E600W/E600/E400
Teaching Head/Multi Teaching Head
Instructions

Thank you for purchasing this Nikon product.
This instruction manual is written for users of the Nikon Microscope ECLIPSE E600W/E600/E400 Teaching Head/Multi Teaching Head.
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 dealer or nearest Nikon representative.
- Some products introduced in this manual may not be included in the set you've purchased.
- Be sure to read this together with the respective instruction manuals for the microscope and other instruments being used.

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 this 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.

WARNING

1. **Intended product use**
   This product should only be used for microscopic observation. Do not use it for any other purpose.
2. **Do not disassemble**
   Disassembling may cause malfunction and/or electrical shock. Do not disassemble any parts other than those mentioned in this manual. If you notice any malfunction, notify your dealer or nearest Nikon representative.
3. **Read all instruction manuals thoroughly**
   To ensure safety, thoroughly study this instruction manual as well as the instruction manuals for all other units being used. Adhere strictly to the warnings and cautions given at the beginning of these instruction manuals.
   When using this product in combination with an Epi-fluorescence attachment, be sure to read its instructions. Care is required when handling the mercury lamp used as the light source for the Epi-fluorescence attachment.

CAUTION

1. **Turn the power off when assembling the system, connecting or disconnecting cables and replacing the lamp**
   To prevent electrical shock and damage, be sure to switch off the power switches on the microscope, power supply, etc., and to unplug the power cord from the wall outlet before connecting or disconnecting cables and replacing the lamp.
2. **Do not wet the instrument**
   If the microscope or the power supply gets wet, a short circuit may result that could damage the equipment or make it extremely hot. If you accidentally spill a liquid on the instrument, immediately turn off the power switch and unplug the power cord. Then use a dry cloth to wipe away the moisture. If any liquid gets inside the instrument, do not use it; instead, notify your dealer or nearest Nikon representative.
3. **Precautions for assembly**
   Be careful not to pinch your hands or fingers when assembling the instrument.

Notes on Handling the Instrument

1. Handle the instrument with care

This product is a precision optical instrument. Always handle it with care and do not subject it to strong physical shock.

2. Lense cleaning

Do not let dust, fingerprints, etc. get on the lenses. Dirt on the lenses, mirrors, etc. will adversely affect the view of the image. If any of the lenses gets dirty, clean it as described in section “V. Care and Maintenance.”

3. Installation location

The following conditions should be kept in mind when selecting the location for installation:

- Install the instrument on a surface with little vibration.
- Install the instrument in a location which is not exposed to direct sunlight.
- Install the instrument in a location which is free from dust.
- Do not install the instrument in a warm and humid location (where the temperature is above 40°C or the humidity is above 80%). In such a location, mold or condensation may form on the lenses or filters.

4. Use of accessories

This attachment splits the light to allow several observers to view the same image simultaneously. Due to the working principles of the attachment, the brightness of the image is reduced as the number of observers is increased. The light source produces sufficient light intensity to allow normal observation of an image with adequate brightness by adjusting the ND filters inserted in the microscope main unit (main observer’s section).
However, depending on the accessories being used, adequate brightness may not always be obtained. Please consult your dealer or nearest Nikon representative before using accessories.

5. Pointer and AC adapter

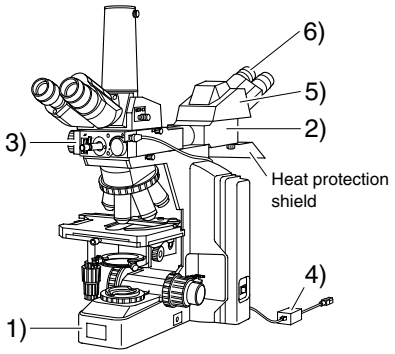
The AC adapter to be connected to the pointer should always be the one provided with the pointer. The use of any other type of AC adapter could result in accidents or damage to the instruments.

Contents

I Components of the System

If the system has not yet been assembled, see section “III. Assembly” first.
For details on assembling and handling the microscope, see the instruction manual supplied with the microscope.
This attachment can be mounted on the ECLIPSE E600W, E600 or E400 microscope. Note that the illustrations in this manual shows the ECLIPSE E600 microscope for convenience. (The microscopes ECLIPSE E800 and E1000 only allow mounting of the dual-viewing (side-by-side) attachment. The inverted microscopes TE300 and TE200 only allow mounting of the dual-viewing (side by side), the triple-viewing and the multi-viewing (for 5 persons) attachment. Separately available components are required for mounting on these microscopes. For details, see P.12.)
Depending on the type of set you have purchased, some of the following components may not be included.

