



SLIT LAMP MICROSCOPE

**HS-5000&5500
7000&7500**

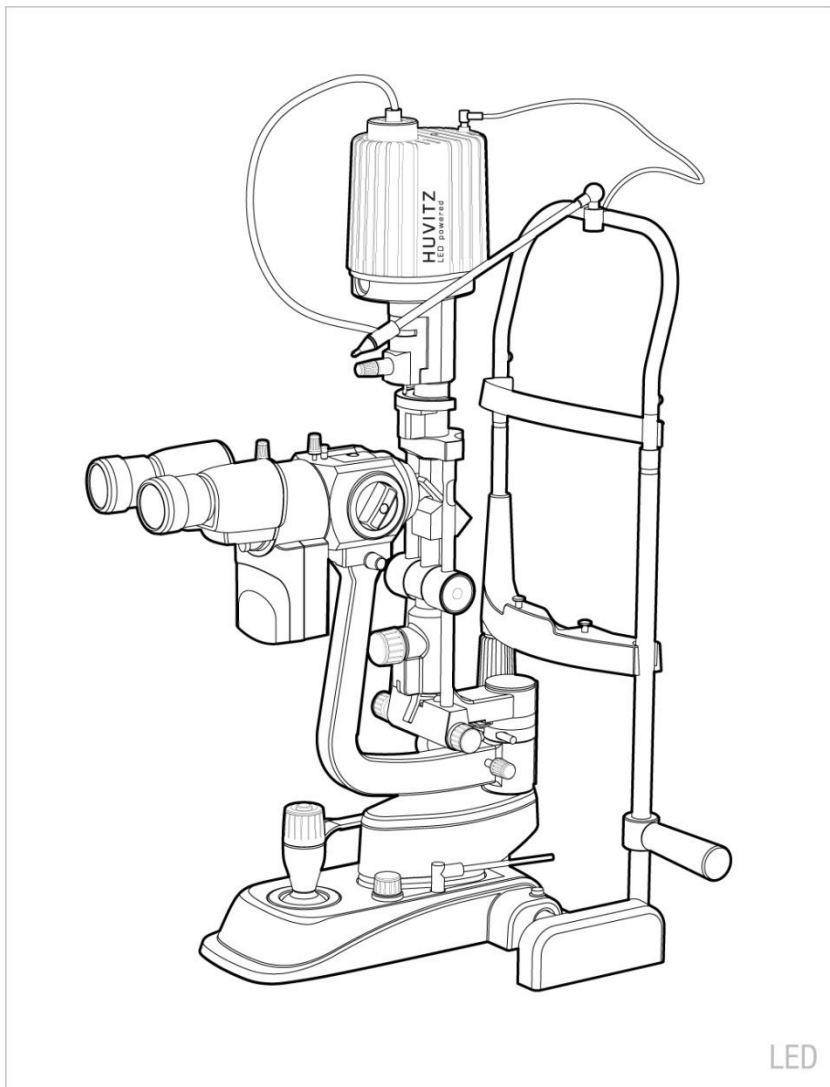
HUVITZ IMAGING SYSTEM

**HIS-5000
5000U**

FATD(R0)-190619-001

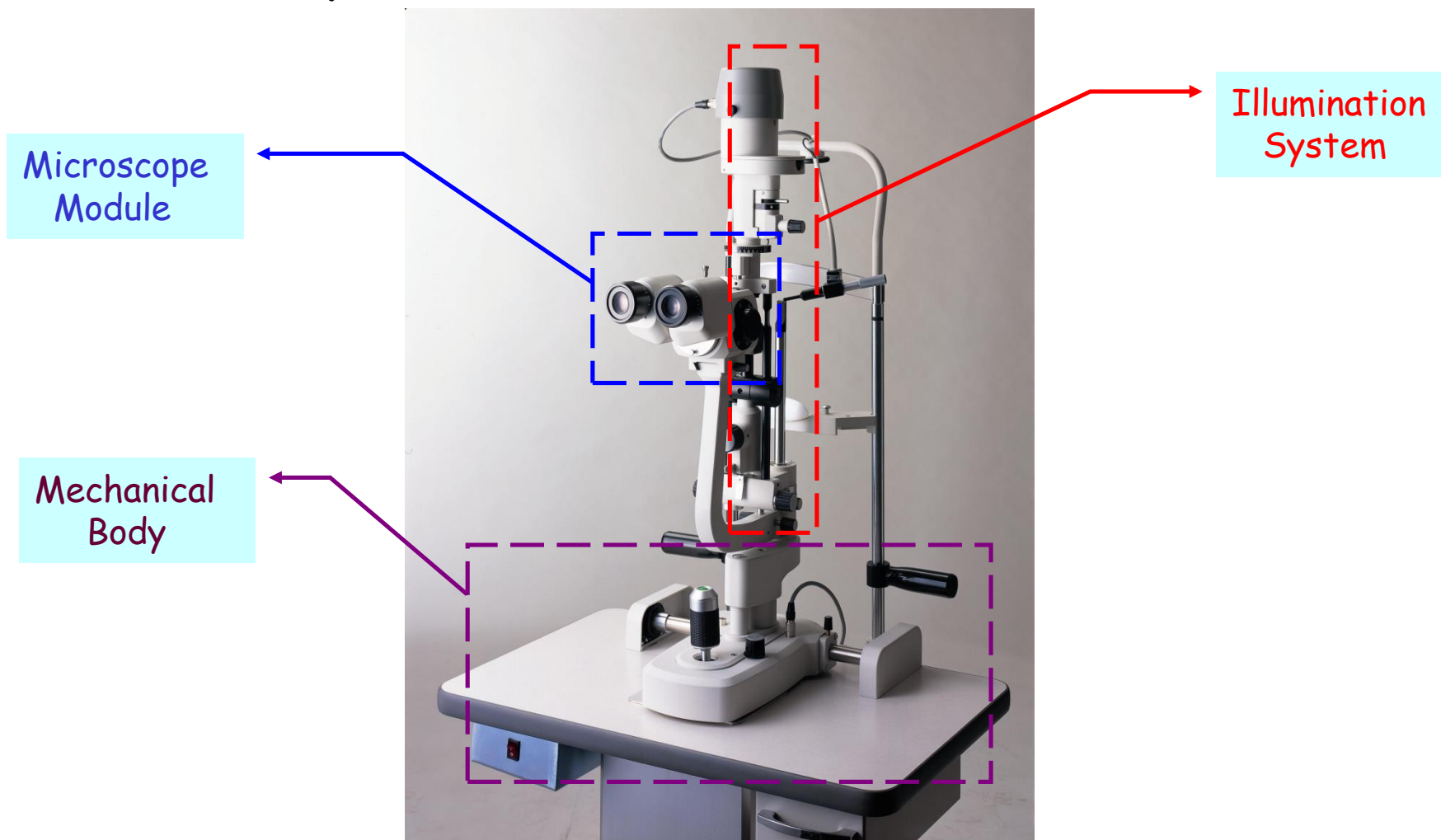


1. Information
2. Structure of SLIT LAMP
3. Principle of SLIT LAMP
4. Illumination System
5. Microscope
6. Installation of Slit Lamp
7. Installation of Joystick driver
8. Installation of LED
9. NEW SMPS Installation
10. Trouble Shooting

