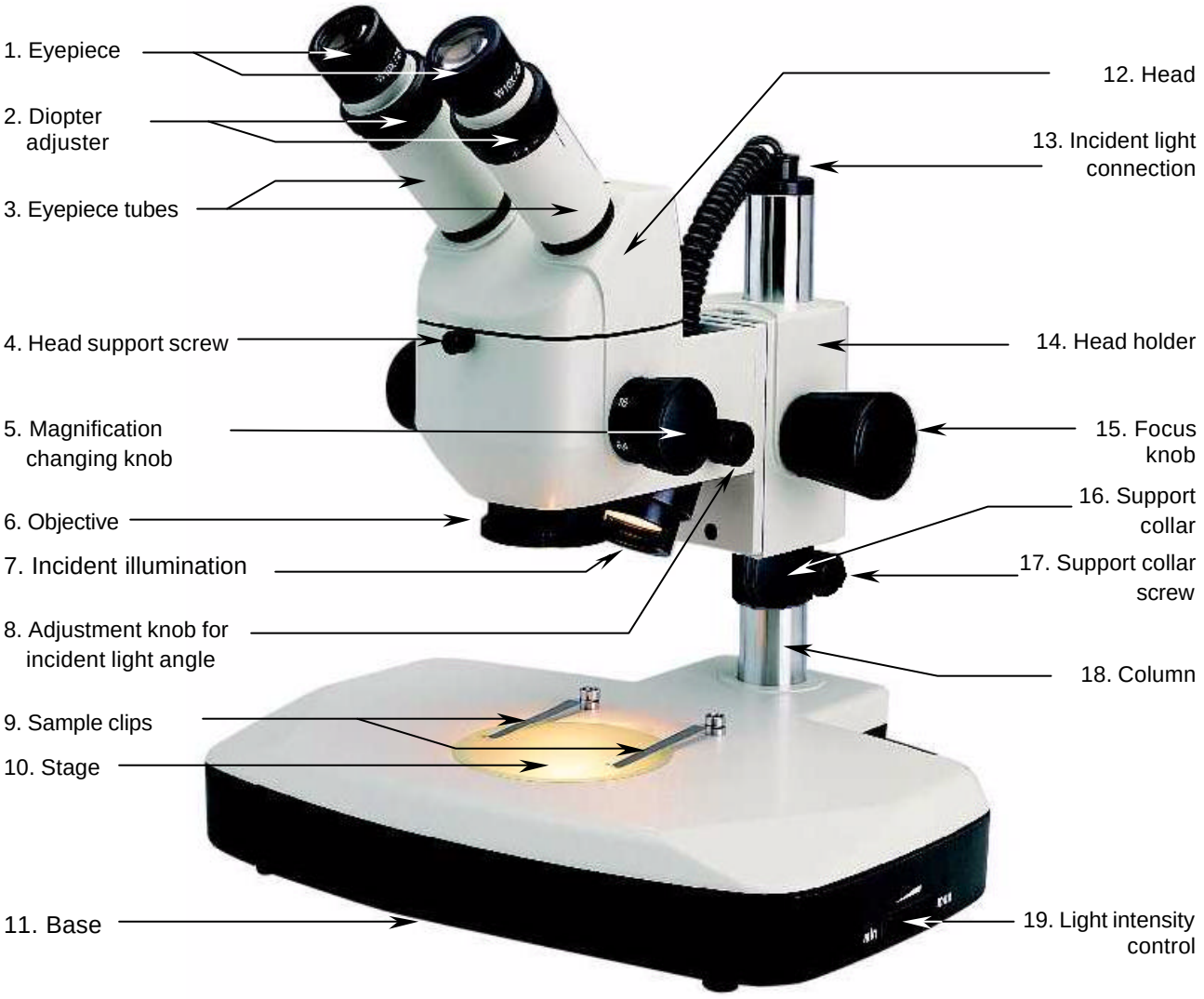
1. Eyepiece
2. Diopter adjuster
3. Eyepiece tubes
4. Head support screw
5. Magnification changing knob
6. Objective
7. Incident illumination
8. Adjustment knob for incident light angle
9. Sample clips
10. Stage
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12. Head
13. Incident light connection
14. Head holder
15. Focus knob
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17. Support collar screw
18. Column
19. Light intensity control

