M272 E 00.12.VF.1

Nikon

Metallurgical Microscope
ECLIPSE ME600L

Instructions

Thank you for purchasing the Nikon products.
This instruction manual is written for the users of the Nikon's metallurgical microscope "ECLIPSE ME600L" and describes the basic operations of the microscope.
To ensure correct usage, read this manual carefully before operating the instrument.

- It is prohibited to reproduce or transmit this manual in part or whole without Nikon's expressed permission.
- The contents of this manual are subject to change without notice.
- Although every effort has been made to ensure the accuracy of this manual, if you note any points that are unclear or incorrect, contact your nearest Nikon representative.
- Some of the products described in this manual may not be included in the set you have purchased.
- Be sure to read the instruction manual for any other products used in combination with the microscope.

Warning/Caution Symbols Used in This Manual

Although Nikon products are designed to provide you with the utmost safety during use, incorrect usage or disregard of the instructions can cause personal injury or property damage. For your safety, read the instruction manual carefully and thoroughly before using the instrument. Do not discard this manual but keep it near the product for easy reference.
In this manual, safety instructions are indicated with the symbols shown below. Be sure to follow the instructions indicated with these symbols to ensure correct and safe operation.

Symbol	Meaning
 **WARNING**	Disregarding instructions marked with this symbol may lead to death or serious injury.
 **CAUTION**	Disregarding instructions marked with this symbol may lead to injury or property damage.

Meaning of Symbols Used on the Equipment

Symbol	Meaning
	**Caution for heat.** This marking on the rear of the lamphouse, and near the lamphouse clamp screw on the illuminator, calls your attention on the following; • Lamphouse becomes very hot during and immediately after the illumination. • Risk of burns. Do not touch the lamphouse during and immediately after the illumination. • Make sure that the lamphouse is sufficiently cool before the lamp replacement.

WARNING

1. Intended product use.

This microscope should only be used for microscopic observation. Do not use it for any other purpose. Do not observe such a large sample as to stick out of the stage.

2. Do not disassemble.

Disassembly may cause malfunction, electrical shock and/or injury. Do not disassemble any part other than those described in this manual. If you experience any problem with the microscope, notify your nearest Nikon representative.

3. Power cord.

To prevent electrical shock, always turn off the power switch (flip it to the ○ side) before connecting or disconnecting the power cord. Use only the supplied power cord. Using the wrong power cord could result in damage or fire. (The specification of the supplied power cord is written below.)
Also note that the protection Class I equipment should be connected to PE (protective earth) terminal.

- **For 100 to 120V area:**
  UL Listed, detachable power cord set, 3 conductor grounding Type SVT, No. 18 AWG, 3 m long maximum, rated at 125V AC minimum.
- **For 220V to 240V area:**
  Approved according to EU/EN standards, 3 conductor grounding Type H05VV-F, 3 m long maximum, rated at 250V AC minimum.

4. Heat from the light source.

The lamp and the lamphouse become extremely hot. To avoid burns, do not touch the lamphouse while the lamp is lit or for thirty minutes after it has been turned off.
Further more, in order to avoid the risk of fire, do not place fabric, paper or highly flammable volatile materials (such as gasoline, petroleum benzine, paint thinner or alcohol) near the lamphouse while the lamp is lit or for about thirty minutes after it has been turned off.

5. Reflection.

The polished surface of the sample will reflect strong light by the illumination. Do not observe the illuminated surface for a long time because the strong reflection may hurt your eyes.

CAUTION

1. Check the light source.

Use only the specified illuminator, lamp and the lamphouse on this microscope. The use of other illuminators, lamps and lamphouses may lead to malfunction.

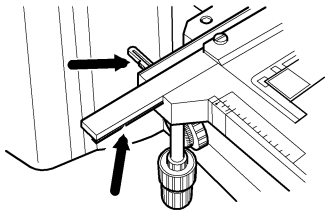
- **The specified illuminator for episcopic illumination:**
  Illuminator L-UEPI made by Nikon (model: L-UEPI)
- **The specified lamphouse for episcopic illumination:**
  12V-100W halogen epi-lamphouse made by Nikon (model: LHS-H100P-2 HALOGEN 12V 100W)
- **The specified lamphouse for diascopic illumination:**
  12V100W halogen lamphouse made by Nikon (model: C-LP)
- **The specified lamp:**
  12V-100W LONGLIFE halogen lamp (model: OSRAM HLX 64623 or PHILIPS 7724)

2. Cautions on lamp replacement.

- To prevent burn injury, allow the lamp to cool for at least 30 minutes after turning off the power switch, before replacing the lamp.
- To prevent electrical shock and damage to the microscope, always turn off the power switch (flip it to the ○ side) and unplug the power cord from the wall outlet before connecting or disconnecting the lamphouse.
- Do not touch the glass surface of the lamp with bare hands. Fingerprints or grease on the bulb surface will degrade the illuminating capacity of the lamp. Wipe clean the fingerprints or grease with a clean piece of cloth.
- Securely attach the lamphouse cover to the lamphouse after replacing the lamp. Never light the lamp while the lamphouse cover is open.

3. Cautions on operating the stage

The stage rack protrudes according to the stage movement. When operating the focus knobs or condenser focus knob, be careful not to graze your hand against the protruded rack.



4. Do not wet the microscope.

If the microscope gets wet, a short circuit may result that may cause malfunction or abnormal heating of the microscope. If you accidentally spill a liquid on the microscope, immediately turn off the power switch (flip it to the ○ side) and unplug the power cord from the wall outlet. Then use a dry cloth to wipe away the moisture. If any liquid gets inside the microscope, do not use it; instead, notify your nearest Nikon representative.

5. Weak electromagnetic waves.

This microscope emits weak electromagnetic waves. The accuracy of any precision electronic equipment may be adversely affected if positioned too close. If the microscope affects TV or radio reception, move the radio or TV further away from the microscope.

CAUTION

6. Installation location.

This product is a precision optical instrument. Using or storing the microscope under unsuitable conditions may damage it or may have an adverse effect on its accuracy. The following conditions should be kept in mind when selecting the installation location.

- Avoid a brightly lit location such as a room that receives direct sunlight, or directly under room lights. The image quality deteriorates if there is excessive ambient light.
- Choose a location that is free from dust or dirt.
- Choose a flat surface with little vibration.
- Choose a sturdy desk or table that is able to bear the weight of the instrument.
- Do not install the microscope in a warm, humid location.

7. Cautions on moving the microscope.

- The microscope is a precision optical instrument. Handle it carefully and do not subject it to a strong physical shock. (The accuracy of the objective in particular may be adversely affected by even a weak physical shock.)
- When moving the microscope, first remove the lamphouse. Then, securely hold the microscope by the root of the arm from the back.
- Do not hold the focusing knobs, eyepiece tube, lamphouse, sub-stage, etc., when carrying the microscope. They may come off and may cause serious injury or malfunction.
- Be careful not to pinch your fingers or hands during the transportation.

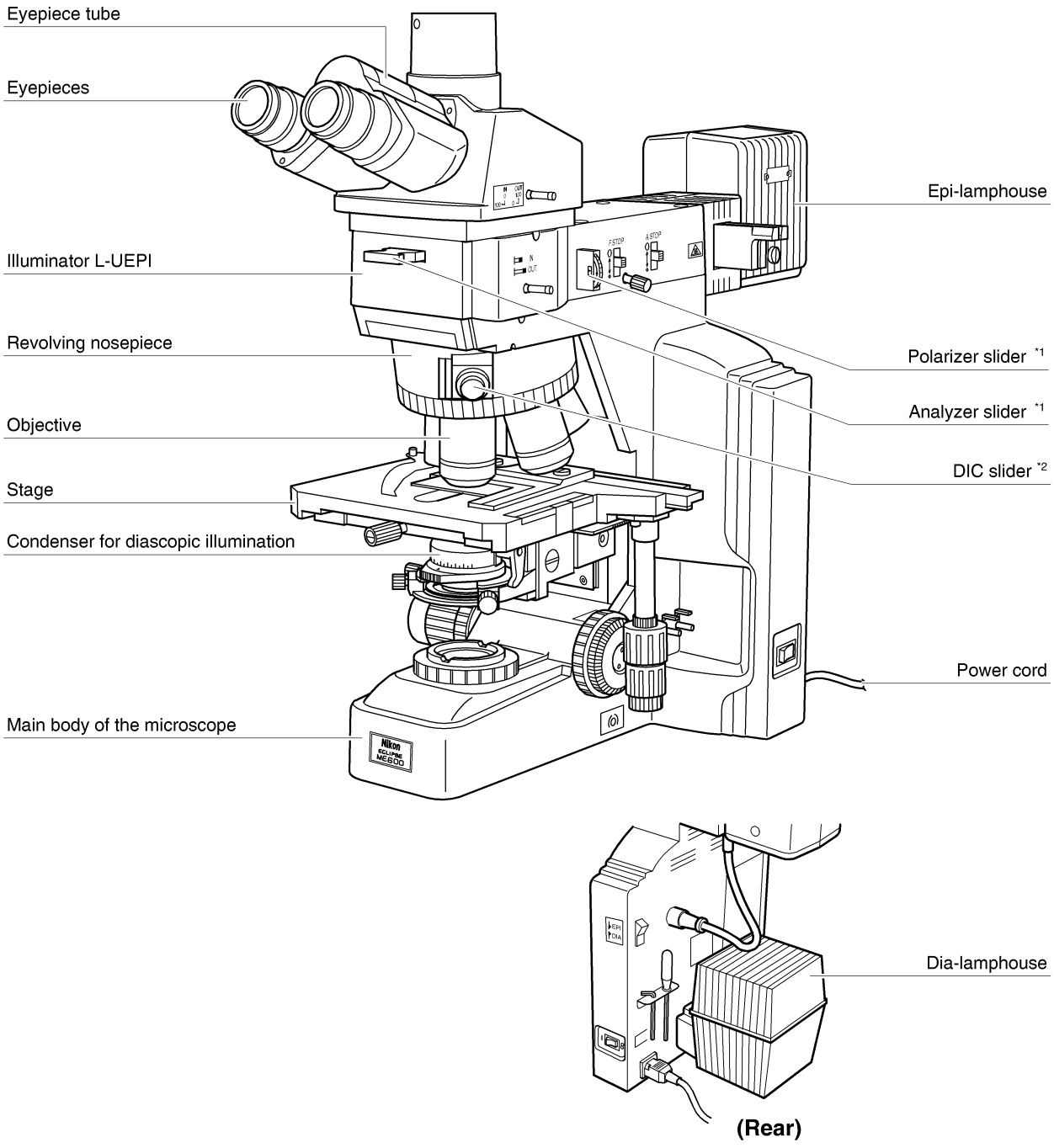
8. Cautions on assembling the microscope.

- Be careful not to pinch your fingers or hands during the assembly.
- The scratches or fingerprints on the lens surface will adversely affect the microscope image. Be careful not to scratch or touch the lens surfaces.

CONTENTS

I Nomenclature and Functions

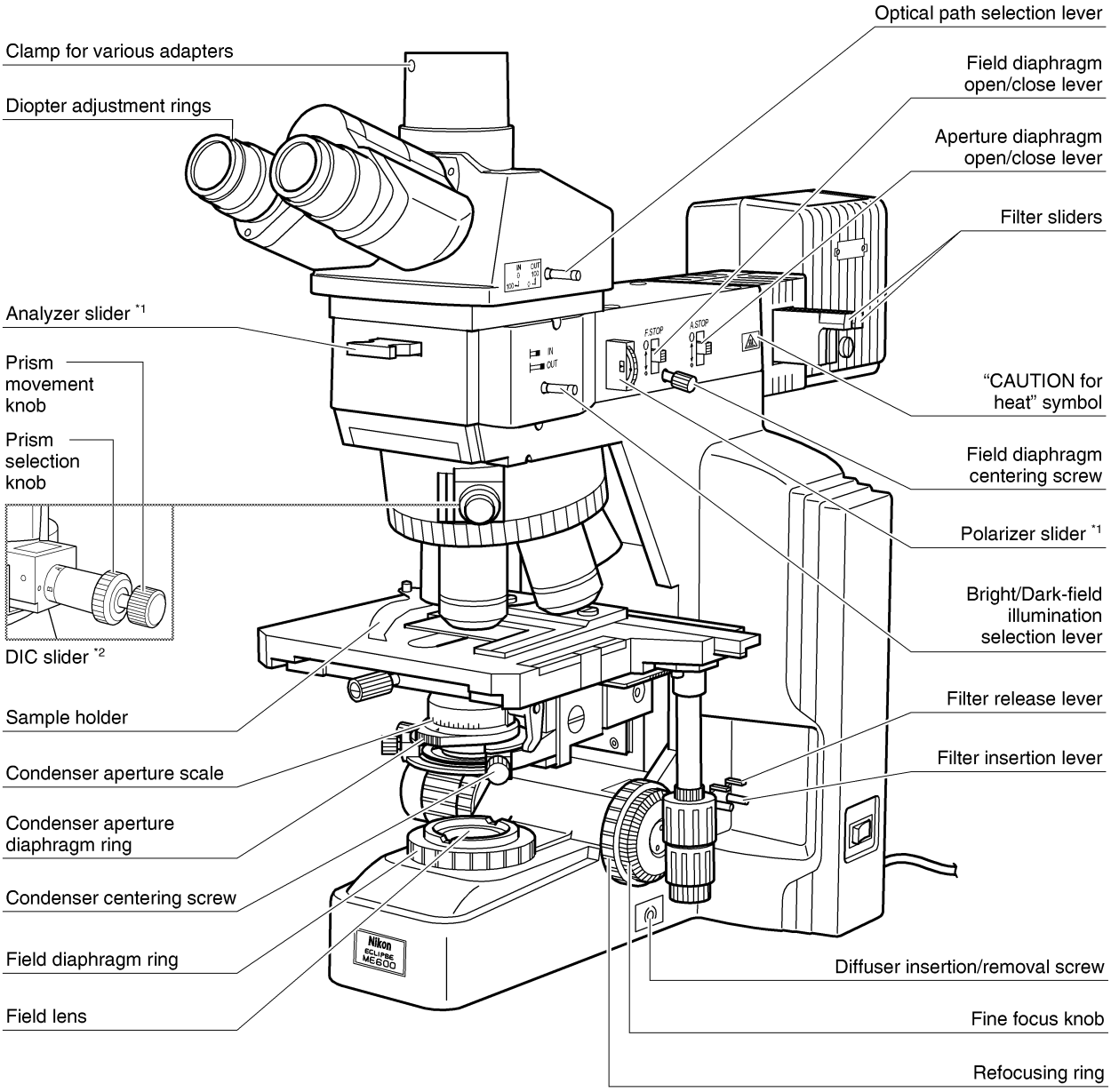
1 Names of the Parts



This drawing depicts an ECLIPSE ME600L microscope with the attachments for DIC microscopy.

