



*Modules described  
in this manual*

**U-HGLGPS**

**U-LLG150/300**

**U-LLGAD**

# INSTRUCTIONS

## LIGHT GUIDE ILLUMINATION SYSTEM

This instruction manual is for the Light source Model U-HGLGPS.

To ensure the safety, obtain optimum performance and to familiarize yourself fully with the use of this light source, we recommend that you study this manual thoroughly before operating this system.

Retain this instruction manual in an easily accessible place near the work desk for future reference.

**A X 8 1 0 4**



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.



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.

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# IMPORTANT






This light source unit is the fluorescence illumination light source which does not need to adjust centering. By combining with the microscope, uneven stable illumination can be provided.

## SAFETY PRECAUTIONS

- 1) Do not turn on the lamp without attaching liquid light guide and liquid light guide adapter to the microscope. The UV light is included in the lights from this lamp. Looking directly into the light may damage your eyes. Also, it could cause fire.
- 2) Before replacing the lamp, be sure to set the power switch to ○ (OFF), unplug the power cord from the outlet, and wait until the lamp replacement cover and the lamp have cooled down completely (more than 40 minutes as a guide) to avoid electric shock or burn.
- 3) Install the light source unit on a sturdy, level table or bench.
- 4) Install this equipment on a flat surface which does not block the ventilation opening on the bottom panel. Do not place it on a soft surface, e.g. paper or cloth, etc. This could cause fire.
- 5) Make sure to leave sufficient space for ventilation around this equipment. Never allow metallic objects to enter the ventilation opening. This could cause fire or electric shock.
- 6) When installing this equipment, secure sufficient space larger than 10 cm around this equipment to release the heat.
- 7) In order to prevent the liquid light guide from being broken, the bend radius of the liquid light guide must be larger than 40 mm.
- 8) Always use the power cord provided by Olympus. If no power cord is provided, please select a proper power cord by referring to the section "PROPER SELECTION OF THE POWER CORD" at the end of this instruction manual. If the proper power cord is not used, product safety performance cannot be warranted. Place the power cord far enough from the heat source so that it does not touch it, e.g. near the lamp replacement cover, etc.
- 9) Do not turn ON the light while the lamp replacement cover is open. Doing so could result in electric shock, burn, light source unit failure or deterioration of the light guide.
- 10) Be sure to connect the power cord to a grounded outlet. Otherwise Olympus cannot warrant the intended electric safety and performance of this equipment.
- 11) Never touch the power plug during a thunder-storm.
- 12) The light source must be located/installed in such a way that there is easy access to the AC inlet located on the rear of the equipment as the AC inlet is designated as the main disconnecting device for this equipment.

### Safety Symbols

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

Symbol	Explanation
	Indicates the presence of high voltage. Take caution to guard against electric shock.
	Indicates that the surface becomes hot, and should not be touched with bare hands.
	Indicates a non-specific general hazard. Follow the description given after this symbol or in instruction manual.
	Indicates that the main switch is ON.
	Indicates that the main switch is OFF.

### Caution

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

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

**CAUTION**: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or damage to the equipment or other property. It may also be used to alert against unsafe practices.

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

## 1 Getting Ready

- 1) This Instruction Manual pertains only to the light source unit. Read also the Instruction Manual of the microscope to be used together with this equipment so that you can understand the comprehensive use procedures.
- 2) This equipment is a precision unit. Handle it carefully to avoid sudden and severe impact. This equipment is not waterproof.
- 3) Do not use this equipment where it is subjected to direct sunlight, dust, steam or vibration. For operating environment, refer to [5 Specifications] on page 11.
- 4) Highly flammable organic solvent, e.g. dehydrated alcohol, etc. may cause fire. Keep it away from the light source unit while the light source is turned on or immediately after the light source is turned off.
- 5) When the liquid light guide is broken, solvent leaks out. Though the solvent is not severely toxic, wash your hands and/or eyes thoroughly with water if they got in touch with the solvent.
- 6) Do not twist the liquid light guide excessively to prevent it from being damaged. Also do not pull it with more than 3kg tension.
- 7) Be sure to set the power switch to ○ (OFF) and unplug the power cord from the outlet and remove the liquid light guide before carrying the equipment.
- 8) Be careful not to touch around the ventilation opening area while this equipment is turned on or immediately after it has been turned off. As this ventilation opening area is heated, this causes burns.
- 9) Do not repeat turning ON/OFF the lamp more than necessary. The life of the lamp may be shortened.

After the lamp is turned ON, wait for 2 minutes before turning OFF the lamp.

