

OLYMPUS[®]

U-DO3
U-SDO3
U-MDO3
U-MDO10-3

INSTRUCTIONS

DISCUSSION ATTACHMENTS

This instruction manual is for the Olympus Discussion Attachments Models U-DO3, U-SDO3, U-MDO3 and U-MDO10-3. To ensure the safety, obtain optimum performance and to familiarize yourself fully with the use of this attachment, we recommend that you study this manual thoroughly before operating the microscope. Retain this instruction manual in an easily accessible place near the work desk for future reference.



A X 9 8 8 4

CE Compliance

This device complies with the requirements of both directive **2004/108/EC** concerning electromagnetic compatibility and directive **2006/95/EC** concerning low voltage. The CE marking indicates compliance with the above directives.

Safety and EMC Precautions

1. Use only power cord which OLYMPUS specifies. Otherwise the safety and EMC performance of the product can not be assured.
2. Be sure to ground the product. Otherwise our intended electric safety and EMC performance of the product can not be assured.

CONTENTS

Correct assembly* and adjustments are critical for the discussion attachment to exhibit its full performance. If you are going to assemble the attachment yourself, please carefully read section 5, “ASSEMBLY” (pages 11 to 15).

* If the assistant observers’ stand is not correctly adjusted, the fields of view may be partially invisible.

IMPORTANT – Be sure to read this section for safe use of the equipment. – 1,2

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IMPORTANT




This system employs a UIS2/UIS (Universal Infinity System) optical design, and should be used only with UIS2/UIS microscopes, eyepieces, objectives and condensers for the BX2 series. (Some of the modules designed for the BX series are also usable. For details, please consult Olympus or the catalogues.) Less than optimum performance may result if inappropriate accessories are used.

1 Getting Ready

1. This manual pertains only to the discussion attachments. Before using this attachment together with the microscope and associated options, make sure that you have carefully read and understood their manuals, and understand how the system should be operated together.
2. The discussion attachments have a field number of 26.5. When a discussion attachment is combined with an superwide-field observation tube, the pointer cannot be moved around the entire range of the field of view. Also note that a ghost of pointer may be observed in such a case.
3. If the eyepiece in use incorporates a micrometer, ghost may be observed with dark specimens.
4. To prevent stray light:
 - Make sure to cover the eyepieces which are not attended by the assistant observers with stray light prevention covers. (Page 9)
 - Make sure to attach caps to the unused observation tube and side-view tube mounts.
5. Always use the power cord and AC adapter provided by Olympus. If no power cord is provided, please select the proper power cord by referring to the section "PROPER SELECTION OF THE POWER SUPPLY CORD" at the end of this instruction manual. If the proper power cord is not used, product safety and performance cannot be guaranteed.
6. To ensure safety, disconnect the power plug of the AC adapter from the power outlet after operation.
7. Fix the AC adapter cord at positions where it does not come in the way of microscope operation. Take care not to bring the power cord in contact with the lamp housing.

Safety Symbols

The following symbols are found on the microscope. Study the meaning of the symbols and always use the equipment in the safest possible manner.

| Symbol | Meaning |
|---|---|
| 15V0.2A  | Supply DC current (from the provided AC adapter). |
|  | Indicates an input jack. |
|  | Indicates a pointer. |

2 Maintenance and Storage

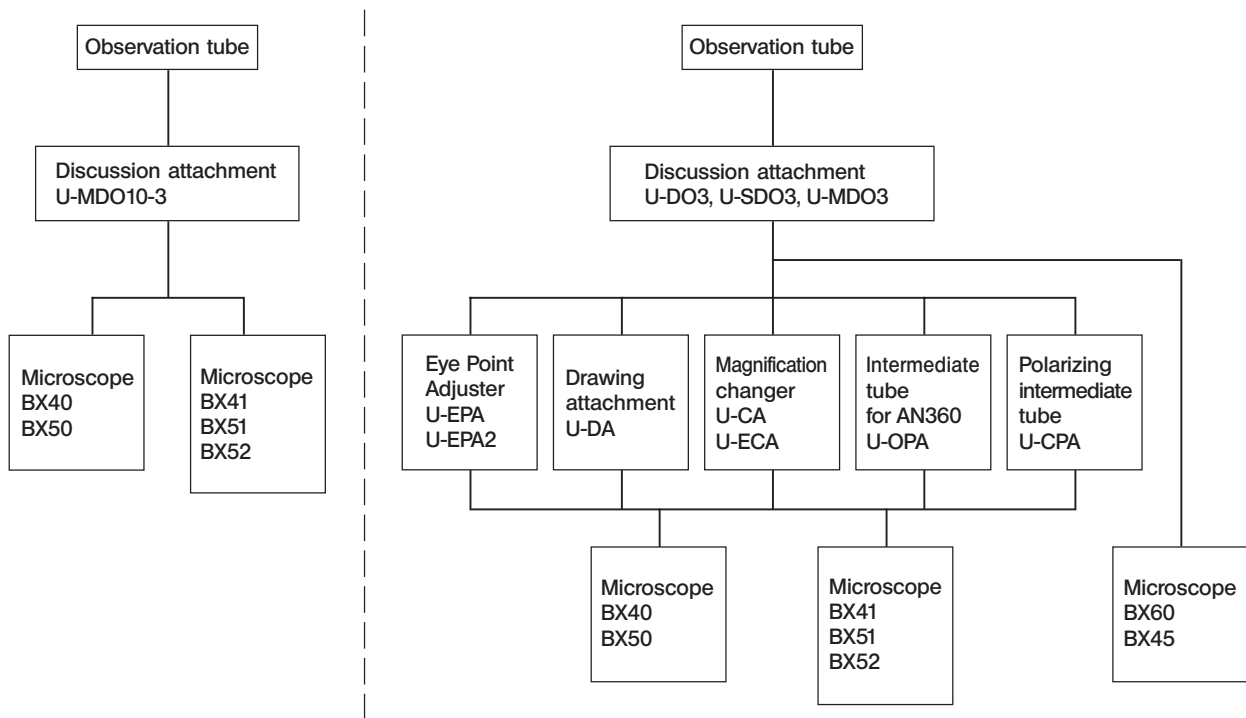
1. To clean the lenses and other glass components, simply blow dirty away using a commercially available blower and wipe gently using a piece of cleaning paper (or clean gauze).
If a lens is stained with fingerprints or oil smudges, wipe it gauze slightly moistened with commercially available absolute alcohol.
▲ Since the absolute alcohol is highly flammable, it must be handled carefully.
Be sure to keep it away from open flames or potential sources of electrical sparks – for example, electrical equipment that is being switched on or off. Also remember to always use it only in a well-ventilated room.
2. With any part of the system other than glass components gets dirty, do not use organic solvents. If a plastic part gets dirty, use a cloth moistened with a diluted neutral detergent.
3. Do not disassemble any part of the system. This could result in malfunctions or reduced performance.
4. When the attachment is not used, make sure to put the dust cover on it.