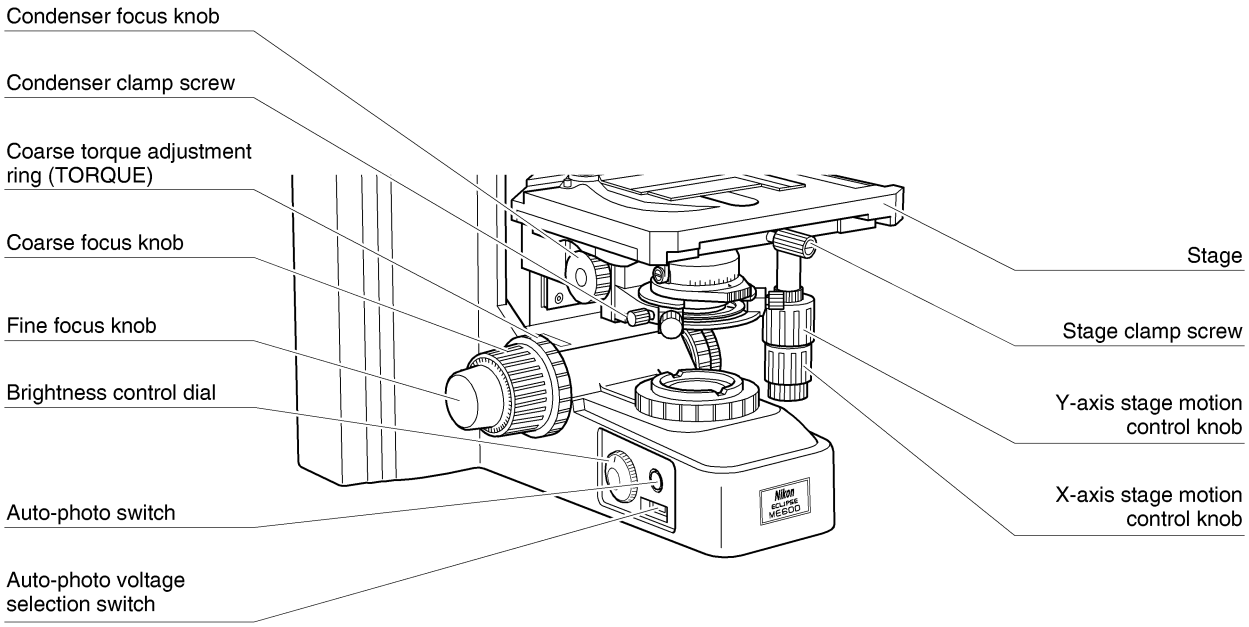
*1: For DIC microscopy or simplified polarization microscopy.
*2: For DIC microscopy.

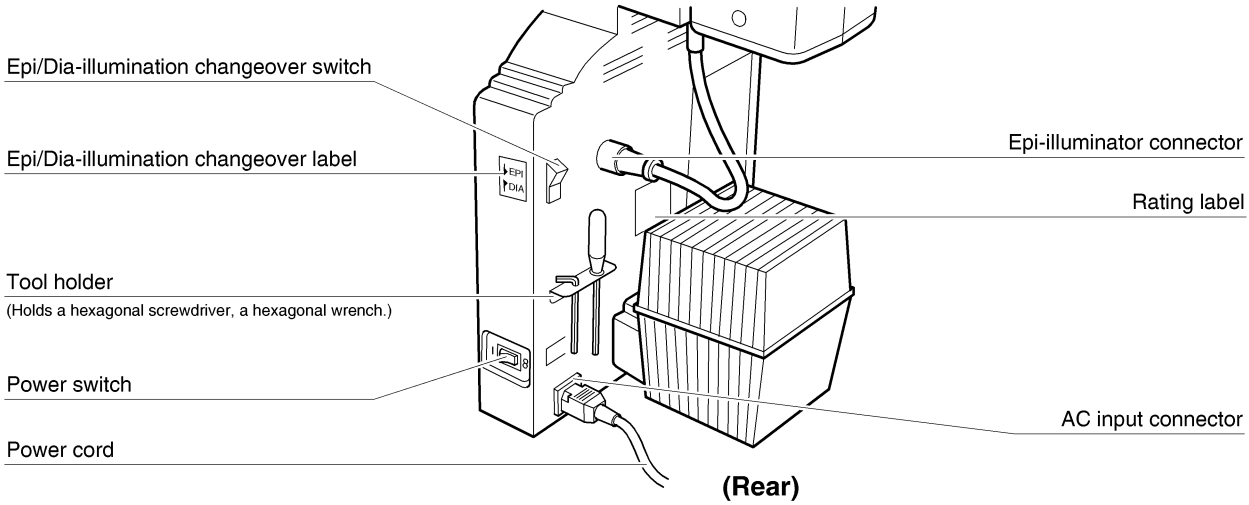
2 Names of the Operational Parts



This drawing depicts an ECLIPSE ME600L microscope with the attachments for DIC microscopy.

*1: For DIC microscopy or simplified polarization microscopy.
*2: For DIC microscopy.


Condenser focus knob
Condenser clamp screw
Coarse torque adjustment ring (TORQUE)
Coarse focus knob
Fine focus knob
Brightness control dial
Auto-photo switch
Auto-photo voltage selection switch
Stage
Stage clamp screw
Y-axis stage motion control knob
X-axis stage motion control knob


Epi/Dia-illumination changeover switch
Epi/Dia-illumination changeover label
Tool holder
(Holds a hexagonal screwdriver, a hexagonal wrench.)
Power switch
Power cord
Epi-illuminator connector
Rating label
AC input connector
EPI
DIA

(Rear)

II Microscopy

This chapter describes the procedures for each microscopy. For optional accessories necessary for each microscopy, refer to the table below.

- If the microscope has not yet been assembled, refer to "Assembly" on p.31 first.
- Refer to "Operation of Each Part" on p.18 for how to operate each part of the microscope.
- Detaching the illuminator L-UEPI and attaching the Y-FL Epi-fluorescence attachment (optional) instead enables the episcopic-fluorescent microscopy. (For the episcopic-fluorescent microscopy, refer to the instructions supplied with the Y-FL Epi-fluorescence attachment.)

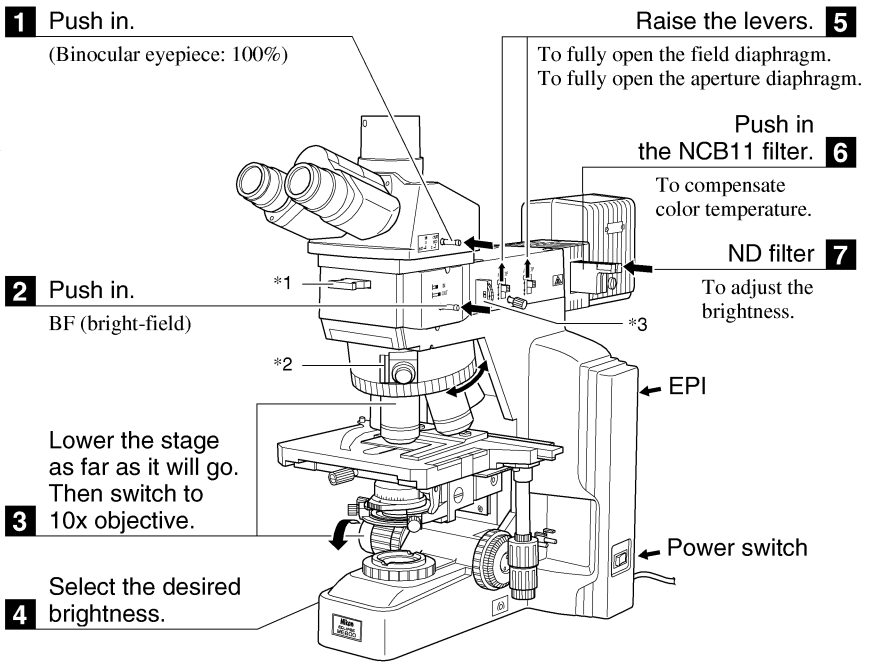
Microscopy	Refer to	Accessories necessary for the microscopy (optional)
Episcopic bright-field microscopy	p.12	—
Episcopic dark-field microscopy	p.13	BD objective, BD quintuple nosepiece (or Universal quintuple nosepiece) (The standard sextuple nosepiece cannot be used for the dark-field microscopy.)
Episcopic differential interference contrast (DIC) microscopy	p.14	Polarizer, Analyzer, DIC slider, Universal quintuple nosepiece, Objectives marked "LU" (Objectives marked "LU" are suitable for DIC microscopy.)
Episcopic simplified polarization microscopy	p.15	Polarizer, Analyzer
Episcopic-fluorescent microscopy	Refer to the instructions provided with the Epi-fluorescence attachment.	Y-FL Epi-fluorescence attachment
Diascopic bright-field microscopy	p.16	—
Diascopic simplified polarization microscopy	p.17	Dia-polarizer Analyzer

1 Episcopic Bright-Field Microscopy

1. Turn on the power. Switch to EPI.

2. Set the microscope for episcopic bright-field microscopy

   If the accessories for DIC microscopy (*1 to *3) are attached, pull them out and remove them from the optical path.



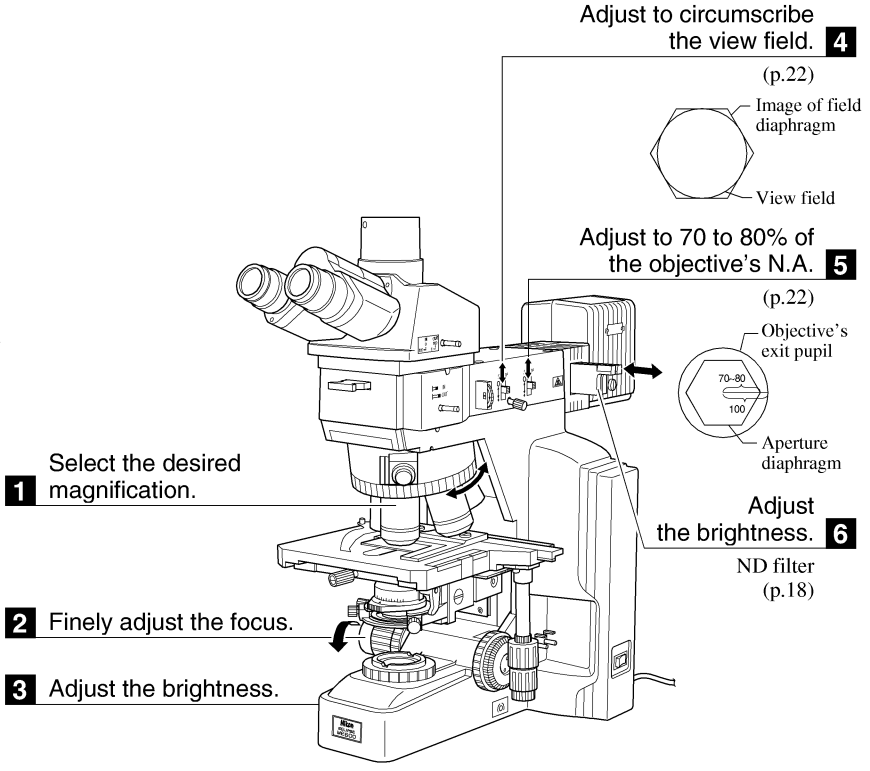
3. Place the sample on the stage and focus on it. (p.19)

4. Adjust the diopter. (p.21)

5. Adjust the interpupillary distance. (p.21)

6. Change the magnification and observe the sample.

   Hint:
   When observing a sample with small contrast, such as the mirror-faced sample, it may be rather difficult to focus on it. In a case like this, stop down the field diaphragm so that its image can be seen in the viewfield, and try to focus on the rim of the diaphragm image. When the rim is in focus, the sample is in focus just as well.