Dual-viewing (face-to-face)

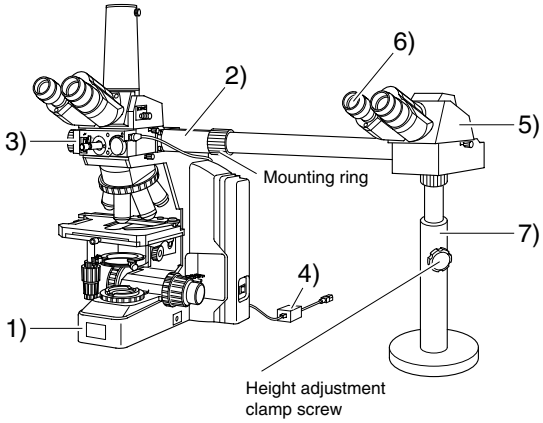


This model allows the main observer and the secondary observer to be positioned face-to-face during observation.

Components

1) Microscope
2) Teaching head F-F
3) Pointer
4) AC adapter
5) Eyepiece tube for secondary observer
6) Eyepieces for secondary observer

Dual-viewing (side-by-side)

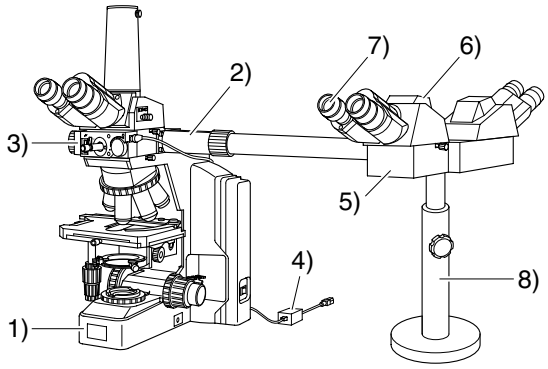


This model allows the main observer and the secondary observer to be positioned side-by-side during observation.
This model can also be mounted on the microscopes ECLIPSE E800, E1000 and the inverted microscopes TE300 and TE200 with the separately available components. (Please refer to P.12 for details.)
When a pointer is going be used, assemble the system so that the secondary observer will be positioned on the right. If reversed, the pointer control section will be at the rear of the microscope.

Components

1) Microscope
2) Teaching head S-S
3) Pointer
4) AC adapter
5) Eyepiece tube for secondary observer
6) Eyepieces for secondary observer
7) Support stand

Triple-viewing

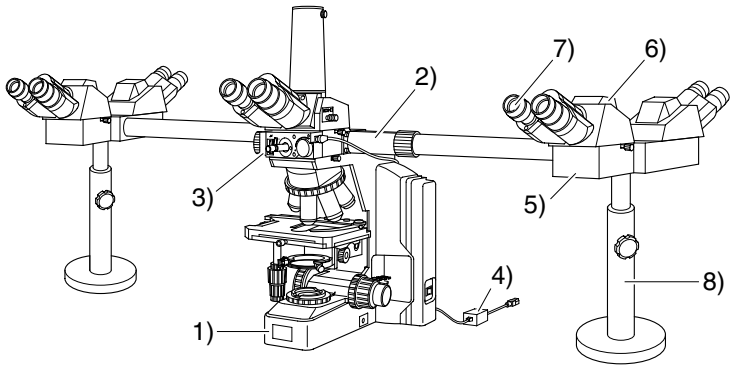


This model allows two secondary observers to be positioned face-to-face on either the left or right side of the main observer during the observation. This model can also be mounted on the inverted microscopes TE300 and TE200 with the separately available components. (Please refer to P.13 for details.)

Components

1) Microscope
2) MTH main splitter
3) Pointer
4) AC adapter
5) MTH relay unit
6) Eyepiece tube for secondary observer (× 2)
7) Eyepieces for secondary observer (× 2 sets)
8) Support stand

Multi-viewing for 5 persons

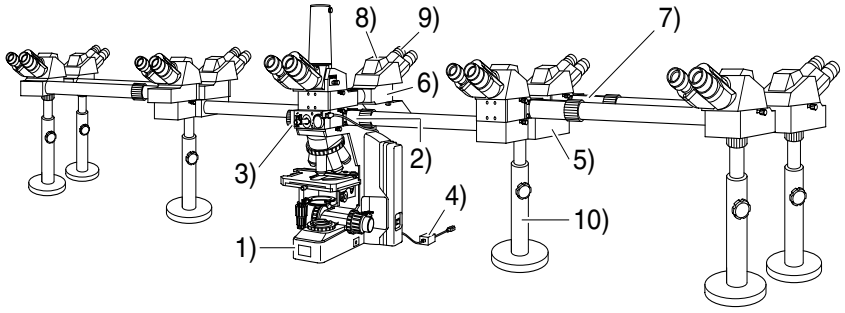


This model allows two secondary observers to be positioned face-to-face on both sides of the main observer during observation.
This model can also be mounted on the inverted microscopes TE300 and TE200 with the separately available components. (Please refer to P.14 for details.)

