

# OLYMPUS®

## INSTRUCTIONS

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# U-RFLT50

## POWER SUPPLY UNIT

This instruction manual only covers the Olympus Power Supply Unit U-RFLT50. To ensure the safety, obtain optimum performance and, to familiarize yourself fully with the use of this power supply unit, we recommend that you also study the instruction manual for the microscope to be used. Retain this instruction manual in an easily accessible place near the work desk for future reference.



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# IMPORTANT

This mercury burner power supply unit is only designed for use with Olympus mercury burner light source attachments. When using this power supply unit, always refer to the instruction manual for the CX-RFL, CH-RFL, etc., reflected light fluorescence module.








## SAFETY PRECAUTIONS

1. The applicable lamp housing is a mercury burner configuration Olympus lamp housing (U-LH50HG).
2. Always press the main switch to "○" (OFF) before connecting/disconnecting the power cord to/from the wall outlet.
3. The power supply unit contains high voltage components. To avoid a potential shock hazard, never attempt to disassemble the unit.
4. To avoid a potential shock hazard, be sure to **ground** the equipment. If the equipment is not grounded, Olympus can no longer warrant the electrical safety and performance of the equipment.
5. The high pressure mercury burner (mercury arc lamp) should be an HBO50W/AC burner (mfd. by OSRAM) or a CS50W4 burner (mfd. by PHILIPS).
6. Before opening the lamp housing for replacement of the burner or other internal parts, press the main switch to "○" (OFF) and unplug the lamp housing connecting cord plug from the output connector on the power supply unit. Allow 10 minutes or more for the burner and lamp housing to cool before touching.
7. Do not open the lamp housing while the burner is turned on or for at least 10 minutes after it is turned off. Lamp housing parts will be extremely hot and will cause burns if touched.
8. Do not reverse the upside/down side of the lamp housing or mount it in a tilted position. The surfaces of the lamp housing will become extremely hot during operation. When installing the microscope, make sure to allow ample free space around and in particular above and below the lamp housing.
9. Always follow national and local laws when discarding a mercury burner.
10. The attachment should only be covered with the dust cover after the lamp housing has cooled and the power cord has been disconnected from the wall outlet.
11. Always use the power cord 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, Olympus can no longer warrant the electrical safety and performance of the equipment.
12. The power supply's built-in lithium battery (for the burner life time hour counter) should be replaced by your Olympus representative. When disposing of the power supply, always follow national and local laws and guidelines for disposal of equipment with built-in lithium batteries.

### Safety Symbols

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

Symbol	Explanation
	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 a potential fire hazard; when replacing fuses, be sure replacement fuse is of the specified rating.
	Indicates that the main switch is ON.
	Indicates that the main switch is OFF.

### Warning Labels

Warning labels are affixed at positions where special precaution is required when handling and using the attachment. Always heed the warnings.

Warning Indication Position	Light Lamp Housing U-LH50HG	[Warning Against High Temperature]
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## 1 Getting Ready

1. The attachment is a precision instrument. Handle it with care and avoid subjecting it to sudden or severe impact.
2. Do not use the attachment where it is subjected to direct sunlight, high temperature and humidity, dust or vibrations. (For operating environment conditions, refer to and adhere to the conditions specified in Section 4, SPECIFICATIONS on page 6.)
3. Make certain that the burner is installed correctly and that all cords are correctly connected.
4. Do not attempt to force any control beyond its built-in limit (stopper, click-stop, etc.). Avoid using excessive force.

## 2 Maintenance and Storage

1. Avoid leaving dirt or fingerprints on the lenses, filters, or the high pressure mercury burner. Dust or other contaminants left on the burner surface may appear as dark spots in the field of view. If contaminated, clean by wiping gently with a piece of gauze. To remove fingerprints or oil smudges, wipe with gauze slightly moistened with a mixture of ether (70%) and alcohol (30%).
- ⚠** Since solvents such as ether and alcohol are highly flammable, they must be handled carefully. Be sure to keep these chemicals 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 these chemicals only in a well-ventilated room.
2. The mercury burner has a service life of approx. 100 hours. When the hour counter on the power supply unit indicates 100 hours, replace the burner with a new one. (See page 3.)
3. If a dichroic mirror cube is not going to be used for a while, place it in its container and store it in a safe place.

