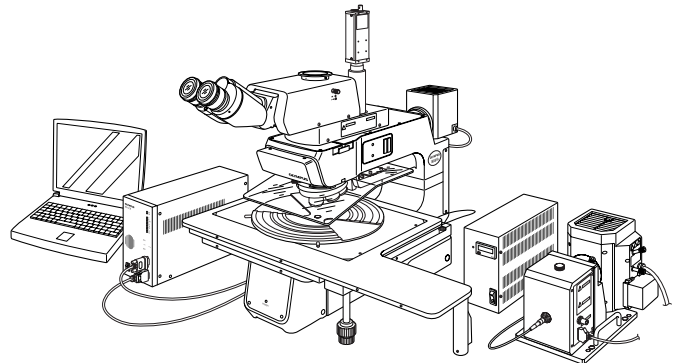


# OLYMPUS®

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## INSTRUCTIONS

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# U-UVF248A

## MOTORIZED 248 nm UV MICROSCOPE UNIT

This instruction manual is for the Olympus Motorized 248 nm UV Microscope Unit Model U-UVF248A. To ensure the safety, obtain optimum performance and to familiarize yourself fully with the use of this unit, we recommended that you study this manual thoroughly before operating the microscope system. To understand the comprehensive operating procedures, it is also recommended to read the instruction manual for the manual type U-UVF248 unit (packaged together with the U-UVF248IM). Retain this instruction manual in an easily accessible place near the work desk for future reference.



A X 7 6 8 0



This device complies with the requirements of directive 2004/108/EC concerning electromagnetic compatibility and of directive 2006/95/EC concerning electrical equipment designed for use within certain voltage limits. CE marking means the conformity to these directives.

EN61326-1 defines two categories according to the location for use.

Class A: Equipment suitable for use in establishments other than domestic, and those directly connected to a low voltage power supply network which supplies buildings used for domestic purposes.

Class B: Equipment for use in domestic establishments, and in establishments directly connected to a low voltage power supply network which supplies buildings used for domestic purposes.

This device is applied Class A. Some interference may occur if this device is used in domestic location.



In accordance with European Directive 2002/96/EC on Waste Electrical and Electronic Equipment, this symbol indicates that the product must not be disposed of as unsorted municipal waste, but should be collected separately.

Refer to your local Olympus distributor in EU for return and/or collection systems available in your country.

**NOTE:** 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.

**FCC WARNING:** Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

### For Korea only

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**CONTENTS**

**IMPORTANT** – Be sure to read this section for safe use of the equipment. – 1-3

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# IMPORTANT

With the U-UVF248A unit, the U-UVF248LB that is the manual type light source box is replaced with the U-UVF248LBM that is the motorized type light source box. The U-UVF248LBM is capable of motorized control of the opening/closing of the shutter and the adjustment of the light intensity.

The applicable scope is also changed to the MX61A motorized microscope frame, and additional modules and the MX2-BSW control software are newly necessary.

The present instruction manual pertains only to the information specific to the motorized operations. For other information, please refer to the instruction manual for the manual type U-UVF248 unit (packaged together with the U-UVF248IM).


## Precautions on UV Light

1. The motorized shutter monitors the drive status of the MX61A to prevent accidental irradiation of UV light. However, care is still required against UV leak from the revolving nosepiece and specimen surface.
2. To prevent unexpected irradiation of UV rays, be sure to close the idle objective positions of the revolving nosepiece by attaching the caps provided with the revolving nosepiece.
3. Leakage of UV light can be prevented effectively by attaching the optional breath shield on the revolving nosepiece of the MX61A.
4. Do not bend the UV light guide into a radius below 100 mm to prevent it from breaking. The UV light guide should be inspected periodically to confirm absence of crack that may lead to UV leak.

### UV caution labels

Contact Olympus for replacement in case a caution label is stained or peeled off or for other inquiries.