After the lamp is turned OFF, wait for 10 minutes before turning ON the lamp.

## 2 Maintenance and Storage

- 1) Clean periodically (every 100 hours as a guide). Before cleaning, unplug the power plug from the outlet and wipe it with a fluff-free soft dry cloth.
- 2) If the light source unit and the liquid light guide are very dirty, wipe them with the soft cloth slightly containing the diluted detergent. If the edge surface of the liquid light guide is dusty, blow the dust off with the clean air. If the dust cannot be removed, clean it off with the cotton swab or the lens paper containing the alcohol.
- 3) Vacuum the dust around the ventilation openings on the bottom and side of the light source with a vacuum-cleaner periodically (every 6 months as a guide). Using the dusty equipment continuously may result in a fire or failure.
- 4) Never disassemble/remodel anything other than those described in this Instruction Manual. This may cause the performance deterioration or incidents.
- 5) If you don't use the equipment, be sure to turn ○ (OFF) the power switch and unplug the power cord from the outlet. Then, after confirming that the equipment is cooled down completely, store it and put the dust prevention cover over it.
- 6) When the lamp replacement instruction of the equipment appears (when the lamp "lighting time" blinks), install a new lamp. (See page 9.) The mercury lamp, different from the fluorescence, contains a high pressure gas within the tube. If you keep using it beyond the lifetime extremely, the glass tube may burst due to the accumulated strain. The used mercury lamp must be disposed of as industrial waste. If you cannot dispose of it by yourself, bring it to the Olympus sales office.
- 7) Before disposing of this product, be sure to follow the regulations and rules of your local government.

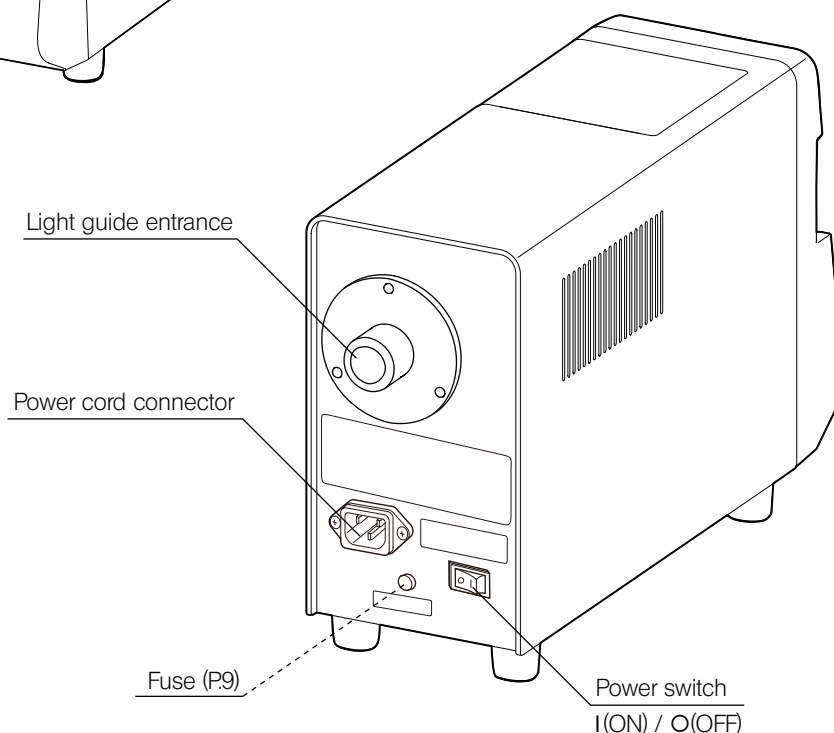
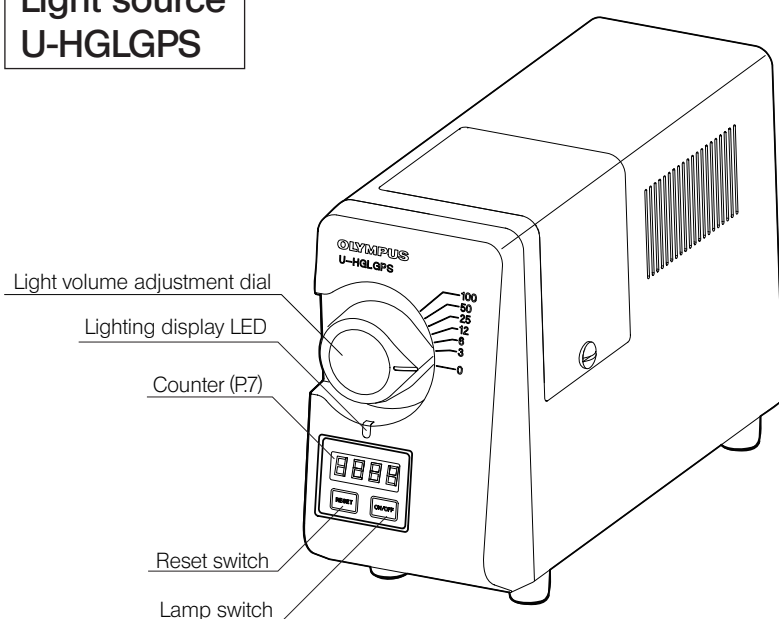
### In case that the lamp bursts