## 3 Caution

If the attachment 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.

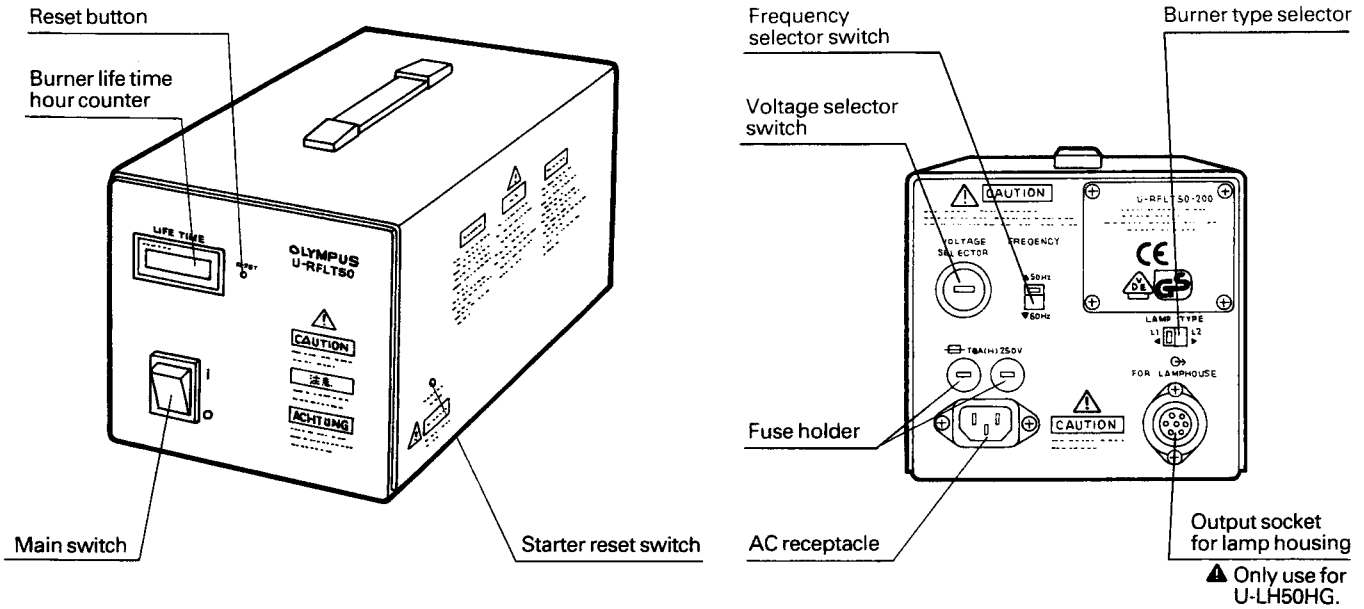
- ⚠** : Indicates that failure to follow the instructions in the warning could result in bodily harm to the user and/or damage to equipment (including objects in the vicinity of the equipment).
- ★** : Indicates that failure to follow the instructions could result in damage to equipment.
- ⊙** : Indicates commentary (for ease of operation and maintenance).