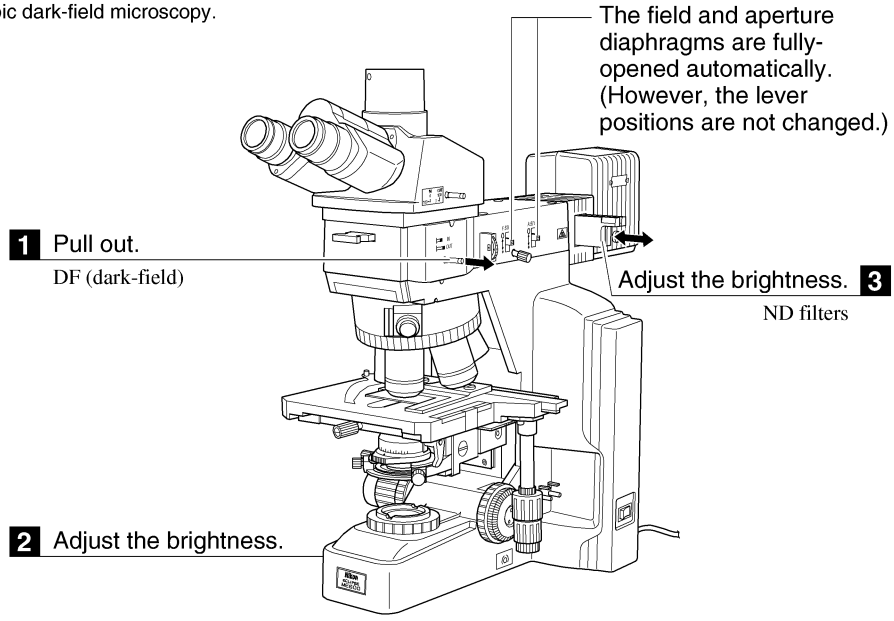
2 Episcopic Dark-Field Microscopy

1. Mount a BD objective and a BD quintuple nosepiece (or an universal quintuple nosepiece). (p.37)

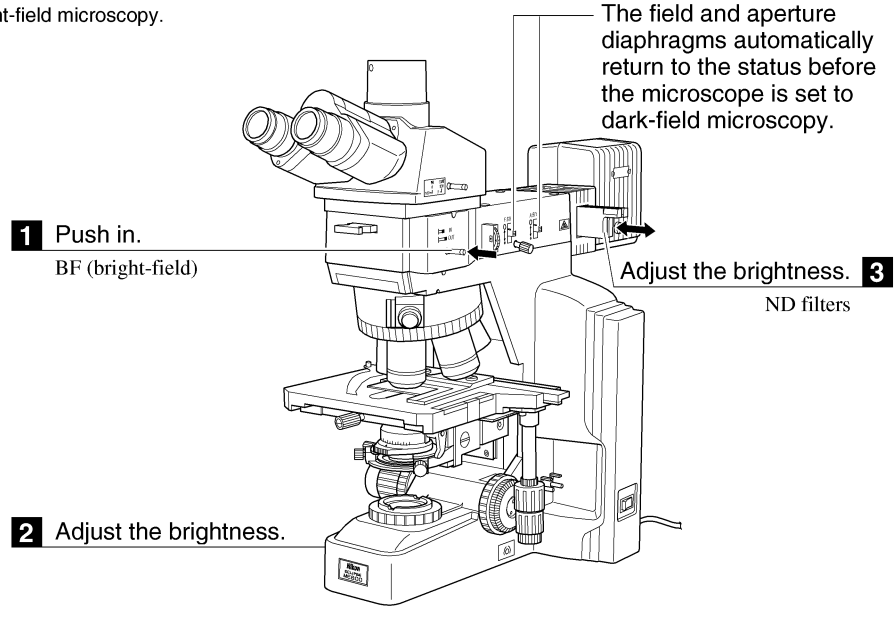
   (The standard sextuple nosepiece cannot be used for the dark-field microscopy.)

2. Focus on the sample with episcopic bright-field microscopy. (p.12)

3. Set the microscope for episcopic dark-field microscopy.



4. Return the microscope to bright-field microscopy.



⚠CAUTION

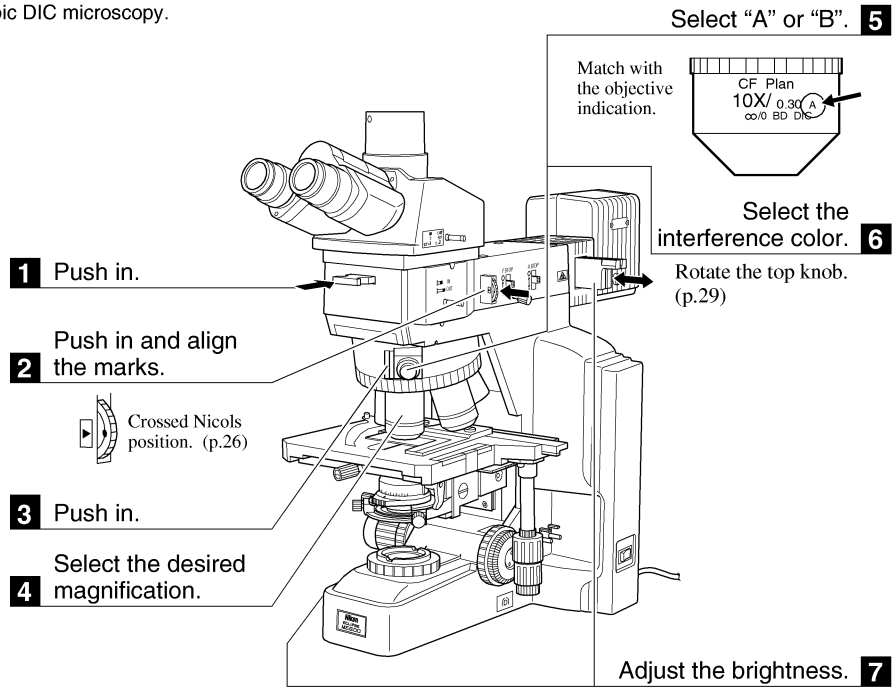
When switching the illuminations between BF and DF, a dazzling bright light may enter the view field.

3 Episcopic Differential Interference Contrast (DIC) Microscopy

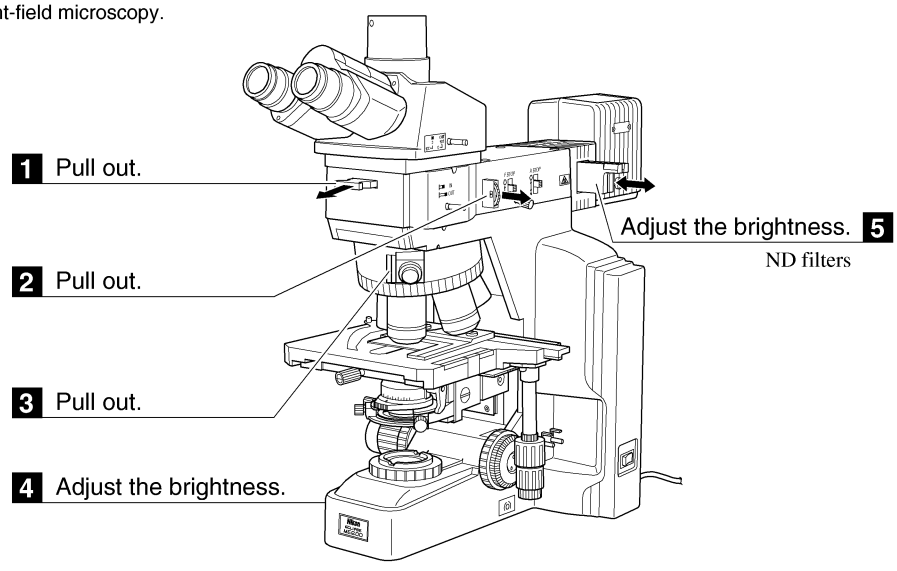
1. Mount an objective marked “LU”, universal quintuple nosepiece, polarizer, analyzer and DIC slider. (p.26)

2. Focus on the sample with episcopic bright-field microscopy. (p.12)

3. Set the microscope for episcopic DIC microscopy.



4. Return the microscope to bright-field microscopy.

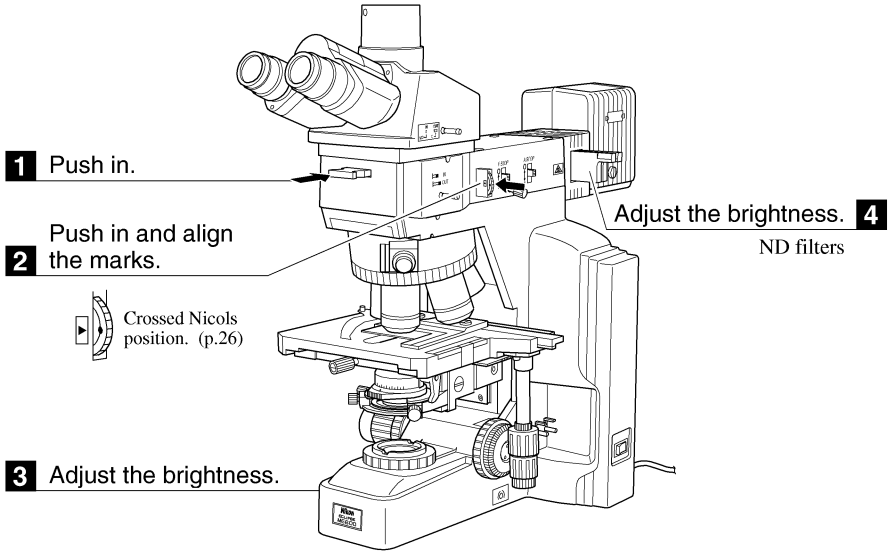


4 Episcopic Simplified Polarization Microscopy

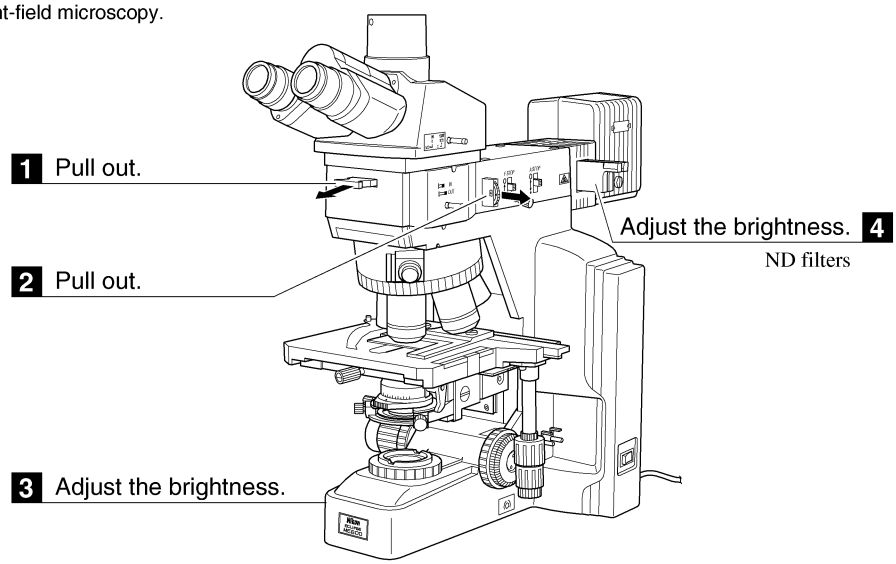
1. Mount a polarizer and an analyzer. (p.26, 28)