#### • Right side panel of the UV248 observation tube U-UVF248IM

 <b>CAUTION</b> <ul style="list-style-type: none"><li>• Do not expose your skin and eyes to the UV (ultraviolet) rays without proper protections.</li><li>• The power supply to the lamphousing must be turned off before installation or removal, or any maintenance.</li></ul>	<b>注意</b> <ul style="list-style-type: none"><li>• 紫外線を肉眼や皮膚に直接あてないでください。</li><li>• ユニット着脱時やメンテナンス時は必ずランプの電源を切ってください。</li></ul>
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#### • Right side panel of the UV248 light source box U-UVF248LBM






 <b>CAUTION</b> <ul style="list-style-type: none"><li>• Do not expose your skin and eyes to the UV (ultraviolet) rays without proper protections.</li><li>• The power supply to the lamphousing must be turned off before installation or removal, or any maintenance.</li></ul>
 <b>注意</b> <ul style="list-style-type: none"><li>• 紫外線を肉眼や皮膚に直接あてないでください。</li><li>• ユニット着脱時やメンテナンス時は必ずランプの電源を切ってください。</li></ul>

 **SAFETY PRECAUTIONS**

1. This unit is a precision instrument. Handle it with care and avoid subjecting it to sudden or severe impacts.
2. The mercury/xenon burner should be the UXM80E (USHIO), which is available through Olympus.
3. Before using the unit, ensure that the burner is mounted and that cords are connected properly.
4. The lamp housing becomes very hot during and right after use. Do not open the lamp housing during these periods.
5. When the hour counter on the power supply indicates 1000 hours, set the main switch to "○" (OFF), wait for more than 10 minutes and then replace the burner. Unlike a fluorescent lamp, the mercury/xenon burner seals high-pressure gas inside. If it is used extremely beyond the service life, accumulated distortion of the glass tube could cause the burner to burst, though this is a very rare case.
6. The power supply contains high-voltage parts inside and should not be disassembled.
7. Always use the power cord provided by Olympus. Before connecting the power cord into the power outlet, ensure that the main switch of the power supply is set to "○" (OFF).
8. Be sure to ground the power supply to ensure safety. If it is not **grounded/earthed**, Olympus can no longer warrant the electrical safety performance of the equipment.
9. Before opening the lamp housing for replacing the burner, etc., be sure to set the main switch of the power supply to "○" (OFF), disconnect the lamp housing output connector on the power supply, and wait for more than 10 minutes after use to cool down the burner.
10. The top panel of the lamp housing becomes very hot during operation. To prevent a fire hazard, be sure not to block ventilation of this part. A space of 10 cm or more should also be reserved around the lamp housing to allow ventilation.
11. If a connection cable contacts the lamp housing or is distributed near it, the cable may melt and cause an electric shock. To prevent this, be sure to distribute the connection cables at an enough distance from the lamp housing.
12. Do not apply an excessive force to any of the stopper mechanisms provided for the functions of the unit. Otherwise, the stopper mechanism may be destroyed.
13. The power cord is used to shut down the power supply in case of emergency.  
The power cord connector (on the rear of the power supply) or the power outlet should be easily accessible for power cord disconnection in case of emergency.
14. Never insert a metallic object, etc. into a ventilation slot. Otherwise, an electric shock or malfunction may result.
15. To prevent the system from toppling down, do not combine the module if the total height of the microscope system exceeds 1 meter.
16. The standard service life of the lamp housing is eight (8) years of use or 20,000 hours of total power ON period, whichever is the shorter period.  
For details, see Inspection Sheet on page 13.



**Safety Symbols**

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

Symbol	Explanation
	A high voltage (1 kV or more) is present. Be careful against electric shock.
	Indicates that the surface becomes hot, and should not be touched with bare hands.
	Before use, carefully read the instruction manual. Improper handling could result in injury to the user and/or damage to the equipment.
	Indicates that the main switch is ON.
	Indicates that the main switch is OFF.

### Caution indications

Caution indications are affixed at parts where special precaution is required when handling and using the microscope. Always heed the cautions.

