

# **Ophthalmic Slit-lamp Microscope**

**(SLM-2ER-E)**

## **Operation**

## **Instruction**

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# 1. Introduction

## 1.1 Characteristics:

- The microscope's rays path is parallel way, Galileo style which has large view;
- All optics lens adopts high quality material to keep its high definition and brightness;
- All the lens have been tested by multi-layer reflection, moist and mildew, it can keep high optics effect all the time;
- Light resource adopts high quality Halogen bulb, which can keep brightness and equality of light spot. The intensity can reach to 160000lx.
- 5 steps magnification rotation.

## 1.2 Technical Parameters

Microscope	Type	Galileo parallel style
	Magnification change	Five magnification
	Eyepiece	12.5x
	Total magnification	6x 10x 16x 25x 40x
	Field of View	6X: 33mm, 10X: 20mm, 16X: 13mm, 25X: 8mm, 40X :5mm
	Range of adjusting the distance of pupil	55 mm-75 mm
	Range of adjusting eyepieces	-5D - +5D
	Magnification	0.794x
	Slit width	0mm-14mm
	Slit length	1mm-14mm
	Diameter of aperture	φ 14mm,φ 10mm,φ 5mm,φ 2mm,φ 1mm,φ 0.2mm
	Slit angle	0-180
	Illumination angle	0, 5, 10, 15, 20
	Filter	Heat absorption, Grey, red free(Green), Cobalt blue
	Bulb	12v, 50w halogen bulb
Moving	Forward and backward moving	90mm
	Left and right moving	100mm
	Handle moving	15mm

	Up and down moving	30mm
Jaw bracket part	Up and down moving	80mm
	Fixation	Red LED
Power	Input voltage	110/220V ± 10%
	Input frequency	50/60Hz
	Input power	60VA
	Output voltage	Illumination: 4.5V 9V 12V Fixation: 6V
	Safe standard of electric	IEC601 – 1, type I of BF Model
Weight and Dimension	Packing box	720mmx495mmx480mm
	Gross weight	25Kg
	Net weight	21Kg

**(If there is any change for the parameter, please forgive us not to notify you.)**

### 1.3 Notes:

The instrument is supplied by single-phase net power .Turn off the power when it is not in work

### 1.4 Caution:

The voltage must be up to the given standard. If the voltage is not steady, please install a Constant Voltage Regulator. Our company will not take responsibility for the damage caused by the voltage.

The instrument should be operated in the dark room.

**EU Representative:** SUNGO GROUP COMPANY LIMITED



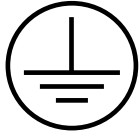
It belongs to BF type instrument



Dangerous Voltage (Please prevent from electric shock when you touch the place where the icon is.)



Attention to the attached file (Please check the attached file when you touch the place where the icon is.)



Connect the ground

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## 2. Installation

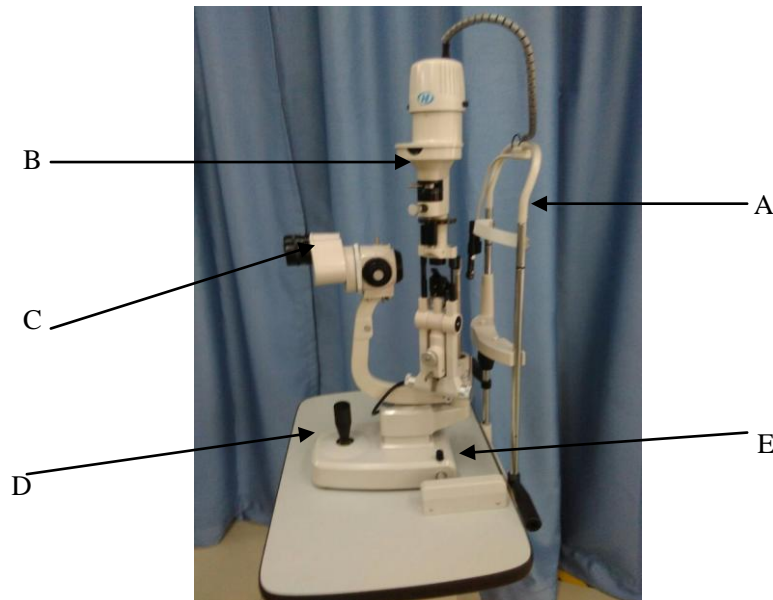
### 2.1 Cautions before the Installation

2.1.1 The earth cables on the moto-table and the power box must be connected well by the grounding wire (the wire is in yellow and green).