2. Focus on the sample with episcopic bright-field microscopy. (p.12)

3. Set the microscope for episcopic simplified polarization microscopy.



4. Return the microscope to bright-field microscopy.

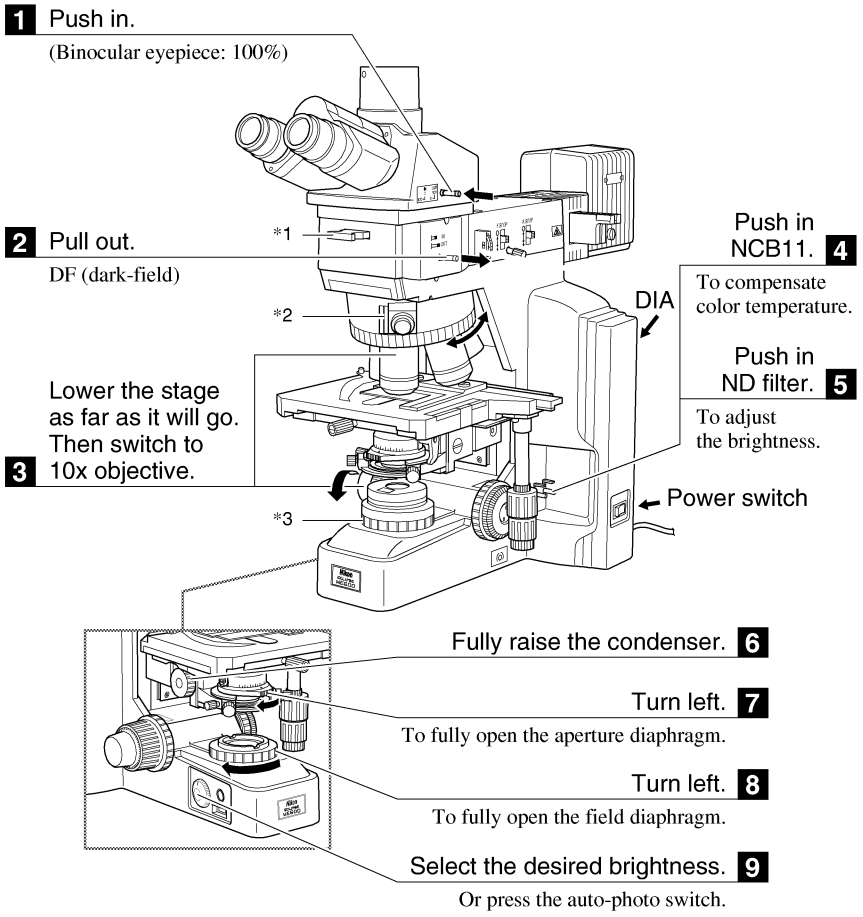


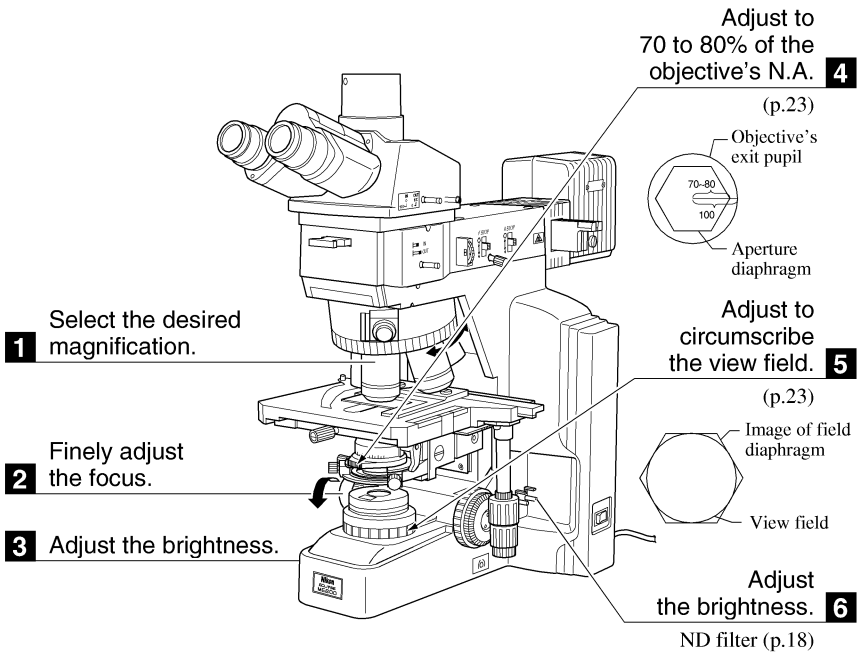
5 Diascopic Bright-Field Microscopy

1. Turn on the power. Switch to DIA.
2. Set the microscope for diascopic bright-field microscopy

   If the accessories for DIC microscopy (*1 to *3) are attached, pull them out and remove them from the optical path.

3. Place the sample on the stage and focus on it. (p.19)
4. Adjust the diopter. (p.21)
5. Adjust the interpupillary distance. (p.21)
6. Focus and center the condenser. (p.23)
7. Change the magnification and observe the sample.



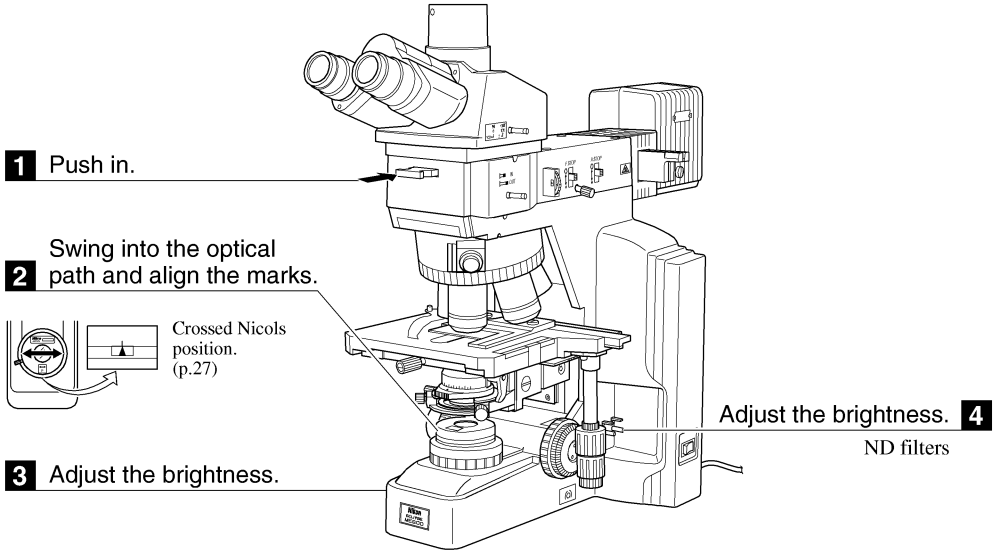


6 Diascopic Simplified Polarization Microscopy

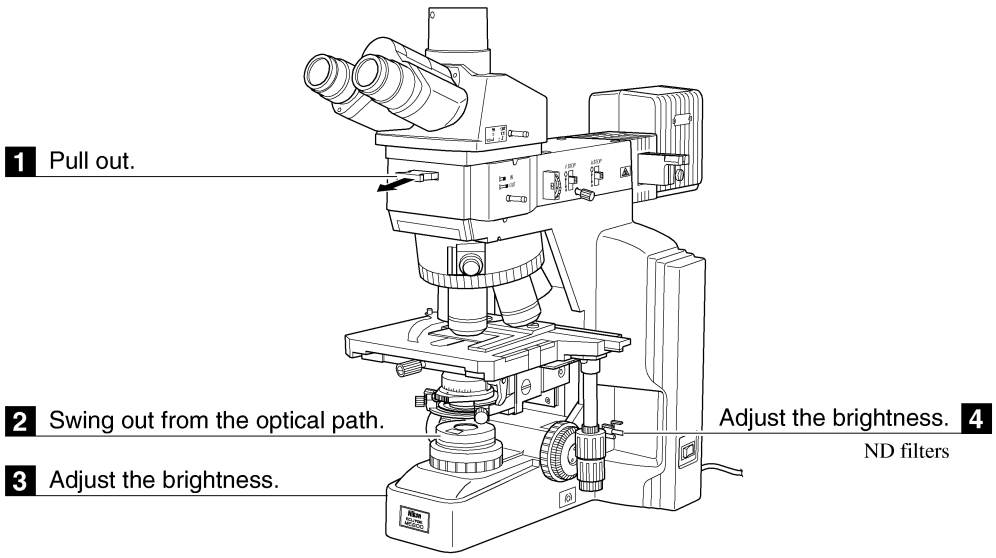
1. Mount a dia-polarizer and an analyzer. (p.27, 28)

2. Focus on the sample with diascopic bright-field microscopy. (p.16)

3. Set the microscope for diascopic simplified polarization microscopy.



4. Return the microscope to bright-field microscopy.



III Operation of Each Part

1 Filters

▶ Filters for episcopic illumination

There are two filter sliders at the end of the illuminator. Two filters can be set on each filter slider. The desired filters can be brought into the optical path by sliding the filter sliders in and out. For attaching the filters, refer to p.34.

Filters	Usage
NCB11 (neutral color balancing filter)	Color balance adjustment for general use and color photomicrography.
ND4 (transmission rate: 25%)	Brightness adjustment.
ND16 (transmission rate: 6%)	Brightness adjustment.
GIF (green interference filter)	Contrast adjustment.
IF	For interference.

▶ Filters for diascopic illumination

Three filters are housed in the base of the microscope.
A filter is inserted into the optical path by pressing in the filter insertion lever on the right side of the microscope. The filter is removed from the optical path by pressing the release lever down.

Filter Types	Utility
NCB11 (color balancing filter)	Color balance adjustment for general use and color photomicrography.
ND32 (transmission rate: 3%)	Brightness adjustment
ND8 (transmission rate: 12.5%)	Brightness adjustment

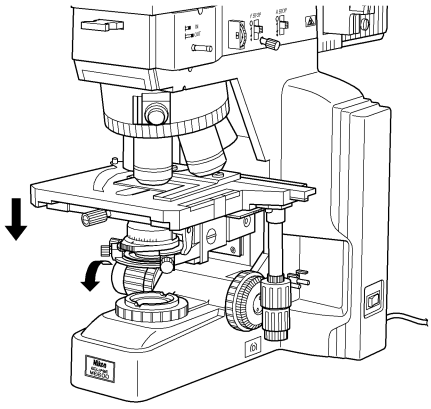
Diffuser insertion

A diffuser is contained in the microscope. When removing the diffuser from the optical path, turn the diffuser insertion/removal screw as far as it will go (about 90°) in the counter-clockwise direction with a hexagonal wrench. When returning the diffuser to the optical path, turn the screw as far as it will go in the clockwise direction.

2 Coarse/Fine Focus Knobs

The relationship between the focus knob rotation and the stage vertical movement

The relationship between the direction of coarse/fine focus knob rotation and the stage vertical movement is shown in the figure.

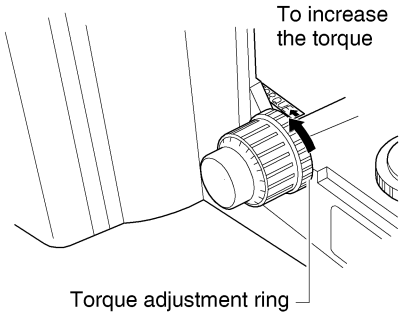


- The stage moves 12.7 mm per one full rotation of the coarse focus knob.
- The stage moves 0.1 mm per one full rotation of the fine focus knob.
- The stage moves 1 µm per one step of the fine focus knob graduations.
- The stage moves 1 µm per one step of the fine focus knob graduations.
- The stroke (range) of stage vertical movement is 2 mm up and 23 mm down from the reference plane (in-focus position). (When 1 mm thick slide glass is used.)

Never attempt either of the following actions, as this will damage the microscope.
- *Rotating the left and right knobs in opposite directions at the same time.*
- *Continuing to rotate the coarse focus knob after the stage has reached the limit of its motion.*

Adjusting the torque of the coarse focus knob

The torque of the coarse focus knob can be adjusted.
To increase the torque, turn the torque adjustment ring in the direction shown by the arrow on the microscope (counter-clockwise).
To reduce the torque, turn it opposite to the arrow (clockwise).



Refocusing ring

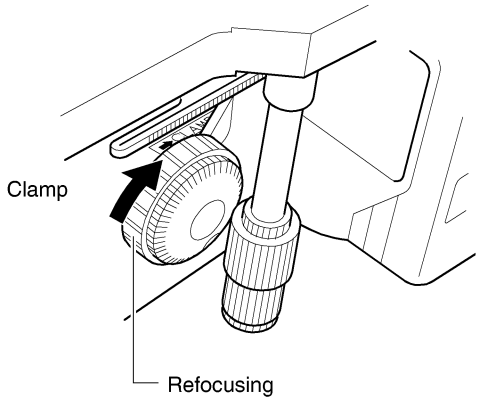
The refocusing ring restricts the movement of the coarse focus knob so that the stage cannot be raised higher than the position the operator specifies. Once the refocusing ring has been clamped in position, the coarse focus knob cannot be used to move the stage any higher. (Movement of the stage by the fine focus knob is not restricted.)
For example, once the coarse focus knob has been clamped in place at the focus position, a rough focus can be attained the next time simply by raising up the stage till the coarse focus knob cannot be turned any further.
If the refocusing ring is not being used, be sure to turn the refocusing ring in the direction opposite to the arrow on the microscope base as far as it will go.

[Using the refocusing ring]

With the sample in focus, turn the refocusing ring as far as it will go in the direction of the arrow on the base of the microscope (about 3/4 revolution). The refocusing ring is now clamped in position.

When changing the sample, lower the stage by turning only the coarse focus knob.

After changing the sample, gently raise the stage by turning only the coarse focus knob as far as it will go. The sample should be roughly in focus when the stage has been raised as far as it will go. Use the fine focus knob to bring the sample into perfect focus.

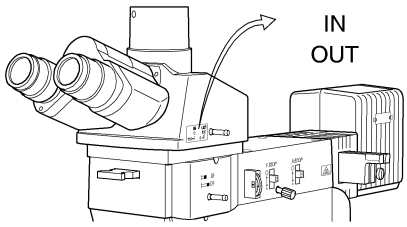


3 Eyepiece Tube

▶ Optical path selection

The optical path selection lever can be used to switch the destination of light from the binocular part to the vertical tube.

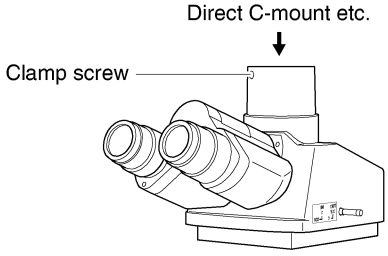
Lever position	Light proportion Binocular part		Vertical tube
IN	100	:	0
OUT	0	:	100



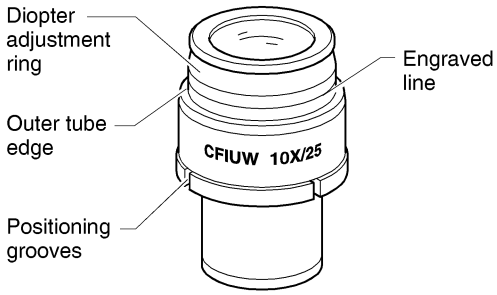
Trinocular eyepiece tube for erect image

▶ Vertical tube adapters

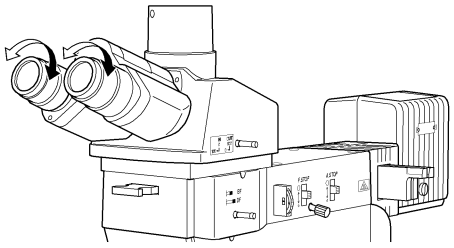
When mounting the photomicrographic equipment or TV camera to the vertical tube of the trinocular eyepiece tube, you must first attach the adapter (photomicrographic vertical tube adapter or direct C-mount; both sold separately). Insert the adapter into the vertical tube and fix it by the clamp screw with the hexagonal screwdriver.