Caution indication positions	Lamp housing for mercury/xenon burner (U-LH80HGXE)	High temperature caution] 
	Power supply	[High voltage caution] 

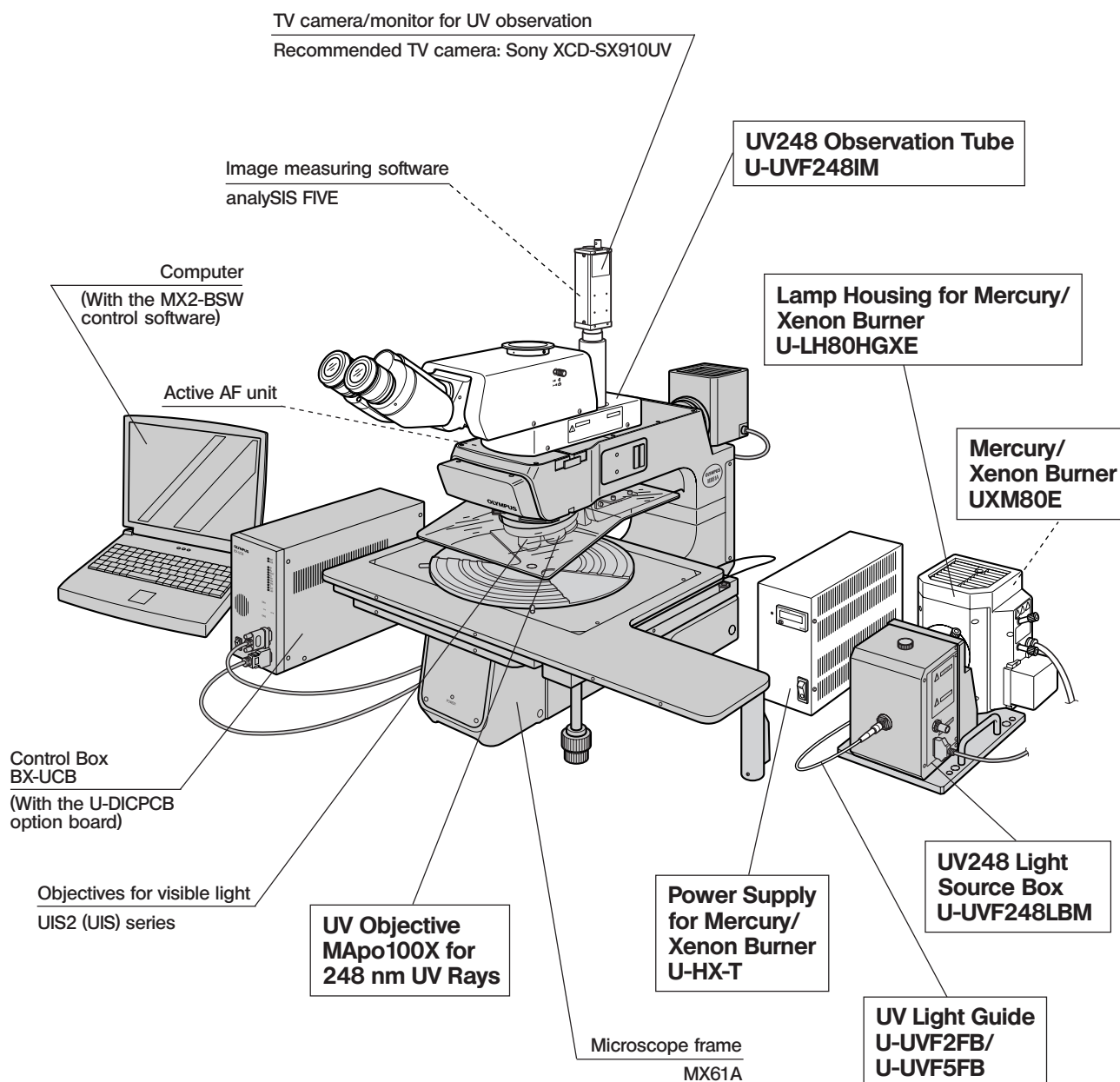
# 1 NOMENCLATURE

The modules enclosed in  belong to the U-UVF248A UV Microscope Unit.

Other modules should be prepared by the user.