5. When one of the discussion attachments (except for the U-MDO10-3) is used with the BX Series or BX2 Series microscope frame, only one intermediate attachment can be mounted in a 2-level configuration together with the discussion attachment.

However, the usable intermediate attachment is restricted depending on whether it is mounted above or below the discussion attachments.

- The only intermediate attachments that can be used on top of the discussion attachments is the U-EPA or U-EPA2 eyepoint adjuster.

For the intermediate attachments that can be used below the discussion attachments, consult the following sketch and select the optimum one.



3 Caution

If the equipment is used in a manner not specified by this manual, the safety of the user may be imperiled. In addition, the system equipment may also be damaged. Always use the system as outlined in the instruction manual.

The following symbols are used to set off text in this instruction manual.

▲ : Indicates that failure to follow the instructions in the warning could result in bodily harm to the user and/or damage to equipment (including objects in the vicinity of the equipment).

★ : Indicates that failure to follow the instructions could result in damage to the equipment.

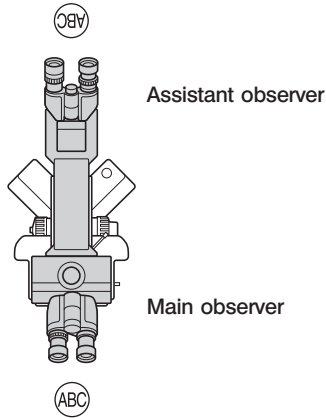
© : Indicates commentary (for ease of operation and maintenance).

1 LAYOUT OF ATTACHMENTS, ORIENTATION OF THEIR OBSERVED IMAGES

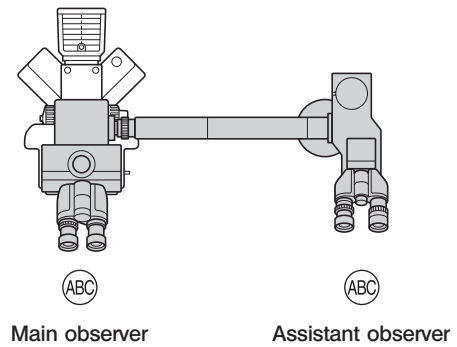
© The following sketches illustrate the top view of the discussion attachments.

(ABC) expresses the observation field and image orientation of each view. (ABC) marked with * indicates that the image can be rotated by 90°.