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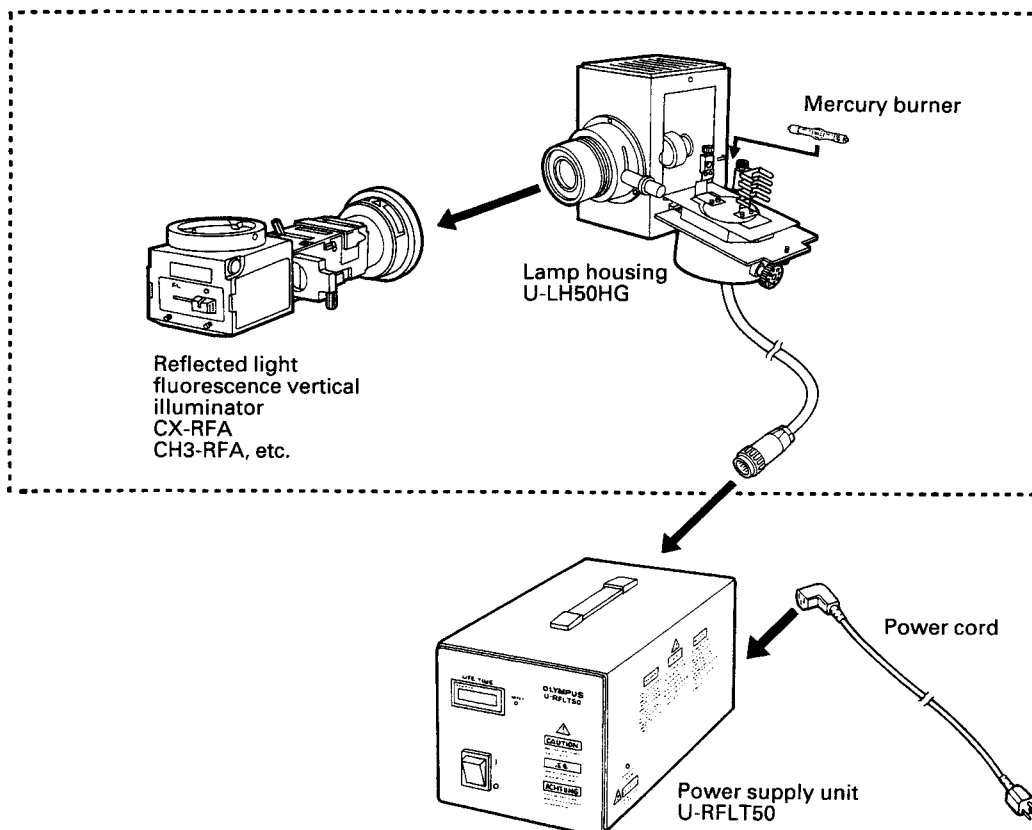
# 1 NOMENCLATURE

★ The depth dimensions of the 100V and 200V models differ.



# 2 ASSEMBLY

## 2-1 Assembly Diagram



## 2-2 Mounting the Mercury Burner

(Figs. 1-4)

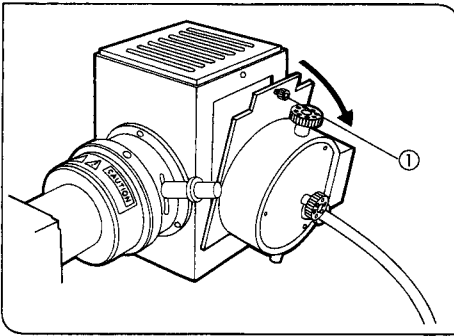


Fig. 1

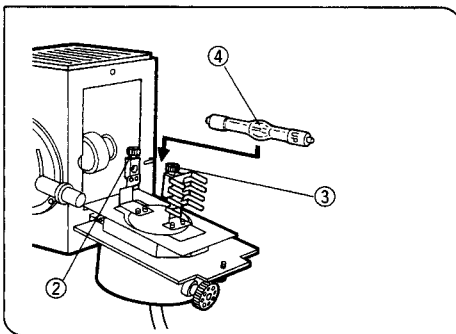


Fig. 2

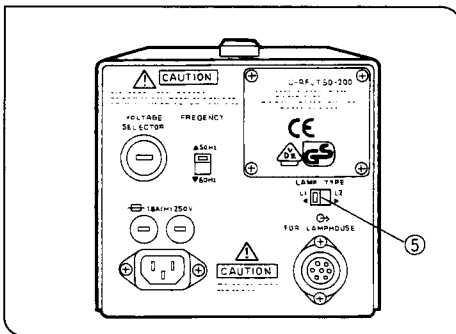


Fig. 3

### 《 Applicable Burner 》

HBO50W/AC (OSRAM)  
CS50W4 (PHILIPS)

⊙ The type of burner should be registered in the power supply unit. Accordingly, check the burner's container or the burner socket indication to see whether the burner is an L<sub>1</sub> or L<sub>2</sub> type burner.

1. Using the Allen wrench, loosen the burner socket clamping screw ①. Then gently open the socket approximately 90° in the direction of the arrow.