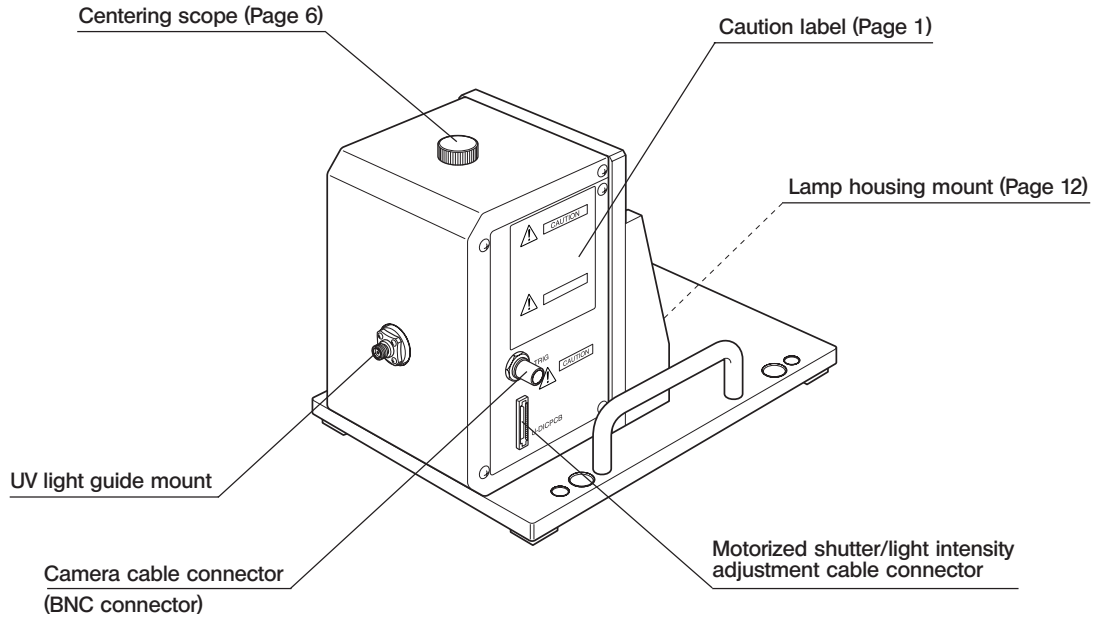
The modules marked in the illustration are for exclusive use in a motorized system.

© If you have not completed the assembly yet, see chapter 7, "ASSEMBLY" before proceeding to the following.

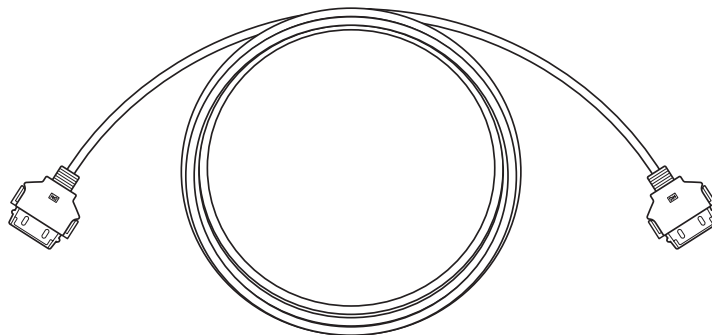


# 2 CONTROLS

## UV248 Light Source Box U-UVF248LBM



## Motorized shutter/light intensity adjustment cable





# 3 PREPARATION

©The motorized control of the MX61A and U-UVF248A is executed using the MX2-BSW control software.  
For details on the software, refer to the instruction manual provided with it.

## CAUTION

To prevent accidental UV irradiation due to mistake, it is prohibited to control a system combining the MX-OPU61A controller or the MX-HS61A with the MX61A.