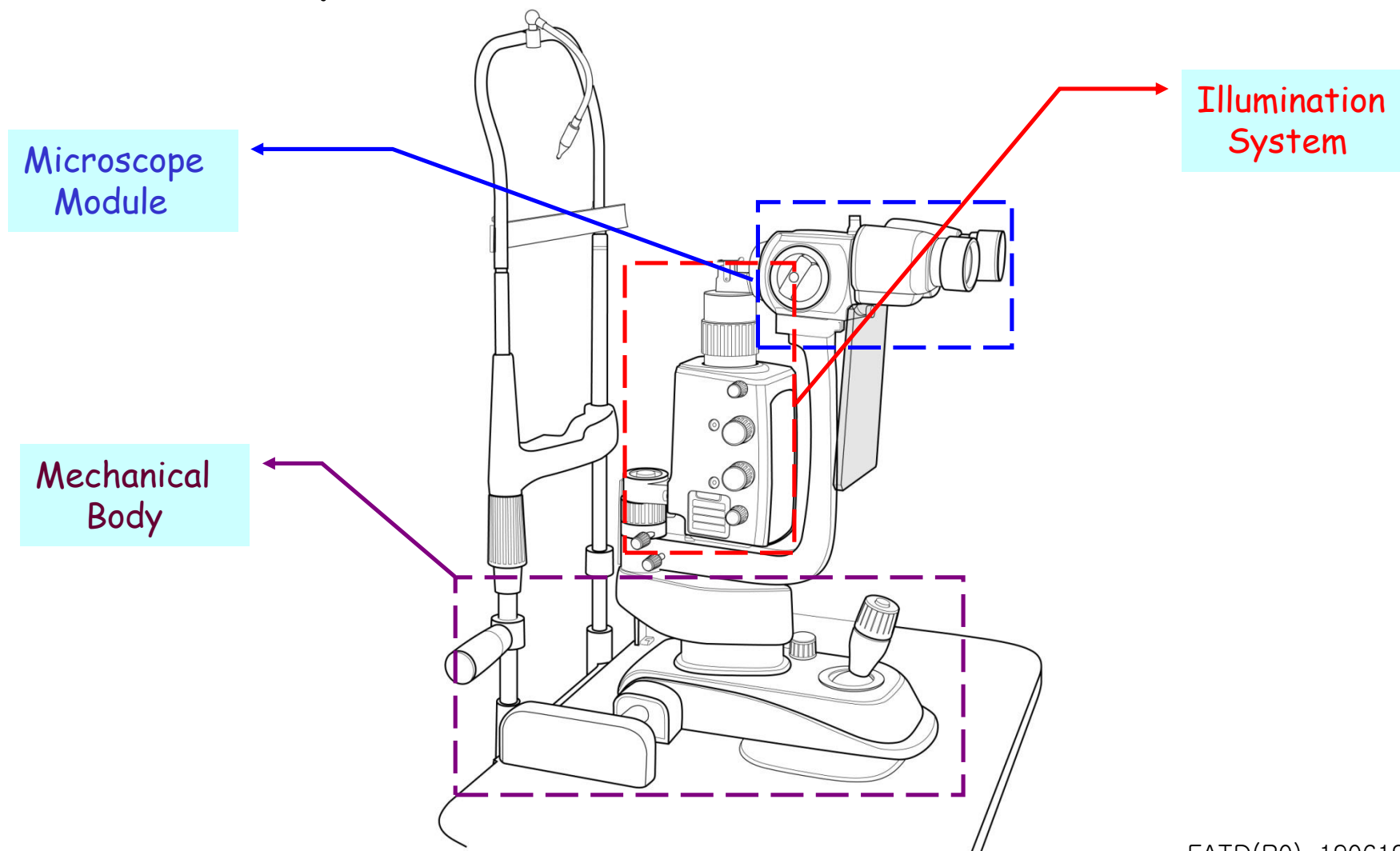


1. The slit lamp performs stereomicroscopic examination of the eye under the slit light.
2. The slit lamp performs microscopic examination of the ocular fundus and posterior vitreous body (using hruby's lens).
3. The slit lamp is designed for use ophthalmologists and optometrists.