2. Loosen the burner clamping screws ② and ③ and remove the transport post.

⊙ For burner replacement, remove the used burner.

3. Insert the side of the mercury burner ④ with no UP engraving into the bottom terminal and tighten the clamping screw ② loosely. Then loosely tighten the clamping screw ③ holding the UP side of the burner.

★ If the terminals of the mercury burner are reversed, optimum illumination performance will not be obtainable. The burner life time may also be reduced.

★ Avoid leaving fingerprints or dirt on the mercury burner. Dust or other contaminants left on the burner surface may lead to the appearance of dark spots in the field of view. If contaminated, clean by wiping gently with gauze slightly moistened with xylene or a mixture of ether (70%) and alcohol (30%).

4. Return the burner socket with the mounted burner to its original position and tighten the socket clamping screw ①.

⊙ A click will be heard when the socket clamping screw ① is tightened. This sound indicates that the safety interlock switch is functioning correctly.

5. Set the burner type selector ⑤ on the rear panel of the power supply unit to the position corresponding to the mounted burner type (L<sub>1</sub> or L<sub>2</sub>).

★ If the socket clamping screw ① is accidentally loosened while the burner is ON, the safety interlock function will automatically turn OFF the burner. To turn ON the burner again, press the power supply unit's main switch to "O" (OFF) and wait approximately 10 minutes\*. Tighten the socket clamping screw firmly and press the main switch to "I" (ON).

\* Approximately 10 minutes are required for the mercury vapor inside the mercury burner to cool and condense to a liquid.

### ⚠ Caution When Replacing the Burner During or Immediately After Observation

The surfaces of the lamp housing will be extremely hot during and immediately after operation.

Whenever you replace the burner during use or right after use, first press the main switch on the power supply unit to "O" (OFF) and wait for the lamp housing and parts near the burner to cool before touching.

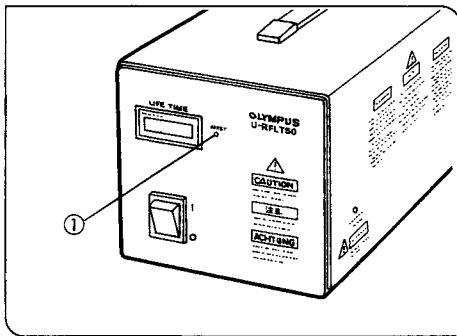


Fig. 4

6. Press the reset button ① on the power supply unit's front panel to reset the burner life indicator to "0.00".

⊙ The counter shows elapsed time in hours. In order not to impair the safety of the equipment, replace the burner when the counter indicates "100.00" hours.

★ **Make sure that the indicator is properly reset to "0.00". The burner may not start if the indicator is not properly reset.**

⚠ **To allow heat to escape, leave at least 10 cm free space around the power supply unit.**

## 2-3 Setting the Voltage Selector Switch

(Fig. 5)

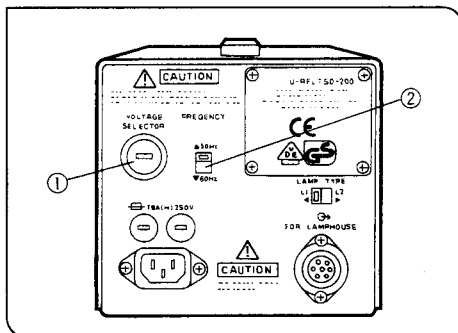


Fig. 5

1. Make sure that the voltage selector switch ① located on the rear panel of the power supply unit is set to conform with the local AC mains voltage. Use a flat-bladed screwdriver to move the switch if required.