4 Diopter Adjustment



Diopter adjustment standard position

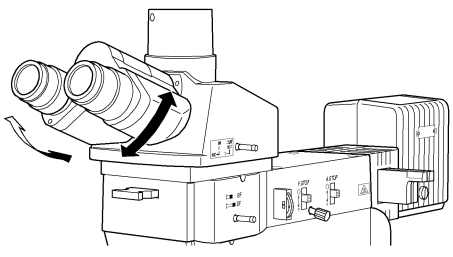


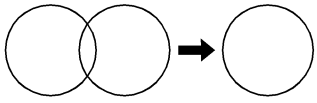
The diopter adjustment compensates for differences in eyesight between your left and right eyes. After the correct adjustment, you will find the observation with both eyes easier and the focus shift is reduced when switched to the different objectives. Be sure to adjust the diopter adjustment rings on both eyepieces.

1. Turn the diopter adjustment rings on both eyepieces to align their engraved lines with the edge of the outer tube of the eyepiece. (This is the standard position for the diopter adjustment.)
2. Focus on the sample with the 10x objective following the steps of the episcopic bright-field microscopy (→ p.12), or the diascopic bright-field microscopy (→ p.16).
3. Bring the 50x objective into the optical path and focus on the sample by turning the coarse/ fine focus knobs.
4. Bring the 5x or 10x objective in the optical path.
5. Focus on the sample by turning the diopter adjustment rings on the eyepieces (not the coarse/ fine focus knobs). Look through the left eyepiece with your left eye, and right eyepiece with your right eye, to focus on the sample with the diopter adjustment rings.
6. Repeat steps **3** to **5** for the 50x and 5x (or 10x) objectives till the image keeps its focus even though the objective magnification is changed.

5 Interpupillary Distance Adjustment

Before adjusting the interpupillary distance, perform the steps of the episcopic bright-field microscopy (→ p.12), or the diascopic bright-field microscopy (→ p.16) and focus on the image with the 10x objective.
Adjust the interpupillary distance so that the viewfield for each eye is at the same position on the sample. Doing so will make observation through the binocular eyepiece with both eyes easier.
The scale on binocular part is useful in order to memorize the interpupillary distance for the next time.



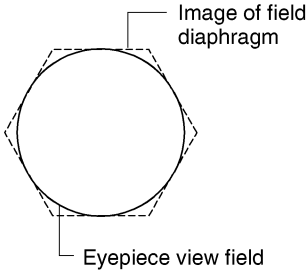


Merge the view fields into one.

6 Adjusting the Episcopic Illumination

Field diaphragm

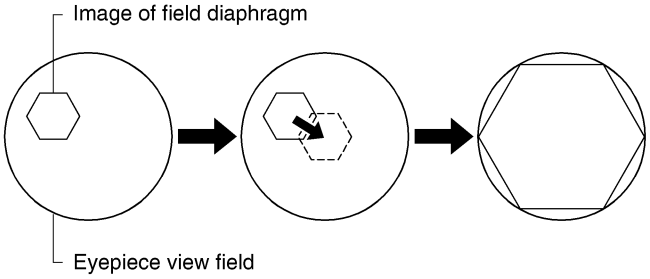
The field diaphragm restricts the illumination on the sample to the area being observed. Moving the field diaphragm open/close lever on the right side of the illuminator changes the size of the field diaphragm. Use this lever to adjust the size of the field diaphragm so that it just circumscribes (or inscribes) the view field. Illuminating the area larger than necessary can make stray light to enter the view field, creating flaring and reducing the contrast of the optical image.



It is especially important to properly adjust the size of the field diaphragm during photomicrography. Generally, the field diaphragm should be set to the area to be exposed on the film, that is, to an area slightly larger than the picture composition frame representing the photographed area.
Before adjusting the size of the field diaphragm, center the field diaphragm first.

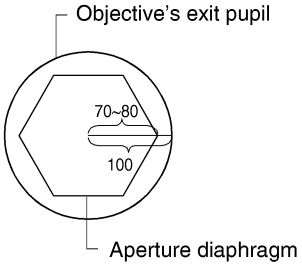
Centering the field diaphragm

1. Focus on the sample with the 10x objective following the steps of the episcopic bright-field microscopy (→ p.12) or the diascopic bright-field microscopy (→ p.16).
2. Lower the field diaphragm open/close lever to stop down the field diaphragm.
3. Turn the two field diaphragm centering screws to move the center of the field diaphragm image to the center of the view field.
4. Use the field diaphragm open/close lever and centering screws so that the field diaphragm image inscribes the view field.
5. During observation, raise the field diaphragm open/close lever so that the field diaphragm image circumscribes the view field.



Aperture diaphragm

The aperture diaphragm adjusts the numerical aperture of the illumination system which controls the resolution, contrast, depth of focus and brightness of the image. Generally, the aperture diaphragm should be adjusted to about 70 to 80% of the numerical aperture of the objective.
Moving the aperture diaphragm open/close lever on the right side of the illuminator changes the size of the aperture diaphragm. Use this lever to adjust the size of the aperture diaphragm while observing its image by taking off one eyepiece from the eyepiece tube and looking inside the open sleeve.
(There is no need to center the aperture diaphragm since it is already centered at the factory.)

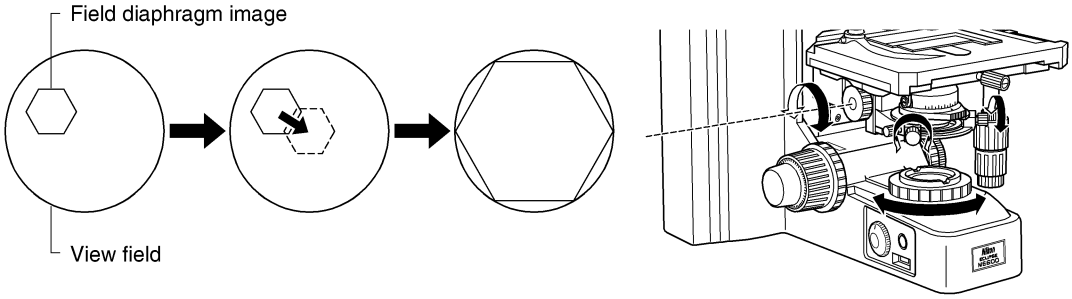


7 Adjusting the Diascopic Illumination (Centering the condenser and adjusting the field and aperture diaphragm.)

Focusing and centering the condenser

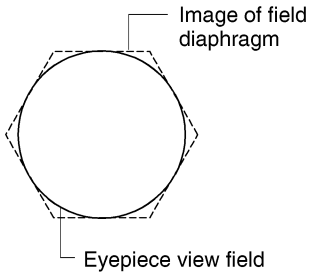
When using the microscope for the first time, or when you've changed the condenser, perform focusing and centering of the condenser so that the lights that pass through the condenser will focus on the correct position on the sample (on the optical axis).

1. Focus on the sample with the 10x objective following the steps of the diascopic bright-field microscopy (→ p.16)
2. Turn the field diaphragm ring to stop down the field diaphragm.
3. Turn the condenser focus knob to bring the field diaphragm image in focus on the sample surface.
4. Turn the two condenser centering screws to move the field diaphragm image to the center of the view field.
5. Bring the 50x objective in the optical path and focus on the sample with the fine focus knob.
6. Turn the condenser focus knob to bring the field diaphragm image in focus on the sample surface.
7. Turn both the field diaphragm ring and the condenser centering screws till the field diaphragm image inscribes the view field.
8. During observation, turn the field diaphragm ring so that the field diaphragm image circumscribes the view field.



Field diaphragm

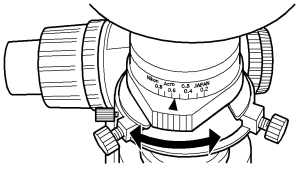
The field diaphragm restricts the illumination on the sample to the area being observed. Adjust the size of the field diaphragm so that it just circumscribes (or inscribes) the view field.
Illuminating the area larger than necessary can make stray light to enter the view field, creating flaring and reducing the contrast of the optical image.
It is especially important to properly adjust the size of the field diaphragm during photomicrography. Generally, the field diaphragm should be set to the area to be exposed on the film, that is, to an area slightly larger than the picture composition frame representing the photographed area.



Turning the field diaphragm ring on the microscope base will change the size of the field diaphragm. Use this ring to adjust the size of the field diaphragm so that it circumscribes the view field.
(Before adjusting the size of the field diaphragm, perform focusing and centering of the condenser first.)

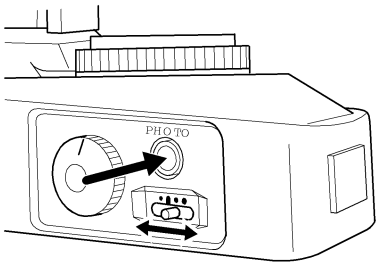
Condenser aperture diaphragm

The aperture diaphragm adjusts the numerical aperture of the illumination system which controls the resolution, contrast, depth of focus and brightness of the image. Turning the condenser aperture diaphragm ring on the condenser changes the size of the aperture diaphragm. Generally, the aperture diaphragm should be adjusted to about 70 to 80% of the numerical aperture of the objective.
Since the figures on the condenser aperture scale represents the numerical aperture, the size of the aperture diaphragm can be adjusted referring to this scale. (Before adjusting the size of the aperture diaphragm, perform focusing and centering of the condenser first.)



8 Auto-photo switch (for photomicrography)

The color temperature of the lamp varies according to the voltage. If the voltage is high, the color temperature of the lamp increases and the light becomes bluer. If the voltage is low, the color temperature of the lamp decreases and the light becomes redder. Therefore, to obtain the best color reproduction in color photomicrography, it is necessary for the lamp voltage to be kept constant. When using daylight-type color film, the standard setup is to use the color balancing filter (NCB11) and set the lamp voltage to 9 V.
The auto-photo switch is used to automatically set the standard lamp voltage (9 V). If the images on color film shot with the auto-photo switch on are reddish or bluish, finely adjust the voltage with the auto-photo voltage selection switch. The second position from the left of the 4-level slide switch is roughly 9 V. Sliding the switch forward increases the bluish tint of the light, while sliding the switch towards the back increases the reddish tint of the light.
Use commercially available color compensation filters (CC filters) if this adjustment does not resolve the problem.



9 Stage

▶ Adjusting the torque of the stage motion control knobs

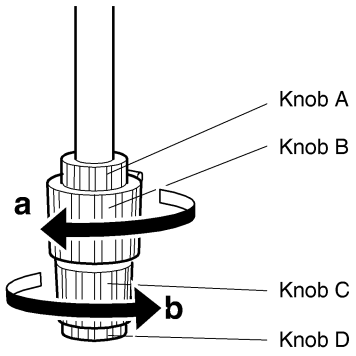
The torque of the X-axis and Y-axis stage motion control knobs can be adjusted. It is easy to adjust if the stage is moved to either limit of the stage motion stroke.

Adjusting the torque for Y-axis stage motion

To increase the torque of the Y-axis, turn Knob B in the direction of arrow "a" while holding Knob A; to reduce the torque, turn Knob B in the opposite direction.

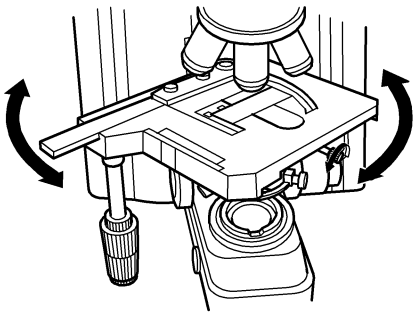
Adjusting the torque for X-axis stage motion

To increase the torque of the X-axis, turn Knob C in the direction of arrow "b" while holding Knob D; to reduce the torque, turn Knob C in the opposite direction. Insert your finger into the bottom hole of the Knob D to hold the Knob D.



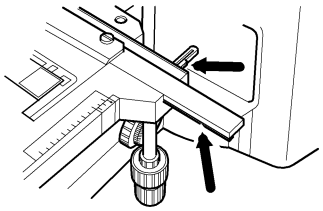
▶ Stage rotation

Loosen the stage rotation clamp screw to rotate the stage. Rotating the stage is useful for cropping images during photomicrography.



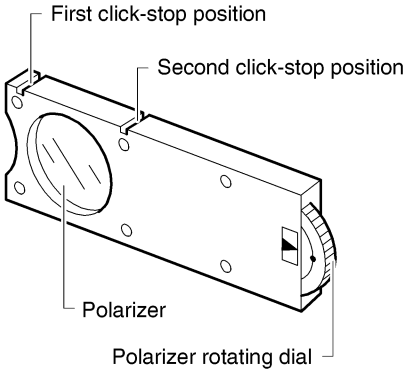
CAUTION

The stage rack is protruding according to the stage movement. When operating the focus knobs or condenser focus knob, be careful not to graze your hand against the protruding rack.