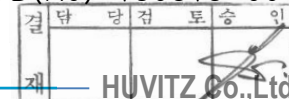
HS-5000,7000



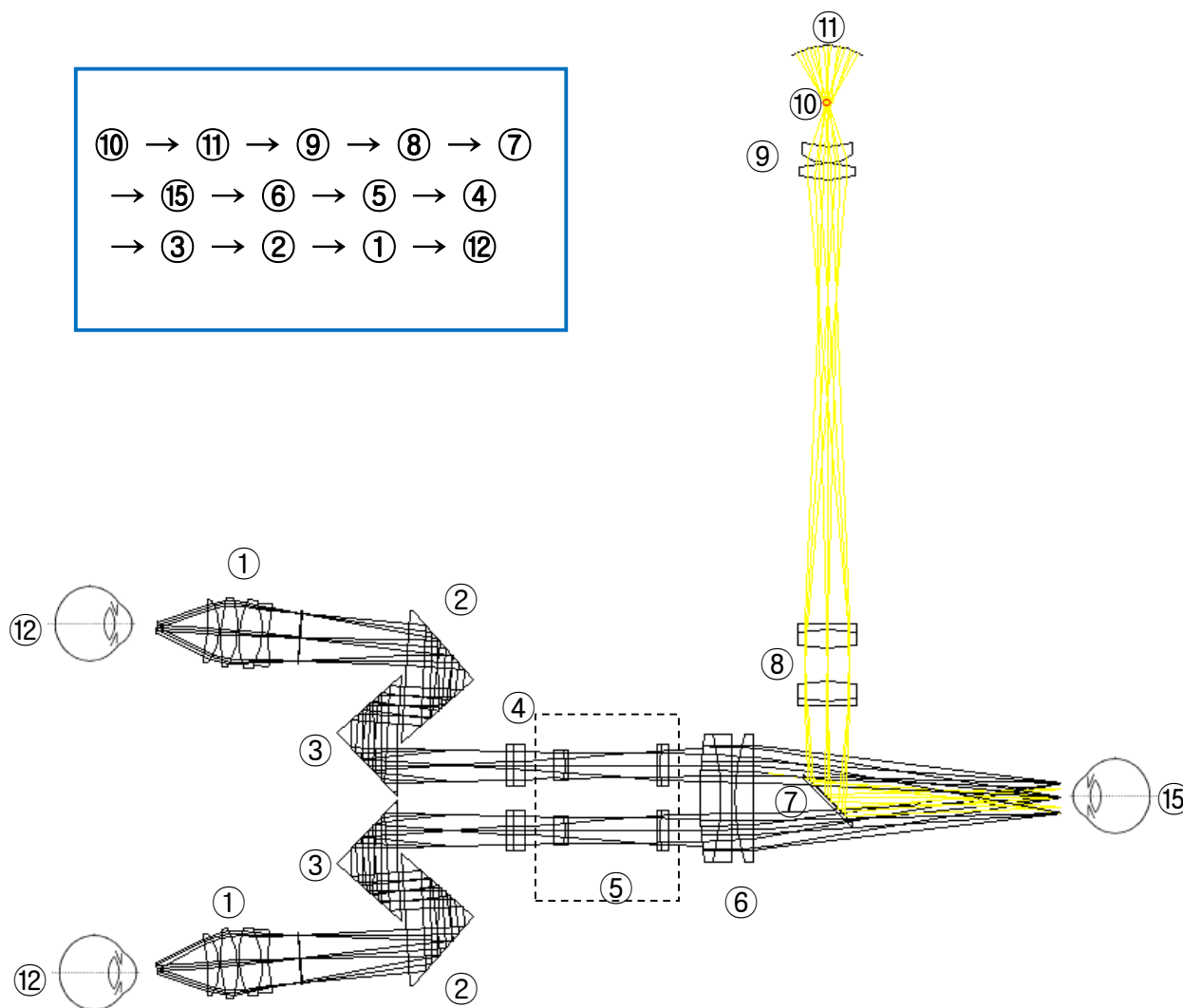
HS-5500,7500



FATD(R0)-190619-001

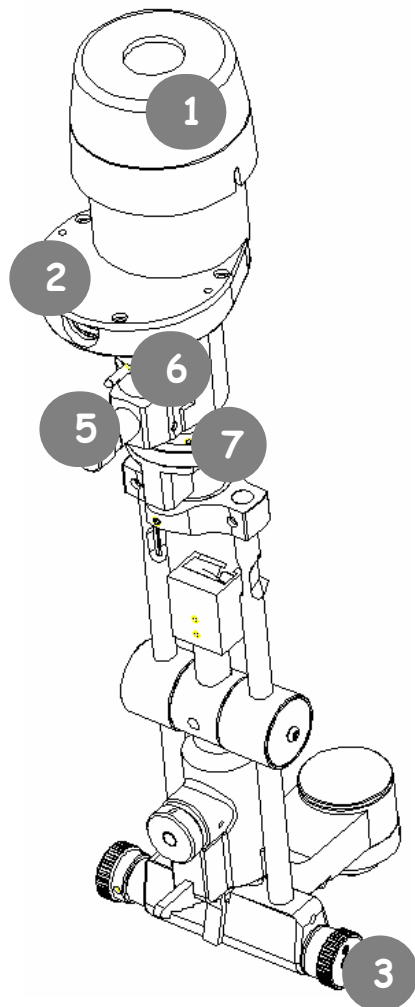


⑩ → ⑪ → ⑨ → ⑧ → ⑦
→ ⑮ → ⑥ → ⑤ → ④
→ ③ → ② → ① → ⑫



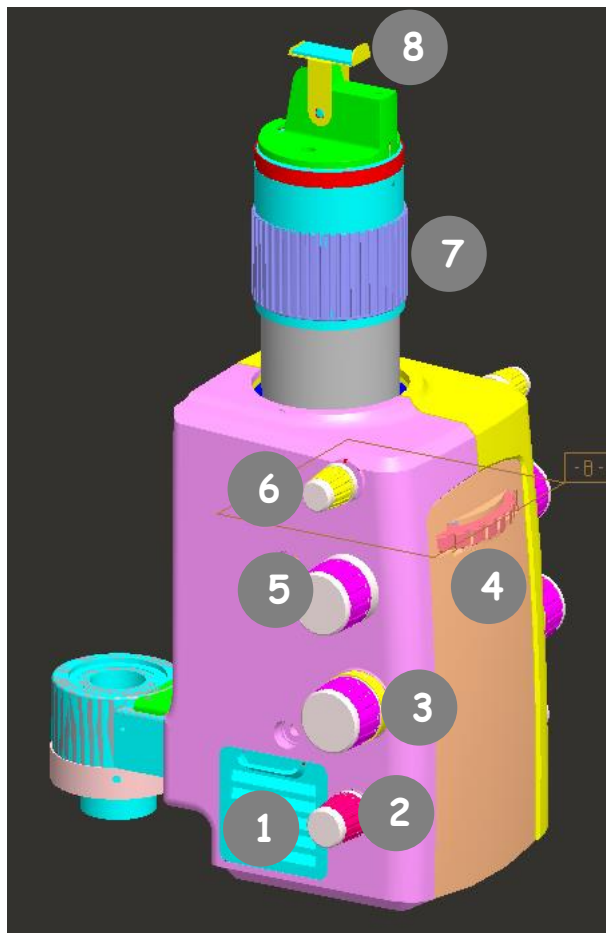
- ① : Eyepiece
- ② : Prism (Ver Prism)
- ③ : Prism (Hor Prism)
- ④ : 16x lens
- ⑤ : Magnification lens
- ⑥ : Objective lens
- ⑦ : Mirror
- ⑧ : Lamp lens
- ⑨ : C lens
- ⑩ : Halogen lamp
- ⑪ : C mirror
- ⑫ : OD'S Eyes
- ⑮ : Patient's Eye

HS-5000,7000



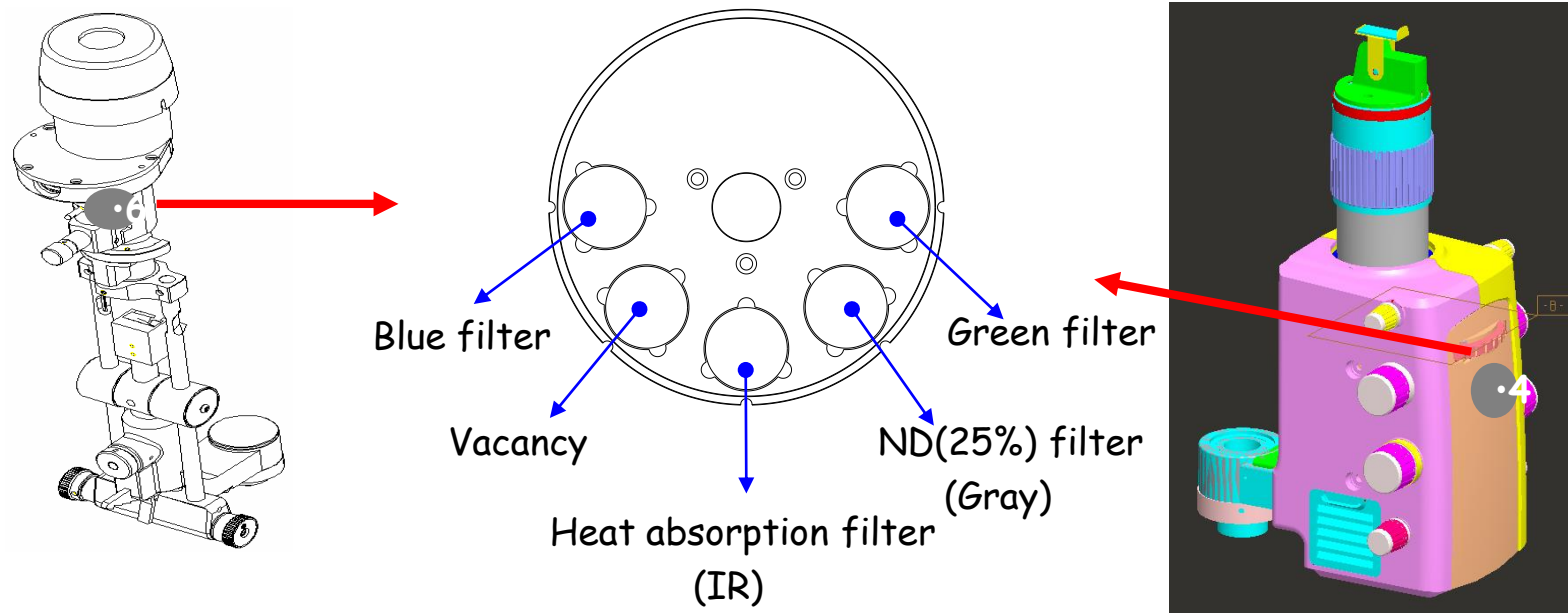
- | | | |
|---|--------------------|--|
| ① | Light source | Halogen lamp (12V 30W)
or LED |
| ② | Slit length | 0.3 ~ 12mm |
| ③ | Slit width | 0 ~ 12mm (continuous) |
| ④ | Slit projection | 1x |
| ⑤ | Aperture diaphragm | 0.3 / 1 / 3 / 5 / 9 / 12mm |
| ⑥ | Filters | cobalt blue / ND (gray) /
heat absorption /
red-free (green) |
| ⑦ | Slit rotation | 0 ~ 180° (continuous) |

HS-5500, 7500



- | | | |
|---|--------------------|--|
| ① | Light source | Halogen lamp (12V 30W)
or LED |
| ② | Slit length | 0.3 ~ 12mm |
| ③ | Slit width | 0 ~ 12mm (continuous) |
| ④ | Filters | cobalt blue / ND (gray) /
heat absorption /
red-free (green) |
| ⑤ | Slit rotation | 0 ~ 180° (continuous) |
| ⑥ | Horizontal tilting | Slit movement
(left & right) |
| ⑦ | Vertical tilting | Angle change for slit |
| ⑧ | Diffuser | Diffusing the light |

