

# **Ophthalmic Slit-lamp Microscope SLM-3ER (SLR)**

## **Operation**

## **Instruction**

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# Preface

To avoid injury, prevent the instrument from damage some possible danger, please read this Instruction carefully and pay great attention to the following notes

**Reference standard: YZB/ YU 0025-2004**

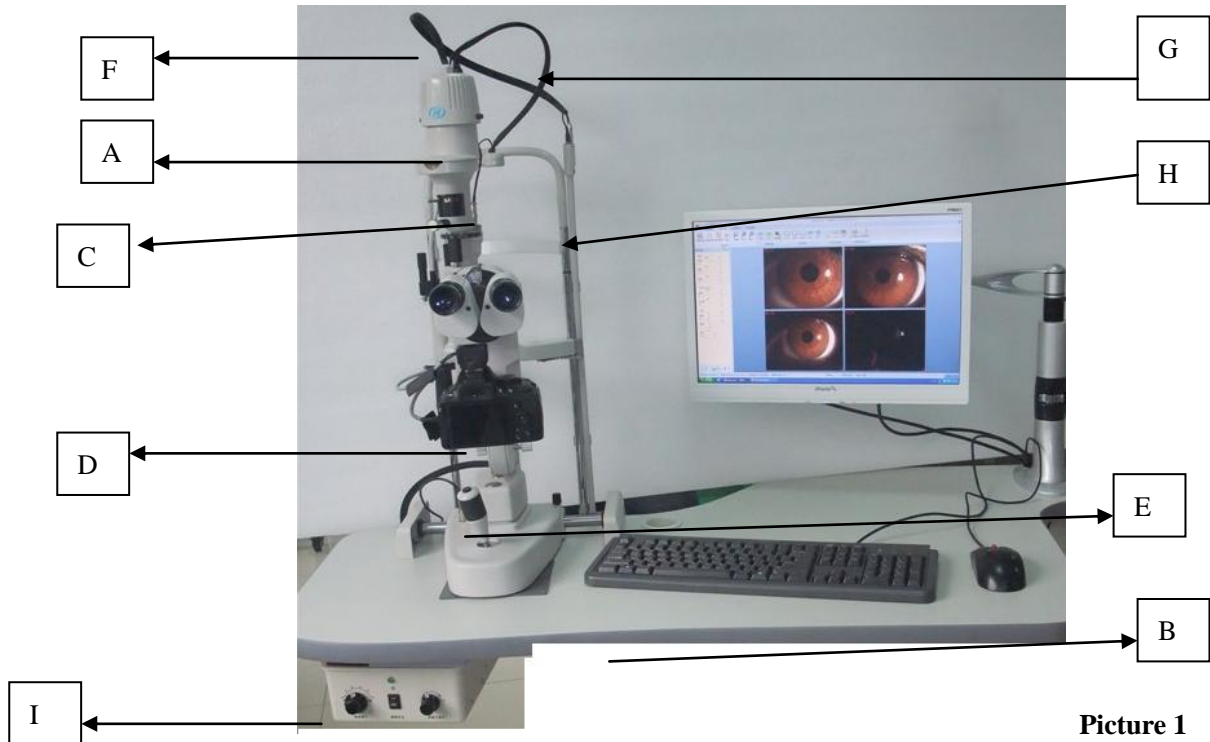
## Notes

- Do not use this instrument in the inflammable, hot and dusty environment. Use it in a darkroom and be attention to keep it clean and dry;
- Check the firm cable joints
- Make sure the ground wire is connected well before using it;
- Choose the cartridge fuse meeting our requirement;
- Do not touch the surface of lens with hand or hard objects;
- Turn off the main power before replacing the bulb and the cartridge fuse;
- Install this instrument on the ground where the dip angle is less than 10 degree to avoid toppling over;
- Turn off the power and cover it with dust guard when you do not use it;
- If it breaks down, please read the guide to fix the breakdown. If it does not work yet, please contact us.

# Checking Components

This instruction is for SLM Ophthalmic Slit Lamp Microscope .Take all the components out carefully from the packing box and then fix them.

## Components list



Picture 1



Picture2

Code	Name	Amount
A	Lighting component	1
B	Workbench	1
C	Background light plug	1
D	SLR	1
E	Joystick	1
F	Flash control cable	1

G	illumination cable	1
H	Chin rest	1
I	Power box	1

# 1. Introduction

## 1.1. Brief Introduction

This instrument is consisting of Micro-computer, control card, optics, printer, etc. This is an ophthalmic optical instrument for checking ocular front part and inner parts. It utilizes the principles of optical magnification and KO-ehler illumination. It can be exactly used to check diseases of eyelids, corneas, anterior chamber, sclera, iris, crystalline lens and retinas. If fixed with diffuse lens, it can expand sight scope. Its preset lens can be used to check local pathological changes of ocular fundus and other functions.

In order to avoid injury, prevent the product damaging and be likely to cause other dangers, please read the notes carefully.

Applicable scope: It is used to check disease of cornea, ACD, iris, and lens.

Taboo sickness: There is no taboo sickness for this instrument.

## 1.2. Transport and Store

Prevent the instrument from damp, inverting and shaking violently. Keep it in the room in which the relative humidity is less than or equally 85 percent, the environment humidity is between  $-40$  degree and  $-55$  degree , the scope of atmospheric pressures between  $700\text{hPa}\sim 1060\text{ hPa}$  and well ventilated without corrosion gases.

If the installed instrument needs to move or transport in short distance, all the moving components must be locked. Please support with your hands on its rear and push or lift it carefully. If the instrument must be transported in long distance, re-pack it into its package for transporting it.

## 1.3. Choose Lists of Accessories

- 1). Lens of CAD (Inspecting CAD)
- 2). SLM-3ER Application Tonometer (Measure ratio of the pressure)
- 3). Eye ground touched lens (Inspect eye ground)
- 4). Touch –lens of three sides. (Inspect eye ground,  $2/3$  axial behind eyes)
- 5). Module of background light

## 1.4. The working environments of Slit-lamp

- |                                      |  |
|--------------------------------------|--|
| 1)Environment temperature degree:    | $5^{\circ}\text{C}\text{--}40^{\circ}\text{C}$ |
| 2)Relative humidity:                 | $\leq 85\%$                                    |
| 3)The scope of atmospheric pressure: | $700\text{hPa}\sim 1060\text{ hPa}$            |

4) Power resource: AV 220V ± 22V, Frequency: 50Hz ± 1Hz

5) Input power: ≤ 300W

## 1.5. Characteristic

- 1) The instrument belongs to type I, BF Model common instrument
- 2) The instrument is supplied by single-phase net power
- 3) The instrument is intermission doing form

## 1.6. Technical Parameters

### 1) Microscope

Type Galiean magnifying type of the binocular with cross angle type

Eyepiece 12.5X

Total magnifying ratio

Visual diameter

6X

φ 37mm ± 1.2mm

10X

φ 23mm ± 1.2mm

16X

φ 14mm ± 1.2mm

25X

φ 8.2mm ± 1.2mm

40X

φ 5.7mm ± 1.2mm

Magnification errors: ± 5%

The range of adjusting intraocular distance

55mm~75mm

Adjusting diopter -5D~+3D

Indication errors is less than or equal ± 0.5D

The relatively errors of the magnification ratio between left and right system is less than or equal 2.5%

The visual field of left and right is the same, not create two double images, can not be impartiality for left and right. On the object lens, the value is less than 0.2mm up and down. Less than 0.4mm for left and right.

Definition:

Magnifying X	6	10	16	25	40
Definition LP/MM	35	53	74.9	100	112

### 2) Illumination

Slitting width: 0mm~10mm adjusting continuously

Slitting height: 1mm~10mm adjusting continuously

Diameter of the light spot: φ 10、φ 8、φ 5、φ 3、φ 1、φ 0.2(mm)

Slitting angle: 0° ~180° adjusting continuously from horizontal to vertical

Swing scope of slit light: ± 15°

Magnifying of illumination: 0.7 errors: ± 8%

Slitting tilting: 5°、10°、15°、20° four grades



Color filter: Heat filter, light-reducing filter, red filter and cobalt filter  
Lighting bulb 12V30W halogen tungsten bulb

### 3) Move the pedestal

Back and forth moving	90mm±5mm	accurately adjusting: : $\geq 85$ mm
Left and right moving	120mm±8mm	accurately adjusting: $\geq 112$ mm
Move vertical direction	30mm±5mm	accurately adjusting: $\geq 25$ mm
X、Y move	15mm±5mm	accurately adjusting $\geq 10$ mm

### 4) Jaw bracket part

Up and down moving	80mm
The sight-line fixing lamp	RedLED

### 5) Electric power

Input voltage	110/220V~±1HZ
Input frequency	50/60HZ±1HZ
Input power	60VA
Output voltage	Illuminating lights 4.5V 6.0V 9V 10.5V 12V Sight-line fixing lamp 3.5V

### 6) Lighting source: 12V/50W halogen tungsten bulb

The sight-line fixing lamp: Red LED

◆ The design and the assigned type has changed, please forgive us for not noting you!

## 1.7 Notes

- 1) The instruments must be used in the dark room, and keep it clean and dry, Do not use this instrument in the inflammable, hot and dusty environment.
- 2) Do not touch the surface of lens with hand or hard objects;
- 3) Install this instrument on the ground where the dip angle is less than 10 degree to avoid toppling over;
- 4) The life of illumination lamp is 50 hours, the brightness will descend when exceeding 50 hours, please turn off the power when finishing checking every time. ;
- 5) Keep the power off and cover it with dust guard when you do not use it;

## 2. Hardware Installation

### 2.1 Tools for Installation:

Plastic handle cross screwdriver

Plain meter screwdriver

Solid wrench

Socket head cap wrench

### 2.2 Install the Workbench

- If you want to compose the workbench on the set of electric instrument, please use the solid wrench to screw out the four M8X20mm bolts with spring washers on the workbench.
- Lift up the workbench, make the screw apertures be on the fixing holes of the instrument's set
- Put the workbench down. Let the board for controlling power face the operator. Put the bolts into the screw holes again and then use the wrench to fasten the bolt. (picture 3)



Picture 3

### 2.3 Connect Head Bracket Component

- Fasten the screws on the jointing board (picture 4) with the plastic handle cross screwdriver.