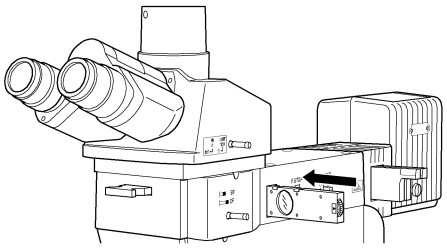
10 Polarizer Slider (for episcopic illumination)

For episcopic simplified polarization microscopy, use the polarizer slider together with the analyzer slider. For episcopic DIC microscopy, use the polarizer slider together with the analyzer and the DIC sliders.



▶ Placing the polarizer in the optical path

Remove the dummy slider at the right side of the illuminator. Insert the polarizer slider with its orientation indication facing toward the eyepieces. Pushing it in as far as the first click-stop position will insert the empty hole into the optical path. Pushing it in as far as the second click-stop position will insert the polarizer into the optical path.
Set the orientation of the polarizer by turning the polarizer rotating dial.

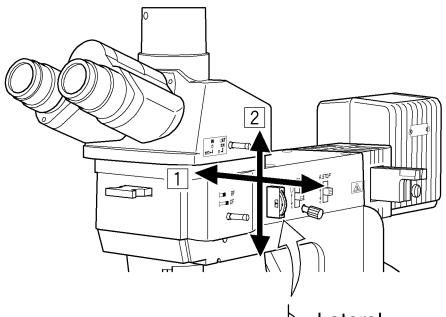


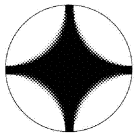
▶ Removing the polarizer out of the optical path

Pull out the slider to the first click-stop position to remove the polarizer out of the optical path. (The empty hole is now placed in the optical path.)

▶ Adjusting the orientation of the polarizer

Turning the polarizer rotating dial changes the orientation of the polarizer. Here is how to bring the polarizer and the analyzer into the crossed Nicols position.
Place the polarizer and the analyzer in the optical path. Place a sample with a flat and plain surface on the stage and set each part of the microscope for the episcopic simplified polarization microscopy.
Remove one eyepiece from the microscope and look inside the open sleeve. You can see the objective's exit pupil as a bright circle.
Turn the polarizer rotating dial in either direction till the dark cross appears in the viewfield. This is the crossed Nicols position. (Matching the marks on the polarizer rotation dial as [1] on the illustration will bring about the crossed Nicols position as well.)

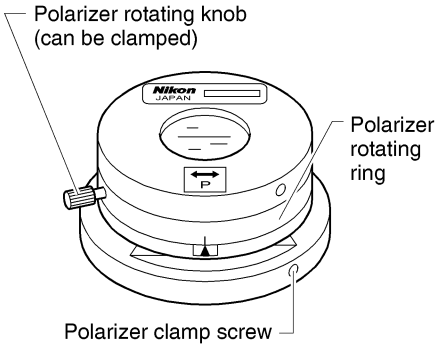




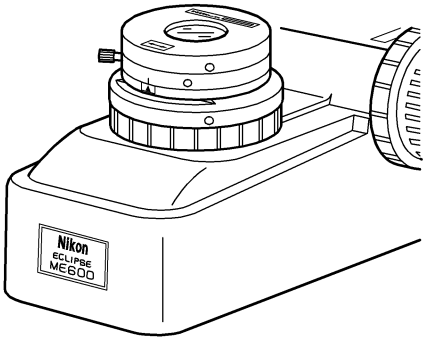
Dark cross

11 Dia-Polarizer

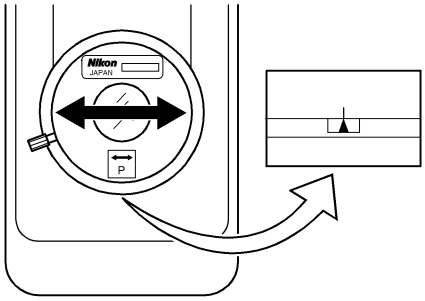
Use the Dia-polarizer together with the analyzer for the diascopic simplified polarization microscopy.



Attach the dia-polarizer on the field lens with ▲ index facing forward. Secure by tightening the polarizer clamp screw with a hexagonal screwdriver. Polarizer is in the optical path in this state.

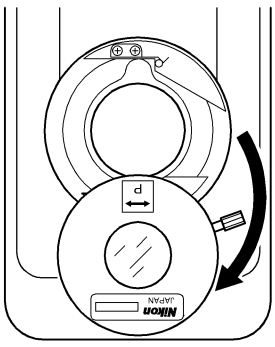


Set the orientation of the polarizer by turning the polarizer rotating ring using the rotating knob.



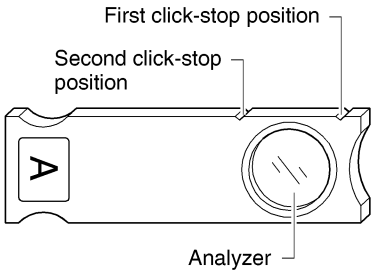
To remove the polarizer from the optical path:

To remove the polarizer from the optical path, turn the upper part of the polarizer unit clockwise.



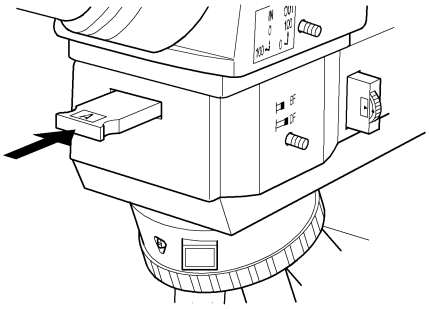
12 Analyzer Slider

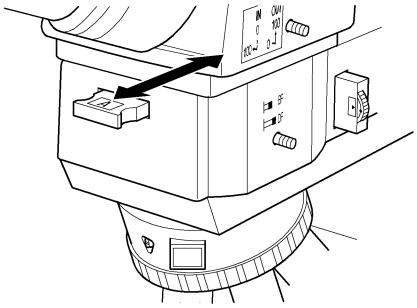
For simplified polarization microscopy, use the analyzer slider together with the polarizer slider or the dia-polarizer.
For DIC microscopy, use the analyzer slider together with the polarizer and the DIC slider.



▶ Placing the analyzer in the optical path

Remove the dummy slider at the front of the illuminator. Insert the analyzer slider with its indication facing up. Pushing it in as far as the first click-stop position will insert the empty hole into the optical path. Pushing it in as far as the second click-stop position will insert the analyzer into the optical path.
The orientation of the analyzer is as shown in the figure.





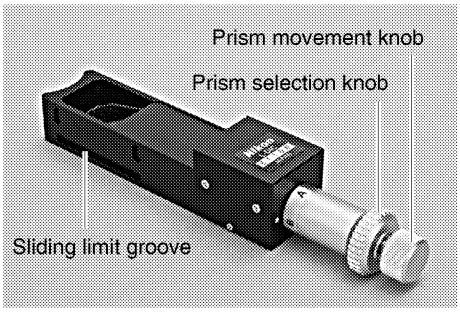
Orientation direction

▶ Removing the analyzer out of the optical path

Pull out the slider to the first click-stop position to remove the analyzer out of the optical path. (The empty hole is now placed in the optical path.)

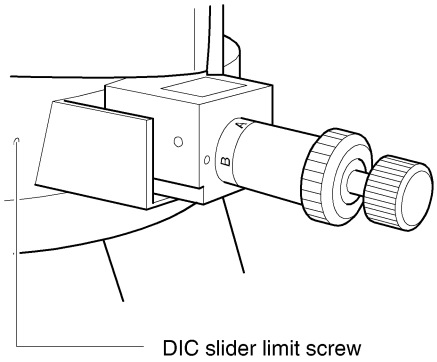
13 DIC Slider

Use the DIC slider together with the polarizer and the analyzer for DIC microscopy.
Attach the universal quintuple nosepiece first, and attach the DIC slider.



▶ Attaching (removing) the DIC slider

Use a hexagonal screwdriver to loosen the DIC slider limit screw on the revolving nosepiece.
Insert the DIC slider into the slot on the nosepiece and screw in the DIC slider limit screw.
When removing the DIC slider from the nosepiece, first fully loosen the DIC slider limit screw, and then pull out the slider.



▶ Placing the DIC prism in the optical path

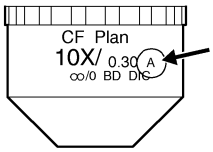
Push in the slider till the second click to place the DIC prism in the optical path.

▶ Removing the DIC prism out of the optical path

Pull out the slider to the first click to remove the DIC prism out of the optical path.

▶ Selecting the DIC prism position

The correct position of the prism selection knob is indicated on the objective barrel after the magnification and the objective N.A. indications. See the objective figure on the right. The letter “A” on the barrel indicates that the correct DIC prism position for this objective is “A”. Thus, when you use this objective, turn the prism selection knob on the DIC slider to match the letter “A” with the white circle.



▶ Selecting the interference color

Turn the prism movement knob to change the interference colors.

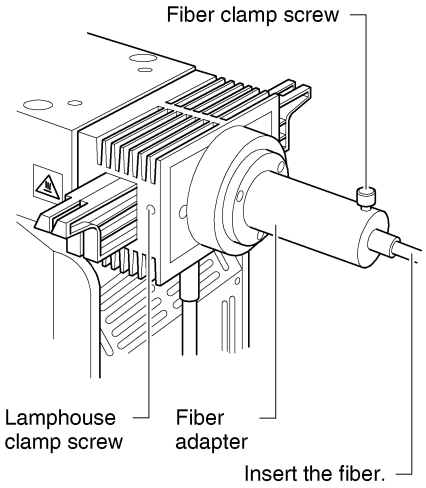
Interference color	Effects
Dark	Observation similar to the dark-field microscopy can be performed.
Gray	This color enables observation of the phase difference distribution for the whole sample.
Sensitive red-violet	Observation with the highest color contrast can be performed.

14 Fiber Adapter

Attaching the fiber adapter instead of the epi-lamphouse will enable the user to use other illuminators using the fiber.

▶ Attaching the fiber adapter

Loosen the lamphouse clamp screw to remove the lamphouse. Insert the fiber adapter instead and fix it by the same clamp screw.
Insert the fiber to the adapter to the limit and fix it by the fiber clamp screw.



15 Eye-Level Riser

The eye-level riser can be used to raise the eye point of the microscope according to the observer. The eye-level riser raises the eye point by 25 mm.

▶ Mounting the eye-level riser

Release the eyepiece tube clamp screw on the illuminator and fit the eye-level riser onto the circular mount on the illuminator. Tighten the clamp screw to fix. Mount the eyepiece tube on the eye-level riser. (p.36)

IV Assembly

Assemble each part of the microscope referring to the diagram on the next page.

WARNING

- Before assembling the microscope, be sure to read the ⚠WARNING and ⚠CAUTION at the beginning of this instruction manual and follow the instructions written therein.
- To prevent electrical shocks and fire, turn off the power switch when assembling the microscope.

CAUTION

- Be careful not to pinch your fingers or hands during the assembly.
- The scratches or fingerprints on the lens surface will adversely affect the microscope image. Be careful not to scratch or touch the lens surfaces.
- The microscope is a precision optical instrument. Handle it carefully and do not subject it to a strong physical shock. (The accuracy of the objective in particular may be adversely affected by even a weak physical shock.)

▶ Required tools

- Hexagonal screwdriver 2 mm × 1 (supplied with the microscope)
- Hexagonal wrench 3 mm × 1 (supplied with the microscope)

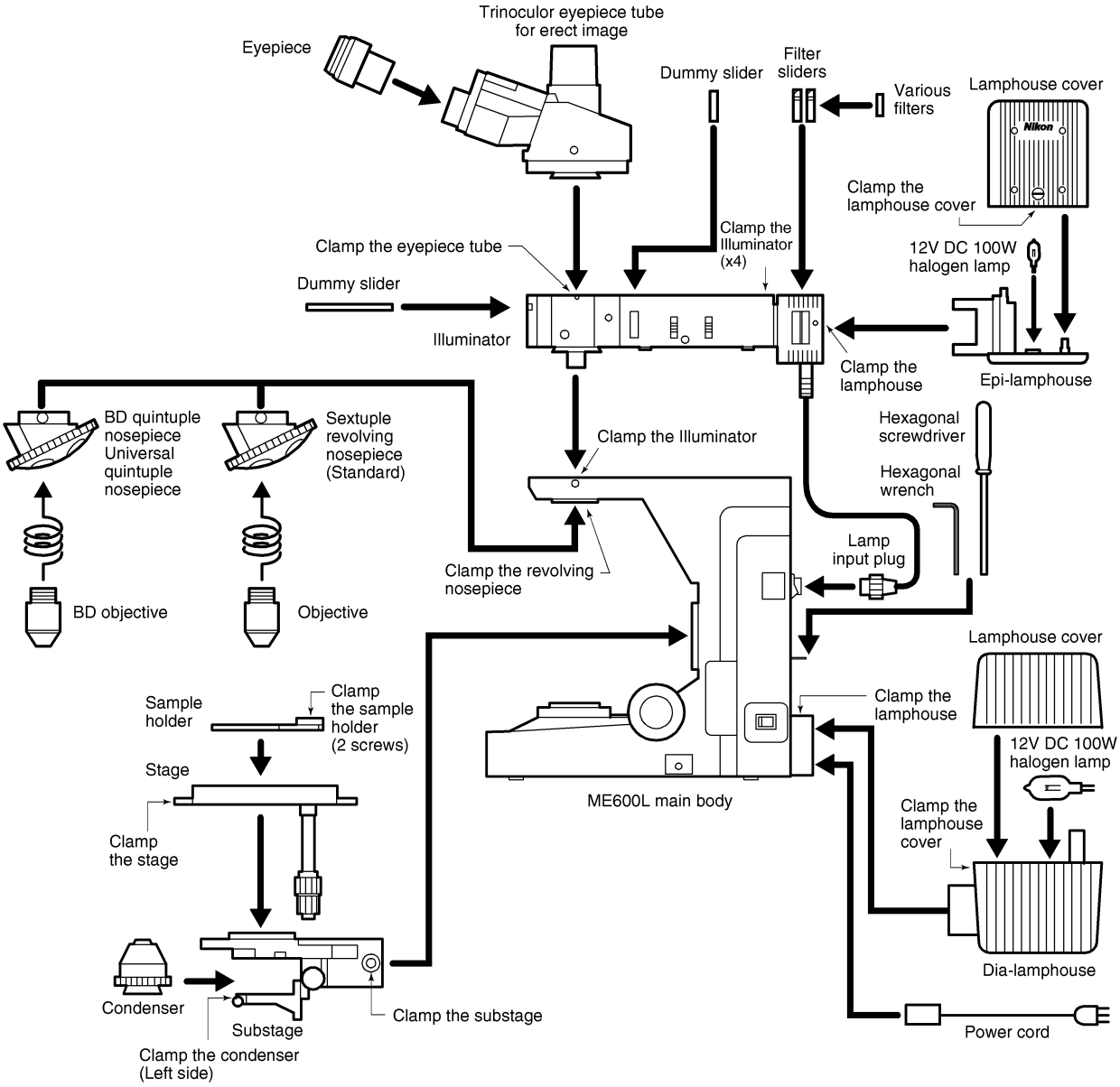
When not using, place these in the tool holder at the rear of the microscope base.