2. Slide the frequency selector switch ② to the position conforming to the local frequency.

★ **Improper setting of the selector switches may result in reduced burner performance and/or cause it to crack.**



## 2-4 Connecting Cords and Cables

(Figs. 6-8)

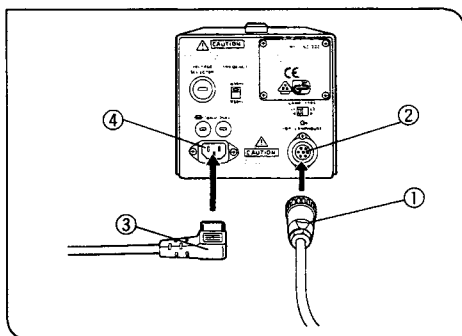


Fig. 6

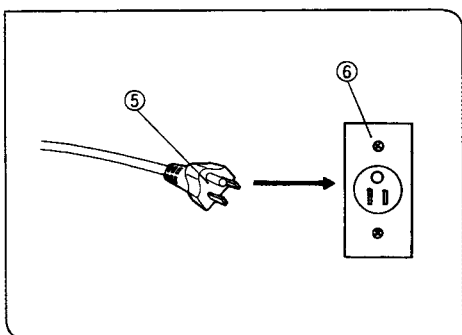


Fig. 7

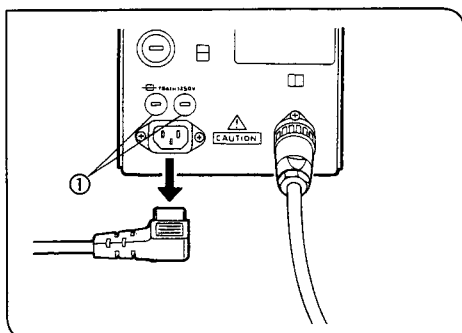


Fig. 8

- ⚠ Cables and cords are vulnerable when bent or twisted. Never subject them to excessive force as this may result in short-circuit.
- ⚠ Make sure the power supply unit's main switch is on "O" (OFF) before connecting cords and cables.

1. Plug the burner socket connecting cord plug ① firmly into the output socket ② on the power supply unit.

- ⚠ Only use for U-LH50HG.

⚠ Always use the power cord 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.

2. Connect the power cord plug ③ to the AC receptacle ④ on the power supply unit.

3. Plug the power cord plug ⑤ into a wall outlet ⑥.

- ⚠ Connect the power cord correctly and ensure that the ground terminal of the power supply and that of the wall outlet are properly connected.

If the equipment is not grounded, Olympus can no longer warrant the electrical safety and performance of the equipment.

### Replacing the Fuses (Fig. 8)

- ★ Always press the main switch to "O" (OFF) and disconnect the power cord from the wall outlet before replacing the fuses.

1. Using a flat-bladed screwdriver, turn each fuse holder ① counterclockwise and pull it out.

2. Replace the two fuses with new ones.

- ★ Use only specified fuses. Other fuse types may result in a fire.

#### Applicable fuse:

U-RFLT50-100

☐ T4A(H)250V (LITTELFUSE 215004). Two fuses.

U-RFLT50-200

☐ T2.5A(H)250V (LITTELFUSE 21502.5). Two fuses.

# 3 PREPARATION FOR OBSERVATION

## 3-1 Turning ON the Mercury Burner

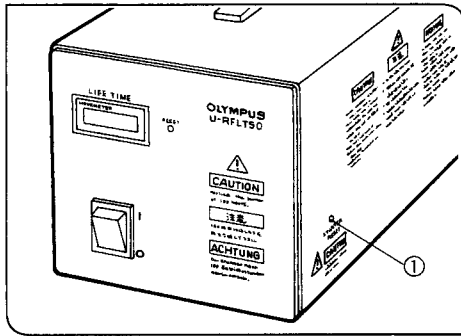


Fig. 9

### 1 Turning ON the Mercury Burner

- ★ Confirm that the power supply voltage setting, frequency setting, and burner type setting are correct. Improper settings may reduce the burner life time considerably.

Press the power supply unit's main switch to "I" (ON). Between 5 to 10 minutes are required for the arc to stabilize after the burner is ignited.

- ★ Some mercury burners may not ignite the first time the power is turned ON. If the burner does not ignite, the power supply unit's starter safety device will activate and should be reset. Press the main switch to "O" (OFF) once. Then insert the tip of a mechanical pencil, etc. into the starter reset switch hole ① on the right hand side of the power supply unit and press the switch inside. Then press the main switch to "I" (ON) again.

- ★ To avoid shortening the life of the burner, do not turn the burner off within 15 minutes of ignition. Use the shutter function to block light if required.