Picture 4

- Screw in four socket head cap screws under the fixing board of the head bracket with the socket head cap wrench. (picture 5)



Picture 5

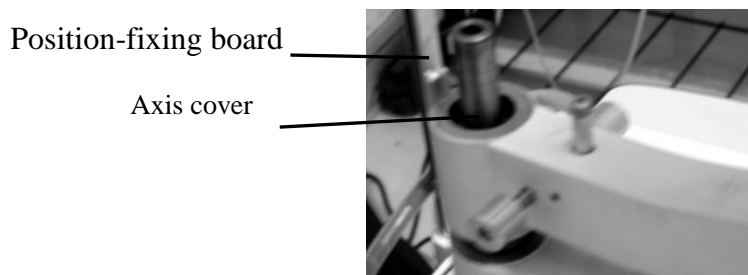
### 2.4 Install Pedestal Bracket component and Guide-way Shroud (Picture 6)



Picture 6

- Put the rollers of two sides of the pedestal bracket component on the guide-way of the work-bench;
- Screw off four screws on the guide-way with screwdriver;
- Put guide-way shroud on the guide-way, and then fasten the screws that were screw off just now.

## 2.5 Component Illumination Body (A) (picture 7)



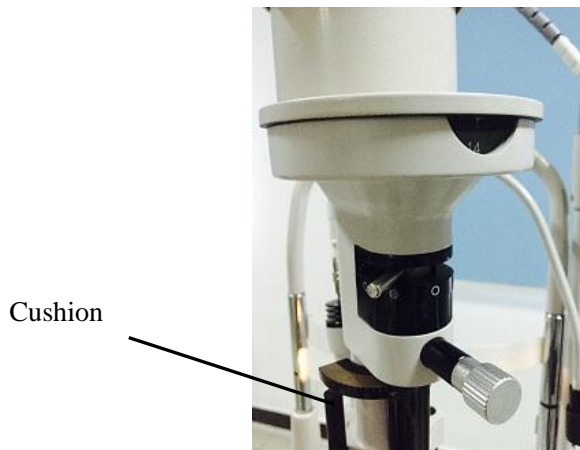
Picture 7

- Loose joint-movement bolt of lighting arm, Turn the copper axis sleeve to make the included angle between the red mark and the fixing-position board is between 30 degree and 90 degree.
- Loose the screw on the lighting arm with the screwdriver. Make the fixing hole of the lighting arm be on the copper axis sleeve in the fixing hole. Make the bottoms of the axis sleeve and the fixing hole link closely and two red marks be on the same line
- After align two red marks, fasten the screw that was loosed just now with the screwdriver. (picture 8)



Picture 8

## 2.6 Take off the cushion for lighting component (picture 9)



Picture 9

- The function of the cushion is to prevent slitting component from damage when transporting the microscope.
- Take off the rubber band, and then take out the cushion carefully.

## 2.7 Joint the plug

- Insert the plug on the top of the head bracket component into the socket on the lamp cover of the lighting component.
- Insert the two plugs under the bracket component into the matched output sockets on the power box.
- Insert camera power source into the matched socket on the power box
- Insert the plug of power wire and control wire of digital images collector and output wire of illumination into the input accordion of power on power box.(picture 10)



Picture 10

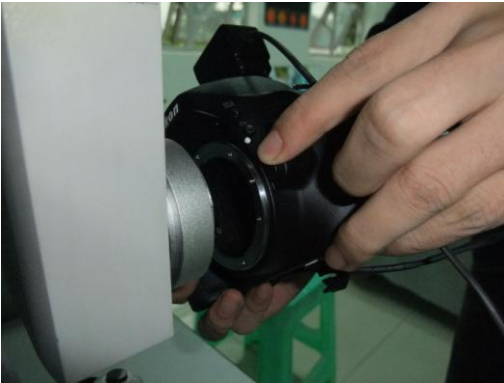


Picture 11

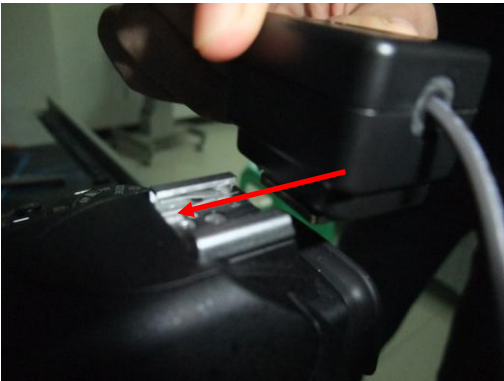
## 2.8 Connect SLR camera on Slit lamp



Press the button all the time and connect camera and slit lamp



Assemble the flash component.





Lock the flash component on the top of SLR camera.



Insert USB-cable into the socket of SLR camera.



Switch on camera



Set SLR camera at "Manual" state.

Insert battery in the SLR battery socket.



■ Connect device with computer.

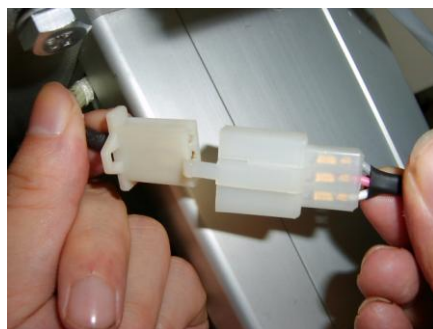


→ Usb-cable



→ Usb-dog

Connect the power of lift-table to this.(picture 12)



Picture 12

## 2.9 Install the long reflector

The included angle between microscope arm and lighting arm must be more than 30 degree. The dipping angle of the lighting arm must be more than 10 degree Hold the projection of the long reflector and insert the reflector into the set (picture 13).





Picture 13

### **2.10 Install the Lighting Joint**

Insert the double-core plug on the lighting set into the double-core socket on the head bracket and lamp cover. (picture14)



Picture 14

### **2.11 Install preset lens and leading board for preset lens**

Insert the preset lens into the preset lens set of the head bracket component. Be carefully not to touch the surface of lens. (Picture 15)



Picture 15

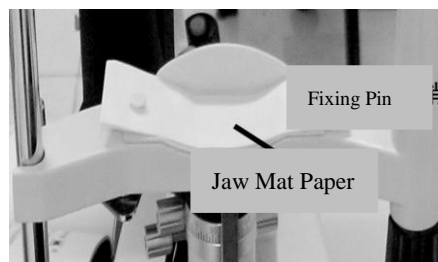
Insert the leading board into the hole of main axle and make the small end direct the head bracket component. (Picture 16)



picture 16

## 2.12 Install paper mat for jaw bracket

Take out of two fixing pines, remove the packing of the paper mat and insert the fixing pines into the holes on the paper mat through mat (picture 17)



Picture 17

Some spare parts can be placed in the drawer for accessories. (Picture 18)



Picture 18

## 2.13 Checking Steps after Installation

### 1) Power plug

- We provide a three-core wire to you. Please choose the power socket being up to the type of the power plug.
- Insure good ground connection of this instrument

**Note: Please use the special purpose power wire that we provided to you.**

### 2) Power box and lighting component

- Press the main power switch on power box to “1” for connect the power. Press the switch to “0”for cut the power. Press the main power switch to “0” before connecting the input power wire and the power socket.
- As soon as opening the main power switch, the indicator lamp will be luminous. Open the

knob for controlling the slitting width and look if there is light in the slit.

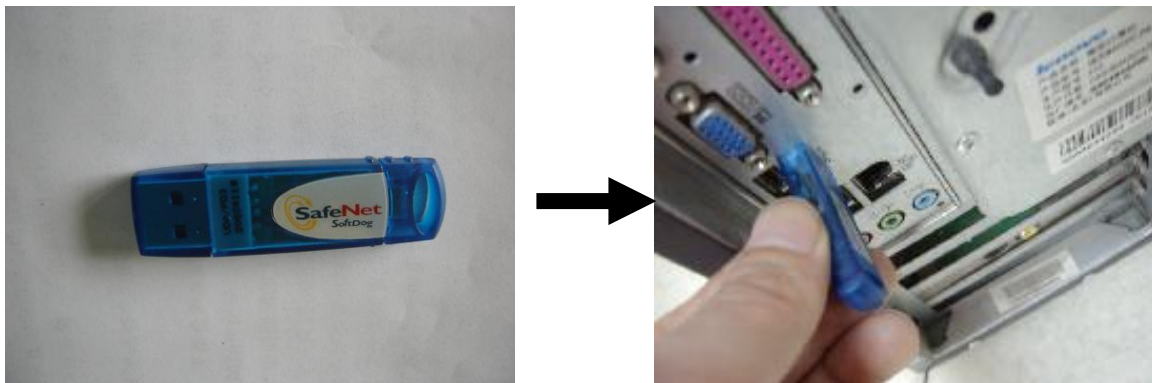
- The brightness must be changed when turning the brightness controlling knob to five positions respectively
- Check the position of the focus handle to ensure lighting.
- Make sure the aperture and slit height adjuster knob, filter-choosing handle, diameter-changing knob and other movement components can work well.
- Inspect whether shooting button and feet-touch switch can take a picture, whether digital camera are transmitting image.
- Use focus handle or sample to inspect whether illumination and focus of microscope are the same, display monitor and focus of microscope are the same step. Whether the printer can print the clear image
- Close the main power switch on the power box and cover the dust cover.

# 3. Software Installation

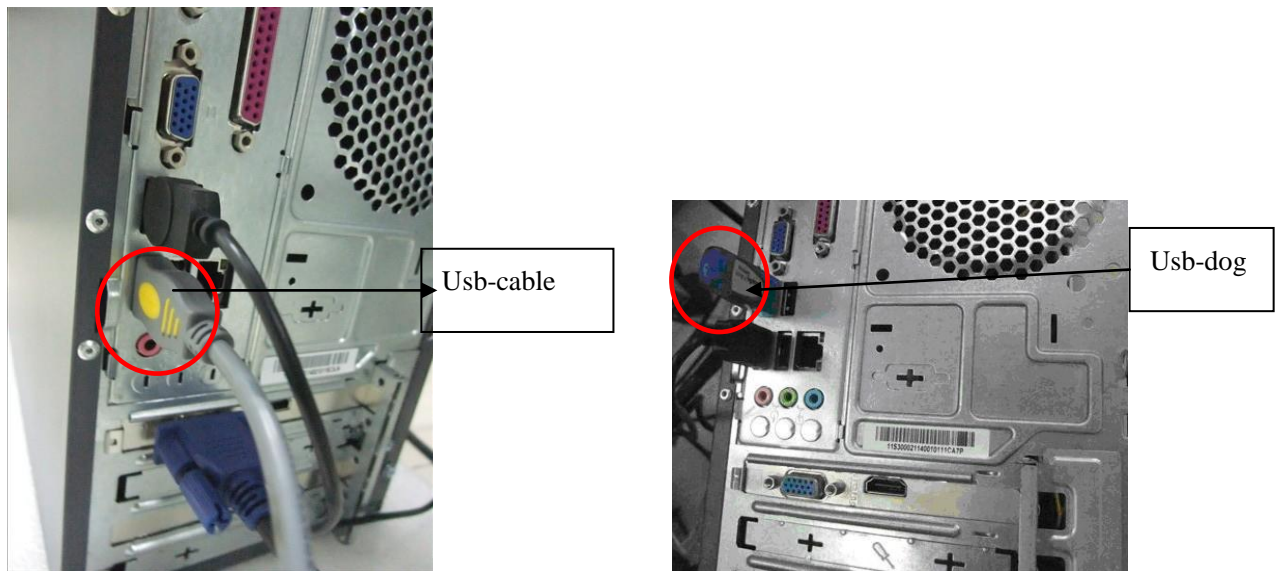
## 3.1 Computer Requirement

- 1) Windows XP (professional version) or Windows 7 (professional or Ultimate version) and drivers necessary for your computer. The system should be 32bit.
- 2) Make sure at least 2 partitions "C:" and "D:" exist in hard disk, otherwise the soft will run error.
- 3) Make sure partition "D" size is enough for data storage, at least 5GB free space (all pictures are stored in this partition, recommend 40GB or higher), otherwise the soft will run error.