K-500L

Introduction

Thank you for your purchase of a Motic stereomicroscope. Motic stereomicroscopes are precision instruments subjected to meticulous examination to reach you in perfect condition. Their design combines easy management and optimum functioning with minimum maintenance.
The information contained in this manual is likely to go beyond what the average user needs to know to use the stereomicroscope, however, it is provided to answer any queries that may arise.

Stereomicroscopes are used to study three-dimensional objects, examine small parts, or dissect biological specimens. They also permit the observation of slide specimens.

These instructions should be read carefully before operating the microscope. They will permit you to use your new stereomicroscope to its fullest capabilities. Terminology used to describe components and controls can be found in the diagram on page 2.

These instructions are based on the assembly and use of the K500L model with additional notes applying specifically for the other models in the series.

Unpacking

All components of the stereomicroscope have been carefully packed to ensure they reach you in perfect condition. We recommend that you do not discard any packing containers in case you need to return the microscope or store it for long periods of time; or should it become necessary to transport it to a technical service for any repair or maintenance procedure.

The box should contain the following components:

- K-400L: An illuminated base with a pole for a moveable head holder, also illuminated. A main body with a magnification changing knob 6X, 12X, 25X and 50X. A frosted glass stage, a binocular head with two eyepieces, a black and white stage, a protective cover and a 1,5mm hexagonal key.

- K-500L: An illuminated base with a pole for a moveable head holder, also illuminated. A main body with a magnification changing knob 6,4X, 10X, 16X, 25X and 40X. A frosted glass stage, a binocular head with two eyepieces, a black and white stage, a protective cover and a 1,5mm hexagonal key.

- K-700L: An illuminated base with a pole for a moveable head holder, also illuminated. A main body with a zoom control with ratio 1:5,2. A frosted glass stage, a binocular head with two eyepieces, a black and white stage, a protective cover and a 1,5mm hexagonal key.

NB: Models K-400P, K-500P and K-700P have a base and head holder, without illumination.

Remove, and handle all components of the microscope with extreme care.

Avoid touching the lenses of the optical elements and keep out of contact with dust, water or other contaminating agents, as they could stain or damage the lens surface and affect the quality of the image.

Assembly

All the steps described for the assembly of the stereomicroscope must be undertaken with extreme care, and without forcing the placement of the distinct parts and elements of the stereomicroscope.

A. Place the stereomicroscope base (13) upright, on a flat, clean and stable surface.

B. Insert head holder (14) on column (18).

C. Ensure that the head support screw (Fig. 1) is tight.

D. Move the security collar (16) until it comes into contact with the lower part of the head holder. Firmly tighten support screw (17).

E. Plug in incident illumination in connector (15) located on the upper part of the column. (Only for models L).

F. For greater comfort, place the head so that the eyepiece (1) faces the opposite direction to the column.

1. Loosen head holder support screw (4).
2. Extract head (12) and place it facing opposite direction.
3. Retighten head support screw.

WARNING: Before connecting the stereomicroscope, make sure that the voltage at the power source coincides with that of the stereomicroscope.