Components

1) Microscope
2) MTH main splitter
3) Pointer
4) AC adapter
5) MTH relay unit (× 2)
6) Eyepiece tube for secondary observer (× 4)
7) Eyepieces for secondary observer (× 4 sets)
8) Support stand (× 2)

Multi-viewing for 10 persons



Components

1) Microscope
2) MTH main splitter
3) Pointer
4) AC adapter
5) MTH relay unit (× 2)
6) Teaching head F-F
7) Teaching head S-S (× 4)
8) Eyepiece tube for secondary observer (× 9)
9) Eyepieces for secondary observer (× 9 sets)
10) Support stand (× 6)

II Microscopy

If the system has not yet been assembled, see section “III. Assembly” first.
For details on assembling and handling the microscope, see the instruction manual supplied with the microscope.
Depending on the type of set you have purchased, some of the components described below may not be included.

1 Adjust the microscope correctly.

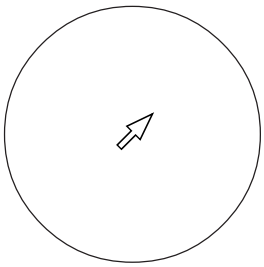
The secondary observer will view the same image as the main observer. If the main observer does not adjust the microscope correctly, the secondary observer will not be able to view a correct image. Also when the main observer did not perform the diopter adjustment, the secondary observer is likely to have his image out-focused each time the main observer changes the objective magnification. Be sure to perform the diopter adjustment referring to the instruction manual supplied with the microscope.

2 Adjust the diopter setting at the secondary observer’s position as well.

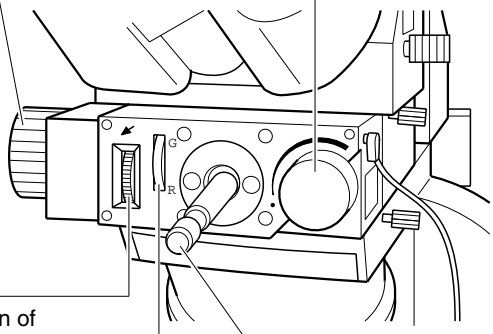
After the main observer has adjusted the microscope correctly, the secondary observer should bring the image into focus with the diopter adjustment rings. Set the dioptor adjustment rings for both the left and right eyes.

3 Method for simple diopter adjustment

When a pointer is attached to the system, turn the respective diopter adjustment rings on the left and right eyepieces to bring the arrow into focus. It is needed to change the arrow color to green, and to move the arrow to near the center of view field in advance. This completes diopter adjustment.



4 Using the pointer



Lamphouse cover

Allow the lamp to cool before replacement (p.16).
Before replacing the lamp, turn the arrow brightness control counterclockwise until it clicks to turn off the arrow and unplug the AC adapter plug from the wall outlet.

Arrow brightness control (also functions as the ON/OFF switch)

Turn the control clockwise to increase arrow brightness. Turn it counterclockwise until it clicks to turn OFF the power and to make the arrow disappear.

Arrow rotation dial

Use this to change the direction of the arrow.

Arrow color selector dial

Turning the dial to the "G" position changes the color to green, and turning it to the R position changes it to orange. (Turn the dial as far as it will go.)

Arrow control stick

Use this to move the arrow.

III Assembly

The assembly procedure for the system is shown below. Assemble it according to the numbers indicated in the illustrations.
For details on assembly of the microscope and other components being used, see the respective instruction manuals.
Be sure not to scratch or leave fingerprints on lenses and filters when assembling them, as this will adversely affect the image quality.
For details on the installation location, see the section "Notes on Handling the Instrument" at the beginning of this instruction manual.

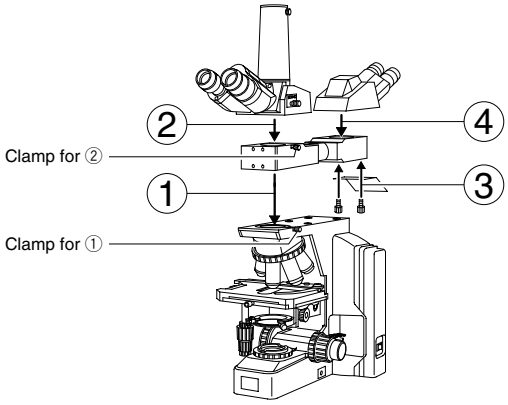
WARNING

Before using this attachment, be sure to read the "⚠ WARNING", "⚠ CAUTION" and "Notes on Handling the Instrument" sections at the beginning of this instruction manual. Adhere strictly to the WARNING and CAUTION instructions.
Be sure to also read the instruction manuals for all other equipment (microscope, etc.) being used and adhere strictly to the warning and caution instructions. In particular, when the attachment is used in combination with an Epi-fluorescence attachment, be sure to read the instructions provided with the Epi-fluorescence attachment. Care is required when handling the mercury lamp used as the light source for the Epi-fluorescence attachment.
To prevent electrical shock, fire and accidents, always turn OFF the power switch on the microscope, power supply, etc., and unplug the power cord from the wall outlet before assembly.