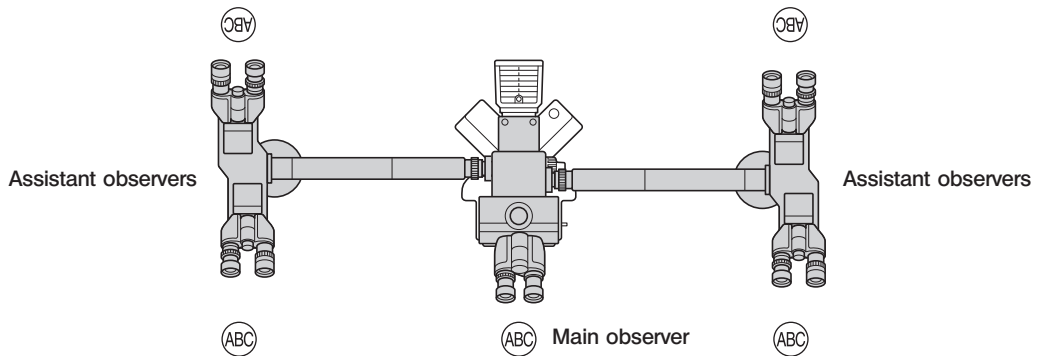
2-person, opposite viewing U-DO3



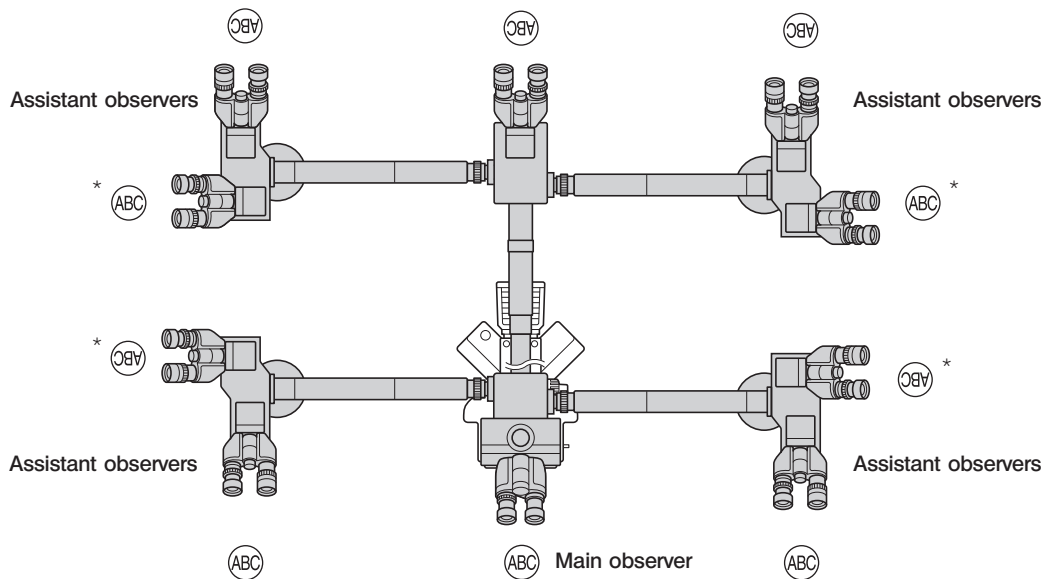
2-person, side-by-side viewing U-SDO3



5-person, multi-viewing U-MDO3

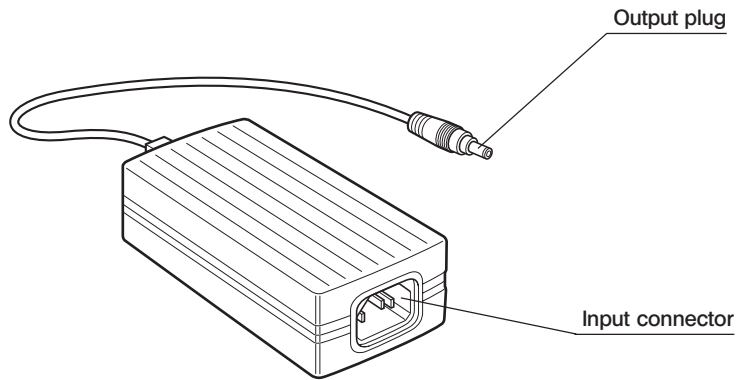
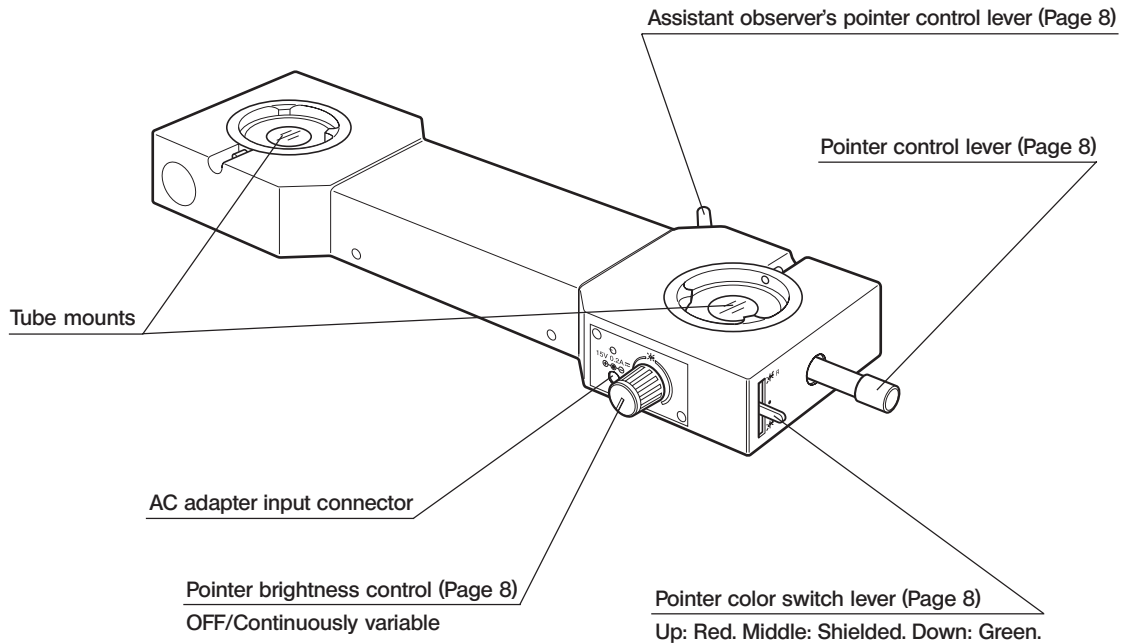