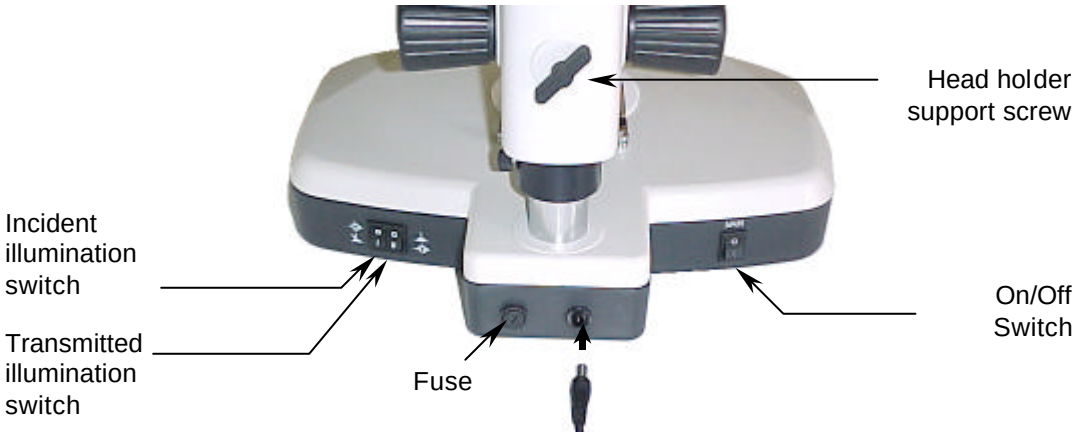

Fig. 1

Operation

A. Starting Up

The stereomicroscope has two stages. One is frosted glass and is used for the observation of microscope slides or samples that are thin or transparent, such as leaves, insect wings, etc. The black and white stage is used for non-transparent objects, or for dissection. For best contrast, choose the side of the stage to use.

Warning: Transmitted illumination can ONLY be used with the frosted glass stage. THE HEAT GENERATED BY THE TRANSMITTED ILLUMINATION CAN MELT OR DAMAGE THE BLACK AND WHITE STAGE. SUCH DAMAGE WOULD NOT BE INCLUDED UNDER GUARANTEE

1. Changing the stage.

   a. Remove stage (10) by pressing towards the tiny springs in the rim of the base (Fig. 2) and then upwards so the stage is released.

   b. If using glass stage, firstly place the metallic filter holder (Fig. 2) and place blue filter in center.

   c. Next, place the glass stage with the frosted surface facing downwards. Press firstly towards the tiny springs in the rim, to insert it correctly.

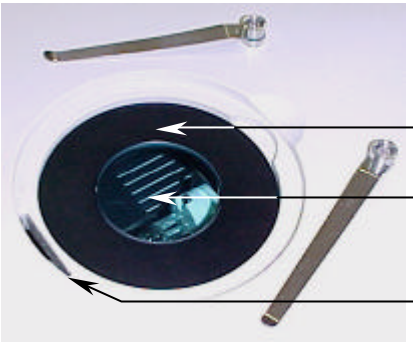

Fig. 2

2. Before connecting the stereomicroscope to a power source, adjust light intensity to its minimum (19). This must be repeated every time the stereomicroscope is turned on or off, to prolong the life of the bulb.

3. Insert power cable in the connector at the lower back of the stereomicroscope (Fig. 1).

   Three light switches are located on the base of the microscope:

   MAIN : The principal switch turns the whole unit on or off.
   I : Turns incident illumination on or off. (Illumination from above)
   T : Turns transmitted illumination on or off. (Illumination from below)

4. Press the principal switch to an ON position "I" (Fig. 1).

5. Press incident or transmitted illumination switch, or both at the same time (Fig. 1), to position "I" or "II", according to the requirements of the sample.

6. Light intensity can be adjusted according to the type of sample being observed.

7. The angle of the incident illumination can be adjusted by using the adjustment knob (8).

B. Interpupillary adjustment.

   1. Looking through the eyepiece (1), move the eyepiece tubes (3) horizontally.

   2. Interpupillary distance is correct when the two fields of view viewed through both eyepieces appear complete and are unified into one.