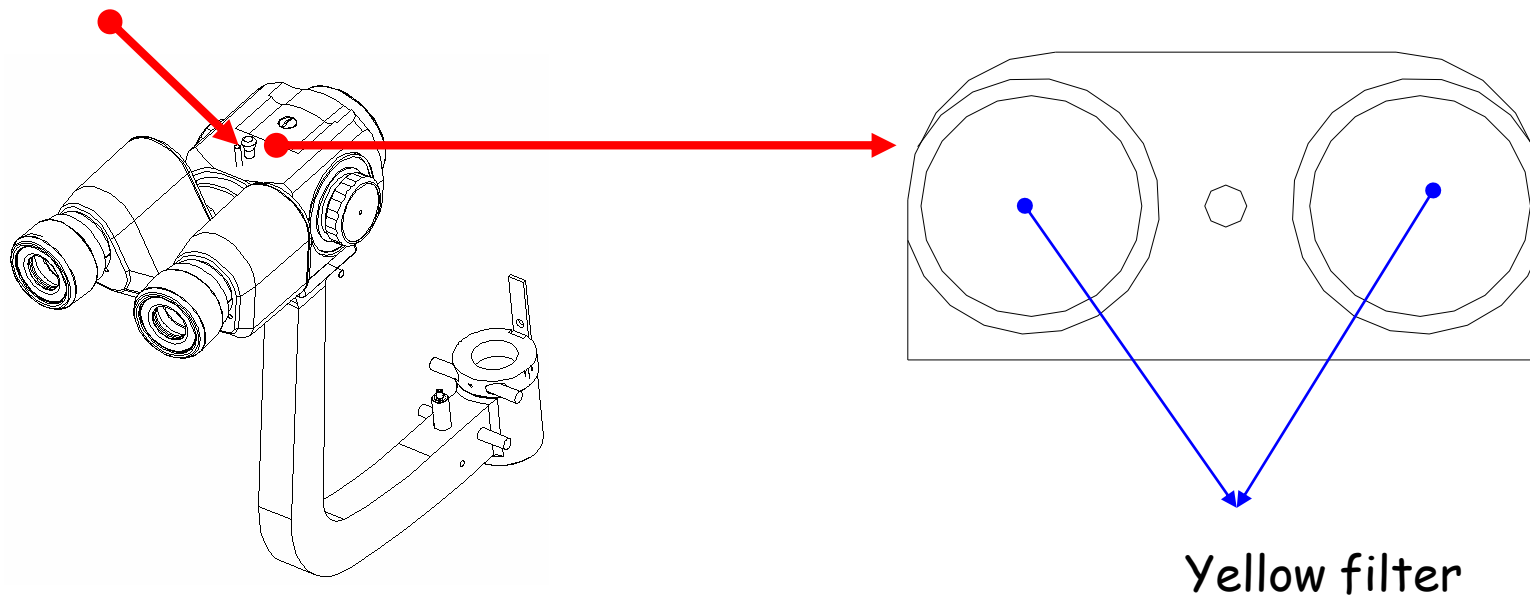
Illumination System - Filter 1



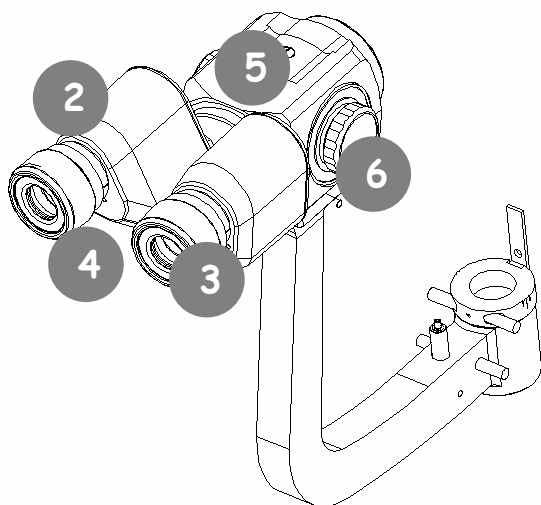
- ① The cobalt blue filter is used in conjunction with fluorescein dye.
- ② The green filter (red-free) obscures anything that is red, thus blood vessels or hemorrhages appear black.
- ③ Neutral Density filter (ND) is to reduces the amount of light.
- ④ Heat absorption (IR) filter is mainly used in lighting systems to absorb the heat from a light source.

Illumination System - Filter 2

Yellow Filter

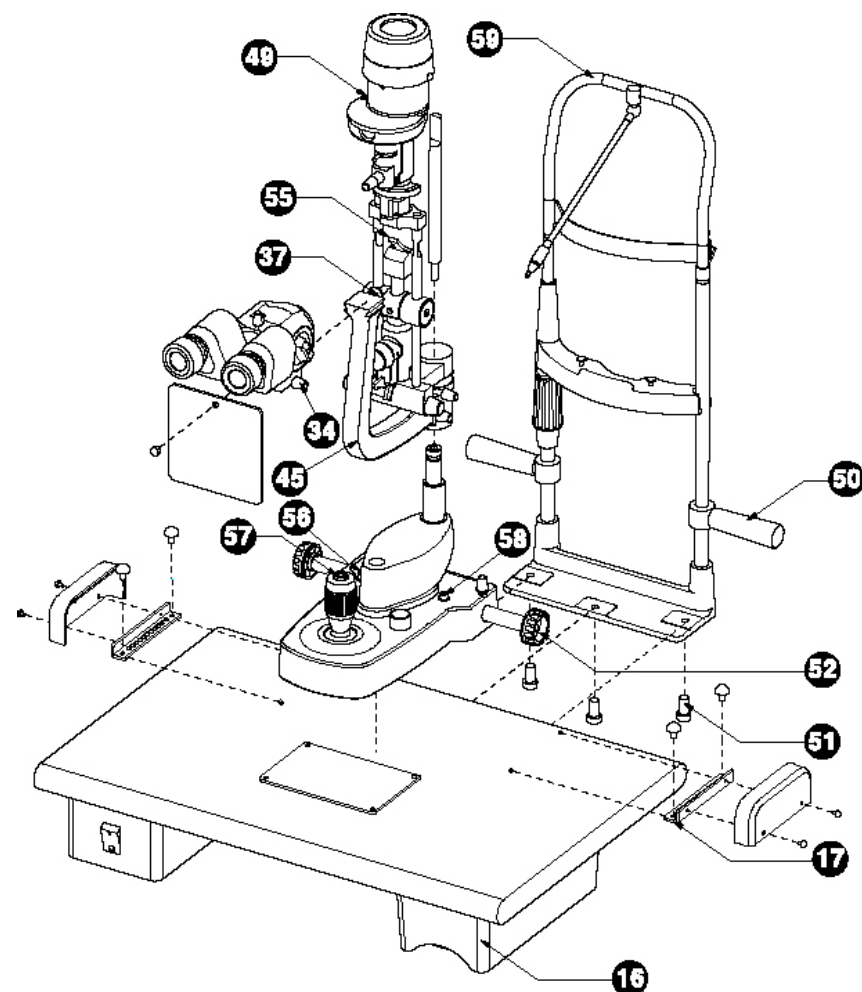
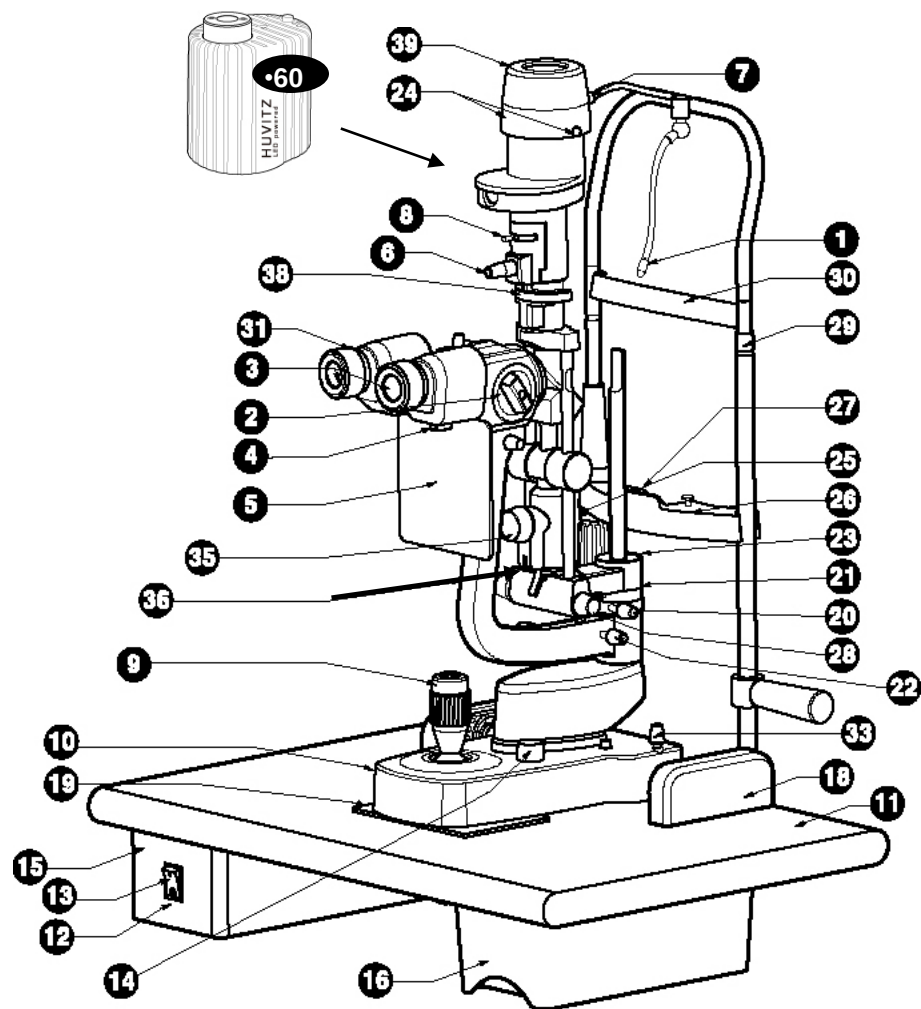


The Yellow filter fits RGP lenses with fluorescein dye
After installation, check whether Yellow filter is removed or not.