Should the lamp burst, follow the procedures below.

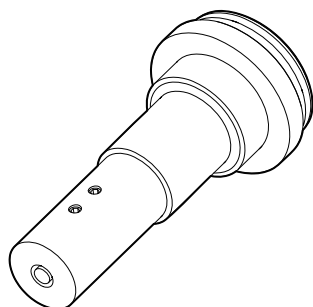
- Should the lamp burst, unplug the power cord from the outlet. Leave that place and ventilate for at least 30 minutes.
- After the lamp and the lamp house have cooled down, collect the remaining mercury with packing tape, paper or dropper, etc.
- The collected mercury and tools used must be sealed completely in a nonmetallic container, and ask the waste disposer to dispose them.
- Should you have inhaled mercury steam, consult the doctor immediately and follow his/her instructions.

# 1 MODULE NOMENCLATURE

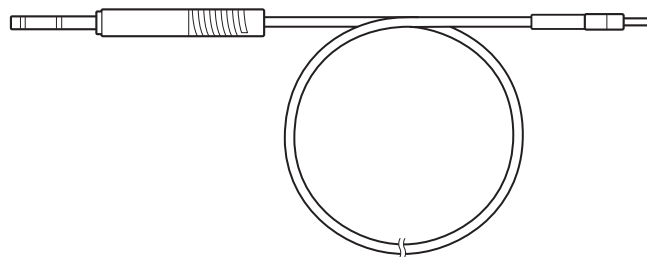
## Light source U-HGLGPS



## Liquid light guide adapter U-LLGAD



## Liquid light guide U-LLG 150/300



## 2 ASSEMBLY

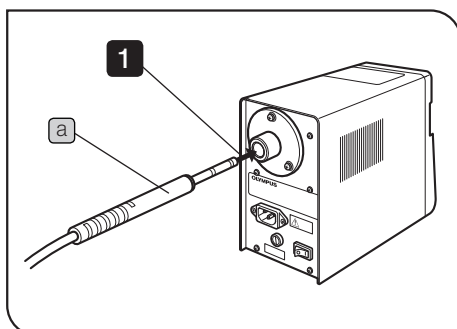


Fig. 1

### 1 Mounting the Light Guide

(Figs. 1 to 3)

- 1 Hold the connector (a) of the light guide and insert it to the light guide socket of the light source unit.

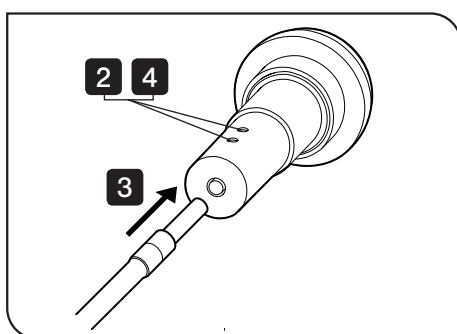


Fig. 2

- 2 Loosen the light guide fixing screws with the Allen screwdriver provided with the microscope.

⊙ Make sure that the light guide screw is loosened enough. If not, the connector of light guide will hit the light guide screw and it can not be inserted to the right position.

- 3 Insert the other light guide connector to the light guide adapter.
- 4 Tighten the light guide fixing screws firmly by using the Allen screwdriver provided with the microscope.

**CAUTION** If the light guide fixing screws are not tightened firmly, the light guide can slip out and cause fire.

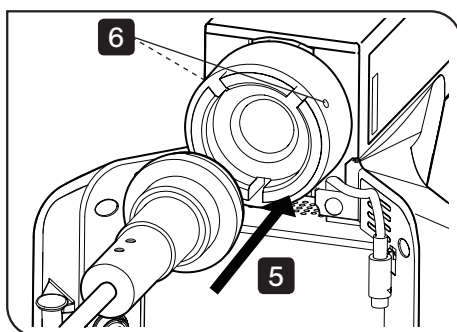


Fig. 3

- 5 Mount the light guide adapter to the illuminator.
- 6 Tighten the fixing screw with the Allen screwdriver provided with the microscope.