10-person, multi-viewing U-MDO10-3



2 CONTROLS

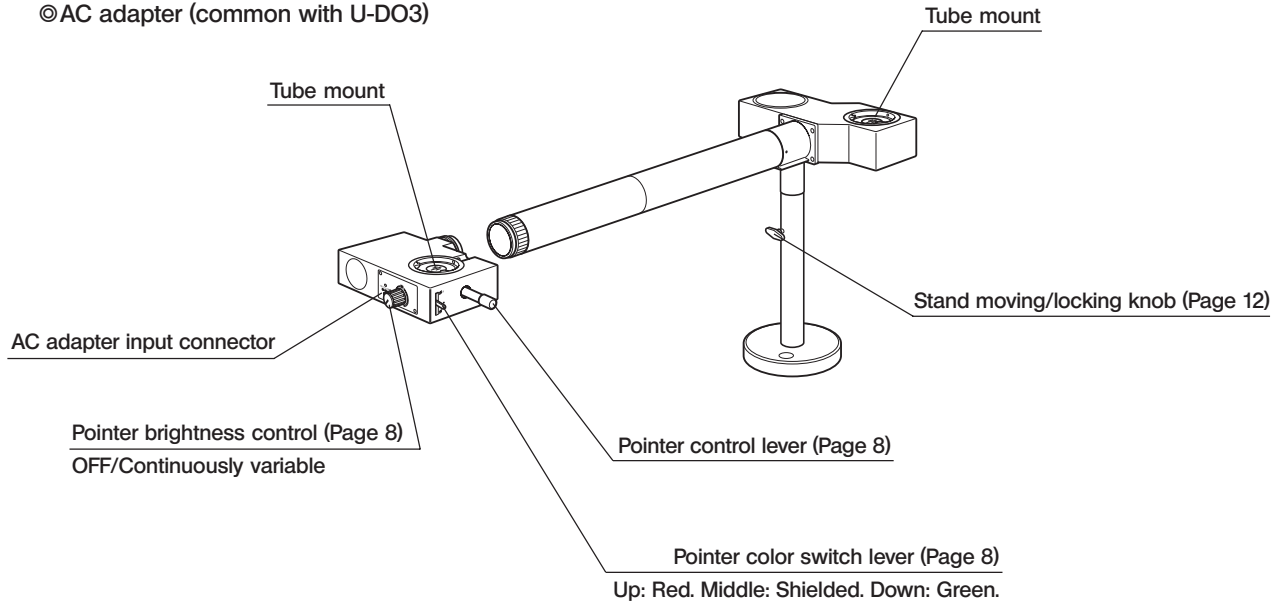
2-person, opposite viewing
U-D03



AC adapter

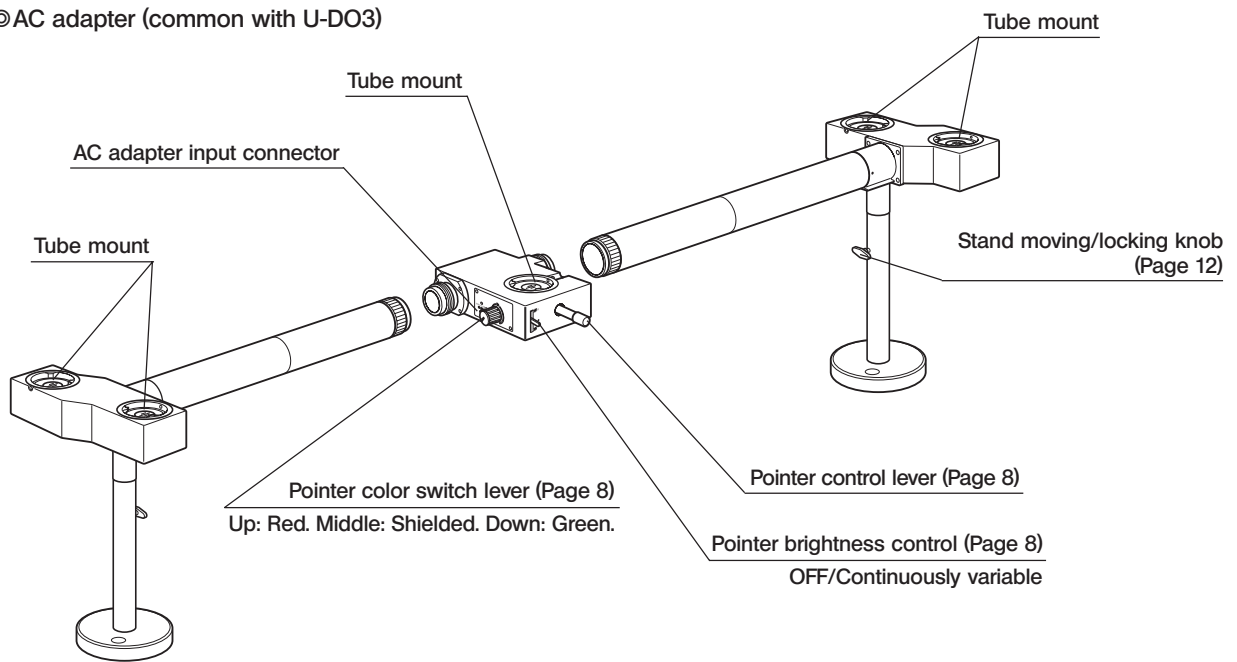
**2-person, side-by-side viewing
U-SDO3**

© AC adapter (common with U-DO3)



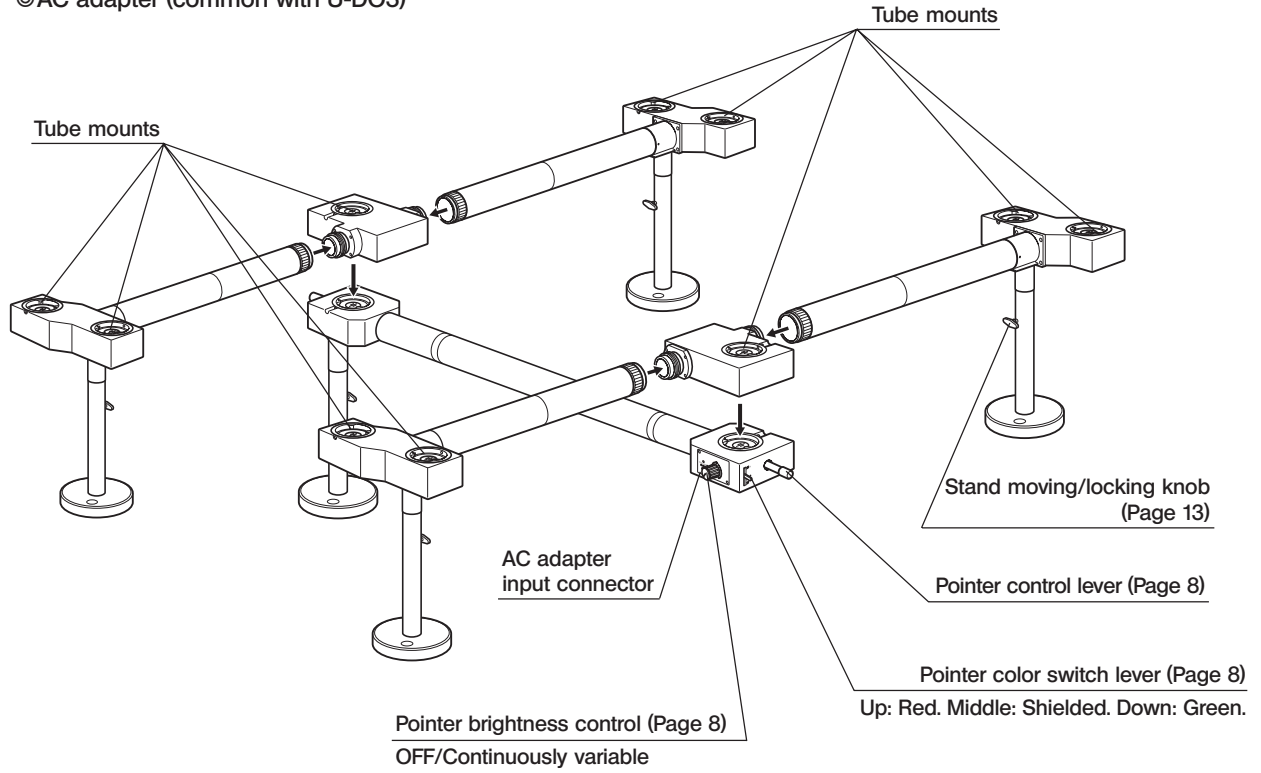
**5-person, multi-viewing
U-MDO3**

© AC adapter (common with U-DO3)