- | | | |
|---|--|--|
| ① | Type | Galilean converging
binocular (8°) |
| ② | Eyepiece | 12.5x, 10.0x |
| ③ | Diopter adjustment | ±5D |
| ④ | PD adjustment | 55 ~ 80mm |
| ⑤ | Filter | yellow |
| ⑥ | Magnification | 5 positions rotating drum |
| ⑦ | Total magnification & real field of view | 6x (38.5mm)
10x (22.2mm)
16x (15.2mm)
25x (10.5mm)
40x (6.7mm) |

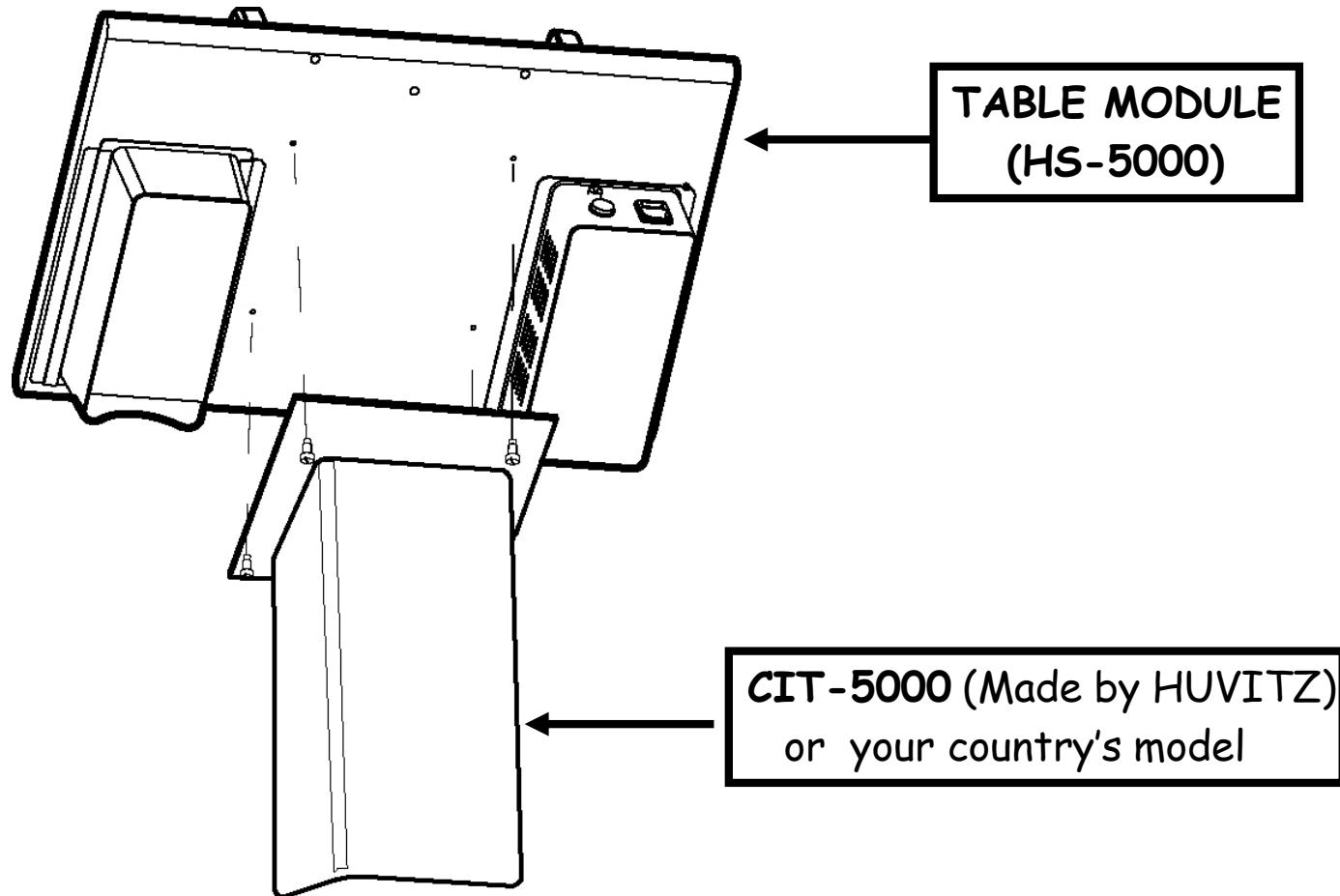
FATD(R0)-190619-001



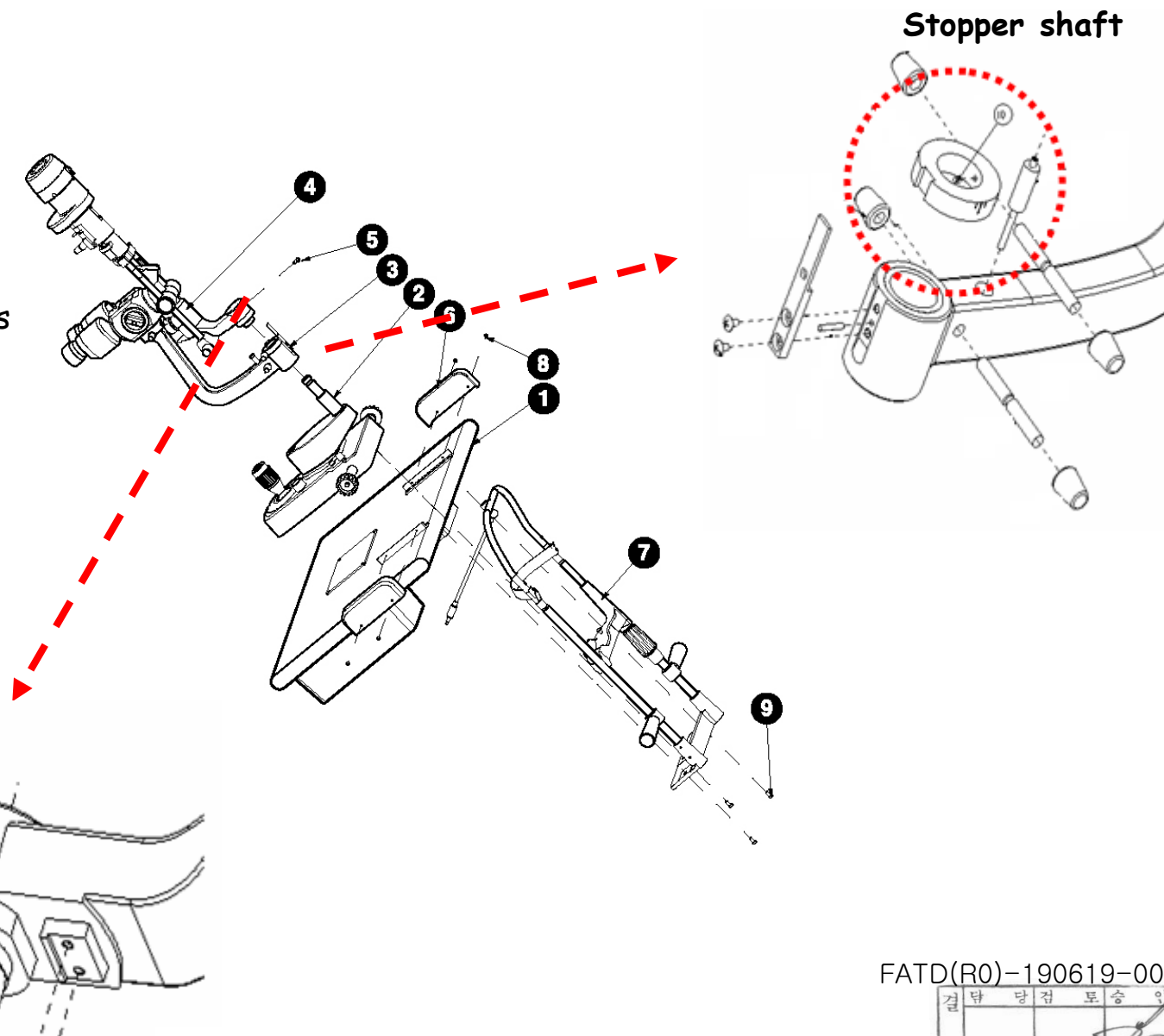
1. Fixation point
2. Control lever for changing enlargement
3. Removable eye-pieces
4. Knob for clamping the breath screen
5. Breath screen
6. Control handle for the slit rotation 90-0-90
7. Connecting plug of the projector lamp
8. Knurled ring for filters insertion
9. Movements (x y z)
10. Base with orthogonal movements
11. Shaped tabletop
12. Warning light of the SMPS
13. Main switch
14. Luminosity selector
15. SMPS box
16. Drawer
17. Toothed guides
18. Wheel protection Cases
19. Sliding plate
20. Knob to lock the projector
21. Scale for the projector position
22. Knob to lock the arm of the microscope
23. Hole cover
24. Knurled knob to lift the bulb holder
25. Ring for the vertical setting of the chin-rest
26. Locking pins for chin rest paper
27. Chin rest
28. Knobs to change the slit width
29. Pointer for the eye positioning
30. Head rest
31. Microscope
33. Knob to lock the base of the instrument
34. Knob to lock the microscope
35. Control handle for horizontal tilting
36. Control lever for vertical tilting
37. Microscope position stop
38. 90-0-90 determining the inclination of the slit during rotation
39. Lamp cover
45. Microscope arm
49. An optical group of the slit projector
50. Patient's handle
51. Chin rest fastening screw
52. Wheel
55. Mirror
56. Capture connector (For the image system)
Rubber cap(No image system)
57. Capture switch
58. Luminosity selector connector (Connecting to the SMPS)
59. Head rest module
- 60. LED Lamp (Option)**