▶ Installation location

This product is a precision optical instrument. Using or storing the microscope under unsuitable conditions may damage it or may have an adverse effect on its accuracy. The following conditions should be kept in mind when selecting the installation location.

- Avoid a brightly lit location such as a room that receives direct sunlight, or directly under room lights. The image quality deteriorates if there is excessive ambient light.
- Choose a location that is free from dust or dirt.
- Choose a flat surface with little vibration.
- Choose a sturdy desk or table that is able to bear the weight of the instrument.
- Do not install the microscope in a warm, humid location (temperature higher than 40°C and humidity more than 60%).

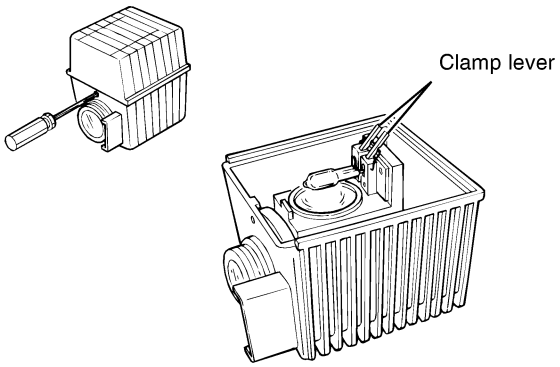
Assembling the ECLIPSE ME600L



1 Attaching the Lamp and the Lamphouse for Diascopic Illumination (Replacing the Lamp)

CAUTION

- To prevent electrical shock and damage to the microscope, always turn off the power switch (flip it to the "○" side) and unplug the power cord when connecting or disconnecting the lamphouse.
- To prevent burns, allow the lamp and lamphouse to cool before replacing it for at least 30 minutes after using.
- Use the Nikon C-LP HALOGEN 12V-100W model for the lamphouse.
- Use a 12 V-100 W LONGLIFE halogen lamp (OSRAM HLX 64623 or PHILIPS 7724).
- Do not touch the glass surface of the lamp with your bare hands. Doing so will cause fingerprints, grease, etc., to burn onto the lamp surface, reducing the illumination provided by the lamp. If you do get any fingerprints or dirt on the lamp, wipe it clean.
- After replacing the lamp, make sure that the lamphouse cover is attached securely. Never use the lamphouse while its cover is off.



1. Check that the power switch is off (i.e., that it is flipped to the "○" side).
2. If the lamphouse is mounted on the microscope, use a hexagonal screwdriver to loosen the lamphouse clamp screw, and then remove the lamphouse from the microscope (the screw is on the top of the lamphouse mount).
3. Use a hexagonal screwdriver to loosen the clamp screw on the front of the lamphouse and remove the lamphouse cover.
4. While pressing the lamp clamp lever, push the lamp into the socket pin holes as far as it will go. (Do not touch the glass portion of the lamp with your bare hands.)
5. Return the clamp lever to its original position. Make sure that the lamp is not tilted.
6. Attach the cover securely and tighten the clamp screw. Make sure that the cover is fixed in place and will not come off even when shaken by hand.
7. Connect the lamphouse to the microscope by inserting the lamphouse plug into the lamphouse socket.
8. Tighten the lamphouse clamp screw to secure the lamphouse in place.

2 Attaching the Illuminator

1. Illuminator main unit

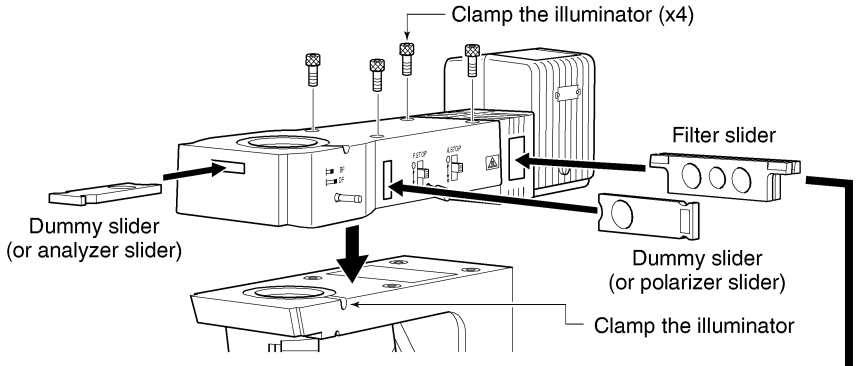
1 Release sufficiently the illuminator clamp screw on the right side of the microscope arm with the hexagonal screwdriver.
2 Mount the illuminator onto the microscope arm and fix it tightening the illuminator clamp screw.
3 Screw in the four hexagonal head bolts supplied with the illuminator to the screw holes on the top of the illuminator, and tighten the bolts using the hexagonal wrench.
4 Cover the bolt holes with the provided protective stickers.
5 Make sure that the microscope power switch is turned off (flipped on the ○ side), and connect the lamp input plug to the connector for connecting an illuminator on the rear of the microscope.

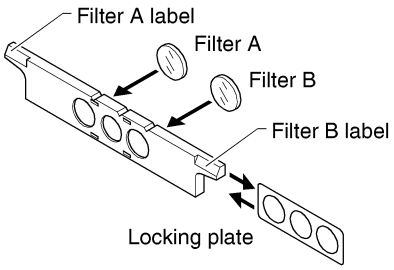
2. Sliders (dummy sliders, polarizer slider, and analyzer slider)

The sliders are to be inserted into the slots on the front and the right side of the illuminator. In case of the dummy sliders, slide them in till the limit (so that the empty hole will be set in the optical path).
In case of the polarizer and the analyzer slider, refer to page 26 to 28.

3. Filter slider and filter

1 Remove the filter sliders from the illuminator. (There are two sliders.)
2 Pull out and remove the locking plate.
3 Insert the desired filter. (Two filters can be set on a filter slider.)
4 Return the locking plate.
5 Affix the label at the same position as the filter.
6 Attach the filter slider to the illuminator.



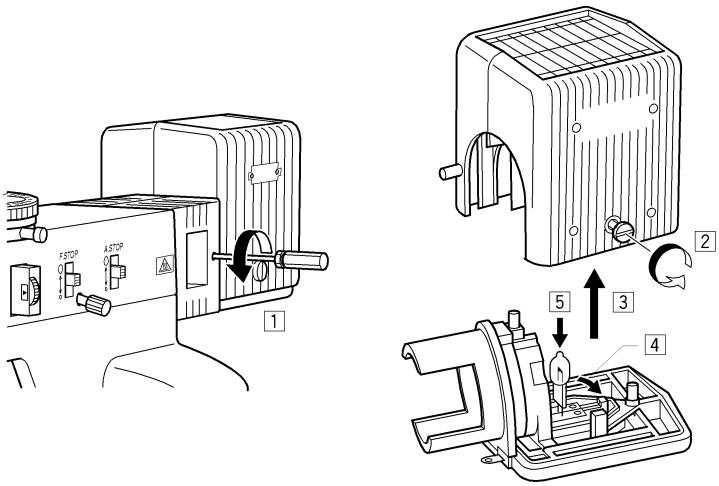


ND4, ND16 and NCB filters are already set on the sliders at the factory. You can set one filter to the remaining position.

3 Attaching the Lamp and the Lamphouse for Episcopic Illumination (Replacing the Lamp)

CAUTION

- To prevent electrical shock and damage to the microscope, always turn off the power switch (flip it to the ○ side) and unplug the power cord from the outlet before connecting or disconnecting the lamphouse.
- To prevent burn injury, allow the lamp and the lamphouse to cool for at least 30 minutes after turning off the power switch, before replacing the lamp.
- Use the "LHS-H100P-2 HALOGEN 12V100W" lamphouse made by Nikon.
- Use the 12V-100W LONGLIFE halogen lamp (OSRAM HLX 64623 or PHILIPS 7724).
- Do not touch the glass surface of the lamp with bare hands. Fingerprints or grease on the bulb surface will degrade the illuminating capacity of the lamp. Wipe clean the fingerprints or grease with a clean piece of cloth.
- Securely attach the lamphouse cover to the lamphouse after replacing the lamp. Never light the lamp while the lamphouse cover is open.



1 Turn off the power switch of the microscope (flip it to the ○ side).
2 Remove the lamphouse from the microscope if attached. (Use the 2 mm hexagonal screwdriver to loosen the lamphouse clamp screw on the right side of the microscope and remove the lamphouse.)
3 Remove the lamphouse cover by loosening the lamphouse cover clamp screw by a coin.
4 Press down the lamp clamp lever and insert a lamp to the socket to the limit. (Do not hold the glass surface by the bare hands. Use gloves.)
5 Slowly return the lamp clamp lever to its original position. Take care not to tilt the lamp at this time.
6 Securely attach the lamphouse cover and tighten the clamp screw.
7 Return the lamphouse to the microscope. Make sure that the plug on the lamphouse fits securely into the socket on the lamphouse mount.

4 Attaching the Eyepiece Tube

Fully loosen the eyepiece tube clamp screw with the hexagonal screwdriver. Fit the eyepiece tube on to the mount on the top of the illuminator and tighten the eyepiece tube clamp screw with the hexagonal screwdriver.

▶ When removing the eyepiece tube

Take hold of the eyepiece tube when loosening the eyepiece tube clamp screw since the eyepiece tube may drop suddenly.

▶ Note on using the ERGO eyepiece tube

Pulling out the binocular tubes till the limit, and fully closing down the aperture diaphragm will sometimes cause vignetting in the viewfield.

5 Attaching the Eyepieces

Attach the eyepieces of the same magnifications and of the same view field number for the left and the right eyes.
There are positioning pins on the eyepiece sleeve. Insert the eyepiece so that its positioning grooves match the pins.

6 Stage Assembly

1 Substage installation

Use a hexagonal wrench to loosen the clamp screw on the right side of the substage.
Fit the substage over the substage mount on the microscope and slide it down as far as it will go. Use a hexagonal wrench to tighten the substage clamp screw and secure the substage in place.

2 Stage installation

Loosen the stage rotation clamp screw. Place the stage on top of the substage and fit it in position so that it is level. Tighten the rotation clamp screw with the stage facing to the front.

Sample holder

When removing (or attaching) the sample holder, first remove the stage from the substage. Release two clamp screws of the sample holder to remove the sample holder. Securely clamp the screws when reinstalling the sample holder.

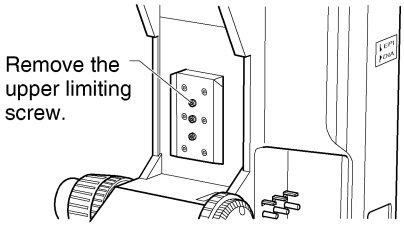
3 Condenser installation

Turn the condenser focus knob to lower the condenser holder as far as it will go.
Insert the condenser in the condenser holder. Tighten the clamp screw on the left side with the aperture scale on the condenser facing to the front.
Turn the condenser focus knob to raise the condenser as far as it will go.
Swing-out condenser or LWD condenser can be attached.

Observing a relatively thick sample

Lower the substage according to the following procedure.

1. Turn the coarse focus knob to lower the substage as far as it will go and remove the stage.
2. Loosen the substage clamp screw with a hexagonal wrench and remove the substage.
3. Remove the upper limiting screw with a hexagonal screwdriver. (Store the screw in a safe place to prevent its loss.)
4. Re-install the substage and stage in their original positions.



7 Assembling the Revolving Nosepiece

1. Fully loosen the revolving nosepiece clamp screw on the right side of the microscope arm with the hexagonal screwdriver.
2. Fit the revolving nosepiece into the revolving nosepiece mount on the microscope arm from the bottom and slide it toward the rear of the microscope as far as it will go.
3. Tighten the clamp screw to secure the revolving nosepiece.
4. When removing the revolving nosepiece, remove the sample and all the objectives, and lower the stage completely. Hold the revolving nosepiece in your hand so that it does not fall when you remove it.