Tools needed

- One hexagonal screwdriver (provided with the microscope) 1.3 mm 
  (When a pointer is to be attached, you also need)
- One hexagonal wrench (provided with the pointer) 3 mm 

1 Assembly for the dual-viewing (face-to-face) model



2 Assembly for the dual-viewing (side-to-side) model

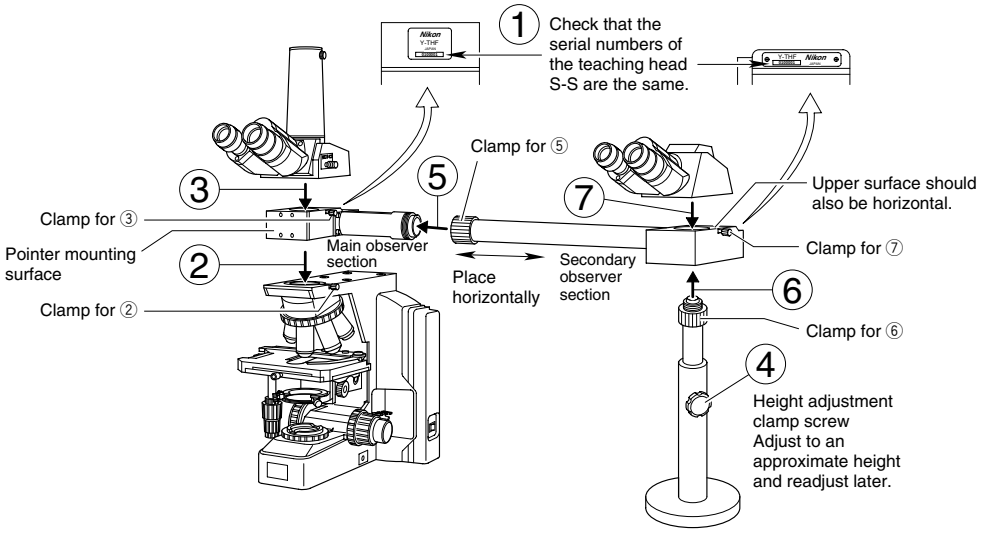
1 Check that the serial numbers on the two components (main observer section and secondary observer section) of the teaching head S-S are identical. (If the numbers are different, observation will be adversely affected. In this case, please contact your dealer or nearest Nikon representative.)

2 Adjust the height of the support stand so that the main observer section and the secondary observer section are horizontal. This step is facilitated by first adjusting the support stand to an approximate height before attaching the stand.

3 When a pointer is going to be used, assemble the system so that the secondary observer will be positioned on the right. If reversed, the pointer control section will be at the rear of the microscope.

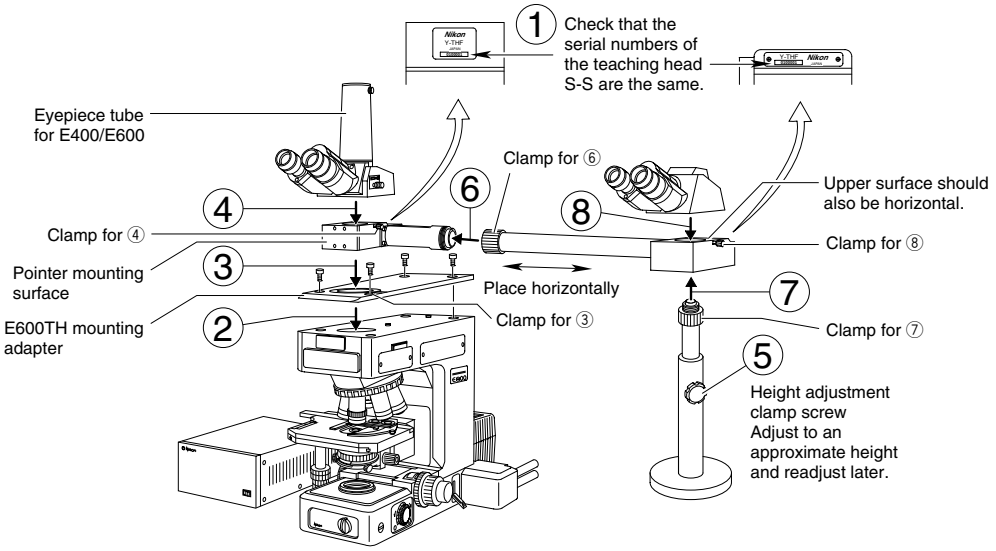
4 When mounting the attachment on the microscopes ECLIPSE E800 and E1000, or on the inverted microscopes ECLIPSE TE300 and TE200, separately available components are required.