FATD(R0)-190619-001





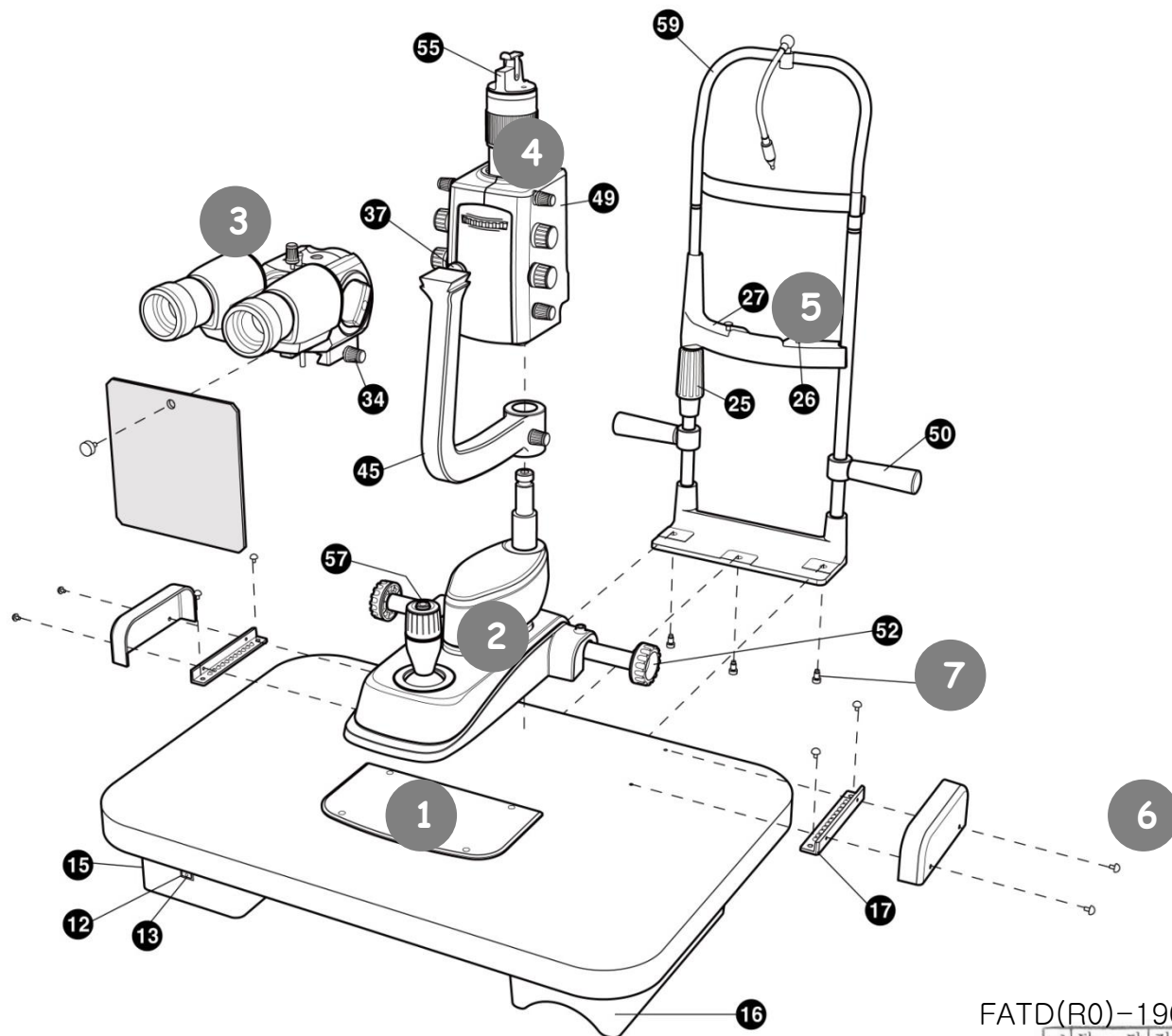
1. Table Ass'y
2. Main Body Ass'y
3. Microscope Ass'y
4. Illumination Ass'y
5. Rotation Guide Bolt
6. Wheel protection Cases
7. Head rest module
8. Screw M3
9. Bolt M6
10. Stopper shaft