8 Attaching the Objectives

1. Lower the stage to the limit.
2. Screw the objectives into the revolving nosepiece so that the magnification increases when the nosepiece is rotated in the clockwise direction when looking down on the nosepiece from above.
3. When removing the objectives, remove the sample, lower the stage completely, and hold the objective using both hands so that it does not fall when you remove it.

9 Connecting the Power Cord

WARNING Use only the supplied power cord. A damage or fire could result if you use the wrong power cord. Also note that the protection Class I equipment should be connected to a protective earth terminal. The specifications of the supplied power cord are shown below.

- **For 100-120V area:**
  UL Listed, detachable power cord set, 3 conductor grounding Type SVT, No. 18 AWG, 3 m long maximum, rated at 125V AC minimum.
- **For 220-240V area:**
  Approved according to EU/EN standards, 3 conductor grounding Type H05VV-F, 3 m long maximum, rated at 250V AC minimum.

Turn off the power switch of the microscope (flip it to the ○ side).
Insert the socket into the AC IN connector at the rear of the microscope, and then firmly insert the plug into the AC outlet.

10 Installing Separately Sold Accessories

Install photomicrographic equipment and other separately sold accessories by referring to the system diagram or the instruction manual for each accessory.

V Troubleshooting

Improper use of the microscope may adversely affect the performance even if it is not damaged. If any of the problems listed in the table below occur, follow the countermeasures.

1 Viewing and Control Systems

Problems		Causes	Countermeasures
Vignetting or uneven brightness in the view field; the entire view field cannot be seen.		The lamp is not installed properly.	Install the lamp securely. (p.33 and 35)
		The optical path selection lever on the eyepiece tube is in an intermediate position.	Set the optical path selection lever to 100% of the binocular eyepiece. (p.20)
		The optical path selection lever on the eyepiece tube is not set to 100% of the binocular eyepiece.	
		The filters are not switched fully into position.	Switch the filters correctly. (p.18)
		The field diaphragm is stopped down too far.	Open the diaphragm to a suitable size. (p.22 and 23)
		The revolving nosepiece has not been installed properly.	Install the revolving nosepiece correctly. (p.37)
		The revolving nosepiece has not been rotated until it has clicked into place. (The objective is not in the optical path.)	Turn the revolving nosepiece until it clicks into place. (Place the objective in the optical path.)
	Epi-Microscopy	The dummy slider, DIC slider, polarizer or analyzer in intermediate position.	Pull out or push in to the limit. (p.26 and 28)
		Bright/Dark field illumination selection lever is in an intermediate position.	Pull out or push in to the limit.
	Dia-Microscopy	The diffuser is in an intermediate position.	Insert or remove correctly. (p.18)
		The condenser is too low.	Position the condenser so that the image of the field diaphragm forms properly on the sample. (p.23)
		The condenser is not centered.	Center the condenser. (p.23)
		The condenser is not installed properly.	Install the condenser correctly. (p.37)
Dirt or dust in the view field.		The aperture diaphragm is stopped down too far.	Open the diaphragm to a suitable size. (p.23 and 24)
		There is dirt or dust on the lens, eyepiece, filter or sample.	Clean the components. (p.43)
	Dia-Microscopy	There is dirt or dust on the top of the condenser.	Clean the condenser. (p.43)
		The condenser is too low.	Position the condenser so that the image of the field diaphragm forms properly on the sample. (p.23)

Problems		Causes	Countermeasures
Viewing is poor (too much or too little contrast, poor resolution).		There is dirt or dust on the lens, eyepiece, filter or sample.	Clean the components. (p.43)
		The specified objective is not being used.	Use the specified objective.
		The aperture diaphragm is stopped down too far.	Open the diaphragm to a suitable size. (p.23 and 24)
	Dia-Microscopy	The condenser is too low.	Position the condenser so that the image of the field diaphragm forms properly on the sample. (p.23)
Uneven focus.		The revolving nosepiece has not been installed properly.	Install the revolving nosepiece correctly. (p.37)
		The revolving nosepiece has not been rotated until it clicks into place.	Turn the revolving nosepiece until it clicks into place.
		The specimen is not secured in place on the stage.	Install the sample properly in the sample holder on the stage.
		The stage has been installed slanted.	Install the stage correctly. (p.36)
Image flows.		The revolving nosepiece has not been installed properly.	Install the revolving nosepiece correctly. (p.37)
		The revolving nosepiece has not been rotated until it clicks into place.	Turn the revolving nosepiece until it clicks into place.
		The sample is not secured in place on the stage.	Install the specimen properly in the sample holder on the stage.
		The stage has been installed slanted.	Install the stage correctly. (p.36)
	Dia-Microscopy	The condenser is not centered.	Center the condenser. (p.23)
The image is yellowish.		An NCB11 filter is not being used.	Use the NCB11 filter. (p.18)
		The lamp voltage is too low.	Brighten the viewfield with brightness control dial, and adjust with ND filters.
The image is too bright.		The lamp voltage is too high.	Adjust the brightness with the brightness control dial. Or, use ND filters.
Inadequate illumination (also check the electrical system problems and countermeasures).		The lamp voltage is too low.	Adjust the brightness with the brightness control dial.
		ND filters in the optical path.	Remove them from the optical path.
		The aperture diaphragm is stopped down too far.	Open the diaphragm to a suitable size. (p.23 and 24)
		Polarizer or analyzer in the optical path during bright-field microscopy.	Remove them.
	Dia-Microscopy	The condenser is too low.	Position the condenser so that the image of the field diaphragm forms properly on the sample. (p.23)

Problems	Causes	Countermeasures
The objective strikes the sample when changing from a low-power objective to a high-power objective. The difference in focus is large when the objective is changed.	The diopter setting has not been adjusted.	Adjust the diopter setting. (p.21)
	The eyepiece is not installed properly.	Insert the eyepiece securely aligning the positioning grooves with the pins on the eyepiece sleeve. (p.36)
The sample does not move smoothly.	The sample holder is not fixed securely in place on the stage.	Secure the sample holder in place. (p.36)
When viewing through the binocular eyepiece, the image does not merge into a single image.	The interpupillary distance has not been adjusted.	Adjust the interpupillary distance. (p.21)
	The diopter setting has not been adjusted.	Adjust the diopter setting. (p.21)
Eye strain develops while viewing.	The interpupillary distance has not been adjusted.	Adjust the interpupillary distance. (p.21)
	The diopter setting has not been adjusted.	Adjust the diopter setting. (p.21)
	The brightness level is not suitable.	Adjust the brightness through the brightness control dial or the ND filter combination. (p.18)
	Eyepieces of different field nos. are used.	Two eyepieces should have the same field no.
Rotation of the coarse focus knob is tight.	The torque of the coarse torque adjustment ring is tightened excessively.	Release the torque properly. (p.19)
	The refocusing ring locks the upper limit of the coarse focus motion.	Release the ring. (p.19)
Stage lowers by its weight and the focus blurs while observing the image.	The torque of the coarse torque adjustment ring is released excessively.	Tighten the torque properly. (p.19)
Coarse focus knob can't be rotated.	Refocusing ring locks the coarse focus motion at the lower limit.	Release the ring. (p.19)

2 Episcopic Differential Interference Contrast Microscopy

Problems	Causes	Countermeasures
Interference contrast color can't be obtained.	Analyzer or polarizer is not in the optical path.	Insert it into the optical path. (p.26 to 28)
	DIC prism is not in the optical path.	Insert it into the optical path. (p.29)
Uneven color or wrong contrast of interference color	The specified objective is not being used.	Use the objective marked "LU Plan", "LU Plan Apo".
	Setting of the DIC prism is not correct for the objective being used.	Set it correctly. (p.29)

3 Electrical System

Problems	Causes	Countermeasures
The lamp does not light when the power switch is turned on.	The power is not being supplied.	Plug the power cord into an outlet. (p.38)
	The power cord is not connected to the microscope.	Connect the power cord. (p.38)
	Lamp input plug of the illuminator is not connected.	Connect it. (p.34)
	The lamp has not been installed.	Install the lamp. (p.33 and 35)
	The lamp is burned out.	Replace the lamp. (p.33 and 35)
	The position of the Epi/Dia-illumination changeover switch is not correct.	Change it correctly.
	The specified lamp is not being used.	Use the specified lamp (refer to the electrical specifications on p.44).
The lamp flickers; the brightness is unstable.	The lamp is near the end of its life.	Replace the lamp. (p.33 and 35)
	The power cord or the lamp input plug of the illuminator is not connected securely.	Secure the connection. (p.34 and 38)
	The lamp is not plugged into its socket securely.	Insert the lamp securely into its socket. (p.33 and 35)
	The lamphouse is not connected to the microscope securely.	Connect the lamphouse securely. (p.33 and 35)
Brightness adjuster can't change the brightness.	Auto-photo switch is ON.	Turn it OFF.

VI Care and Maintenance

1 Cleaning the Lens

Do not let dust, fingerprints, etc., get on the lenses. Dirt on the lenses, filters, etc., will adversely affect the view of the image. If any of the lenses get dirty, clean them as described below.

- Either brush away dust with a soft brush, or else wipe it away gently with gauze.
- Only if there are fingerprints or grease on a lens, dampen a piece of soft, clean cotton cloth, lens tissue, or gauze with absolute alcohol (ethyl or methyl alcohol) and wipe.
- Absolute alcohol is highly flammable. Be careful when handling it, when around open flames, when turning the power switch on / off, etc.
- Follow the instructions provided by the manufacturer when using absolute alcohol.

2 Cleaning the Painted, Plastic and Printed Parts

Do not use organic solvents (such as alcohol, ether, or paint thinner) on painted, plastic or printed parts. Doing so could result in discoloration or in the peeling of printed characters. If the dirt is hard to remove, dampen a piece of gauze with the neutral detergent solvent and wipe gently.

3 Storage

Store the microscope in a dry place where mold is not likely to form.
Store the objectives and eyepieces in a desiccator or similar container with a drying agent.
Put the vinyl cover over the microscope to protect it from dust.
Before putting on the vinyl cover, turn off the power switch on the microscope (flip it to the ○ side) and wait until the lamphouse is cool.

4 Regular Inspections

Regular inspections of this microscope are recommended in order to maintain peak performance. Contact your nearest Nikon representative for details about regular inspections.

VII Electrical Specifications

Input rating	Input voltage: 100 to 240 V AC ±10%, 50/60 Hz Rated current: 2.4 A or less Internal fuse rating: 250 V, T4A
Lamp rating	12 V DC, 100 W halogen lamp (OSRAM HLX 64623 or PHILIPS 7724)
Power cord	Use only the supplied power cord. Using the wrong power cord could result in damage or fire. (The specification of the supplied power cord is written below.) Also note that the protection Class I equipment should be connected to PE (protective earth) terminal. ● **For 100 to 120V area:** UL Listed, detachable power cord set, 3 conductor grounding Type SVT, No. 18 AWG, 3 m long maximum, rated at 125V AC minimum. ● **For 220V to 240V area:** Approved according to EU/EN standards, 3 conductor grounding Type H05VV-F, 3 m long maximum, rated at 250V AC minimum.
Protection class	Class 1
Operating environmental conditions	Temperature: 0°C to +40°C Humidity: 85% RH max., non-condensing Altitude: 2000 m max. Pollution: Degree 2 Installation category (Overvoltage category): Category II Indoor use only
Conforming standards	• This product satisfies the UL standards. • This product satisfies FCC 15B Class A. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. This class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations. Cet appareil numérique de la Class A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada. • This product satisfies the EU Low Voltage Directive. • This product satisfies the EU EMC Directive. 

NIKON CORPORATION／株式会社 ニコン

2-3, Marunouchi 3-chome, Chiyoda-ku, Tokyo 100-8331, Japan
〒100-8331　東京都千代田区丸ノ内 3-2-3（富士ビル）

NIKON INSTECH CO., LTD.／株式会社 ニコン インステック

Parale-Mitsui Bldg., 8, Higashida-cho, Kawasaki-ku, Kawasaki, Kanagawa, 210-0005 Japan　TEL +81-44-223-2161　FAX +81-44-223-2182

本社	210-0005	川崎市川崎区東田町 8 番地 パレール三井ビルディング 13 階	電話（044）223-2160	FAX（044）223-2180
札幌営業所	001-0011	札幌市北区北 11 条西 4-1-40（すばるビル）	電話（011）746-9381	FAX（011）746-9398
名古屋営業所	460-0002	名古屋市中区丸の内 3-20-17（中外東京海上ビル）	電話（052）954-0165	FAX（052）954-0166

●系列会社●

株式会社コーガク【大阪（本社）、京都、金沢】

本社	532-0003	大阪市淀川区宮原 3-3-31 上村ニッセイビル 16 階	電話（06）6394-8801
京都支社	606-8221	京都市左京区田中西樋ノ口町 80	電話（075）781-1170

株式会社大熊商会【福岡（本社）、北九州、長崎、大分、熊本、宮崎、国分、鹿児島】

本社	813-0034	福岡市東区多の津 1-4-1	電話（092）611-1111

NIKON INSTRUMENTS INC.

1300 Walt Whitman Road, Melville, NY 11747-3064, U.S.A.
Tel: +1-631-547-8500　Fax: +1-631-547-0306

NIKON INSTRUMENTS EUROPE B.V.

Schipholweg 321, P.O. Box 222, 1170 AE Badhoevedorp, The Netherlands
Tel: +31-20-44-96-222　Fax: +31-20-44-96-298