Mounting on the ECLIPSE E400, E600 or E600W



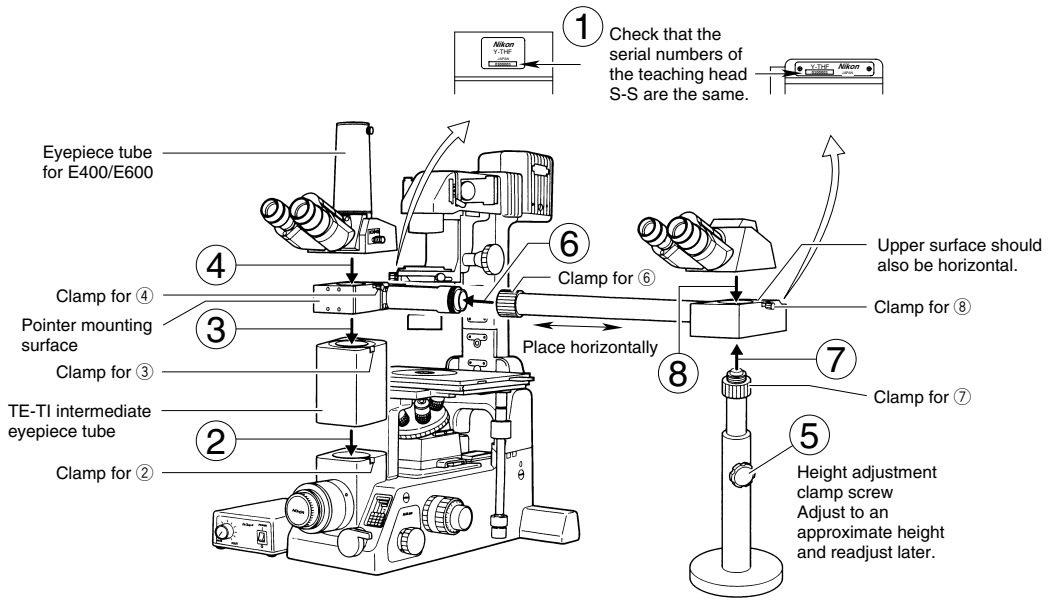
Mounting on the ECLIPSE E800 or E1000

(The E600TH mounting adapter and E400/600 eyepiece tube are required.)



Mounting on the ECLIPSE TE300 or TE200

(The TE-TI intermediate eyepiece tube and E400/600 eyepiece tube are required.)



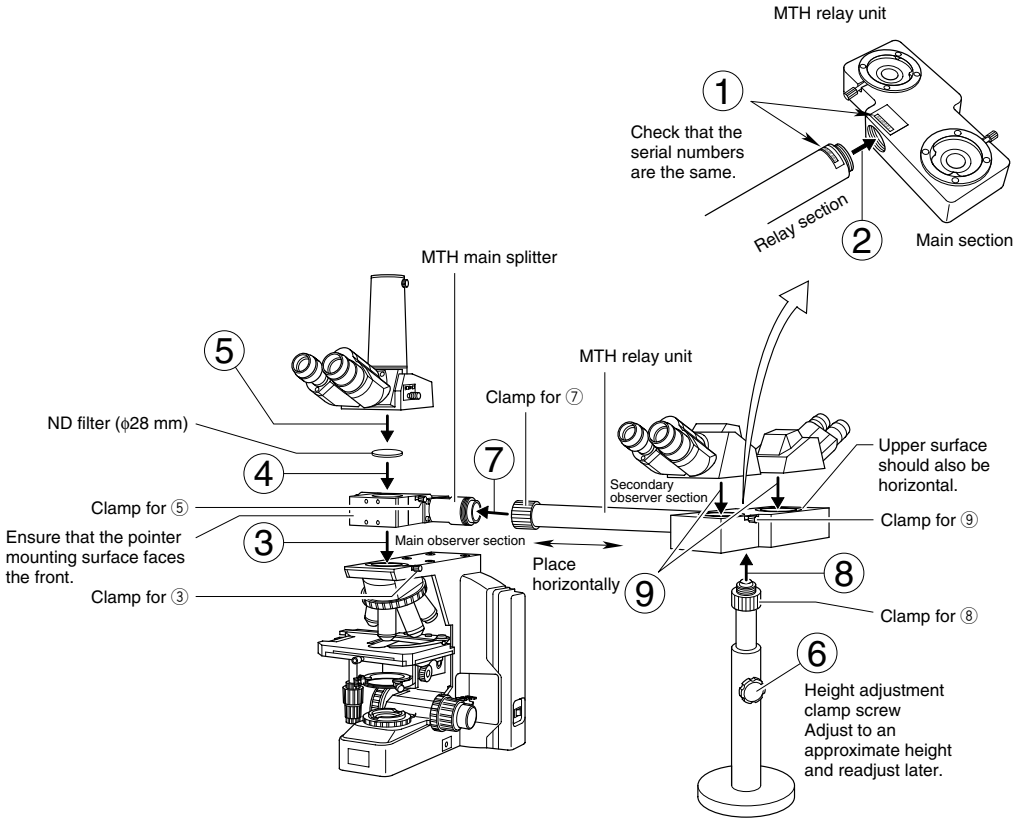
3 Assembly for the triple-viewing model

1 Check that the serial numbers on the two components (on the main section and the relay section) of the MTH relay unit are identical. (If the numbers are different, observation will be adversely affected. In this case, please contact your dealer or nearest Nikon representative.)