**CAUTION** · Never subject cords and liquid light guides to excessive bending or twisting because they can easily be damaged.

· Do not turn on the lamp without attaching the liquid light guide and liquid light guide adapter to the microscope. The UV light is included in the lights from this lamp. Looking directly into the light may damage your eyes. Also, it could cause fire.



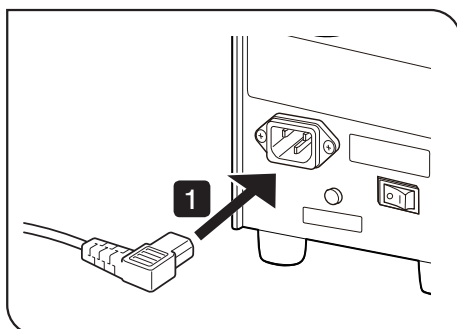


Fig. 4

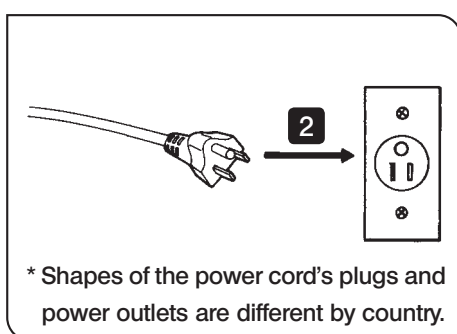


Fig. 5

## 2 Mounting the Power Cord

(Figs. 4 &amp; 5)

- 1 Insert the power cord to the socket on the back side of the light source unit.
- 2 Insert the power cord plug to the wall mounted outlet.

### CAUTION

· Cords and liquid light guide are vulnerable when bent or twisted. Never subject them to excessive force.

· Make sure that the main switch is set to ○ (OFF) before connecting the power cord and other cords.

· Always use the power cord provided by Olympus. If no power cord is provided, please select a proper power cord by referring to "PROPER SELECTION OF THE POWER CORD" at the end of this instruction manual.

· Connect the power cord correctly and ensure that the ground terminals of the power cord and the wall outlet are properly connected. If the equipment is not grounded, Olympus cannot warrant the electrical safety and performance of the system.

# 3 OPERATION

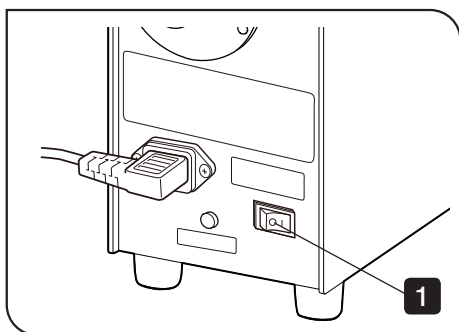


Fig. 6

## 1 Turning ON the lamp

(Figs. 6 & 7)

- 1 Turn I (ON) the power switch on the back side of the light source unit. The software version appears in the counter, and then (after approximately 3 seconds), the accumulated lighting time of the lamp appears. When the accumulated lighting time of the lamp appears, each switch can be operated.

**CAUTION** Before lighting the lamp, confirm that the lamp replacement cover is closed completely.

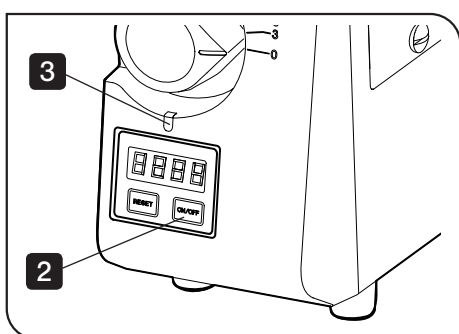


Fig. 7

- 2 Press the lamp switch in front of the light source unit.
- 3 The lighting display LED is turned on in blue. If the lamp is not turned on, the lighting display LED is turned on in red. In this case, refer to page 8.
  - ⊙ The light volume of the lamp stabilizes approximately 90 seconds after turned on. If you want to stabilize the light volume more stably, wait approximately 5 minutes after having it turned on.
  - ⊙ In case the lamp switch is pressed for a period time to turn off the lamp within 2 minutes after the lamp was turned on, the lighting display LED is turned on in blue and starts blinking. The lamp is turned off 2 minutes after it was turned on, and light display LED stops blinking.