**10-person, multi-viewing
U-MDO10-3**

© AC adapter (common with U-DO3)



3 OPERATION

3-1 Focus Adjustments of the Main and Assistant Observers

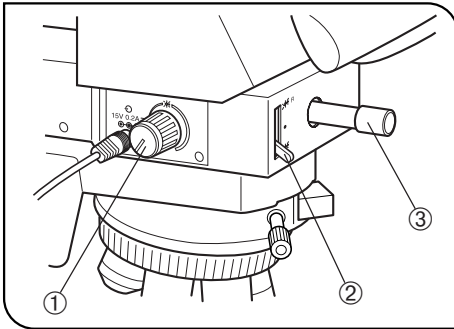


Fig. 1

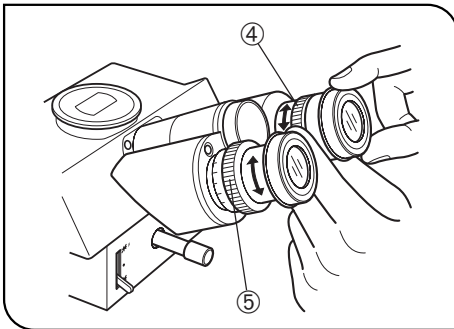


Fig. 2

1 Focusing at the Main Observer's Position

(Figs. 1 & 2)

1. Turn the pointer brightness control ① of the discussion attachment clockwise to turn on the pointer (\uparrow).
Ⓞ Set the pointer color switching lever ② to other position than the middle position. If the pointer cannot be seen in the field of view, move the pointer at the center of field using the pointer control lever ③.

2. Turn the helicoid ④ of the right eyepiece to focus on the pointer.
3. Turn the helicoid ⑤ of the left eyepiece sleeve to focus on the pointer. (Fig. 2)
4. Turn the coarse and fine focus adjustment knobs of the microscope to focus on the specimen.

2 Focusing at the Assistant Observers' Positions

Perform steps 2 and 3 of "Focusing at the Main Observer's Position" above. This will bring both the pointer and specimen in focus.

3-2 Pointer Operation

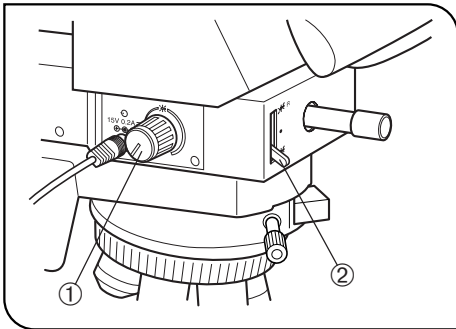


Fig. 3

1 Adjusting the Pointer Brightness (Fig. 3)

1. While looking into the eyepiece, turn the pointer brightness control ① clockwise to vary the brightness continuously.
2. Turning the control to the fully counterclockwise position switches it off.

2 Selecting the Pointer Color (Fig. 3)

Using the pointer color switching lever ②, select a color which is clearly distinguishable from the specimen color.

- Top position: Red
- Middle position: Light shielded.
- Down position: Green

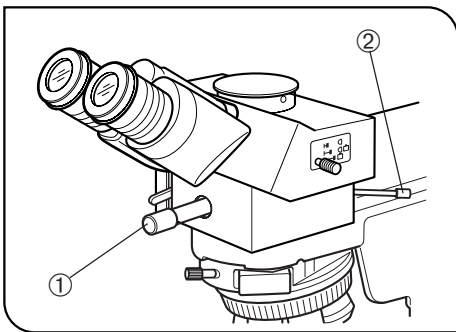


Fig. 4

3 Moving the Pointer (Fig. 4)

The main observer can move the pointer to the desired location in the field of view by operating the pointer control lever ① on the front of the discussion attachment.

U-DO3 only

The assistant observer can also move the pointer using the assistant observer's pointer control lever ②.

Ⓞ When the pointer is not used, move it away from the field of view or set the pointer color switching lever to the middle position.

3-3 Notes on Photomicrography

In general, the procedure for taking photographs is the same as usual. This section describes special considerations that apply when taking photographs with the discussion attachment installed.

1. Using the trinocular observation tube on top of the microscope, you can take photographs that include the pointer.

★ **When you use genuine Olympus trinocular observation tubes, photo eyepiece and photomicrographic equipment, the pointer (↑) is always focused on the film plane.**

2. Brightness of the pointer is set to be brighter than the specimen to ensure adequate contrast. This has the following effects on photographs that are not apparent during visual observation.

- Since the pointer is always overexposed when exposure is correct for specimen, the pointer color will bleach to white in color photographs.
- When taking photographs with photomicrographic equipment with automatic exposure control, the brightness of the pointer will cause the specimen to be underexposed. In such cases, set the photomicrographic equipment's specimen distribution compensation dial to the OVER position.
- Since the effect of the pointer is especially great when making long exposures of dark specimens, check the exposure time with the pointer illumination turned off, then make the exposure manually after turning the pointer illumination back on.

3. Take photographs at the main observer's position.

★ **When taking photographs, be sure to place the stray light prevention cover ② on the eyepiece ① of the assistant observer's position.**