2 Adjust the height of the support stand so that the main observer section and the secondary observer section are horizontal. This step is facilitated by first adjusting the support stand to an approximate height before attaching the stand.

3 In the illustration below, the secondary observers are positioned on the right side of the main observer, but they may also be positioned on the left. Attach the MTH main splitter so that the pointer mounting surface is facing towards the front.

4 When mounting the attachment on the inverted microscopes TE300 and TE200, the TE-TI intermediate eyepiece tube and E400/600 eyepiece tube are required. Attach the TE-TI intermediate eyepiece tube instead of the original eyepiece tube and mount the MTH main splitter on it.
See the illustration on P.12 for the installation of the TE-TI intermediate eyepiece tube.



[Remarks]

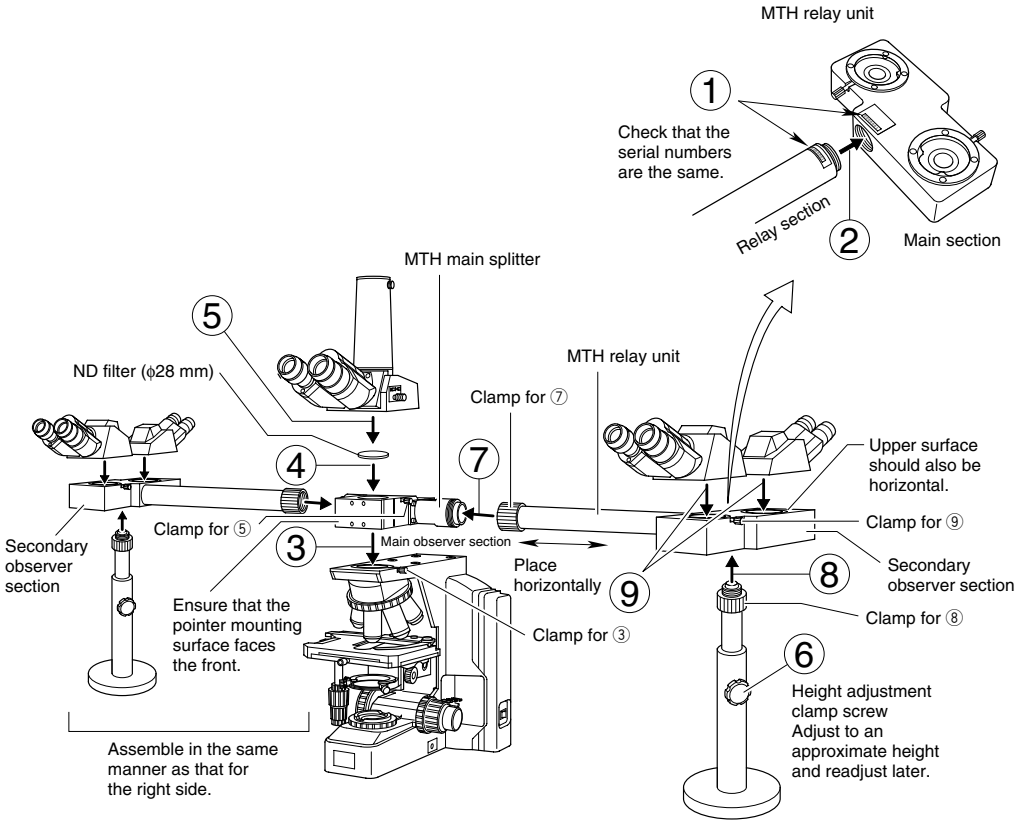
If a trinocular eyepiece tube T is used for the main observer section, you can provide the image to the vertical tube of the eyepiece tube by setting the optical path to the "BINO & PHOTO" position. If the ND filter is removed in advance from the eyepiece tube mounting port of the MTH main splitter, the main and the secondary observers will be able to view an image with more uniform brightness. This should be convenient such as when performing the TV observation.

4 Assembly for the multi-viewing model by 5 persons

1 Check that the serial numbers on the two components (on the main section and the relay section) of the MTH relay unit are identical. (If the numbers are different, observation will be adversely affected. In this case, please contact your dealer or nearest Nikon representative.) Two sets of MTH relay units are required. Assemble those components with identical serial numbers to each other.

2 Adjust the height of the support stand so that the main observer section and the secondary observer section are horizontal. This step is facilitated by first adjusting the support stand to an approximate height before attaching the stand.

3 When mounting the attachment on the inverted microscopes TE300 and TE200, the TE-TI intermediate eyepiece tube and E400/600 eyepiece tube are required. Attach the TE-TI intermediate eyepiece tube instead of the original eyepiece tube and mount the MTH main splitter on it.
See the illustration on P.12 for the installation of the TE-TI intermediate eyepiece tube.