   3. Interpupillary distance should be adjusted for each new user.

C. Focusing

   1. Turn the magnification changing knob (5) to the lowest magnification.

   2. Place a flat object or a microscope slide on the center of the stage (10).

   3. Turn focus knobs (15) to mid range of focus.

4. The head holder (14) is mounted on a column (18), on which it can be moved up or down, depending on the size of the object to be focussed on.

    a. Support head holder with one hand (14) without touching any lens, and with the other, loosen the screw (17) on the support collar (16). The head holder can then be slid to the base (11).

    b. Without letting go of the head, loosen the head holder locking screw. (Fig. 1).

    c. While looking through the eyepiece, move the head holder up or down until the object appears in focus.

    d. Tighten the head holder locking screw. Do not let go of the head yet.

    e. Slide the security collar up to the head holder, and tighten the support collar screw. The head can then be released.

    f. It is not necessary to adjust the head every time the sample is changed, only when the object is out of focus range.

5. Adjust the focus knobs until the image appears sharp.

C. Diopter adjustment.

Diopter adjustment collars are located on the eyepiece tubes. Their normal position is when the "0" on the collar is aligned with the marking on the eyepiece holder.

For differences in eyesight:

1. Turn the magnification changing knob to the highest magnification.

2. Using only the right eye, look through the right eyepiece (1) and adjust focus using the focus knob. (15)

3. With your left eye, look through the eyepiece and adjust the focus by turning the diopter adjuster (2) located on the left-hand tube (3) until the image appears sharp. Do not use the focus knobs to adjust focus (15).

D. Changing magnification.

Depending on the model, the magnification changing knob is different:



K-400



K-500



K-700

1. Turn the magnification changing knob to the highest magnification.

2. Although the stereomicroscope has been parfocalised by the manufacturer, the focus may need adjusting due to the greater profundity of the field seen through higher magnification objectives. Field profundity is the ability to view distinct points on distinct levels.

3. Once the image is focussed with the higher magnification objectives, it should not be necessary to focus again using the other magnification.

Maintenance

WARNING: FOR YOUR OWN SAFETY SWITCH OFF AND DISCONNECT THE MICROSCOPE FROM ANY ELECTRICAL SOURCE BEFORE ATTEMPTING ANY MAINTENANCE PROCEDURE TO AVOID THE RISK OF ELECTROCUTION.
CONSULT YOUR DISTRIBUTOR IF ANY REPAIR OR MAINTENANCE PROCEDURE IS REQUIRED TO YOUR MICROSCOPE THAT DOES NOT APPEAR IN THIS INSTRUCTION MANUAL.

A. Optical maintenance.

Do not attempt to disassemble any optical component. For any repair work not specified in this manual, consult the technical service responsible in your area.

Before cleaning the lens surface, remove dust with a brush specifically for lenses, or with low pressure compressed air, found in any photography shop.

1. Cleaning the eyepiece

   a. Do not remove the eyepiece (1) from the eyepiece tube (3).

   b. Clean the external surfac dampening the lens with breath.

   c. Afterwards, dry the lens with special lens paper. Dry in circular movements from the center of the lens, outwards. Do not wipe the lens when already dry, as they can easily be scratched.

2. Cleaning the objective.

   a. Do not remove the objective from the microscope.

   b. Only clean the surface area. Use a soft cotton cloth dampened slightly with Xylene. Dry the lens afterwards with the same cloth.

B. Electrical Maintenance

- Changing the transmitted illumination bulb.

   a. Remove the stage (10), and also the metallic stage with the blue filter (Fig.2).

   b. Remove the bulb carefully using a cloth, pulling it straight out of the socket.

   c. Place the replacement bulb in the socket.

   d. If the bulb has been touched with the hands it should be immediately cleaned as this could affect light transmission, and the duration of the bulb.

   e. Replace the stage, metallic stage and blue filter.