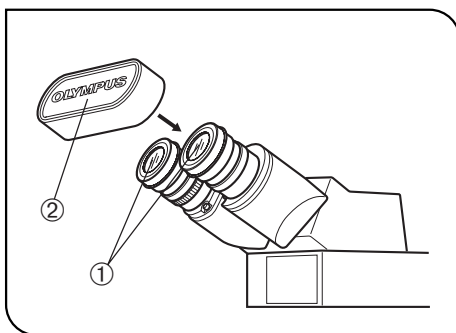


Fig. 5

4 SPECIFICATIONS

| Item | Specification |
|-----------------------------|--|
| Maximum number of observers | U-DO3 (2 persons), U-SDO3 (2 persons), U-MDO3 (5 persons), U-MDO10-3 (10 persons) |
| Image orientation | Orientations of the images of the main and assistant observers are identical. However, with the U-MDO10-3, four observers should observe 90° rotated images. |
| Maximum field number | 22 |
| Pointer color | 3 steps switchable (Top: Red. Middle: Shielded. Down: Green.) |
| Pointer movement | Joystick control. (U-DO3: Double control by main and assistant observers.) |
| Pointer power supply | AC adapter (Rated voltages 100-120/220-240 V ~ 1.0/0.5 A) |
| Operating environment | <ul style="list-style-type: none"> • Indoor use. • Altitude: Max. 2000 meters • Ambient temperature: 5° to 40°C (41° to 104° F) • Maximum relative humidity: 80% for temperatures up to 31°C (88°F), decreasing linearly through 70% at 34°C (93°F), 60% at 37°C (99°F), to 50% relative humidity at 40°C (104°F). • Supply voltage fluctuations; Not to exceed ±10% of the normal voltage. • Pollution degree: 2 (in accordance with IEC60664) • Installation/Overvoltage category: II (in accordance with IEC60664) |

5 ASSEMBLY

©Assemble the discussion attachment by referring to the layout shown in Chapter 1 on page 3.

★Install the discussion attachment and the modules combined with it on a same single desktop surface.

5-1 U-DO3

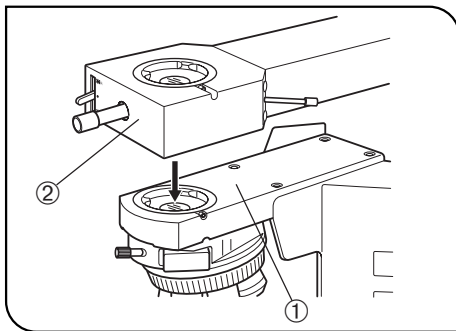


Fig. 6

1 Installing the Discussion Attachment (Fig. 6)

1. Remove the observation tube from the microscope frame ① in use and attach the discussion attachment ② equipped with the pointer control lever.
2. Attach the observation tube removed before on the discussion attachment.

5-2 U-SDO3/MDO3

◎ Assemble the discussion attachment by referring to the layout shown in Chapter 1 on page 3.

★ Install the discussion attachment and the modules combined with it on a same single desktop surface.

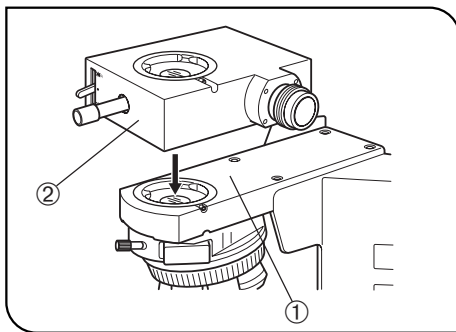


Fig. 7

1 Installing the Discussion Attachment (Fig. 7)

1. Remove the observation tube from the microscope frame ① in use and attach the discussion attachment ② equipped with the pointer control lever.
2. Attach the observation tube removed before on the discussion attachment.
3. Place a specimen on the stage and adjust the focus on it. Hereafter, do not adjust the focusing module.

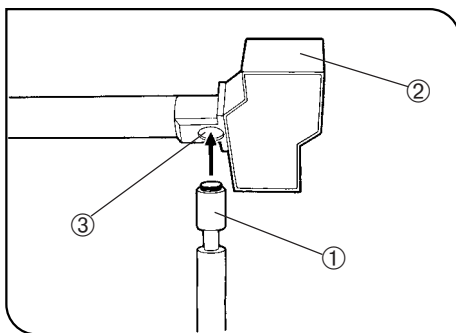


Fig. 8

2 Installing the Stand (Fig. 8)

1. Screw in the top of the stand ① into the mount hole ③ on the bottom side of the side-view tube ②.

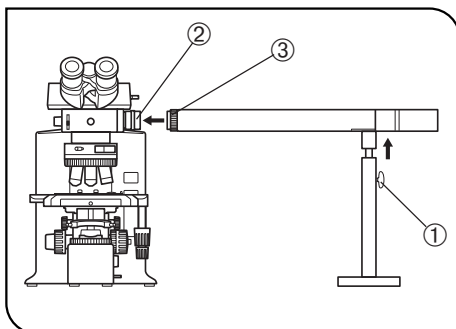


Fig. 9

3 Installing the Side-View Tube (Fig. 9)

1. Remove the caps from the mounts on the side-view tube and microscope frame.
2. Loosen the stand height lock knob ① and, while lifting up the stand, fit the side-view tube into the side-view tube mount ② on the microscope frame.
3. Position the side-view tube in parallel with the desktop surface and tighten the stand height lock knob.
4. Turn the mount ring ③ of the side-view tube to clamp it against the microscope frame.
5. Attach the observation tube on the side-view tube.
6. Look into the observation tube of the side-view tube, adjust the stand height and tighten the stand height lock knob ① at the height where the specimen is focused.

Do not adjust the focusing module from the position set in ❶-3 above.
◎ Be sure to adjust the height of the side-view tube stand at the end of assembly as described above.

If this adjustment is omitted, the periphery areas of the field of view of the side-view tube may be cut off, deviated from that of the main observation tube or colored. Make sure that the field of view of the side-view tube is not cut off or deviated from that of the main observation tube. If it is, loosen the stand height lock knob slightly, fine-adjust the stand height by moving it up or down, and tighten the stand height lock knob again to clamp.

5-3 U-MDO10-3

© Assemble the discussion attachment by referring to the layout shown in Chapter 1 on page 3.

★ With the U-MDO10-3 multi-viewing attachment designed for up to 10 observers, prepare a desktop with a big surface (1250-1400(W) x 1100-1250(D) mm.

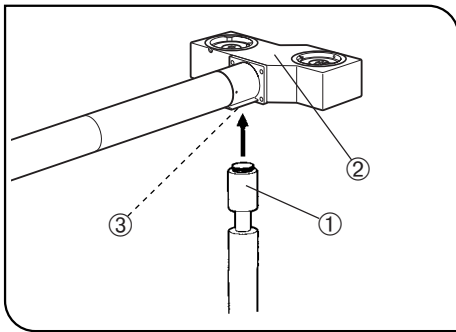


Fig. 10

1 Adjusting the Focus

Place a specimen on the microscope stage and adjust the focus before attaching the discussion attachment. Hereafter, do not adjust the focusing module.