## 3.2 Install soft dog.



## 3.3 Connect slit lamp and computer as below picture.



## 3.4 Install Software and hardware's drivers from CD:

When entering into XP System, it will show you find new hardware, please cancel this. Please insert attached CD into CD-ROM, and then you can see a picture. Please click "Software install" item or click "KhSetup.exe" file (/software-drivers). Then it will show you as below picture.



please click “software install” item

If your system is windows XP, please install item1, item2, Item4,5,6,7 one by one.

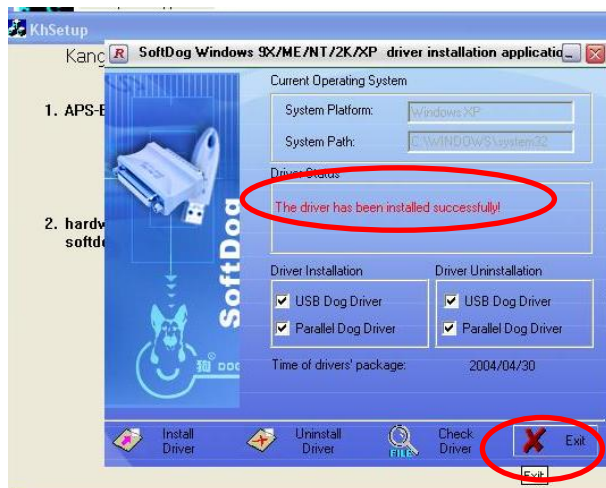
If your system is windows 7, please install item1, item3, item4,5,6,7 one by one.

(1). Please click “Setup” of 1.softdog driver to install softdog driver.



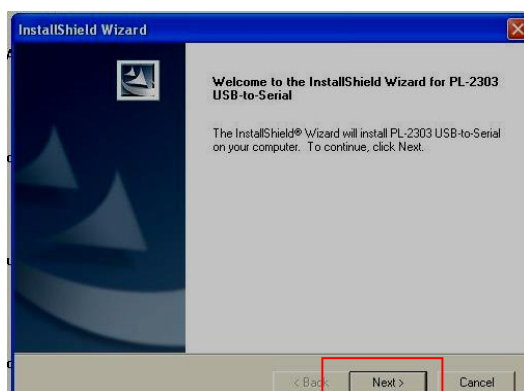


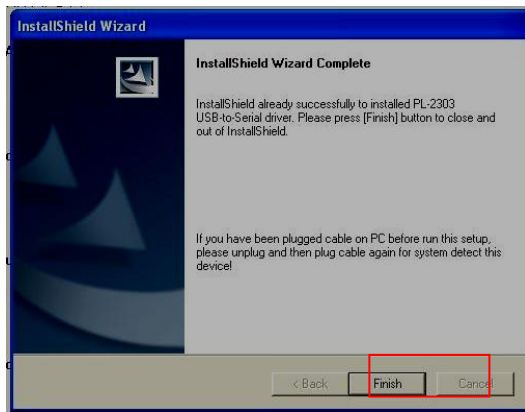
Click “install Driver” icon to install softdogs driver.



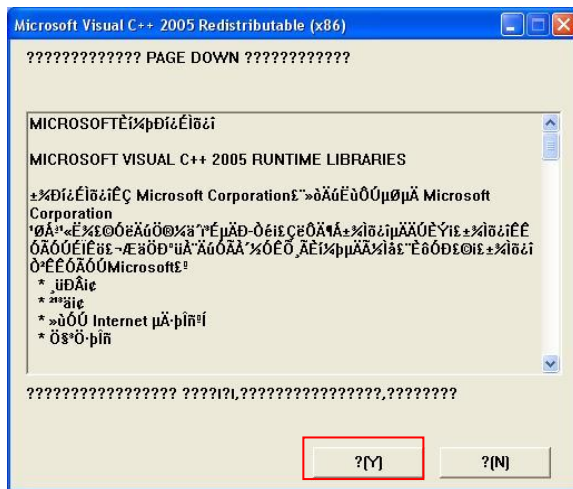
It shows that softdog’s driver is installed successfully. Then click “Exit” icon to continue.

- (2) Please click “Setup” icon of “ USB serial port driver.” It will show you the below picture. Please click “NEXT” until to “Finish”(if your system is XP, please click “item2”, if system is Windows7, please click “item3”)





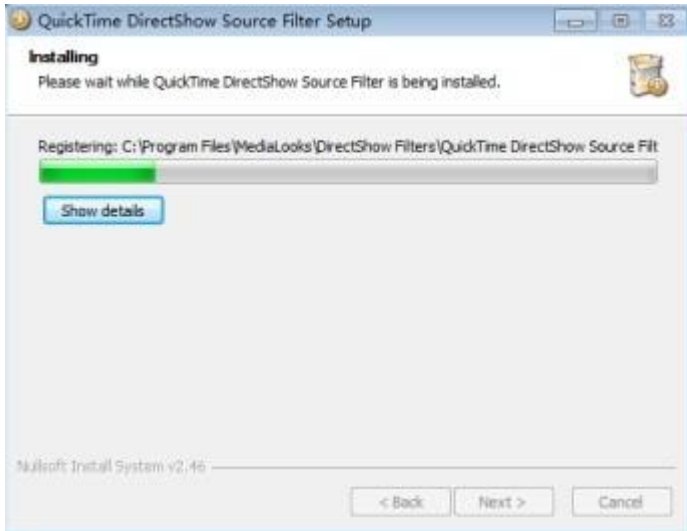
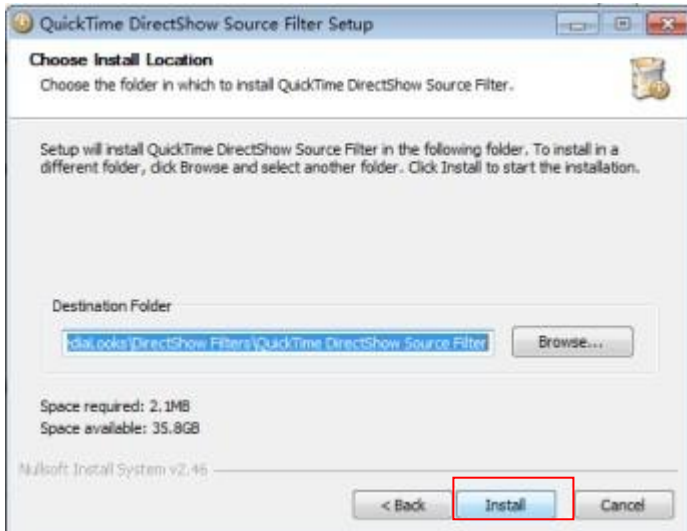
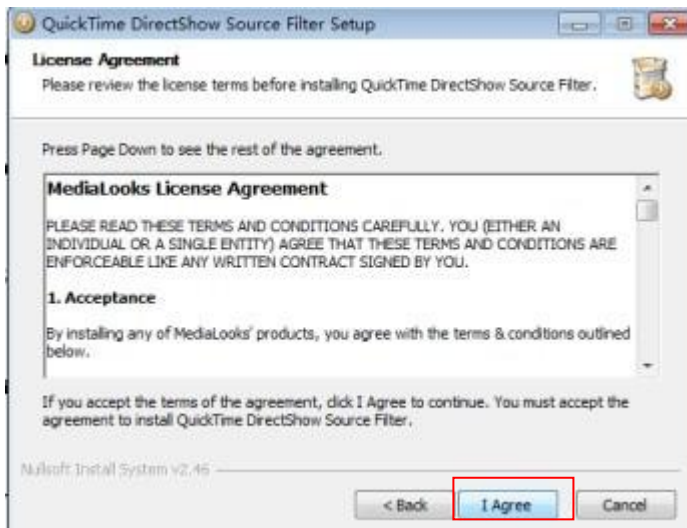
(3) Please click “Setup” icon of “Vc2005” to install.



(4) Please click “Setup” icon of “Quicktime” to install.

(5) Please click “Setup” icon of “QTsource filter” to install.