Rotation Guide Bolt

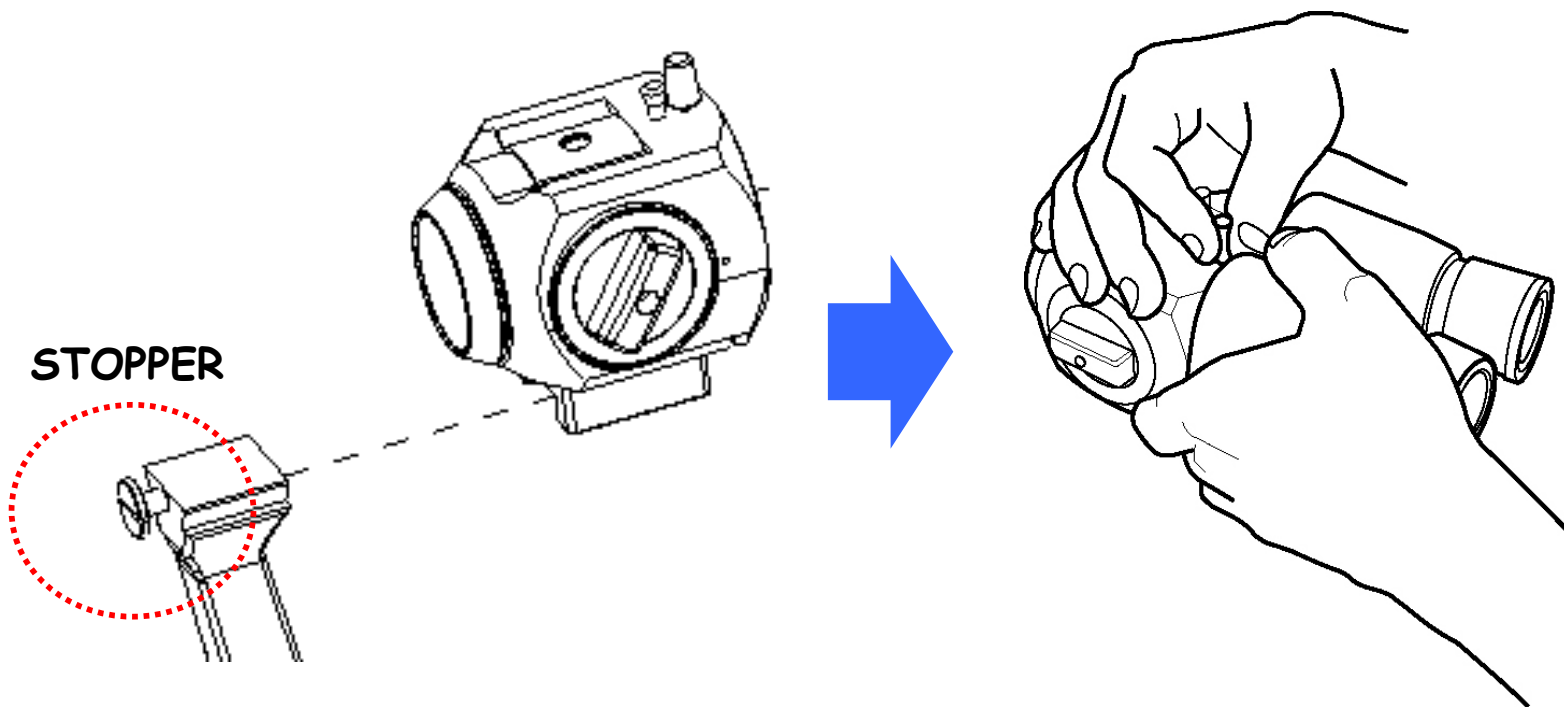
Stopper shaft

1. Table Ass'y
2. Main Body Ass'y
3. Microscope Ass'y
4. Illumination Ass'y
5. Head rest module
6. Screw M3
7. Bolt M6



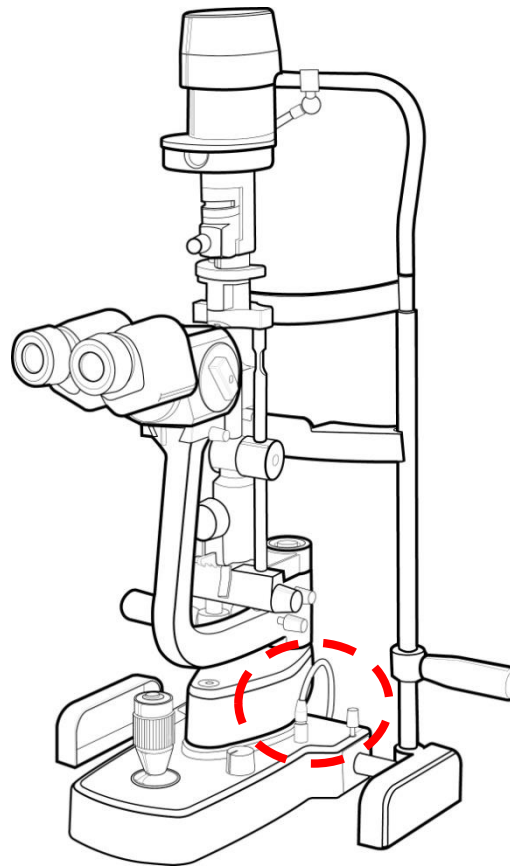
Installation Microscope Ass'y

Be careful, you have to assemble the Microscope until you reach end of the stopper.

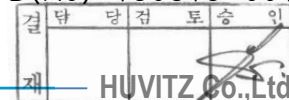


**Using the test bar, check whether focus is aligned or not.
(Try to move entire Microscope until the figure(sight) become clear)**

Be careful, you have to connect the connector to the cable.



FATD(R0)-190619-001



Component and Accessories

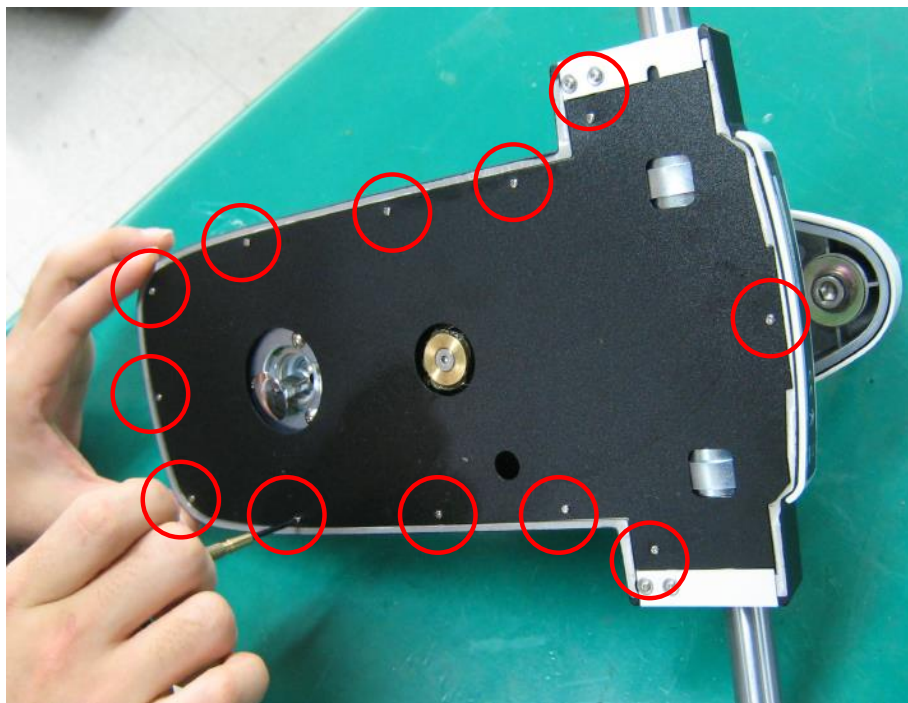


- | | |
|--|--|
| (1) Camera Module | (2) Camera communication cable |
| (3) Auxiliary light cable | (4) FireWire IEEE 1394 cable or USB |
| (5) Software CD | (6) Light sensor plate |
| (7) Light sensor PCB (1394 or USB) | (8) Scatter (Diffuser) |
| (9) Auxiliary light cable supporter | (10) Auxiliary light Module |

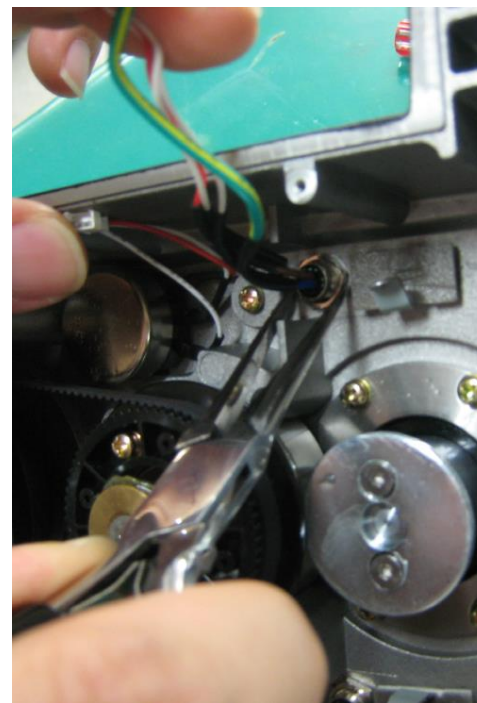
FATD(R0)-190619-001



※ **Notice** : In case of equipped camera, you can skip the slide (1) ~ (10)