2 Installing the Stand

(Fig. 10)

Screw in the top of the stand ① into the mount thread ② on the bottom side of the discussion attachment ③.

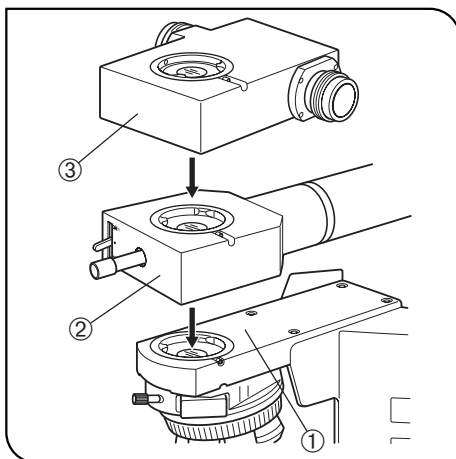


Fig. 11

3 Installing the Discussion Attachment (Figs. 11 & 12)

1. Remove the observation tube from the microscope frame ① in use and attach the discussion attachment ② equipped with the pointer control lever.
2. Place the separate modules (U-MDO10B3) ③ above the two ends of the discussion attachment.
3. Attach the observation tube ④ removed before on the main observer end of the discussion attachment.
4. Attach the observation tube ⑤ on the assistant observer end of the discussion attachment.
5. Look into the observation tube of the assistant observation tube, adjust the stand height and tighten the stand height lock knob ⑥ at the height where the specimen is focused.

© Be sure to adjust the height of the discussion attachment stand at the end of assembly as described above.

If this adjustment is omitted, the periphery areas of the field of view of the assistant observation tube may be cut off, deviated from that of the main observation tube or colored. Make sure that the field of view of the assistant observation tube is not cut off or deviated from that of the main observation tube. If it is, loosen the stand height lock knob slightly, fine-adjust the stand height by moving it up or down, and tighten the stand height lock knob again to clamp.

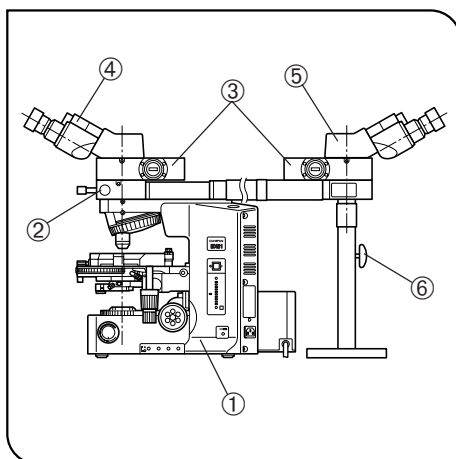


Fig. 12

4 Installing the Stands

Attach the stand to each side-view tube by referring to ② in section 5-2, "U-SDO3/MDO3."

5 Installing the Side-View Tubes

Attach each side-view tube by referring to ③ in section 5-2, "U-SDO3/MDO3."

6 Mounting the Assistant Observers' Tubes

Loosen the clamping screw of each of the assistant observers' tubes and attach the assistant observers' tube.

7 Mounting the Eyepieces

Ⓞ The procedure for mounting eyepieces on the tubes is the same as with other microscopes. However, since the right eyepiece sleeve of the main and assistant observers' positions is used for pointer focusing, the right eyepiece sleeve should be provided with either a helicoid or eyepiece or one with a disk.

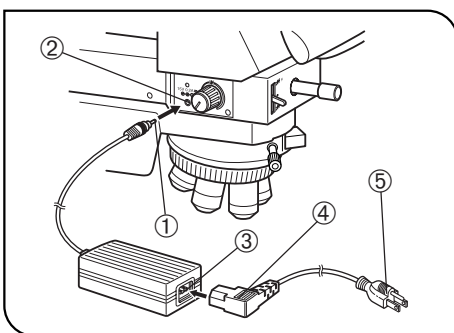
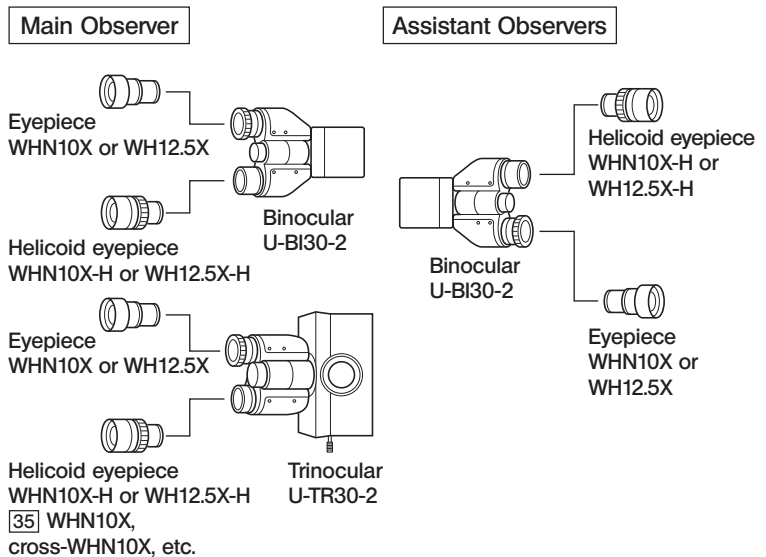


Fig. 13

8 Connecting the AC Adapter

(Fig. 13)

- ▲ Before connecting the AC adapter, turn the pointer brightness control fully counterclockwise to the OFF position.
 - ▲ The power cord is vulnerable when bent or twisted. Never subject it to excessive force.
 - ▲ Always use the power cord and AC adapter provided by Olympus. IF no power cord is provided with the microscope, please select the proper power cord by referring to section "PROPER SELECTION OF THE POWER SUPPLY CORD" at the end of this instruction manual.
1. Firmly connect the AC adapter's output plug ① to the AC adapter input connector ② on the left side panel of the discussion attachment.
 2. Connect the power cord's connector ④ into the AC adapter's input connector ③, then connect the power cord's plug ⑤ to the wall power outlet.
- ▲ The power cord should be connected to a grounded, 3-conductor power outlet. If the power outlet is not grounded properly, Olympus can no longer warrant the electrical safety performance of the equipment.