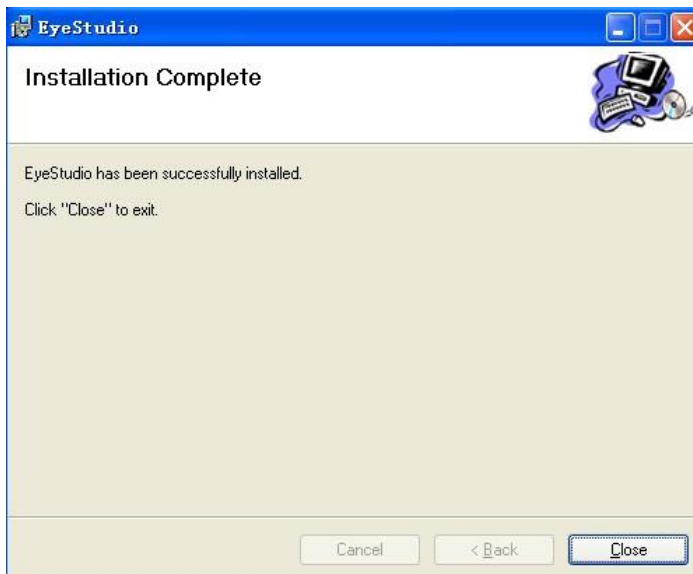
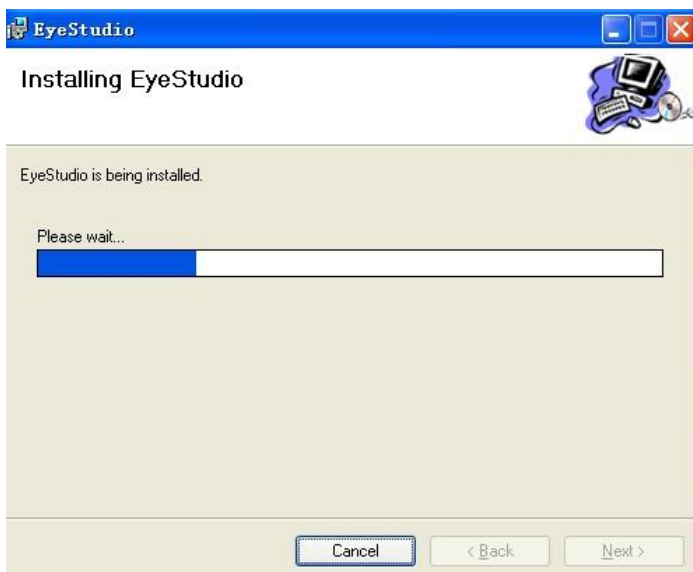




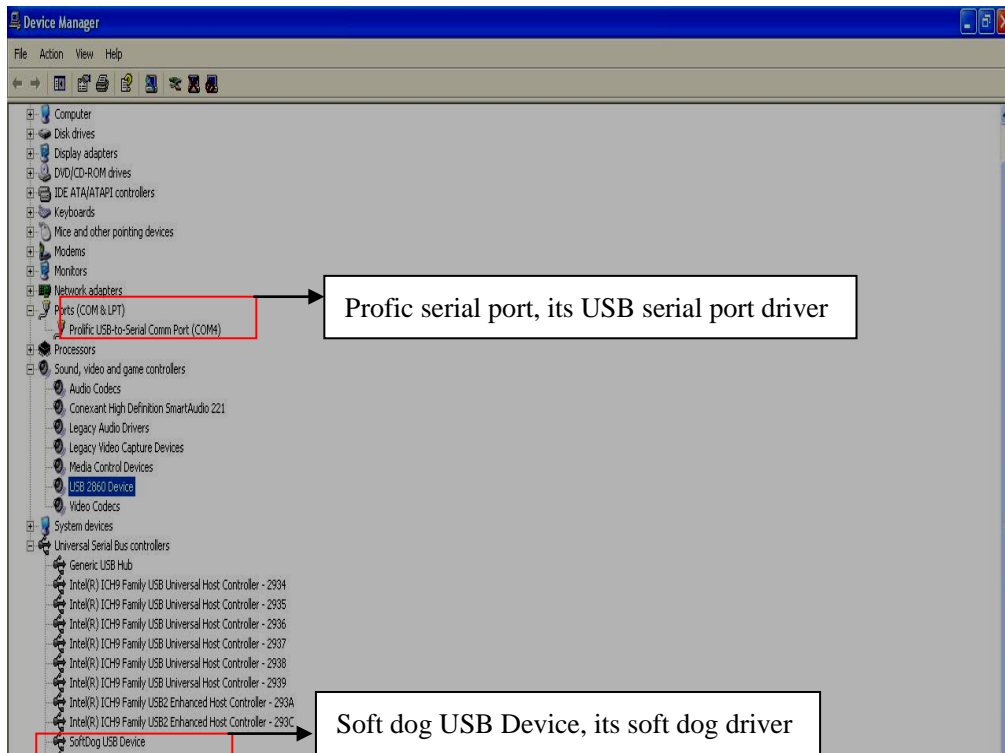




(6) Please click "Setup" icon of "Slm" to install software.



After you finish it, please re-start the computer. When entering XP system, you can find their drivers in Device Manager.



4. Please switch on the power box, then set the camera model at “M” model, then switch on the SLR camera power, then Run the slit lamp software. Click twice below icon on the desktop.



### 3.5 Standard Camera Parameter

After install the software, standard camera parameter is set well automatically. you do not need set camera parameter by yourself. You just need choose “Broad” or “Narrow” or “Video” model, then you can start use. But some time some user want to modify camera parameter , you can do it as below steps and save as below:

1) Choose broad slit by click “Camera” Icon, you can see below standard parameter.

You can set camera parameter according your requirement.

Image Size	S (2464*1632)	ISO Sensitivity	<b>1000</b>
Image Quality	JPEG Fine	Shutter	<b>1/60</b>
Pic Color	Standard	White balance	<b>Incandesceny</b>
Fluor. Type	3:Cool-white Fluor	Exposure Comp.	<b>0.3</b>

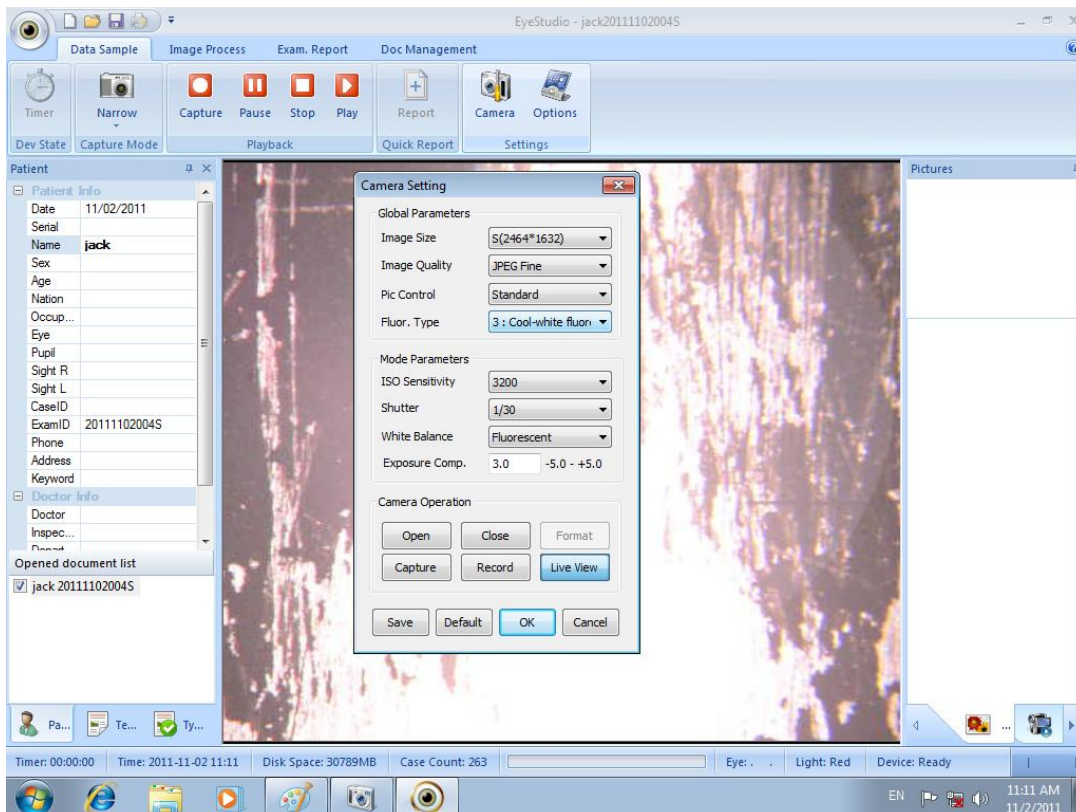
The screenshot shows the EyeStudio software interface with the 'Camera Setting' dialog box open. The dialog box is divided into three sections: Global Parameters, Mode Parameters, and Camera Operation. The Patient info panel on the left shows details for a patient named 'jack' with ExamID 20111102004S. The status bar at the bottom displays system information such as Time, Disk Space, Case Count, Eye, Light, and Device status.

Section	Parameter	Value
Global Parameters	Image Size	S(2464*1632)
	Image Quality	JPEG Fine
	Pic Control	Standard
	Fluor. Type	3 : Cool-white fluor
Mode Parameters	ISO Sensitivity	1000
	Shutter	1/60
	White Balance	Incandescent
	Exposure Comp.	0.3 (-5.0 - +5.0)
Camera Operation	Buttons	Open, Close, Format, Capture, Record, Live View, Save, Default, OK, Cancel

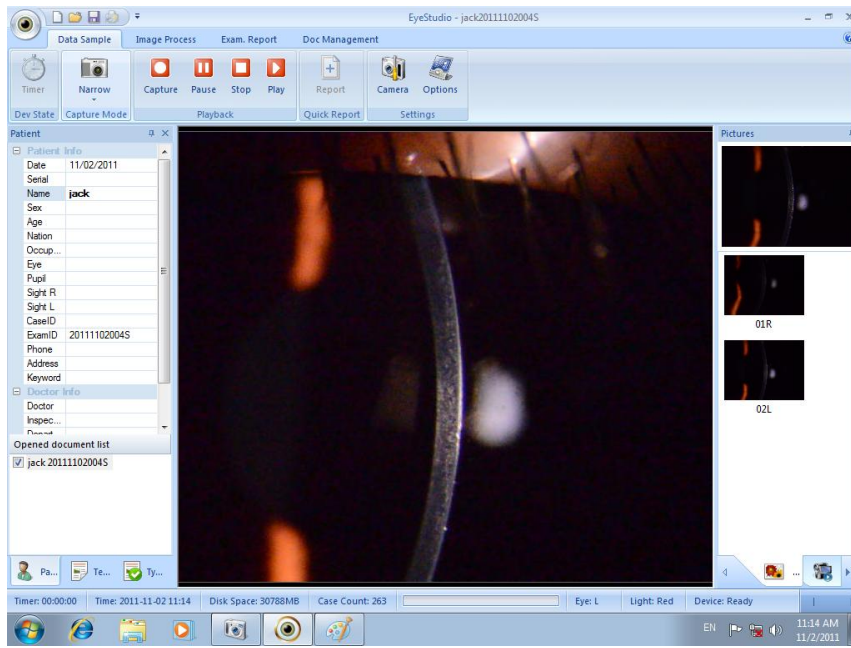


2) Choose Narrow slit by click “Camera” Icon, you can see below standard parameter. You can modify camera parameter according your requirement.

