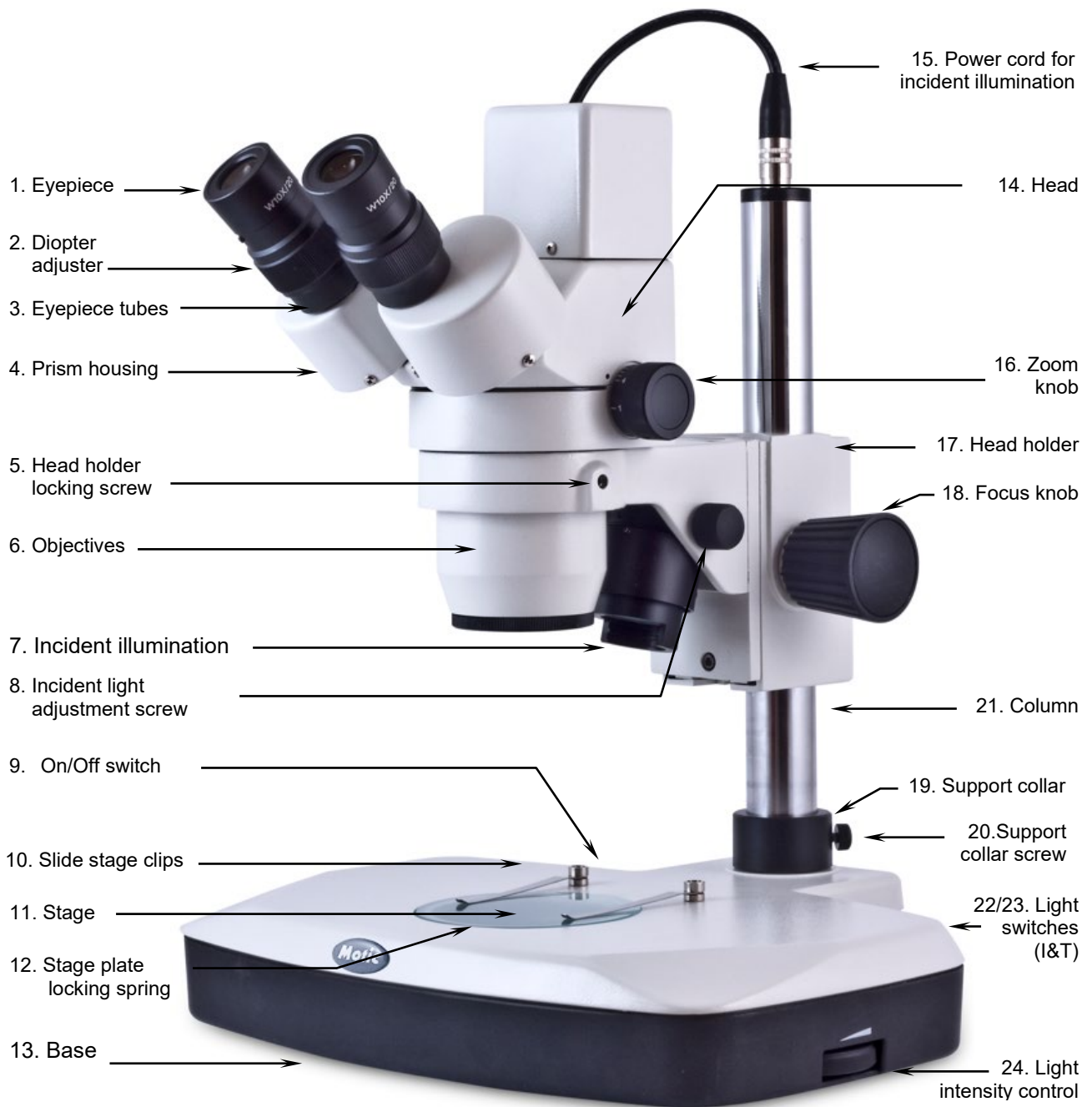


Motic[®] Microscopes

Instruction Manual

DM-143-FBGG



DM-143-FBGG

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 SMZ-140-N2GG model with additional notes applying specifically for the other models in the series.

Unpacking

All components of the stereomicroscope have been carefully packed to make sure 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.

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

Avoid touching the lenses of the optical elements and keep clear 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 base of the microscope (13) upright on a flat, stable and clean surface.
- B. Ensure that the head holder locking screw (Fig. 1) is tight.
- C. Connect incident illumination to power cord (15) located at the upper part of the column (21).

WARNING: Before connecting the stereomicroscope to a power source, always check that the voltage coincides with that of the stereo microscope.

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 WARRANTY.

1. Changing the stage.
 - a. If wishing to use the glass stage, insert the blue filter in the centre of the base with the frosted surface facing down.
 - b. Place the glass stage with the frosted surface, again, facing down.
2. Before connecting the stereomicroscope to a power source, adjust light intensity to its minimum (24). This must be repeated every time the stereomicroscope is turned on or off, to prolong the life of the bulb.

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

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

3. Press the principal switch (9) to an ON position "I".
4. Press the incident illumination (22) or transmitted illumination (23) or both at the same time "I" or "II", according to your needs in observing the sample.
5. Light intensity should be adjusted according to the objective used, or the type of sample observed.
6. The angle of incident illumination can be adjusted by using the adjustment screw (8) that can be used to vary the orientation of the lens.