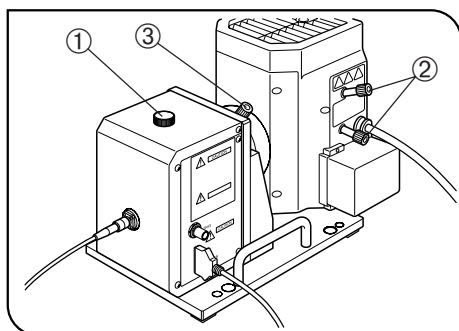


Fig. 1

## 1 Centering the Mercury/Xenon Burner (Figs. 1 & 2)

1. Set the main switch " I " (ON). Between 5 to 10 minutes until the arc image stabilizes.
2. Remove the cap ① of the centering scope by turning the cap counter-clockwise.
3. Observing the UV-cut centering scope, adjust the following controls so that the brightest and most well focused part of the arc image comes on the center of the cross lines in the centering scope.
  - Burner centering knobs ②
  - Collector lens focusing knob ③
4. Set the DUV observation mode and perform the final adjustment to make the image observed on the UV observation monitor brightest.
5. Attach the cap ① in the original position.

©After long hours of use, the electrodes will be consumed and the centering position be deviated. The centering should therefore be adjusted periodically.

Be sure to re-adjust centering after replacing the burner.

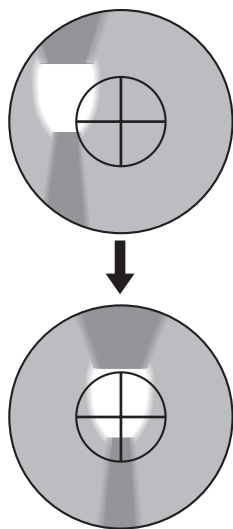


Fig. 2

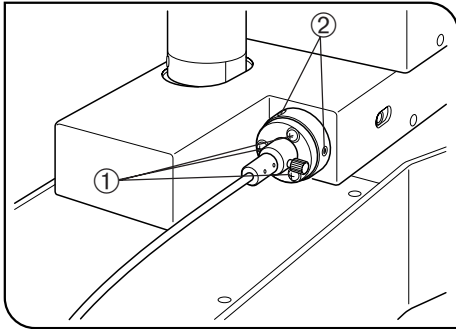


Fig. 3

## 2 Adjusting the Illumination Center

(Fig. 3)

Ⓞ This adjustment consists of aligning the UV light guide with the center of the MApo100X objective for 248 nm UV observation.

1. Set the MX61A to the "BF" observation mode.
2. Place a specimen with a mirror surface on the stage.
3. Bring the specimen into focus by switching the objectives for visible light from the lowest to the highest magnifications.
4. Switch the observation mode to the "DUV."

The MApo100X objective for 248 nm UV light is automatically engaged in the light path.

5. Set the shutter switch to "Open" to open the shutter.
6. Bring the specimen into focus by observing the monitor for UV observation. If the observation image is not displayed or abnormally dark, the illumination center is deviated. In this case, the light guide mount should be adjusted.
7. Using a Phillips screwdriver, loosen slightly the three clamping screws ① of the UV light guide mount.
8. Insert the provided Allen screwdriver alternatively into the two adjustment screws ② and turn the screws until the brightest observation image is obtained.
9. After completing the adjustment, be sure to tighten the three clamping screws ①.

Ⓞ Hereafter, the illumination center adjustment is not required until the UV light guide is replaced. However, when a combined microscope is changed or an AF unit is added, the illumination center needs to be readjusted.

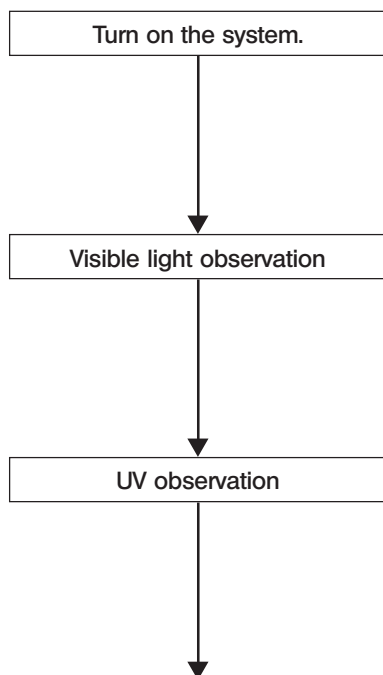
The UV light guide is a consumable part. It should be replaced when the image is deteriorated to a degree it cannot be rendered brighter even by adjusting the illumination center.