- ★ After turning the burner off, it cannot be re-ignited before the mercury vapor cools and condenses to a liquid. Wait for about 10 minutes before restarting the burner.

- ★ The power supply unit has a limited operation life. Avoid burner ignition switch operation when no burner is installed and do not repeatedly turn on/off the burner with short intervals.

- ⚠ If the lamp housing is accidentally opened while the burner is ignited, the safety interlock will activate and switch off the power automatically. In this case press the main switch to "O" (OFF) and wait at least 10 minutes before turning the burner ON again. Always leave to cool before opening the lamp housing.

- ⚠ Make sure that the burner life time hour counter is properly reset to "0.00" when a new burner is installed. In order not to impair the safety of the equipment, replace the burner when the counter shows "100.00". First press the main switch to "O" (OFF) and then wait for at least 10 minutes until the lamp housing has cooled down. The mercury burner contains high-pressured gas and the burner may explode if used beyond the specified life time.

## 3-2 Centering the Mercury Burner

Center the mercury burner as described in the respective instruction manuals provided with the CX-RFL, CH-RFL, etc. reflected light fluorescence attachments.

# 4 SPECIFICATIONS

Module	Specifications
Power Supply Unit U-RFLT50-100 (100V configuration)	Ignition system: Auto ignition Life time hour counter: Displays accumulated hours of operation Input ratings: Input voltage selector provided 100/110/120V ~ 2.5/2.3/2.0A 50/60Hz Dimensions: 150 (W) x 322 (D) x 150 (H) mm Weight: 12 kg (26.4 lb)
Power Supply Unit U-RFLT50-200 (200V configuration)	Ignition system: Auto ignition Life time hour counter: Displays accumulated hours of operation Input ratings: Input voltage selector provided 220/230/240V ~ 1.7A 50/60Hz Dimensions: 150 (W) x 210 (D) x 150 (H) mm Weight: 7 kg (15.4 lb)
Operating Environment	Indoor use Altitude: Max. 2000 m 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) Main supply voltage fluctuations not to exceed ±10% of the nominal voltage. Pollution Degree 2 (in accordance with IEC 664) Installation/Overtoltage Category II (in accordance with IEC 664)

# 5 TROUBLESHOOTING GUIDE

Under certain conditions, performance of this unit may be adversely affected by factors other than defects. If problems occur, please review the following list and take remedial action as appropriate. If you cannot solve the problem after checking the entire list, please contact your local Olympus representative for assistance.

Problem	Cause	Remedy
1. The main switch indicator does not light up.	Improper connection of the power cord.	Connect the power cord correctly.
	Fuses are blown.	Replace fuses.
2. Main switch indicator lights, but the mercury burner does not ignite.	Improperly connected connectors.	Connect correctly.
	The burner is not installed.	Install the burner.
	The lamp housing interlock mechanism is activated.	Tighten the burner socket clamping screw.
	Auto ignition is malfunctioning.	Turn OFF the main switch on the power supply unit. Turn ON again. (Repeat as necessary.)
3. The burner flickers or is dark.	The auto ignition interlock mechanism is activated.	Press the switch inside the starter reset hole on the right side of the power supply unit, and then press the main switch to "I" (ON) again.
	Insufficient time has elapsed since the burner was turned on.	Wait for at least 10 minutes after igniting the burner.
	The voltage selector switch and/or frequency selector switch is set incorrectly.	Set switches to conform with the local AC mains.
	The burner life has expired.	Replace the mercury burner when the burner life time hour counter reading exceeds 100 hours. (Burner service life is 100 hours.)
	The input voltage selector switch is set incorrectly.	Set to conform with the local AC mains.
4. The burner life is exceptionally short.	The input voltage selector switch is set incorrectly.	Set to conform with the local AC mains.

**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	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		USA	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
Osterreichischer Verband für Elektrotechnik (OVE)	<OVE>	<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)

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

Canadian Standards Association (CSA)

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

This device complies with the requirements of both directive 89/336/EEC concerning electromagnetic compatibility and directive 73/23/EEC concerning low voltage. The CE marking indicates compliance with the above directives.



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