[Remarks]

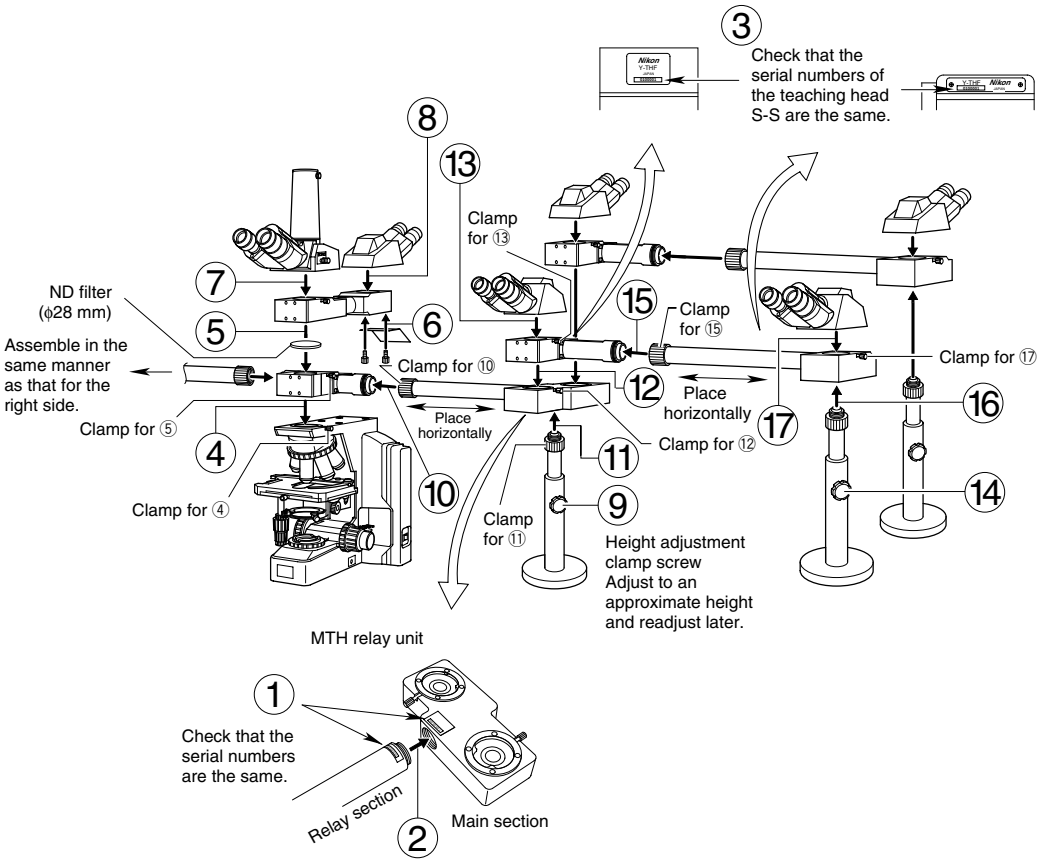
If a trinocular eyepiece tube T is used for the main observer section, you can provide the image to the vertical tube of the eyepiece tube by setting the optical path to the "BINO & PHOTO" position. If the ND filter is removed in advance from the eyepiece tube mounting port of the MTH main splitter, the main and the secondary observers will be able to view an image with more uniform brightness. This should be convenient such as when performing the TV observation.

5 Assembly for the multi-viewing model by 10 persons

1 Check that the serial numbers on the two components (on the main section and the relay section) of the MTH relay unit are identical. (If the numbers are different, observation will be adversely affected. In this case, please contact your dealer or nearest Nikon representative.) Two sets of MTH relay units are required. Assemble those components with identical serial numbers to each other.

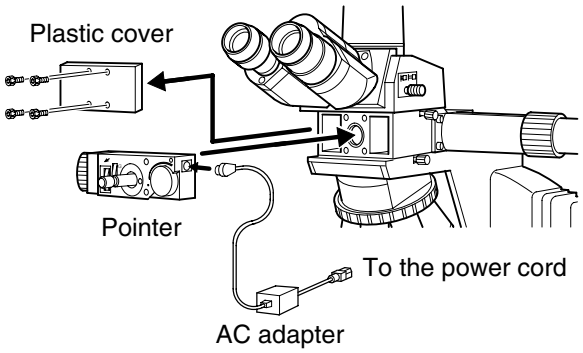
2 Check that the serial numbers on the two components (on the main observer's section and the secondary observer's section) of the teaching head S-S are identical. (If the numbers are different, observation will be adversely affected. In this case, please contact your dealer or nearest Nikon representative.) Four sets of teaching head S-S are required. Assemble those components with identical serial numbers to each other.

3 Adjust the height of the support stands so that the main observer section and the secondary observer sections are horizontal. This step is facilitated by first adjusting the support stands to an approximate height before attaching the stands.