# 4 SUMMARY OF VISIBLE/UV LIGHT OBSERVATION PROCEDURE

©The motorized control of the MX61A and U-UVF248A is executed using the MX2-BSW control software.

©The mercury/xenon burner takes 5 to 10 minutes until the arc is stabilized after ignition.

## (Operation)



1. Switch the power supply for the mercury/xenon burner to "I" (ON).
2. Switch the computer ON.
3. Switch the BX-UCB control box ON.
4. Switch the UV TV camera and monitor ON.
5. Switch other setup modules ON.

1. Select the "BF" observation mode using the menu of the MX2-BSW.
2. Engage a visible-light objective with low magnification in the light path.
3. Place the specimen and adjust the focus and brightness.
4. Engage a visible-light objective with high magnification in the light path, and adjust the focus and brightness. (Use autofocusing when the AF unit is used.)

1. Select the "DUV" observation mode using the menu of the MX2-BSW. The MApo100X objective for UV light is automatically engaged in the light path.
2. Set the shutter to "Open" using the menu of the MX2-BSW.
3. Adjust the focus and brightness of the monitored image using the menu of the MX2-BSW.



### **Caution on UV light**

Before maintenance or removal of a module, switch the power supply for the mercury/xenon burner and the control box to "O" (OFF) to avoid direct exposure of your eyes, skin or other body parts to the UV light.

# 5 SPECIFICATIONS

## ■ UV248 Light Source Box U-UVF248LBM

Item	Specifications
Applicable light source	Lamp housing: U-LH80HGXE. Mercury/xenon burner: UXM80E (Life: Approx. 1000 hours). Power supply: U-HX-T
Optical wavelength	248 ±4 nm.
Brightness adjustment	0% to 100%. Adjustment with pulse motor drive.
Shutter	Shutter opening/closing with pulse motor drive.
Dimensions & weight	170(W) x 170(H) x 240(D) mm, approx. 3.6 kg.

# 6 TROUBLESHOOTING GUIDE FOR UV OBSERVATION

If problems occur, please review the following list and take remedial action as needed. If you cannot solve the problem after checking the entire list, please contact Olympus for assistance.

Trouble	Cause	Remedy	Page
The UV observation image on the monitor is invisible or dark.	Cables are connected improperly or the system is not turned on.	Check all connections and turn on the system.	12
	No mercury/xenon burner is mounted on the lamp housing.	Mount the UXM80E mercury/xenon burner.	11
	The time elapsed after ignition of the mercury/burner is short.	Wait for about 5 to 10 minutes until the arc image stabilizes.	6
	The shutter of the light source box is closed.	Set the shutter to Open using the menu of the MX2-BSW.	7
	The observation mode other than "DUV" is set.	Select "DUV" in the menu of the MX2-BSW.	7
	No UV-light objective is mounted on the revolving nosepiece.	Mount the MApo100X objective for 248 nm UV light.	-
	The mercury/xenon burner is not centered correctly.	Adjust the centering correctly.	6
	The illumination center is deviated.	Adjust it correctly.	7
	The setting of the illumination lens adjustment screw is deviated.	Set it back to the factory-shipped setting position (adjustment screw rearmost stop position).	U-UVF248 6
	The UV light intensity is set too low.	While observing the image, increase the brightness using the menu of the MX2-BSW.	8
	The mercury/xenon burner is blown or its life is expired.	Replace with the specified burner.	11

# 7 ASSEMBLY

★ Some of the modules already mounted on the microscope system should be dismantled when mounting this unit.

When dismantling or mounting a module, handle it carefully, remove dirt or dust on the mounting section and take care not to damage the module.