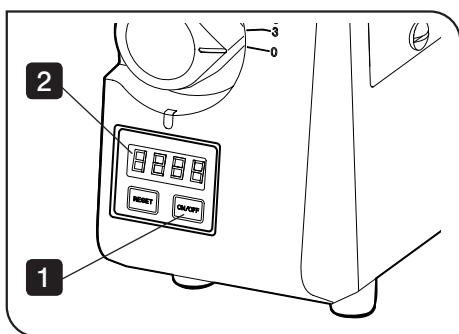


Fig. 8

## 2 Turning OFF the lamp

(Figs. 8 & 9)

- 1 Press the lamp switch in front of the light source unit for a period of time (0.5 seconds) to turn off the lamp.
- 2 After the lamp is turned off, the countdown of the cooling time (300 seconds) is displayed in the counter. Any operations by the buttons are locked until the indication of the countdown becomes "0".
- 3 Turn O (OFF) the power switch of the light source after the indication of the countdown became "0".
  - ⊙ As the lamp is heated immediately after turning it off, it is hard to turn on the lamp again. If you want to turn on the lamp again, wait for approximately 10 minutes after having it turned off. If the lamp is turned on while heated, the lifetime of the lamp may be shortened.
  - ⊙ The fan of the light source stops working automatically 60 seconds after the lamp switch has been pressed for a period time (approx. 0.5 seconds).

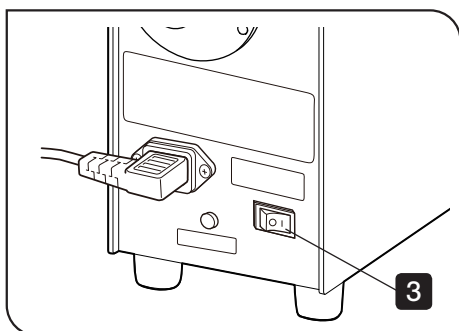


Fig. 9

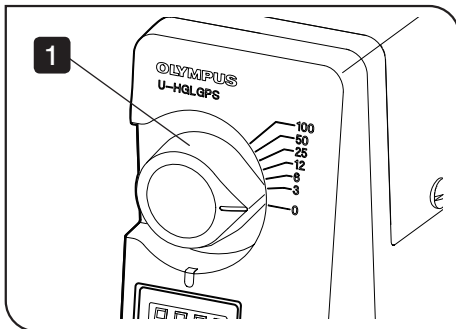


Fig. 10

### 3 Adjustment of the brightness

(Fig. 10)

- 1 Rotate the light volume adjustment dial to adjust the light volume. The light volume can be adjusted in 7 levels. Each numerical number indicates the percentage (0-100%) of each light volume where the maximum light volume is 100%.

⦿ Rotate the light volume adjustment dial slowly by each level.

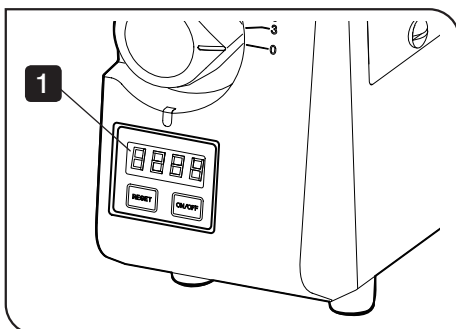


Fig. 11

### 4 Counter Display

(Fig. 11)

- 1 When the power switch is turned ON, the accumulated lighting time of the lamp appears in the counter. For details, refer to below table.

Operation	Counter display
Immediately after the power switch is turned ON.	The software version appears. (for 3 seconds)
When the lamp is in stand-by status (3 seconds after the power switch is turned ON).	The accumulated lighting time of the lamp appears. (Unit: 1 hour)
When the lamp is turned OFF (when the lamp switch is pressed for a period of time). (approx. 0.5 seconds)	The countdown of the cooling time (300 seconds) appears. (Unit: 1 second)
When end of the lifetime of the lamp is coming closer.	When the accumulated lighting time of the lamp exceeds 1900 hours, it blinks every second while the lamp is being turned on.
When the display is disabled by abnormal EEPROM data.	Err is displayed.