2.1.2 The earth wire must be connected well.

2.1.3 There are two boxes for slit lamp microscope (only one excluding moto-table). While removing the packing box, please pay attention to symbol “UP”. Please take out all components orderly, put them down carefully, and then check components according to the packing list in the box.

### 2.2 Components



Code	F	Name	Amount
A		Chin rest	1
B		Illumination body	1
C		Optic body	1
D		Platform	1
E		Guide-way cover	1

### Tools for composing this instrument:

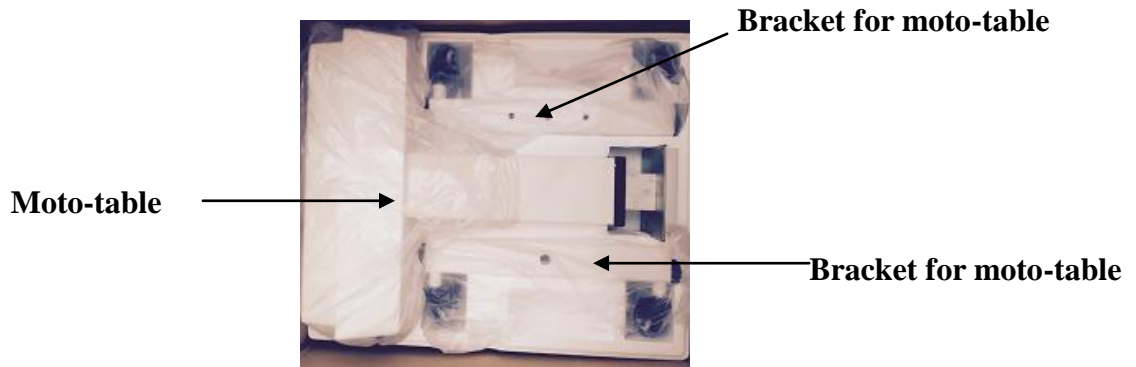
Inner 6-angle screwdriver      Solid wrench

Plain screwdriver              Cross screwdriver

### 2.3 Installation of Moto-table (Optional)

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**2.3.1 Open the box for moto-table (Picture 1)**



**Picture 1**

**2.3.2 Take out the moto-table and upend it on the ground. (Picture 2)**



**Picture 2**

**2.3.3 Take out other parts. (Picture 3)**



**Picture 3**

**2.3.4 Screw off the four inner 6-angle screws (picture 2); aim at the holes that are on the leg, match the position, and screw on. Lock the caps with solid wrench, and tighten them well. (Picture 4) Install the other leg in the same way. (Picture 5)**



**Picture 4**



**Picture 5**

**2.4 Installation of the Platform**

2.4.1 Open the box of slit lamp (There are three layers).The first layer is workbench (**Picture 6**)



**Picture 6**



**Picture 7**

2.4.2 Take out the workbench, open the plastic toolbox (**Picture 7**), and find out four screws for the platform (**Picture 8**).

2.4.3 Put the workbench onto the moto-table; match the position of the apertures and the holes.  
(Notes: Do not press the plastic plug-wire)

2.4.4 Insert the screws and tighten them well. (**Picture 9**)



**Picture 8**



**Picture 9**



The workbench should be steady after successful installation.