- Changing incident illumination bulb.

    a. Firstly holding the illuminator with care, completely unscrew, and remove both adjustment knobs for incident light angle (8),

    b. Unscrew the illuminator lens tube (7), turning it anti-clockwise.

    c. Remove the bulb from the socket.

    d. Do not touch the replacement bulb with hands. If bulb has been touched with the hands, it should be cleaned immediately as this could affect the transmission of light and the duration of the bulb.

    e. Screw illuminator lens tube, turning clockwise.

    f. Holding the illuminator with care, screw on both adjustment knobs for incident light angle (8).

3. Changing the fuse.

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    a. With a flat screwdriver, lightly press on the slot of the fuse holder cover (Fig. 1) and turn 1/4 in the direction of the arrow marked.

    b. Release pressure and completely remove the loosened cover.

    c. Remove the fuse from the removed cover, and insert the new one, ensure that it is 0.5 Amps.

    d. Insert the cover.

    e. Repeat step (a.) but turning 1/4 in the opposite direction to the arrow. The cover must be firmly closed.

C. Mechanical maintenance

1. Adjusting the tension of the focus.

    Tension comes pre-adjusted by the factory. The best point of tension is that which permits the focus knobs to move as loosely as possible, without the head sliding down with its own weight.

    a. Holding both focus knobs, turn one in the opposite direction to the other.

    b. To increase the tension, turn the knobs clockwise; to decrease it, turn the knobs anti-clockwise.

Troubleshooting:

ELECTRICAL PROBLEMS

PROBLEM	CAUSE	SOLUTION
The bulb does not work.	Outlet inoperative. Cable not connected. Bulb burned out. Fuse blown. Wrong Bulb.	Have it repaired by a qualified specialised technician. Connect the cable to the power source. Replace bulb. Replace fuse. Replace with appropriate bulb.
Bulb has short life span.	Very high voltage.	Reduce light intensity to the minimum before turning on or off the stereomicroscope.
Bulb burns out immediately.	Wrong bulb.	Replace with the appropriate bulb.
Bulb flickers.	The bulb is not inserted correctly into socket. Bulb on the point of burning out. Fuse cover badly closed. Bad connection with power source.	Insert bulb correctly. Replace bulb. Close correctly. Have repaired by a qualified specialised technician.
Fuse blown quickly	Wrong fuse.	Replace with appropriate fuse.
Fuse blown instantly	Short circuit.	Have repaired by a qualified specialised technician.

IMAGE QUALITY

PROBLEM	CAUSE	SOLUTION
No image.	Magnification changing knob badly positioned.	Adjust, until it "clicks" into place.
Poor resolution.	Eyepieces dirty. Objectives dirty.	Clean eyepieces. Clean objectives.
Spots, or stains in field of view.	Eyepieces dirty.	Clean eyepieces.
* NB. Stains in field of view may also be attributed to dirt on the inside of the eyepiece. It is recommended therefore that the lens be cleaned by a recognised service technician.		

MECHANICAL PROBLEMS

PROBLEM	CAUSE	SOLUTION
It does not stay in focus.	The head drops down.	Adjust the tension of the coarse focus knob.

Moving the microscope

- If possible, avoid moving the stereomicroscope.
- Carry the microscope in both hands. One hand should hold the microscope column (18) and the other should support it under the base (11).
- Maintain the stereomicroscope in a vertical position.

Reparation

If the stereomicroscope needs repairing, or revision by authorised personnel, we would recommend that it be stored in its polystyrene box and returned to the distributor. Attach a note with a description of the problem, or details of the required revision.

Warrantee

All MOTIC microscopes are warranted against any manufacturing defect for a 5 years period. Damage occurring by any unauthorised repair work, or occurring through misuse or modification of the microscope will not be included under the conditions of the warrantee. Bulbs and fuses are not under warrantee.

The warrantee service is provided by MOTIC, or its authorised distributors. Defective products will be repaired without charge when returned to MOTIC, or one of its distributors. Transport costs will be covered by the purchaser.

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