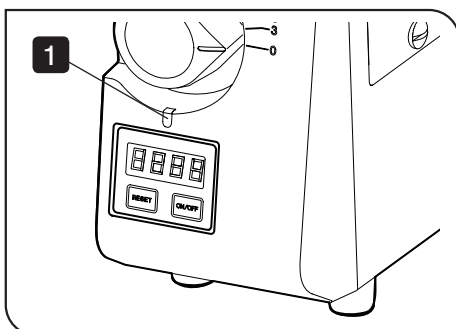


Fig. 12

### 5 Lighting Display LED

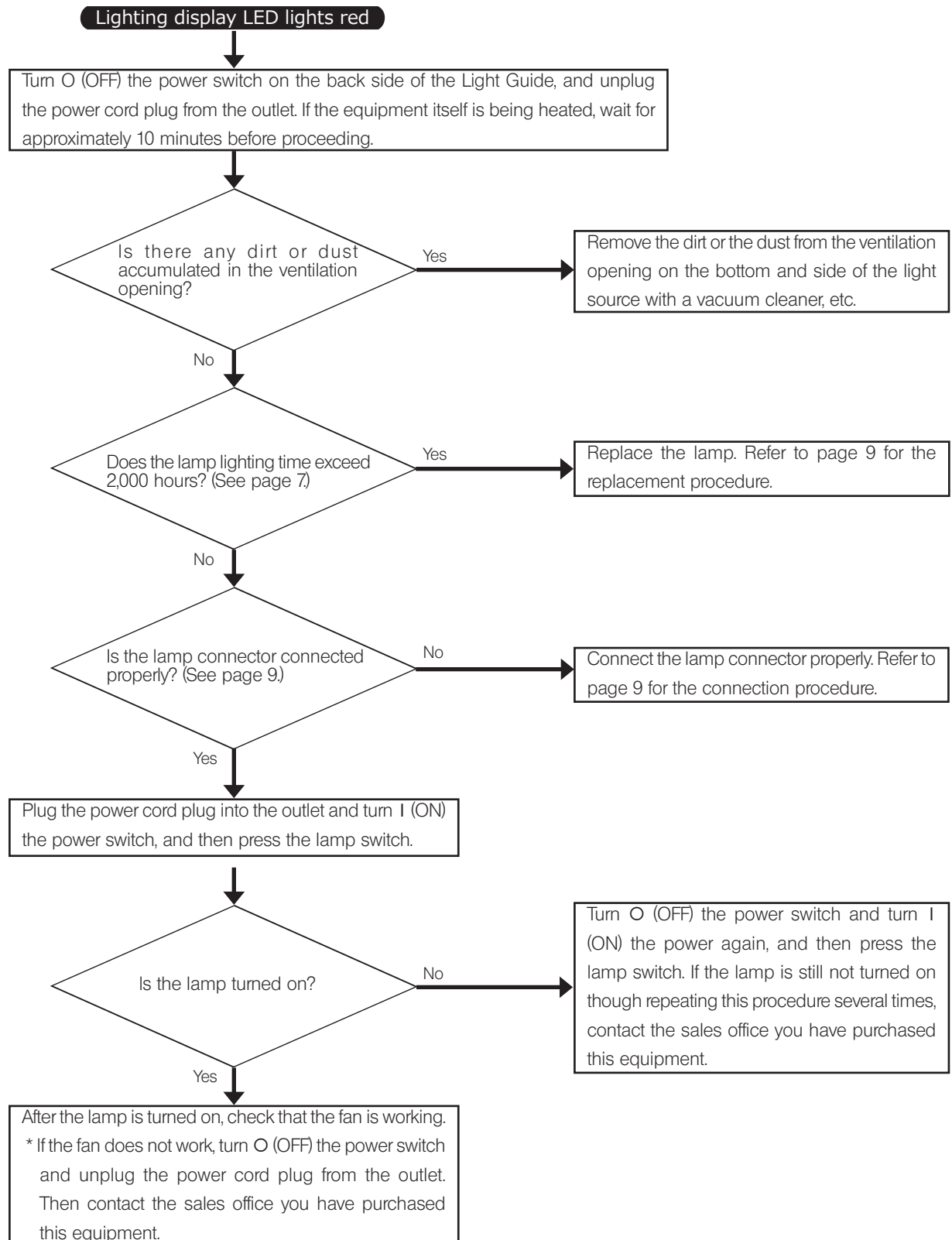
(Fig. 12)

- 1 The lamp status appears in the lighting display LED. For details, refer to below table.

Conditions of the lamp	Lighting display LED
When the lamp is in stand-by status.	It is turned off.
When the lamp switch is pressed and the lamp is turned ON properly.	It lights blue.
Though the lamp switch is pressed, the lamp is not turned ON.	It lights red.
When the lamp is turned off.	It is turned off.
When the lamp switch is pressed for a period of time (approx. 0.5 seconds) within 2 minutes after the lamp was turned on	It lights blue and blinks. (The light display LED is turned off, when the light is turned off 2 minutes after it was turned on.)
When the lamp is turned off abnormally while the lamp is being turned on.	It lights red.
When the temperature of the body is raised abnormally due to the deterioration of cooling status.	It lights red.