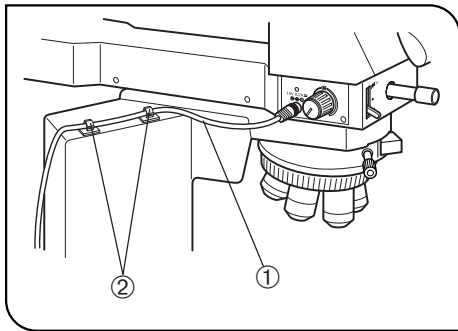


Fig. 14

9 Fixing the Cord Stopper (Fig. 14)

To prevent the AC adapter cord from coming in the way of microscope operation and from contacting the lamp housing, peel off the backings from the two provided cord stopper stickers and fix the power cord at two positions on the dual-view attachment using them.

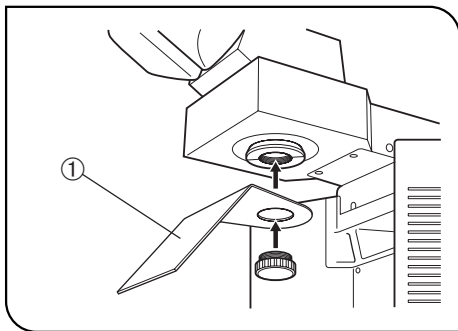


Fig. 15

10 Attaching the Heat Protection Shield (Optional) (Fig. 15)

Ⓞ When using the U-DO3, if the heat from the lamp housing hinders observation, attach the optional BH2-DO-HPS heat protection shield to the discussion attachment.

- Place the shield ① under the assistant observer's side of the discussion attachment and fix it with the clamping screw.
- This screw hole can also be used to attach a stand.

■ PROPER SELECTION OF THE POWER SUPPLY CORD

If no power supply cord is provided, please select the proper power supply cord for the equipment by referring to “ Specifications ” and “ Certified Cord ” below:

CAUTION: In case you use a non-approved power supply cord for Olympus products, Olympus can no longer warrant the electrical safety of the equipment.

Specifications

| | |
|------------------------|--|
| Voltage Rating | 125V AC (for 100-120V AC area) or, 250V AC (for 220-240V AC area) |
| Current Rating | 6A minimum |
| Temperature Rating | 60°C minimum |
| Length | 3.05 m maximum |
| Fittings Configuration | Grounding type attachment plug cap. Opposite terminates in molded-on IEC configuration appliance coupling. |

Table 1 Certified Cord

A power supply cord should be certified by one of the agencies listed in Table 1 , or comprised of cordage marked with an agency marking per Table 1 or marked per Table 2. The fittings are to be marked with at least one of agencies listed in Table 1. In case you are unable to buy locally in your country the power supply cord which is approved by one of the agencies mentioned in Table 1, please use replacements approved by any other equivalent and authorized agencies in your country.




















| Country | Agency | Certification Mark | Country | Agency | Certification Mark |
|-----------|--------|---|----------------|-------------------------------|---|
| Argentina | IRAM |  | Italy | IMQ |  |
| Australia | SAA |  | Japan | JET, JQA, TÜV, UL-APEX / MITI |  |
| Austria | ÖVE |  | Netherlands | KEMA |  |
| Belgium | CEBEC |  | Norway | NEMKO |  |
| Canada | CSA |  | Spain | AEE |  |
| Denmark | DEMKO |  | Sweden | SEMKO |  |
| Finland | FEI |  | Switzerland | SEV |  |
| France | UTE |  | United Kingdom | ASTA BSI |  |
| Germany | VDE |  | U.S.A. | UL |  |
| Ireland | NSAI |  | | | |

Table 2 HAR Flexible Cord

APPROVAL ORGANIZATIONS AND CORDAGE HARMONIZATION MARKING METHODS

| Approval Organization | Printed or Embossed Harmonization Marking (May be located on jacket or insulation of internal wiring) | | Alternative Marking Utilizing Black-Red-Yellow Thread (Length of color section in mm) | | |
|--|---|-------|---|-----|--------|
| | | | Black | Red | Yellow |
| Comite Electrotechnique Belge (CEBEC) | CEBEC | <HAR> | 10 | 30 | 10 |
| Verband Deutscher Elektrotechniker (VDE) e.V. Prüfstelle | <VDE> | <HAR> | 30 | 10 | 10 |
| Union Technique de l'Electricite' (UTE) | USE | <HAR> | 30 | 10 | 30 |
| Instituto Italiano del Marchio di Qualita' (IMQ) | IEMMEQU | <HAR> | 10 | 30 | 50 |
| British Approvals Service for Electric Cables (BASEC) | BASEC | <HAR> | 10 | 10 | 30 |
| N.V. KEMA | KEMA-KEUR | <HAR> | 10 | 30 | 30 |
| SEMKO AB Svenska Elektriska Materielkontrollanstalter | SEMKO | <HAR> | 10 | 10 | 50 |
| Österreichischer Verband für Elektrotechnik (ÖVE) | <ÖVE> | <HAR> | 30 | 10 | 50 |
| Danmarks Elektriske Materielkontroll (DEMKO) | <DEMKO> | <HAR> | 30 | 10 | 30 |
| National Standards Authority of Ireland (NSAI) | <NSAI> | <HAR> | 30 | 30 | 50 |
| Norges Elektriske Materielkontroll (NEMKO) | NEMKO | <HAR> | 10 | 10 | 70 |
| Asociacion Electrotecnica Y Electronica Espanola (AEE) | <UNED> | <HAR> | 30 | 10 | 70 |
| Hellenic Organization for Standardization (ELOT) | ELOT | <HAR> | 30 | 30 | 70 |
| Instituto Portages da Qualidade (IPQ) | np | <HAR> | 10 | 10 | 90 |
| Schweizerischer Elektro Technischer Verein (SEV) | SEV | <HAR> | 10 | 30 | 90 |
| Elektriska Inspektoratet | SETI | <HAR> | 10 | 30 | 90 |

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