Image Size	S (2464*1632)	ISO Sensitivity	3200
Image Quality	JPEG Fine	Shutter	1/30
Pic Color	Standard	White balance	Incandesceny
Fluor. Type	3:Cool-white Fluor	Exposure Comp.	3



Picture32

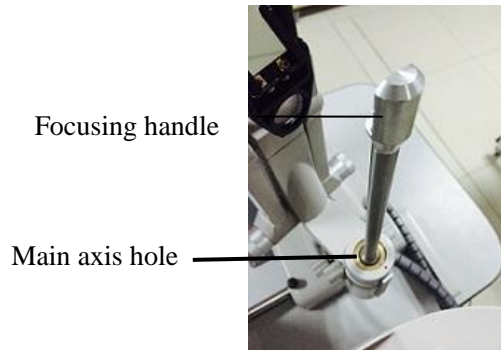


## 4. Hardware Operation Way

### 4.1. Preparation for Diopter compensation and Intraocular Distance Adjustment

#### 1) Usages of the focus handle (L)

Focus handle is provided as standard accessory to ensure right adjustment of the microscope. Insert the focus handle into the hole of main axle and make the planeside direct to the objective lens of the microscope also to the side of the operator (picture 19)



**After adjusting, should take out of the focusing handle**

Picture 19

#### 2) Brightness adjustment

Open the main power switch and turn the brightness controlling knob to “3”. Turn the knob for controlling the slitting width to make the slitting width be between 2-3mm.

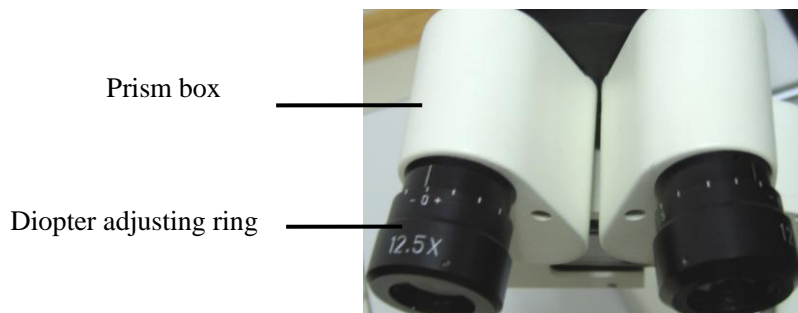
#### 3) Rectifying diopter

The focus of the microscope is adjusted as the emmetropia. If the operator is not emmetropia, the diopter must be adjusted.

#### 4). Adjust the intraocular distance

Increase or decrease the distance of two prism boxes to adjust the intraocular distance to make the two eyes see the image on the focus handle together. You can get the stereoscopic image then.

One eye lens, often on the left eye, is fixed in four short lines for dividing. When it is fixed in some component, you can get accurately focused image. (Picture 20)



Picture 20

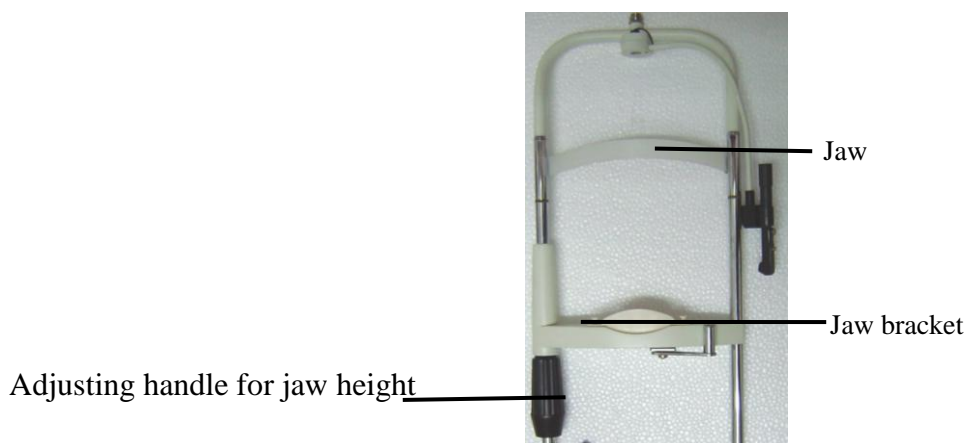
**5) We recommend you to rectify diopter according to the following steps:**

- First of all, turn the ring for adjusting diopter to its end counter-clockwise.
- Then turn the ring clockwise until the clear slitting image shown on the focus handle. The dividing lines in the eye lens are also the clearest. We can use the same way to adjust another eyepiece, write down the diopter value of every eyepiece to reference for using in the future.

**4.2. Position of the patient and the sight-line fixing lamp**

**1). Place the patient's head**

Place the patient's head on the jaw bracket and the forehead of the patient nestled closely to the ribbon for forehead bracket. Adjust the jaw bracket height-controlling handle under the jaw bracket until the eye of the patient is on the best place. (Picture 21)



Picture 21

2). For fixing the line of sight of the patient, let the patient's non-inspecting eye look at the sight-line fixing lamp. If the position of the lamp needs to be changed, you may move the handle of the lamp or move the curved handle around the head bracket

**4.3. Operate the Pedestal**

1). Keep the controlling handle vertical, move the pedestal to make the microscope move on the horizontal plane so as to make the microscope roughly direct the target. (Picture 22)



## Picture 22

2). Tilt the controlling handle to adjust the height of the microscope so as to make the microscope be flush with the target. Turn the handle clockwise to make the microscope rise, turn the handle counter-clockwise to make it fall.

3). Slightly adjust in horizontal direction

Tilt the controlling handle in all sides to make the microscope move slightly on the horizontal plane. Adjust and view through the eye lenses in the same time to aim at it, then can get the clearest image.

4). Lock the pedestal

After adjusting the microscope well, tighten the locknut for the set to fix the pedestal

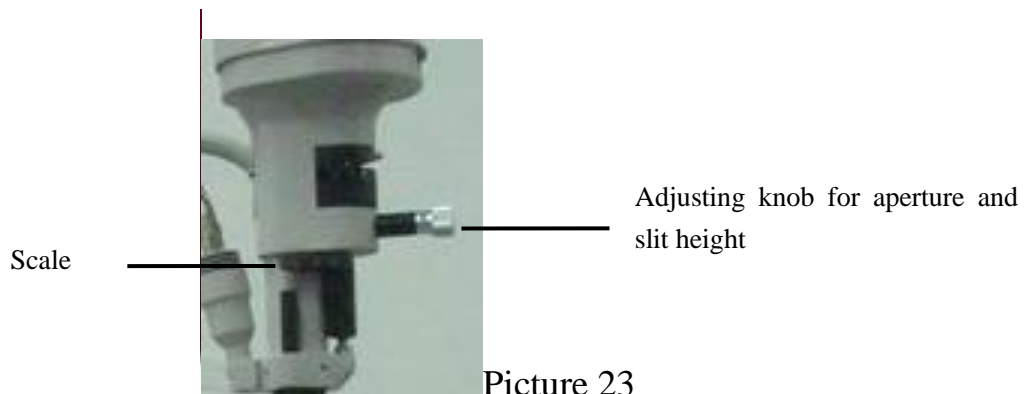
### 4.4. Operate the lighting component

1). **Change the width of the slitting image**

Turning the knob for controlling the slitting width, you can make the slitting width change from 0mm to 10mm (when the width is 10mm, the slit will become round). The graduations on the knob indicate the rough value of the slitting width.

2). **Change the aperture and slit height**

Turning the aperture and slit height adjuster knob, you can get 6 different sizes of lighting dots. The diameter can be 10mm, 8mm, 5mm, 3mm, 1mm or 0.2mm respectively. When it is slitting image, its height can be changed from 1mm to 10mm in succession and its figure can be read in the window. (Picture 23)



3). **Rotate the slitting image**

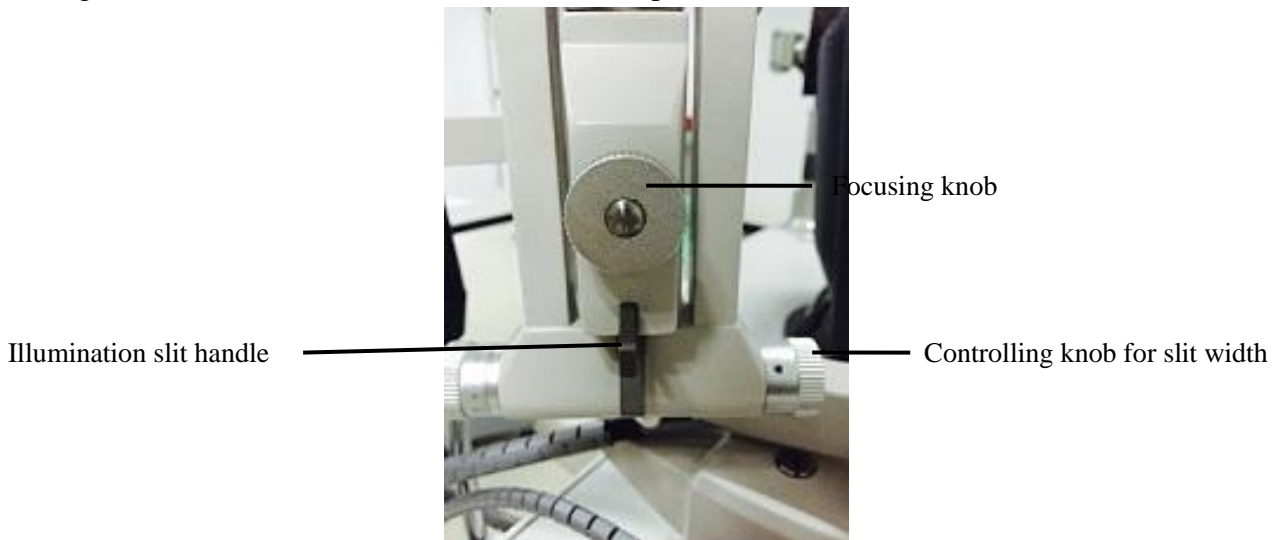
Moving the aperture and slit-height adjuster knob in horizontal, you can turn the slitting image to arbitrary angle between the horizontal and vertical. The degree of angle can be shown on the graduated board. Every small mark is 5 degree and every big one is 10 degree.

4). **Move the light away**

Loosing the focusing knob and turning the knob for controlling the slitting width as the arrow directs, you can move the light away from the central visual field. This is used for checking



eyes with counter-indirect illuminating method. Tightening the focusing knob, you can reset the light to the central visual field of the microscope (Picture 24).