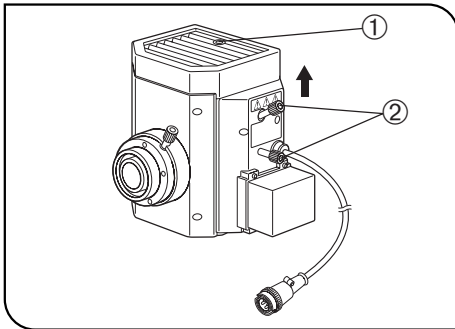


Fig. 4

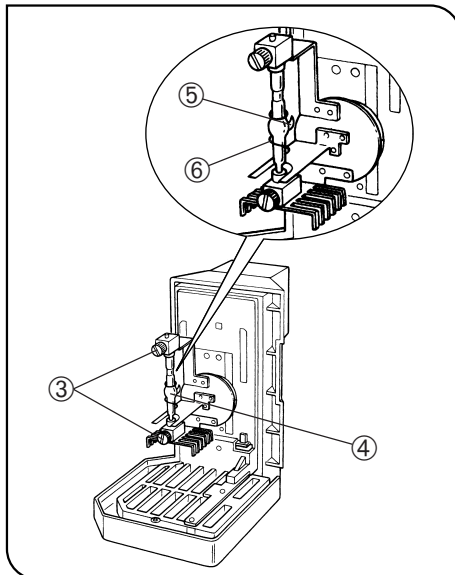


Fig. 5

## 1 Attaching the UV248 Light Source Box (Figs. 4 to 6)

### Attaching the Mercury/Xenon Burner (Figs. 4 & 5)

▲ The burner and areas near it will be extremely hot during and right after use. To prevent burns, wait until the burner and lamp housing have cooled down after turning the burner off.

▲ Do not touch the burner socket immediately after ignition. Otherwise, an electric shock may result due to the remaining charge of the high voltage required for ignition.

Before opening the lamp housing after use, set the power switch to “O” (OFF) and wait 10 minutes or more until the burner and lamp housing have cooled down.

1. Loosen the socket clamping screw ① using the Allen screwdriver.

2. Hold the upper part of the lamp housing and pull it up straight to remove the socket section.

★ To prevent malfunction, do not hold the lamp housing by the centering knobs ②.

3. Place the socket section upside down as shown in Fig. 5.

◎ The lamp housing is equipped with the holder for transportation in the factory shipment condition or with an old burner when the burner is replaced. Remove the holder or old burner by loosening the two burner holding screws ③.

4. Attach the burner so that the - (negative) pole comes at the top and tighten the - (negative) pole side with one of the screws ③. Then fit the + (positive) pole of the burner into the + (positive) side socket hole and tighten the other screw ③.

▲ Be sure to use the UXM80E burner (mfd. by USHIO) that is available through Olympus.

★ Be careful not to soil the burner with fingerprints or dust. If it becomes dirty, wipe clean the burner surface with a piece of gauze moistened with absolute alcohol.

★ If contaminants are left on the burner surface, dark spots may appear in the field of view during observation.

★ The burner ④ should be attached so that projection ⑤ on the tube is oriented toward the burner mounting side and does not hinder the light path.

★ The trigger wire ⑥ of the xenon burner should face the starter connecting surface so that it will not interfere with the light path.

▲ Never disconnect the trigger wire ⑥ as the burner will not ignite if the wire is removed.

5. Attach the socket section with burner in the original position and tighten the clamping screw ①.

★ To attach, align the external surface of the socket with that of the lamp housing and push the socket straight downward.

Do not ignite the burner until the lamp housing is mounted on the UV248 light source box. Otherwise, the UV rays may injure your eyes or skin.

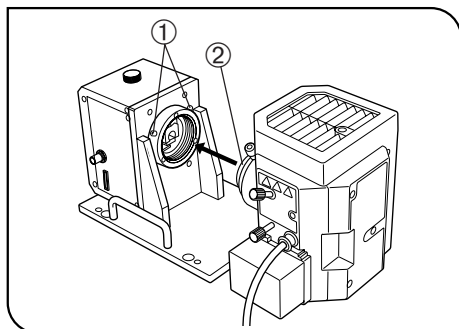


Fig. 6

### Attaching the Lamp Housing (Fig. 6)

1. Loosen the two lamp housing clamping screws ① of the UV248 light source box.
2. Insert the mount seat ② of the lamp housing into the mount and tighten the clamping screws ①.