2.4.5 Make the plastic plug of the moto-table connect with the plastic socket of the workbench well.



**Picture 12**



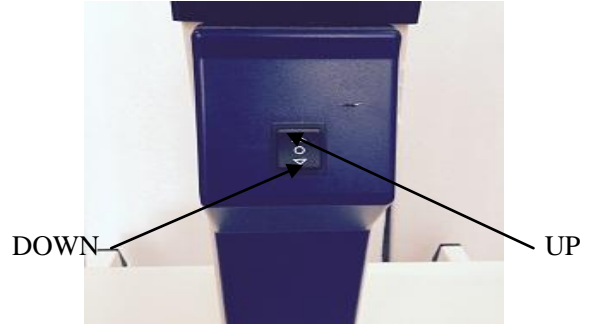
**Picture 13**



2.4.6 Connect the power wire of the motor-table (Picture 13), and turn on the power (Picture 14). Make it move up and down (Picture 15) to check the motor-table is normal or not. If it works normally, go to the next step.



Picture 14



Picture 15

## 2.5 Installation of microscope and pedestal (The second layer, picture 16)



2.5.1 Take out microscope and platform and put them on the table.

**Notes:** When taking them out, remember not to separate them.



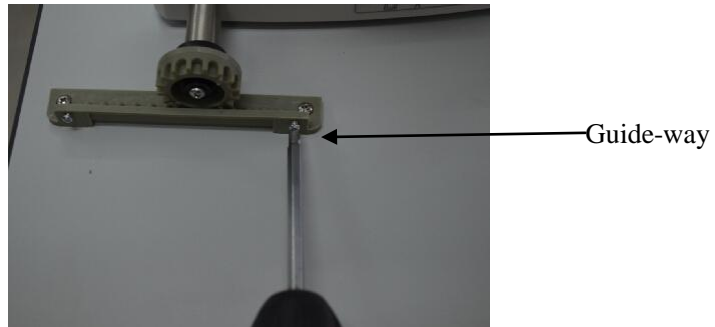
Picture 17



Picture 18

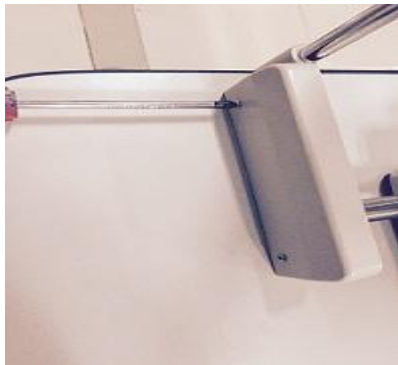
2.5.2 Take out illumination body and put it on the platform and remove the screws on the guide way

(Picture 19)

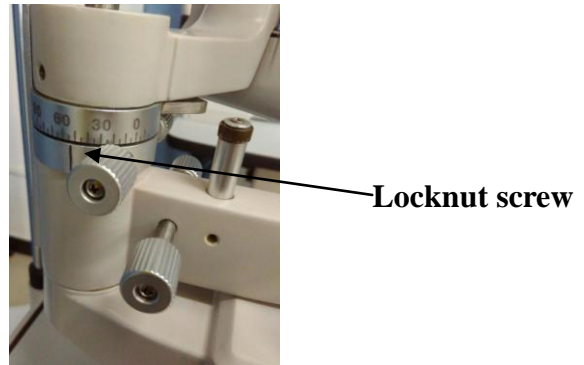


**Picture 19**

2.5.3 Screw off four screws on the guide-way, and cover the guide-way shroud on, and fasten the screws (as picture 20). Then, loose the locknut screws (picture 21); rotate the microscope arm left and right gently in order to install it well (After installing, there should be about 1mm interspaces).



**Picture 20**



**Picture 21**

2.5.4 Loose the locknut of the pedestal (as picture 22), use the handle (as picture 23) to move up and down, forth and back in order to check the pedestal is normal or not. If it is normal, please go on the next step:



**Picture 22**



**Picture 23**

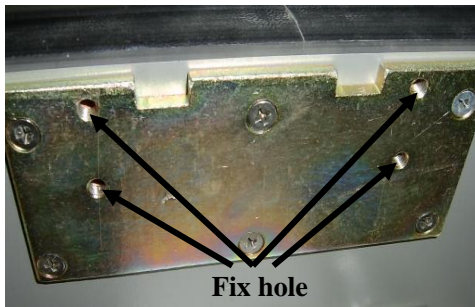
## **2.6 Installation chin rest (The third layer, picture 24)**

2.6.1 Take out jaw bracket from the third layer of the packing box (Picture 24); and take out the four inner 6-angle screws from the toolbox