B. Interpupillary adjustment.

1. Looking through the eyepiece (1), move the eyepiece tubes (3) by taking hold of the prism housing (4) and moving out, or inwards.
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. Focussing

1. Turn the zoom knob (16) to the lowest magnification 1X.
2. Place a flat object or a microscope slide on the centre of the stage (11).
3. Turn focussing knobs (18) to mid-focus range.
4. The head holder (17) is mounted on a column (21), on which it can be moved up or down, depending on the size of the object to be focussed on.
 - a. Support head holder (17) with one hand without touching any lens, and with the other, loosen the screw (20) on the support collar (19). The head holder can then be slid to the base (13).
 - 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 it appears out of focus.
5. Adjust the focus knobs, (18) until the image appears sharp.

D. Diopter adjustment.

Diopter adjustment collars are located on the eyepiece tubes. Their normal position is when the lower part of the collar is aligned with the sign marked on the eyepiece tube.

For differences in eyesight:

1. Using only the right eye, look through the right eyepiece (1) and adjust focus.
2. Next, using the 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 (18).

E. Changing magnification.

1. Turn the zoom control (16) to the highest magnification, 4X.
2. Although the stereomicroscope has been parfocalised, focus will have to be adjusted as the objectives of a low magnification offer a more profound field of view. The profundity of the field is the capacity to focus on different points on different levels.
3. Once the image is in focus with the higher magnification objectives it is not necessary to adjust the focus when lower magnification objectives are used.

Connecting the camera

Before installing the software, please ensure the following:

- Do not connect the USB2.0 cable to computer before installing the Motic software.
- Plug in the Microscope's power cord and switch the unit on.
- Check that you have a Motic software CD with your microscope.
- Your computer should meet the Minimum System Configuration as listed below.

Minimum System Configuration:

CPU: Intel based 1.4GHz or better for PC or G4 for Mac
HDD: 1GB available disk space
RAM: 512MB or more
Display Card: 32MB display memory
Operating System: Windows XP or higher / Mac OSX
Others: Native USB2.0, CD Drive

Installing the Software

Please install the Motic Images software first by referencing the Quick Start Guide provided in PDF format on the CD. Please keep the CD in the drive to load the correct driver for this Digital Microscope when you plug in the USB cable.

Operation

Connect the power cable to a power outlet and to the microscope.

Connect the Microscope Head to your Computer's USB2.0 port with the USB cable.

Switch on the microscope and adjust the illumination intensity to a comfortable level

Please refer further to the enclosed BA manual for details on how to operate the microscope.

Image Adjustment

- Ensure that you pull the Beam Splitter all the way out until you hear it click into place. This will allow the camera chip inside the head to be exposed to the light from the microscope.
- Then you can start the live image transmission by clicking on the Camera icon (shortcut Ctrl M). If you do not see an image, please click on "Auto Exposure". For further details, please consult the software Quick Start Guide contained as a PDF file in the CD.
- Bring the image into focus by adjusting the focusing control.
- With a 4X objective selected on the microscope, ensure that the image on the screen is in focus and in the center of the screen.
- Using a 40X objective next, adjust the fine focusing to ensure that the observation is on the correct focal plane.
- Please note that when changing from 4X to 40X, the image should be Parfocal as well as Parcentered on screen.

Calibration

- Put the calibration slide (with four black dots) shipped with the microscope on the stage and using a 10X objective focus on one of the dots so that the entire dot can be seen on the computer screen, please note the diameter of the dot you are looking at.
- Click on the Calibration Wizard in the Motic Application Program and follow the on-screen instructions to calibrate the microscope.

NOTE: Calibration needs to be done at least once and on at least one objective (we recommend the 10X). When the computer screen or the screen resolution is changed, the calibration needs to be done again. Please read the software Quick Start Guide for further information.

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 surface dampening the lens with breath.
- c. Afterwards, dry the lens with special lens paper. Dry in circular movements from the centre of the lens, outwards. Do not wipe the lens when already dry, as they scratch easily.

2. Cleaning the objectives.

- a. Do not remove objectives 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.

1. 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.

2. 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).

1. Changing the fuse.

- 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. The tension adjustment collar for focussing (Fig.1) is situated between the focussing knob (18) and the head holder (17).

- a. Loosen the screw located in the collar hole with the 2mm hexagonal key.
- b. To increase the tension, turn the collar anti-clockwise; to decrease it, turn the collar clockwise.
- c. Re-tighten the hexagonal key.

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
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 stereomicroscope in both hands. One hand should hold the stereomicroscope column (21), and the other should support it under the base (13).
- Maintain the stereomicroscope in a vertical position.

Repair

If the stereomicroscope needs repairing, or revision by authorised personnel, we 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.

Warranty

All MOTIC microscopes are warranted against any manufacturing defect for a 5 year 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 warranty. Bulbs and fuses are not under warranty.

The warranty service is provided by MOTIC, or its authorised distributors. Defective products will be repaired free of charge when returned to MOTIC, or one of its distributors. Transport costs will be covered by the purchaser.

OWING TO POSSIBLE MODIFICATIONS AND IMPROVEMENTS IN THEIR MANUFACTURE, CHANGES MAY OCCUR TO STEREOMICROSCOPES WITHOUT PRIOR NOTICE.