6 Mounting the pointer

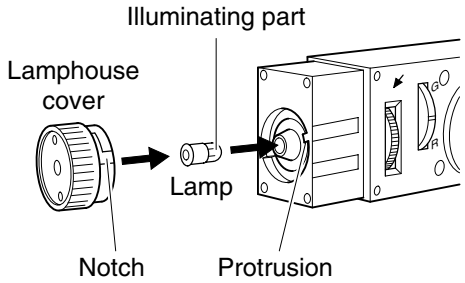
Mount the pointer on the front side of the main observer section with the provided hexagonal wrench. When a multi-viewing attachment for 10 persons is being used, mount the pointer on the lower part (the front side of the MTH main splitter).
Be sure to use the AC adapter provided with the pointer.



<Attaching/replacing the lamp>

Allow the lamp to cool before replacing it. Before replacing the lamp, turn the arrow brightness control counterclockwise as far as it will go to turn off the arrow and then unplug the AC adapter plug from the wall outlet.

1. Push and turn the lamphouse cover approximately 45° counterclockwise to remove it.
2. Position the illuminating part of the lamp inward and insert the lamp into the socket.
3. Return the lamphouse cover to its original position. (Align the protrusion with the notch and turn the cover clockwise as far as it will go.)



IV Troubleshooting

Focus differs among the main and secondary observer positions.

→ The diopter setting has not been adjusted correctly.	→ Adjust the diopter setting correctly. (P.8)
→ The components with different serial numbers are put together.	→ Reassemble the components with the identical serial numbers to each other.

The arrow is not visible when the pointer is used.

→ The arrow is outside of the view field.	→ Use the arrow control stick and bring the arrow into the view field.
→ The arrow color selector dial is in an intermediate position.	→ Turn the dial in the preferred direction as far as it will go.
→ The arrow brightness control is OFF.	→ Turn the control clockwise.
→ The AC adapter is not connected.	→ Connect the AC adapter.
→ The lamp is burned out or no lamp is mounted.	→ Mount a new lamp. (P.16)

When using the pointer, the arrow and the specimen are not in simultaneous focus.

→ The diopter setting has not been adjusted correctly.	→ Adjust the diopter setting correctly. (P.8)

The arrow is blurred when the pointer is used.

→ The arrow is too bright.	→ Turn the arrow brightness control counterclockwise to reduce the brightness.

V Care and Maintenance

1 Lens and filter cleaning

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

- Use a blower, etc. to blow away dust. If this is not sufficient to remove the dust, brush away with a soft brush or gently wipe away with gauze.
- To remove fingerprints or grease, use a piece of soft, clean cotton cloth, lens tissue, or gauze moistened with absolute alcohol (ethyl alcohol or methyl alcohol). However, do not wipe twice with the same part of the cloth.
- Use petroleum benzine to clean off immersion oil. Wiping with absolute alcohol (ethyl alcohol or methyl alcohol) will complete cleaning.
  If petroleum benzine is not available, use methyl alcohol. Note that the cleaning effectiveness of methyl alcohol is low and it will be necessary to repeatedly wipe. (Normally, wiping three or four times is sufficient.)
- Be sure to use petroleum benzine only for cleaning off immersion oil from objectives. Do not use it for cleaning eyepiece tube entrance lenses, filters, etc.
- Absolute alcohol and petroleum benzine are both highly flammable. Be careful when handling them, when around open flames, or when turning the power switches ON and OFF.
- Follow the instructions provided by the manufacturer when using absolute alcohol and petroleum benzine.

2 Cleaning painted components

Do not use organic solvents such as alcohol, ether or paint thinner on painted components, plastic components or printed components. Doing so could result in discoloration or in peeling of the printed characters. For persistent dirt, dampen a piece of gauze with neutral detergent and wipe lightly.

3 Storage

Store the instrument in a dry place where mold is not likely to form.
Store the objectives, eyepieces, filter blocks, etc. in a desiccator or similar container with a drying agent.
Protect the instrument from dust by covering it with the vinyl cover.
Before putting on the vinyl cover, turn off the power switch on the microscope and other equipment, and wait until the lamphouse has cooled.

4 Regular inspection

Regular inspection of this attachment is recommended to maintain optimum performance.
Contact your dealer or nearest Nikon representative for details about regular inspection.

VI Specifications

Teaching Head F-F, Teaching Head S-S, MTH Main Splitter, MTH Relay Unit

Attachment Magnification: × 1 (at both main and secondary observer positions)

Pointer

Designation:	THP
Input Voltage:	DC 9V, 0.5A max.
Lamp for Arrow Illumination:	6V-0.2A tungsten lamp (average lifetime: 1000 hours)
Arrow Color:	Green or orange (switchable)
Arrow Illumination Voltage:	0-6V (by brightness control that also acts as ON/OFF switch)
Conforming Standards (with AC adapter):	
	EU Low Voltage Directive satisfied.
	EU EMC Directive satisfied.
	FCC Part 15, Subpart B satisfied.

AC Adapter

Designation:	SA10-0910V
Input Voltage:	AC 90 to 253V, 50/60 Hz, 0.25A
Output Voltage:	DC 9V, 0.5A
Conforming Standards:	GS/UL/CSA Approved.