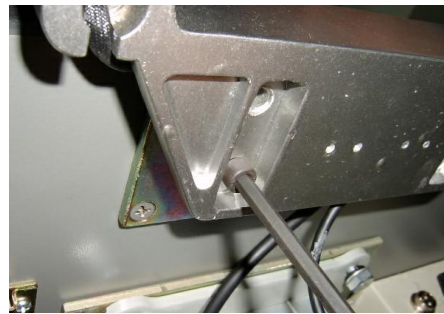


**Picture 24**

**2.6.2** Find out the four holes at the bottom of the workbench (**Picture 25**)



**Picture 25**



**Picture 26**

**2.6.3** Hold the jaw bracket, Aim it at the fixing holes, insert the four inner 6-angle screws one by one and fasten them (**picture 26**). Then, plug the power wire into socket on the lamp cover (**picture 27**).



**Picture 27**



**Picture 28**

**2.6.4** Find out the jointing part of the power box below the workbench (picture 29), insert the plug of the jaw bracket into the socket of the power box and fasten them (picture 30). All the sockets are one match one, do not insert it rudely.



Picture 29



Picture 30

## 2.7 Installation of Reflector

2.7.1 Take out the reflector in the toolbox, there are two reflectors totally, one is short, and the other is long. (Picture 31)



Picture 31



Picture 32

2.7.2 Insert the long one into the reflector pedestal as picture 33.



Picture 33



Picture 34

## 2.8 Installation of the Breath Protector

Screw off the fixing screw of the breath protector under the microscope (picture 35), install the breath protector and fasten it (as picture 36)



**Picture 35**



**Picture 36**

## **2.9 Install the Guide Way for Preset Lens**

Take out the leading board for preset lens from the toolbox, and insert it into the axial hole.



**Picture 37**



**Picture 38**

## **2.10 Checking after Installation**

(1) Eyepiece point to Zero (Picture 39), and tighten the central position fixation knob as the picture 40.



**Picture 39**



**Picture 40**

(2) Turn the filter to the second grade (Heat absorption) as picture 48; turn the knob of

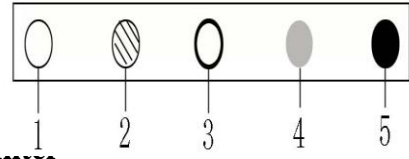


length to 10mm.



**Picture 41**

1. No filter
2. Heat absorption
3. Grey(ND)
4. Redfree(green)
5. Cobalt blue filter



(3) Take out the focus stick from the toolbox, and insert it into the hole of the lighting arm.  
(Picture 42)



**Picture 42**



**Picture 43**

(4) Turn on power, and turn the adjusting knob of slit to 0 and observe the light spot, there should be a well-proportioned light on the stick, then, turn off the power. Then the whole installation is finished.

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## 3. Operation

- 3.1 Turn on the power.
- 3.2 Turn on the light.
- 3.3 Before checking, insert the focus stick, and observe the slit image on the focus stick through eyepiece, and adjust the degree in order to make the slit images clear. (Different operator has a different degree).
- 3.4 Let the patient's chin and forehead lean against chin rest;
- 3.5 Rotate the hand wheel of chin rest to make the light spot lie in the patient's cornea.
- 3.6 Take hold of the operation handle, move forth and back, up and down, to make the light lie in the patient's eye.
- 3.7 During operating, you can change the angle between slit lamp and microscope at your desire.
- 3.8 The fixation is to help patients to keep their eyes fixed.
- 3.9 After finishing operation, turn off the light at once.

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## 4 Maintenance

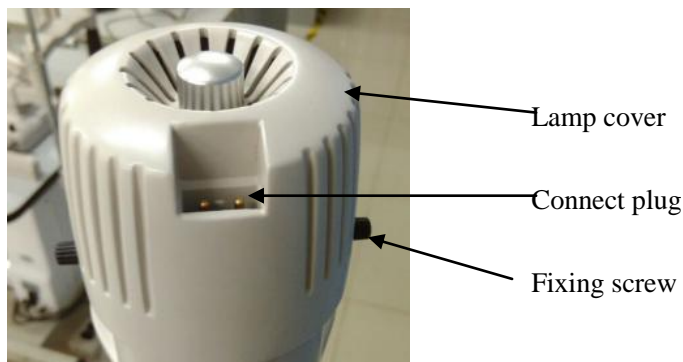
4.1 Keep the room clean, airiness and dry, and use air-conditioner as possible.