### If the lighting display LED lights red

If the equipment does not work properly, e.g. the lamp is not turned on, etc., the lighting display LED lights red. Follow the procedures described below.



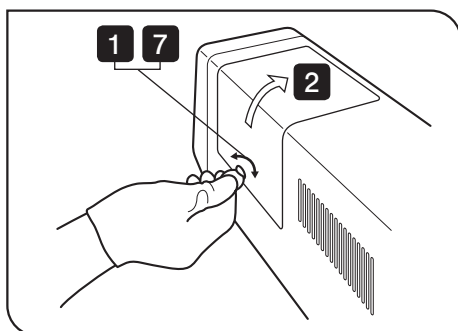


Fig. 13

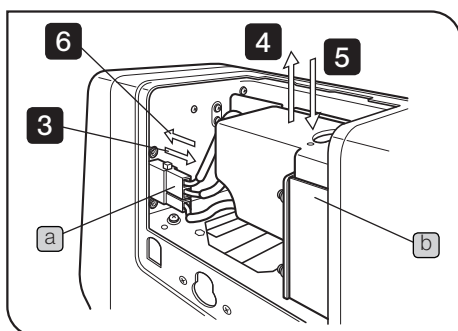


Fig. 14

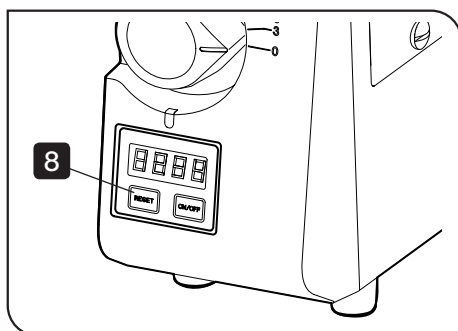


Fig. 15

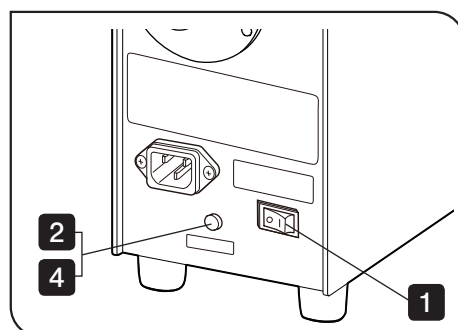


Fig. 16

## 6 Replacement of the Lamp

(Figs. 13 to 15)

« Applicable lamp »

DC130W SHI Lamp (USHIO INC. SHI-130 OL)

**CAUTION** Before replacing the lamp, be sure to turn **O (OFF)** the power switch and unplug the power cord from the outlet, and wait (more than 40 minutes as a guide) until the lamp replacement cover and the lamp are cooled down sufficiently. If you replace the lamp keeping the power switch **I (ON)**, the lamp may be damaged.

Ⓢ Wear protective gloves and protective glasses when replacing the lamp.

- 1 Use a coin or similar to unlock the lamp replacement cover.
- 2 Lift the lamp replacement cover to remove the cover.
- 3 Unplug the lamp connector **a**.
- 4 Hold the black frame and raise the lamp slowly upward.

**CAUTION** If the lamp is dropped, the glass is broken and you may be injured. Pay careful attention when you replace the lamp.

Ⓢ Do not touch the glass area of the lamp (front glass or reflector) directly with bare hands. The lamp may not be used due to the attached dirt or fingerprints.

- 5 Insert a new lamp to the light source unit along the slide rail **b**.
- 6 Connect the lamp connector **a**.
- 7 Mount the lamp replacement cover and lock the lamp replacement cover with a coin or similar.
- 8 Press the reset switch for a period of time (for 2 seconds) and set the accumulated lighting time of the lamp to "0".

## 7 Replacement of Fuse

(Fig. 16)

- 1 Turn **O (OFF)** the power switch of the light source unit and unplug the power cord plug from the outlet.
- 2 Remove the fuse box with flat-blade screwdriver.
- 3 Replace the fuse in the fuse box with a new fuse. (This procedure is not illustrated.)

« Applicable fuses »

T3.15A(H)250V (LITTELFUSE 02153.15XP)

**CAUTION** Using a non-specified fuse may cause a fire hazard.

- 4 Return the fuse box to the original position and fix it with flat-blade screwdriver.

# 4 TROUBLESHOOTING GUIDE

Under certain conditions, performance of the unit may be adversely affected by factors other than defects. 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 your local Olympus representative for assistance.