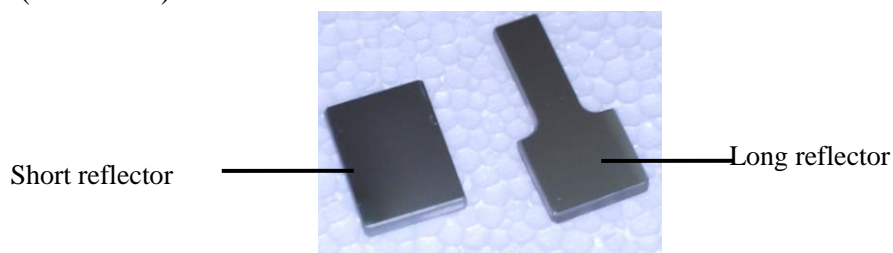
Picture 24

5). Tilt the light

When you use the contacting lens and meanwhile use the section of the slitting light, you must tilt the light. When pressing the tilting handle for lighting, the lighting component can tilt to 20 degree (5 degree per grade). Be careful when you use this method because the instrument may touch the head of your patient.

6). Reflector

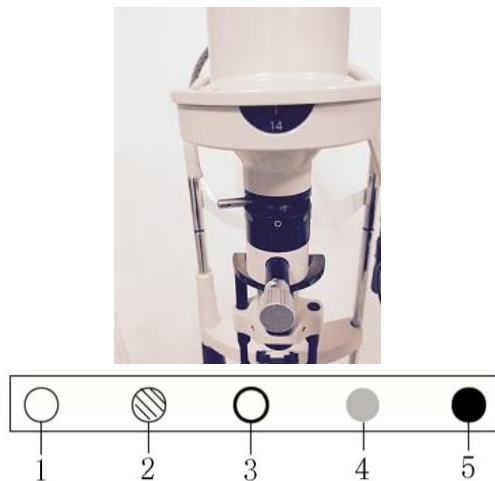
This instrument has two reflectors. One is long and the other is short. We usually use the long reflector. When the included angle between the lighting component and the microscope is between 3 degree and -10 degree, the image may be obstructed. Then you can use the short reflector (Picture 25)



Picture 25

7). Choose filters

Moving the filter-choosing handle on the horizontal plane, you can change four different color filters in the lighting way. The heat filter is usually used so as to make patients feel more comfortable (Picture 26).



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

Picture 27

#### 4.5. Use Preset Lens to check the Ocular Fundus

In the normal checking, because of the refraction action of corneas and lens, the slit-lamp is only used to check the part from cornea to anterior vitreous when it is in routine usage because of the refraction of the cornea and the crystalline lens. If the front of the microscope is fixed with preset lens, you can check ocular fundus and the rear tissue of vitreous.

##### **The operating steps are as follows:**

- 1). The patient's pupils should be dilated for about 20 minutes
- 2). Insert the leading board for preset lens into the hole of main axle between the lighting arm and the microscope arm.
- 3). Turn and draw out the set of preset lens from the side of the head bracket and make the preset lens' set face the operator so that the preset lens' set can slide below the jaw bracket. Insert the projection of the end of the preset lens' staff into the fillister of the leading board (Picture 28).
- 4). Move the focus of the lighting and the microscope to the eye of the patient
- 5). Move the position handle in proper direction, back or forth, up or down, to make the preset lens be in the central visual field of the microscope and close to the patient's eye. (picture 28);
- 6). Move the position handle to make the preset lens focus on the ocular fundus and reduce the included angle between the light for illumination and the lighting for view. When the light for illumination fully enters the ocular fundus, adjust the slitting height and width to reduce the disturbing light in the ocular fundus
- 7). If you need to check different parts, you may slightly change the included angle between the lighting arm and the microscope arm. Or change the position of the fixing lamp to change the fixed point of patient's sight.
- 8). If long reflector may obstruct the view ray, the short reflector should be used and the lighting for illumination should be tilted.

9). After checking the patient's eyes, you reset the set of preset lens to the original position of the jaw bracket.

**▲Note: Let the patient's head move away from the jaw bracket before you move the preset lens' set so as to prevent the patient's nose from touching the preset lens. (Picture 28)**

Direction pole



Leading board of preset lens

Picture 28

# 5. Software Operation Way

## 5.1. Operation Steps

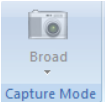
### 1) Run the software

At first, turn on the power box, and then turn on the display monitor, printer, and power supply of main computer unit, which can start computer. After entering into desktop, continuously click icon to enter into the software system.

### 2) Check the Patient

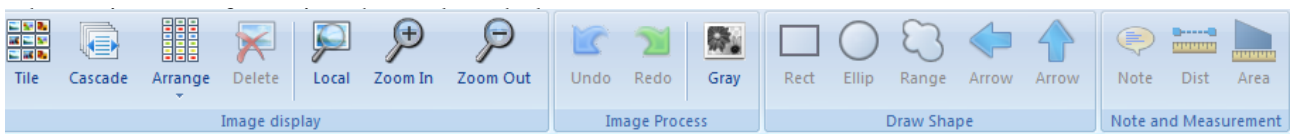
The software will do the following steps:

Data Sample → Image Process → Exam Report → Document Management

- Put in the information of patient in the column on the left.
- Click  to choose “narrow slit” or “wide slit” or video record
- Press the button on the Joystick. The picture will auto show on the screen of computer.

### 3) Image Process

Click “image process”, and double click the images below the software interface. Then you can get



Picture 29

### 4) Exam Report

After the steps above, click the “Exam Report” to prepare to add the reports. And click  to add the report which type you want. Then click  to print the report.

Printer setting:	Paper type: photo paper
	Brightness: +11
	Contrast: +2
	Saturation: +3
	Cyan: 0
	Magenta: 0
	Yellow: 0

### 5) Save & Open

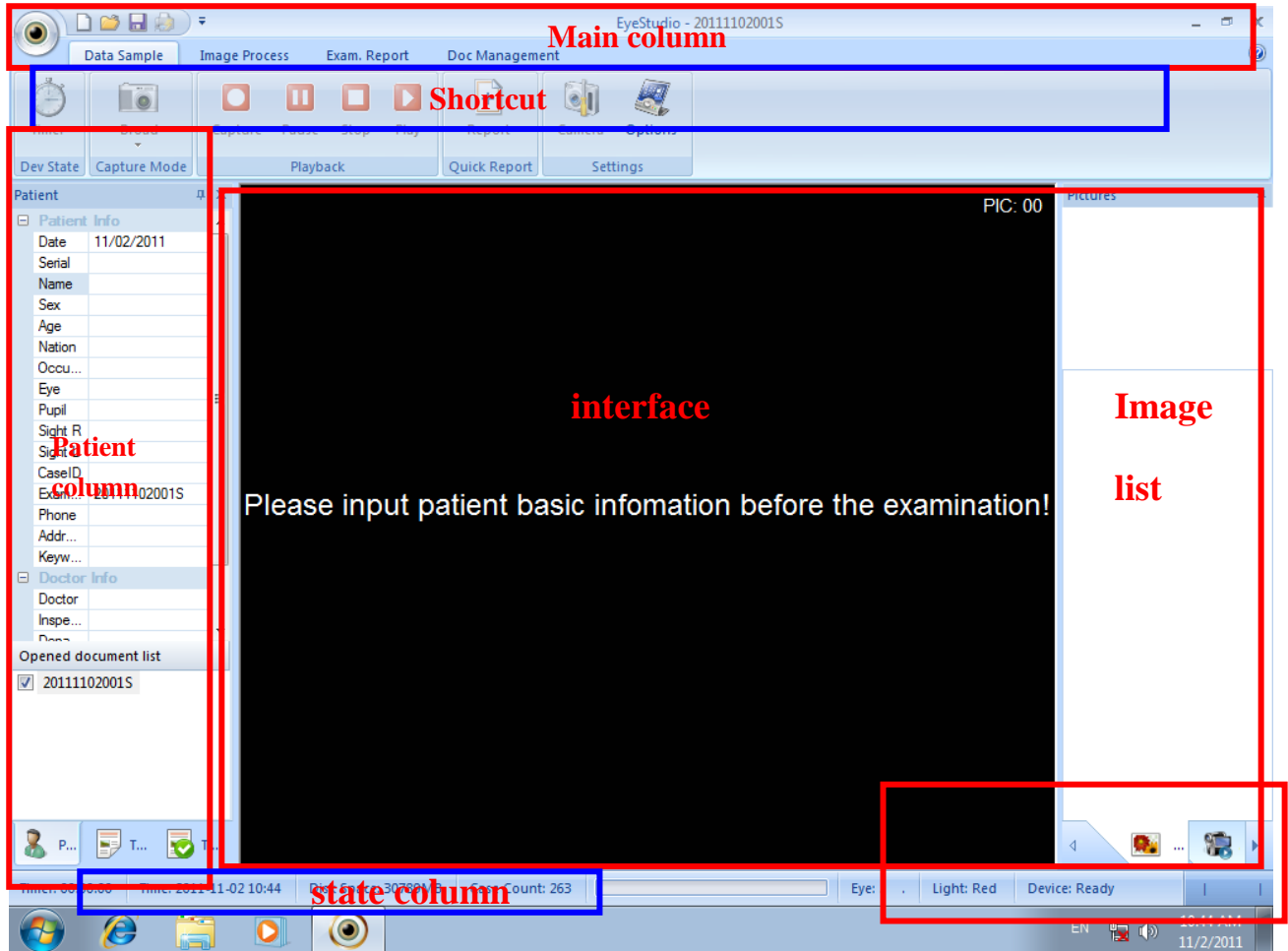
After finishing the steps above, please click  to save the document, and it's easy for you to inquire.

When you want to inquire the document, you can click “doc.managment” to inquire the document.