**▲ Attach the lamp housing and take care not to tilt it. Reserve enough space around the lamp housing to ensure ventilation.**

### Resetting the Burner Hour Counter

Set the hour counter by referring to the instruction manual provided with the power supply.

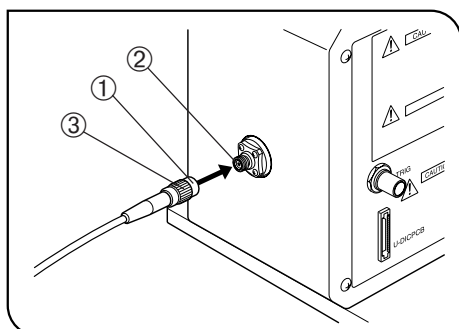


Fig. 7

## 2 Attaching the UV Light Guide (Figs. 7 & 8)

**▲ Do not bend the UV light guide into a radius below 100 mm to prevent it from breaking. Also do not place a heavy object on the light guide or subject it to strong force.**

1. Remove the protective rubber caps from the two ends of the light guide. Handle the light guide carefully so as not to leave stain or damage on the end surfaces.
2. Insert the input connector ① into the UV light guide mount ② on the UV248 light source box by aligning the positioning marks, and tighten the clamping ring ③.
3. Loosen the clamping knob ④ and insert the output connector ⑤ all the way. Clamp the connection so that the clamping knob ④ is aligned with the positioning reference plane ⑥.

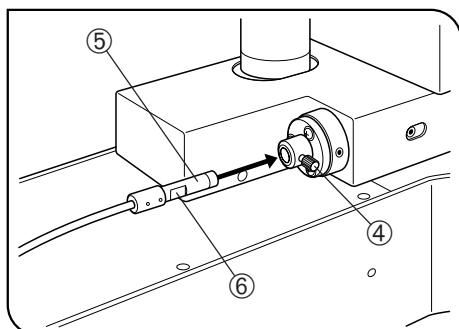


Fig. 8

## 3 Connecting Other Cables

1. Set the main switches of all of the modules equipped with main switches to "○" (OFF).
2. For safety, the connection of the power cord into the power outlet should always be the last connected cable.
3. Be sure to connect each cable firmly.

- We recommend performing "Preventive Inspections" periodically (every time you replace lamps and at least once every 6 months).
- The table below identifies the check items to be observed. Put (X) if not applicable or (√) if applicable.
- If there are any check marks (√) noted, immediately stop use of the product and seek service or replacement for the illumination device(s) for prevention.
- If you detect an abnormality other than that listed below with your illumination device or other Olympus product, request inspection from your Olympus distributor.

If you have any questions, please contact your Olympus distributor.

Check items	Check results (Date)			
	/	/	/	/
1. More than 8 years have passed since original purchase or exceeds 20,000 hours of use.				
2. Lamp does not light sometimes even though the power is on. (Except discharge burners*1)				
3. Light flickers when you move a lamp cable or illumination devices.				
4. Lamp cable is unusually hot to the touch.				
5. Burning or smoke odor.				
6. Light still flickers after new lamp replacement. (Except discharge burners*1)				
7. Signs of deformation, backlash, or looseness, etc. when you assemble/ disassemble the illumination device. (i.e. it is hard to open/ close the lid during lamp-replacement.)				
8. Connection terminals or a lamp installation terminal have become discolored or tarnished on the right or left side. (Except discharge burners*1)				
9. Illumination device/ housing has become deformed, cracked or tarnished in any way.				
10. Lamp cables or wiring parts have become deformed, cracked or tarnished in any way.				
11. Frequent repairs to similar devices put into use at the same time as the unit being checked.				

# If the spaces are not enough for check , copy this sheet.

\*1 Discharge burners: Mercury burner / xenon burner / metal halide burner



# *MEMO*

# *MEMO*



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