Trouble	Cause	Remedy	Page
a) The power of the equipment can not be turned on.	Power cord and plug are not connected properly	Connect them correctly.	5
	The built-in fuse is blown.	Replace the fuse with a new one.	9
b) The lamp cannot be turned on (the cooling fan has stopped).	The cooling fan or the power supply has failed.	Contact your Olympus representative.	-
c) The lamp cannot be turned on (the cooling fan is operating).	The lamp life has expired.	Replace with a new lamp.	9
	The lamp is not mounted properly.	Mount the lamp properly.	9
	The ventilation openings on the bottom and side of the light source are blocked.	Remove the objects blocking the openings. Make sure to secure sufficient space around the ventilation openings.	-
d) The lamp can be turned on but is unstable.	The lamp life has expired.	Replace with a new lamp.	9
e) The lamp can be turned on but is dark.	The lamp life has expired.	Replace with a new lamp.	9
	The lamp is not mounted properly.	Mount the lamp properly.	9
	The light guide is not mounted properly.	Mount the light guide properly.	4
	The dial value of light volume adjustment is low.	Slowly rotate the light volume adjustment dial toward 100 by each level.	7
f) The lamp turns off during use.	The lamp life has expired.	Replace with a new lamp.	9
	The built-in fuse is blown.	Replace the fuse with a new one.	9
	The light source is heated up extremely due to dirt or dust accumulated in the ventilation opening.	Turn off the power and clean the ventilation opening. After cleaning, turn on the power after the light source has cooled down sufficiently.	-

# 5 SPECIFICATIONS

Item	Specification
Input rating	100-240 V $\pm$ 10 % $\sim$ ( 90-264 V ) , 50/60 Hz 2.0 A
Lamp	DC130W SHI lamp SHI-130 OL
Light guides	Liquid light guide(1.5m/3.0m) : U-LLG 150/300
Light guide adapter	Liquid light guide adapter : U-LLGAD
Dimensions / Weight	111(W)X195(H)X317(D) 3.5 $\pm$ 0.3kg
Rated power	160W (lamp output rating : 130W) Max : 170W (lamp maximum rating : 137W)
Transport / Storage environment	Temperature : Min. -25°C, Max. 65°C Humidity: Min. 10%, Max. 90% (without condensation)
Operating environment	Indoor use. Altitude : Max. 2000 m Ambient temperature : 0° to 40°C (32° to 104° F) Relative humidity : 30% to 90% (without condensation) Pollution degree : 2 (in accordance with IEC60664-1) Installation/Overvoltage category : II (in accordance with IEC60664-1) There must be neither corrosive gas nor dust. Either water nor oil must not splash directly.

# 6 LAMP HOUSING INSPECTION SHEET

- Study the instruction manual for the lamp housing before inspection.
- For safe use of the lamp housing, we recommend performing the following inspection periodically (every time you replace the lamp and at least every 6 months).
- The table below identifies the check items to be observed. Put (X) if not applicable or (✓) if applicable.
- If there is any (✓) mark noted, immediately stop use of the product, and contact Olympus for detailed inspections or replace the lamp housing.
- If you detect an abnormality other than that listed below or with other Olympus product, also stop the use of the product and contact Olympus for detailed inspections.
- Note that service, replacement and detailed inspections are charged after expiration of the warranty period.

If you have any questions, please contact Olympus.

Check items	Check results (Date)			
	/	/	/	/
1. More than 8 years have passed since original purchase or the total power ON time has exceeded 20,000 hours.				
2. Illumination flickers when you move the lamp cable or lamp housing.				
3. Lamp cable is unusually hot to the touch.				
4. Scorching or burning odor is produced during use.				
5. Deformation, backlash, or looseness, etc. when you assemble the lamp housing. (Impossibility of removing the top section of lamp housing when you attempt to replace the lamp, etc.)				
6. Discoloration, deformation or cracking of the lamp housing.				
7. Melting, crack, deformation or solidification of the lamp cable or a wiring part.				
8. Increased frequency of servicing compared to similar devices put into use at the same time as the lamp housing.				

\* When the Check Result columns become insufficient, copy this sheet.



## ■ PROPER SELECTION OF THE POWER CORD

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
















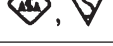



**CAUTION:** In case you use a non-approved power cord for Olympus products, Olympus can no longer warrant the electrical safety of the equipment.

### 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 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 the power 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 Japan/METI	
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
Istituto 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 Materialkontroll (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

Underwriters Laboratories Inc. (UL)  
Canadian Standards Association (CSA)

SV, SVT, SJ or SJT, 3 X 18AWG  
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