## 6) Turn off the Power

Close the software-----turn off the power box-----power off the computer-----printer off-----Main power

## 5.2 Detail of the Software



Picture 30

### Interface:

1. Main column: data sample; image process; Exam report; doc.management
2. Shortcut: Flash, Broad, Capture, Pause, Stop, play... options
3. Patient column: information of patient
4. Interface: preview when taking pictures
5. Image list: display the photo transferred
6. State column: information about the state

### Icons



File: new-built files; open file; save file; print;

New-built files

Open files



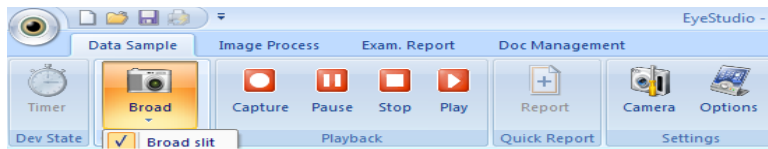
Save files



Print

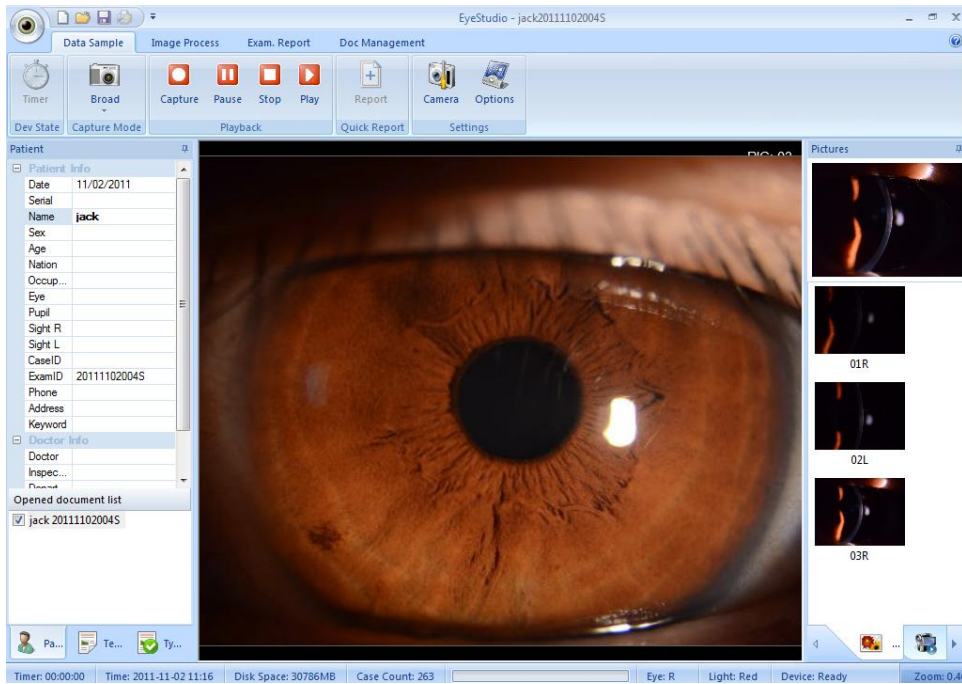
# 1) Data

sample: get color pictures by image collector



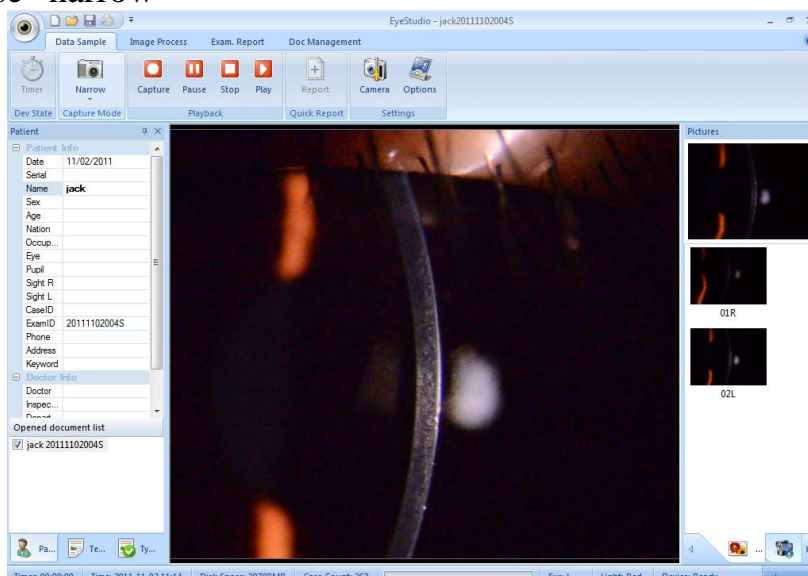
① Timer: For Video model.

② Broad: choose model(broad, narrow)



Picture 31

Choose “narrow”



Picture32

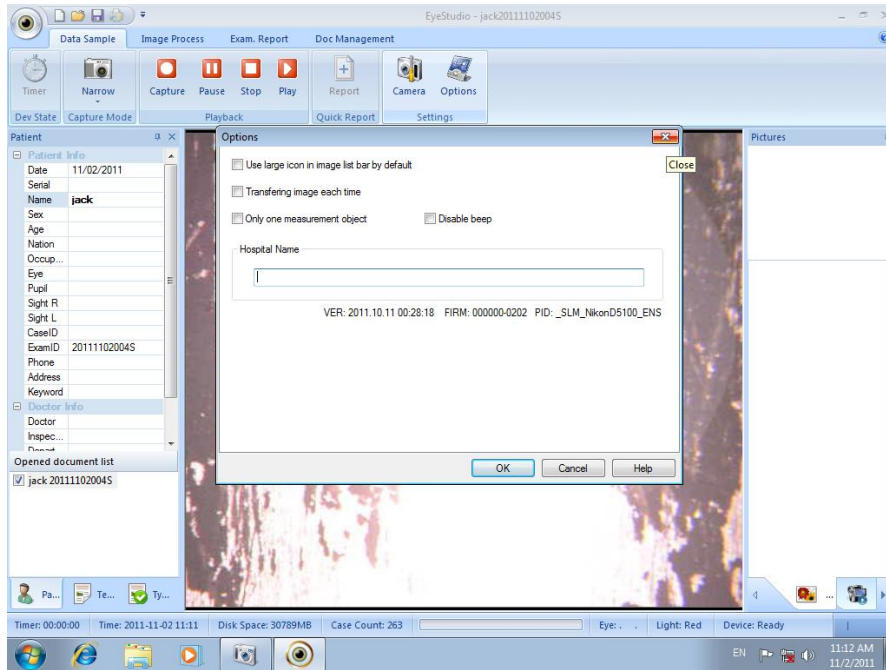
③ Playback: you can capture; pause; stop; play (It's option function)

④ Quick report:

After choosing images that you want to print, click “report” to add patient’s report, then click “print” to print the report out. (Ctrl + left-click to choose more pictures)

⑤ Settings:

.Options: setting the system parameters, and hospital name.



Picture 33

## 2) Image process: to get clearer image after processing



Picture 34

① Image display:

Arrange: display all the pictures in the windows;

“Zoom in, zoom out, fit, actual” make different display mode you want

② Zoom:



Picture 35

③ Draw shape:

④ Click “rect” “elp” “range” “arrow” to choose which shape you want to draw

- ⑤ Note and measurement
- ⑥ Note: you can put in information in the pictures;
- ⑦ Measurement: measure the distance.
- ⑧ Area: display the percentage of the area for the entire picture.

### 3) Exam.report



Picture 36

Paste: You can copy and paste the information in the report.

Print: Setting: choose default printer, direction, paper type, properties. Default paper size is A4

Report: Size: choose “A4、 A5、 A6、 B5”;

Add: Choose different report type. There are 5 types for doctor to choose.

Delete: Delete the report which you have chosen

Save: Save the report and information

Save Word: Save the report as “word” format

Display Scale: 25%、 50%、 75%、 100%、 125%、 150%、 200% of the report

Page height: Display the whole report.

Two page: Display two pages of the report

Page width: Display the report as width

### 4) Doc.management

Picture 37

Database query:

Edit the data in the blanks, such as “ID, name, age, case NO, inspector, keyword” to query the information of patients.

Num	ExamDate	SerialNo	Patient	Sex	Age	Nationality	Occ...	Eye	Pupil	Sight	Key_Word	Doctor
24	2010-06-25		2010062...					R/L		/		
23	2010-06-23		2010062...					R/L		/		re
22	2010-06-23		2010062...					R/L		/		re
21	2010-06-23		2010062...					R/L		/		re
20	2010-06-23		2010062...					R/L		/		re

Picture 38



Click one, and press “delete”, so you can delete the data of patient.

### 5.3 Instruction of Right-click

1) In “**Image process mode**”, right click the image

- Floating: unfixing the image
- Docking: fixing the image
- Auto hide: hided at left-right corner
- Hide: absolutely hide



2) In “**Image process mode**”, right click the image displayed in the interface

- Display all: display all the images
- Clear all: close all the images in the interface
- Clear: close image which chosen
- Delete: delete the image
- Sort ascending: display the images by date
- Sort descending: display the images reverse order
- Group: display the images one by one
- Add to typical case lib: record the detail of the image
- Export image: save the image as other one
- Set eye ID: don't need to set manually
- Object lens ratio: set the ratio in the image

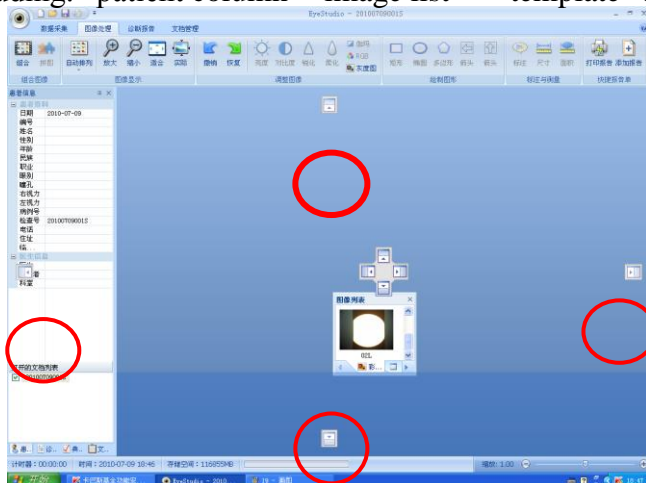
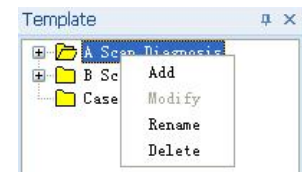


3) In “**Exam.report mode**”

Add: edit the description & tips for all the reports

### 5.4 Align: The user can set the column's positions

Including: “patient column” “image list” “template” and so on.



Picture 39

## 6. Maintenance

### .1 The guide to fix the breakdown

If the instrument breaks down, please examine it according to the following list. If dose not work yet, please contact the Service Department of *our company*.