4.2 If there is besmirch on the lens or reflector, use absorbent cotton with a little absolute alcohol to clean.

4.3 Replace the bulb:

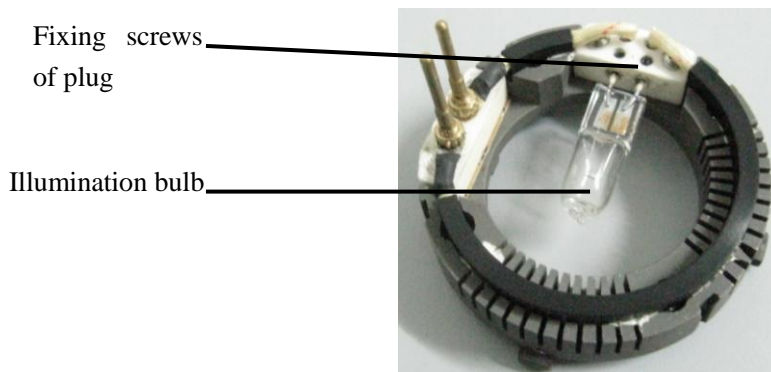
4.3.1 Turn off the main power switch;

4.3.2 Take out the power wire plug. Screw off the fixing screw of lamp cover and take out the lamp cover. **(Picture 44)**



**Picture 44**

4.3.3 Take out the old bulb and replace it with a new one. Fasten the screw clockwise with the screwdriver. Make the bulb side with letter up, the pin of bulb to be inserted the end, otherwise the illumination light is not asymmetry; **(Picture 45)**



**Picture 45**

◆ **Note: The bulb is boiling hot!**

4.3.4 Put the lamp cover to the original place, fasten with screw, and connect the plug;

4.3.5 Turn on the power of main power to check the new one whether it is good



Screw off the cover of cartridge fuse, replace it with a new one, the cover it again.

**Fuse parts:** The fuse of power box: 250V 2A



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The fuse of chief power: 250V 3A



Every time before checking, please clean the chin rest.

#### 4.4 Packing list

Name	Quantity	Unit
Moto-table (Optional)	1	Unit
Platform	1	Unit
Power box	1	Unit
Optics	1	Set
Chin rest	1	Unit
Power-wire	1	Unit
User manual	1	Unit
Dust cover	1	Unit
Focusing handle	1	Unit
Tool box	1	Unit
Preset lens	1	Unit
Dispersing lens	1	Unit
Preset lens guide	1	Unit
Fuse ( 3A/2A )	2	Unit

#### 4.5 Transportation and Maintenance

**4.5.1** Prevent the instrument from damp, inverting and shaking violently.

**4.5.2** Relative humidity  $\leq 85\%$ , the environment temperatures:  $-40^{\circ}\text{C}$ - $55^{\circ}\text{C}$ , the atmospheric pressure: 500hpa-1060hpa well ventilated without corrosion gas.

**4.5.3** If the installed instrument need moving or transporting in short distance, should take apart all connection wires, be transported by single. If the instrument must be transported in long distance, re-pack it into its package for transporting it.

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## 5. Warranty States

- 5.1** Our company provides information and data for the parts, which are made by Our Company.
- 5.2** Our company provides maintenance for whole life.
- 5.3** From the date of purchasing, with following the operation instruction, Our Company can provide free maintenance for one year.
- 5.4** During warranty, Our Company will be paid to maintenance under the conditions of the following:
- 5.4.1** Operate, maintain, and store the instruments without following the operation instruction;
  - 5.4.2** Take apart or amend the instruments without be permitted by Our company.
  - 5.4.3** Damages are caused unnatural force.



The design and the appearance are based on the actual objects, if it has been changed; please forgive us for not informing you!