<b>Breakdown</b>	<b>Possible cause</b>	<b>Treating ways</b>
Illuminating bulb dose not work	The power wire dose not link to the electric socket correctly	Link the power wire correctly
	Main power switch is on “0” position	Turn the switch to “1” position
	The plug on the power box is loose	Fasten the plug
	The jointing plug of the lamp cover is loose	Fasten the plug
	The bulb is burn down	Replace the bulb
	The fuse is fused	Replace the fuse
The slit is too dim	Install the bulb in a wrong way	Install the bulb correctly
	The light filter handle directs the first grade or intermediate position of the light filter	Turn the choosing handle to the right position
	The surface of the reflector oxidized	Replace the reflector
	The reflector is covered too much dust	Clean the surface of the reflector with the lens paper
	The reflector is covered too much light	Clean the surface of the reflector with the soft cotton
	The protector of the microscope or the lens’ surface is stained	Clean the surface of the lens
The fuse breaks down	The type of the fuse is wrong	Replace the proper fuse
	The joint of the electric wire is loose	Fasten the joint of the power wire
The slit shuts off automatically	The slitting width controlling knob is too loose	Adjust the degree of tightness of the knob
The sight fixing lamp dose not work	The output plug of the power box is loose	Fasten the plug
	Fixing lamp does not turn on	Turn on the sight-line fixing lamp
Shooting button is not effect	Shooting wire on the power box is loose	Fasten the output wire
Camera does not	The tip of the digital controlling wire is loose	Fasten the jointing

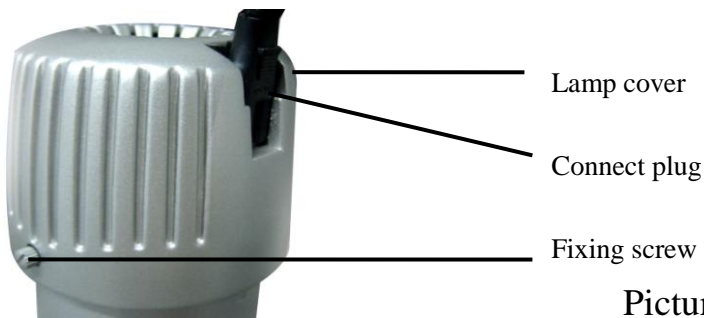
work because of without power, cause it can not transit image	Digital power is loose	Fasten the jointing
Display monitor does not have digital window	USB wire is loose	Fasten the jointing
	Video tip is loose	Link the video tip again

## 6. 2. Replace Way

Notes: The waste material replaced from the instruments must be disposed as soon as possible.

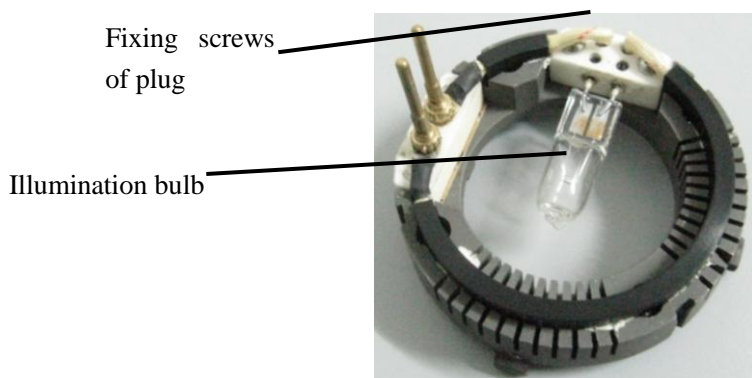
### 1) Replace the lighting bulb

- Turn off the main power switch
- Take out the power wire plug. Screw off the fixing screw of lamp cover and take out the lamp cover. (Picture 40)



Picture 40

- Take out the old bulb and replace new one. Fasten the screw clockwise with the screwdriver. Make the bulb side with letter up, the pin of bulb insert the end, otherwise the illumination light is not asymmetry; (Picture 41)



- Note: The bulb is boiling hot!
- Put the lamp cover to the original place, fasten with screw, and connect the plug;
- Turn on the power of main power to check the new one whether it is good.

- 
- 2). Replace the reflector
- Make the degree of included angle between the microscope arm and the lighting arm bigger than 30 degree
- The angle of the tilting lighting arm should be bigger than 10 degree.
- Hold the projection of the long reflector and pull out the reflector
- Insert new long reflector or short reflector.
- When replacing the short reflector, you can use an object with a tip to push the low-end of the short reflector as it is shown in the picture (Picture 42).



Picture 42

### 6.3 Components Adjustment

#### 1). Adjust the slitting width to control the tightness of knob

If the knob for controlling the slitting width is too loose, the slitting width may be out of control. Loosen the screw on the right knob with the screwdriver (J), then fix the left knob with one hand and with the other hand you turn the right knob clockwise to adjust the tightness to proper degree. After getting the suitable degree of tightness, you fasten the screw on the right knob (Picture 43).

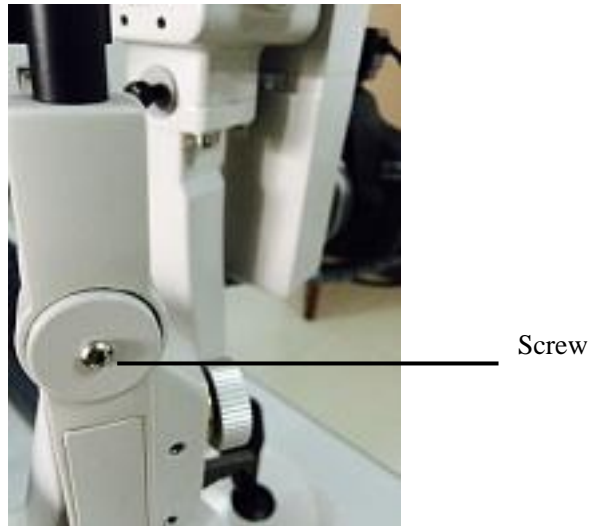


Picture 43

#### 2) Adjust the tilting action of the lighting component

If the tilting part on the lighting component is too loose, fasten the screws on the bearing point of

two sides with the screwdriver. (Picture 44)



Picture 44

## 6.4 Cleaning and Protecting

### 1). Clean the lens and reflector

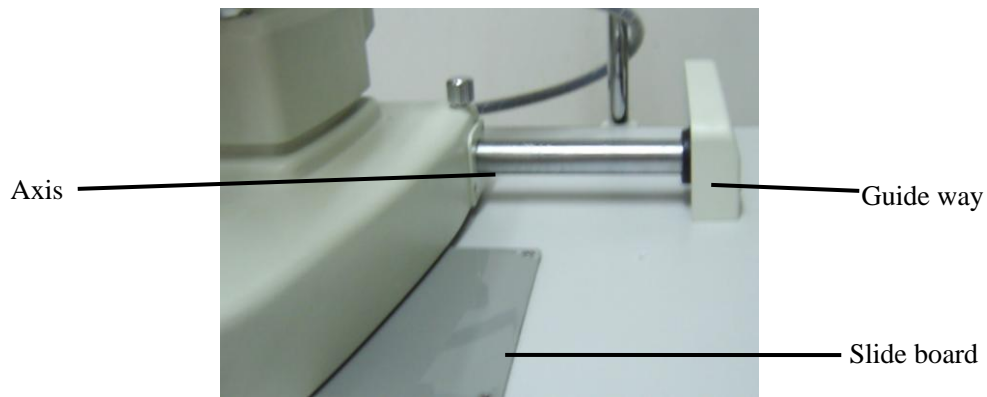
- (1). If there is dust in the lens or reflector, firstly make sure the needing cleaning scope or take off the reflector.
- (2) Then wrapping the absorbent cotton, in the course of wrapping it, we should pay attention to wrap the tip of handle with absorbent cotton, as thick as possible, in order to avoid pull the lens.
- (3) Dip the 2/3 of the button into the aether , as short as possible in the air, in the course of wiping lens, the way of handling is normal. Should wipe it to the same direction, and just only wipe one-two times; we should replace the absorbent cotton.

**Notes:** The aether and absorbent cotton that we use must clean and must not touch the button which has been dipped in the aether with hand.

After wiping it, seal the aether well as soon as possible. If the user find dirty in the lens, we should contact the after service of Our Company the first time, wipe it with according to the manufacture instruction.

### 2). Clean the slide, guide-way and the roller

If the slide, guide-way and the roller are not clean, movement on the horizontal plane and vertical plane will not be smooth. Clean them with a piece of soft, clean cloth (Picture45).



Picture 45

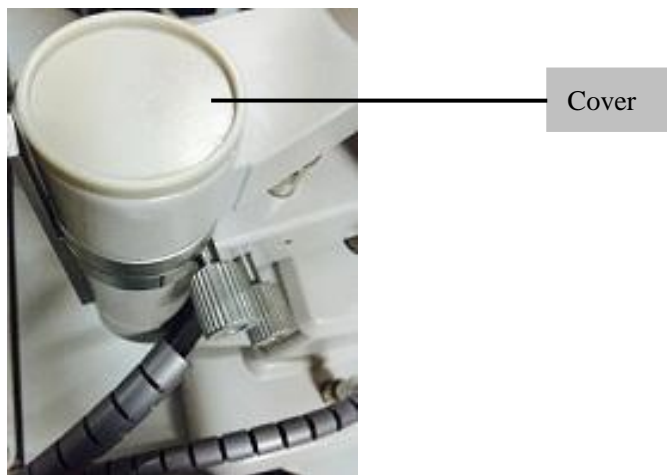
### 3). Clean and disinfect the plastics components

Use a piece of soft cloth stained with dissolvable cleanser or water to clean the plastics components and disinfect them with medicinal alcohol.

**Note: Do not use any corrosive cleanser to wipe them, or the surfaces would be damaged.**




### 4) Protection

In the using course of the slit-lamp, the hole of main axle may have dirt, such as dust and physiological saline in it. In order to prevent the instrument from damage, please cover the hole of main axle with the protecting cap (F). Take off the cover when necessary to install the leading board (Picture 46)



Picture46

### 5) Highly deleted objects

Names of products	Names of components	Appearance
SLM-3ER Slit Lamp	Illuminating bulb	
	Long reflector	
	Cartridge fuse 1A(220V)	

## 6) Maintenance

- (1) When opening, firstly turn on power of monitor, then power of main unit, but closing, we should firstly withdrew WINDOWS, then close power of computer and monitor
- (2) Scan the disk in the certain time and arrangement pieces.
- (3) Keep the room clean, dry, use air-condition as possible.
- (4) It is not be used for a long time, should get through the main unit in a certain time. (Usually three times every week, 4 hours every time)
- (5) If there is breakdown, firstly contact us or let the special engineer to maintain.

## **7. Declaration**

**Our company can provide you with the information of those parts need maintained.**

1. Our company will provide maintenance and enquiry free for one life.
  
  2. Our company will maintain the machine for free for one year since the date of purchasing if the machine is operated according to the operation instruction.
  
  3. During the maintenance, Our company will charge fee for the maintenance under the following conditions
    - Do not use, maintain, store the instruments according to operation instruction;
    - Take apart or amend the instruments without the permission of Our company, which cause damage;
    - Damages is caused by accidents, use wrongly or caused by other major nature factors.
- ▲ Please forgive us for not informing you if the design or the assigned type changes.
- ▲ If you have any question about our products, please do not hesitate to contact us.