1. Remove the cover by loosening the screws.



2. Remove the old camera cables
OR remove the Rubber cap.

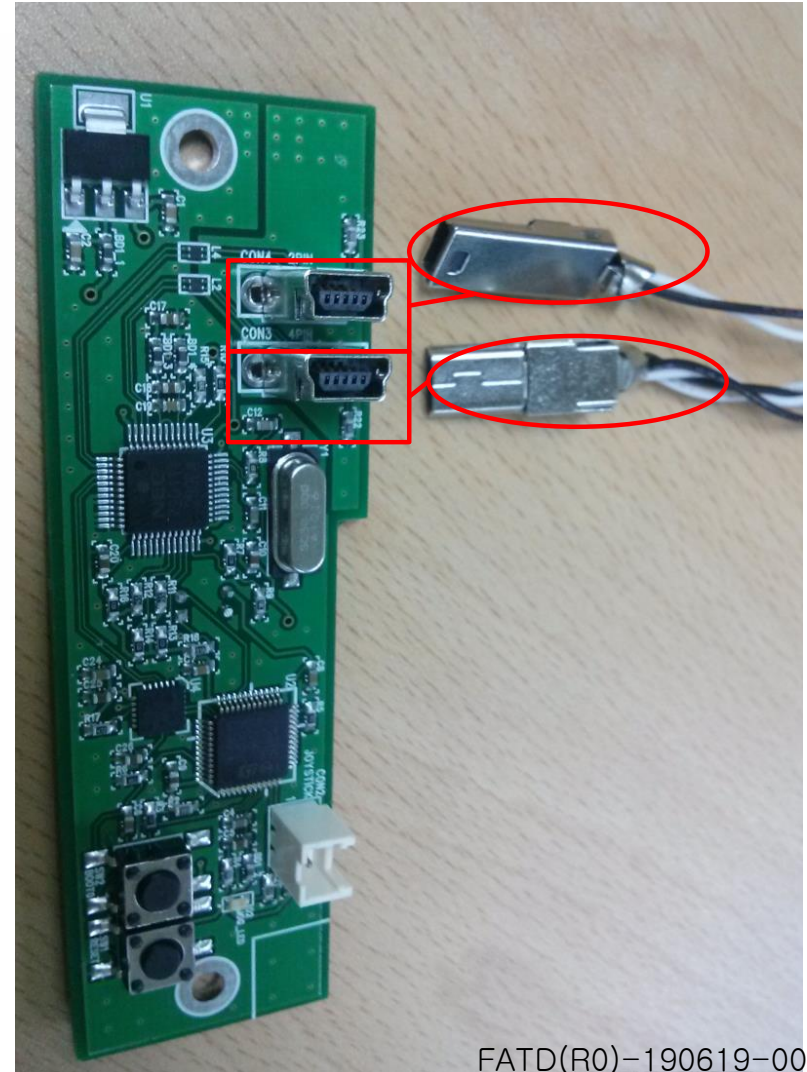
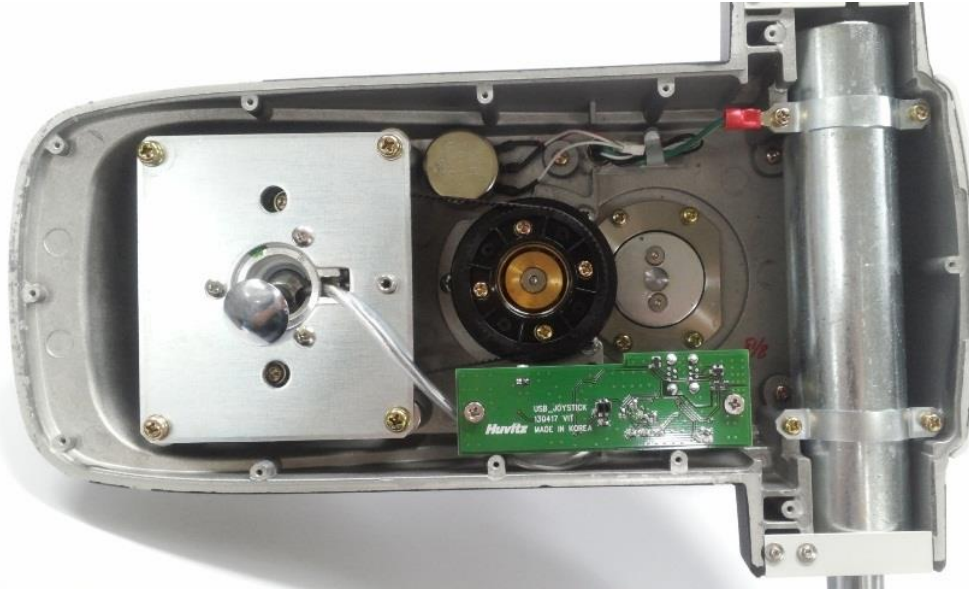




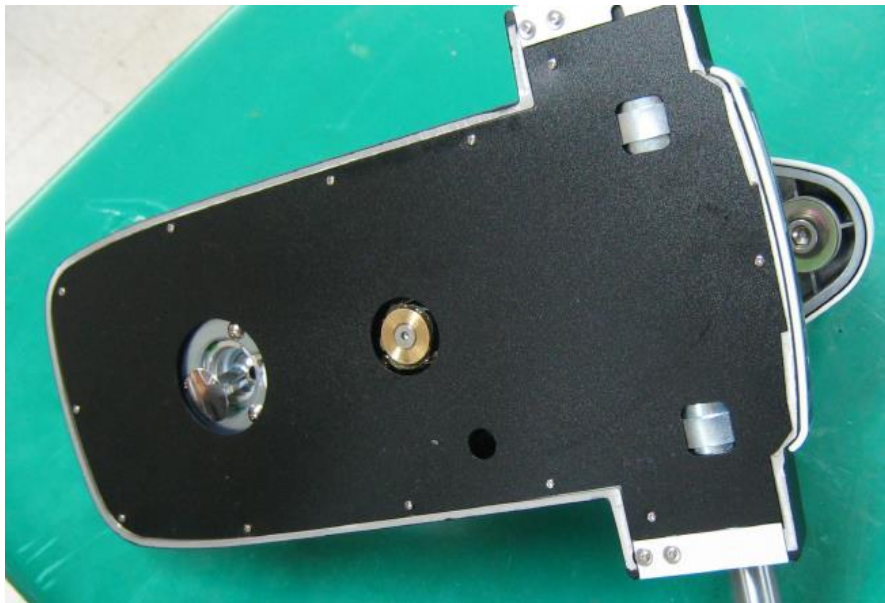
**3. Drill a hole by using 9mm drill.
(only for HS-7000,7500)**

4. Connect the USB camera connector.

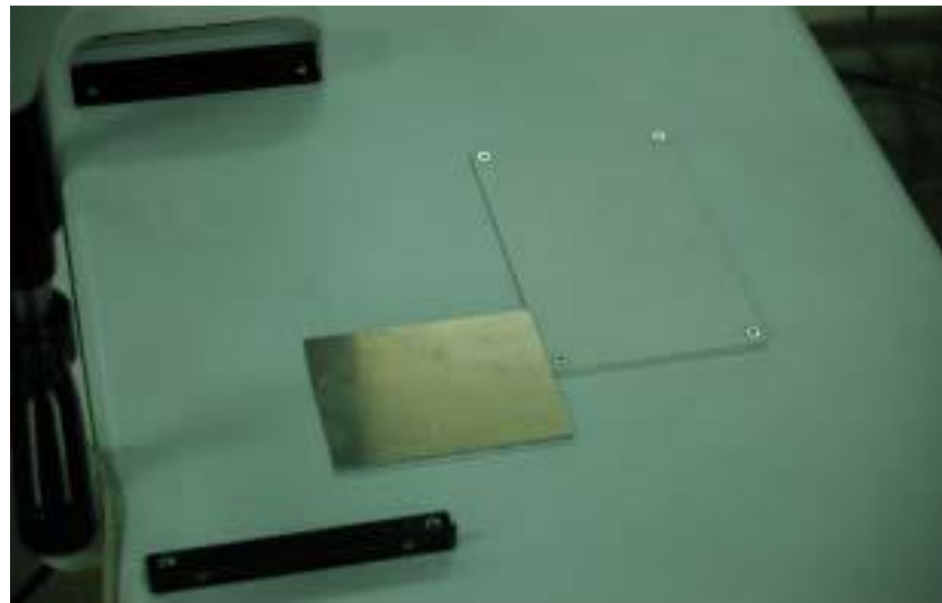
Check contact this bump with hole



5. Assemble the camera board.
6. You have to connect **4-pin USB cable** to **COM3** and **2-pin cable** to **COM4** when you connect the board and cable. If the cables are twisted, it doesn't work.



7. Assemble the cover.

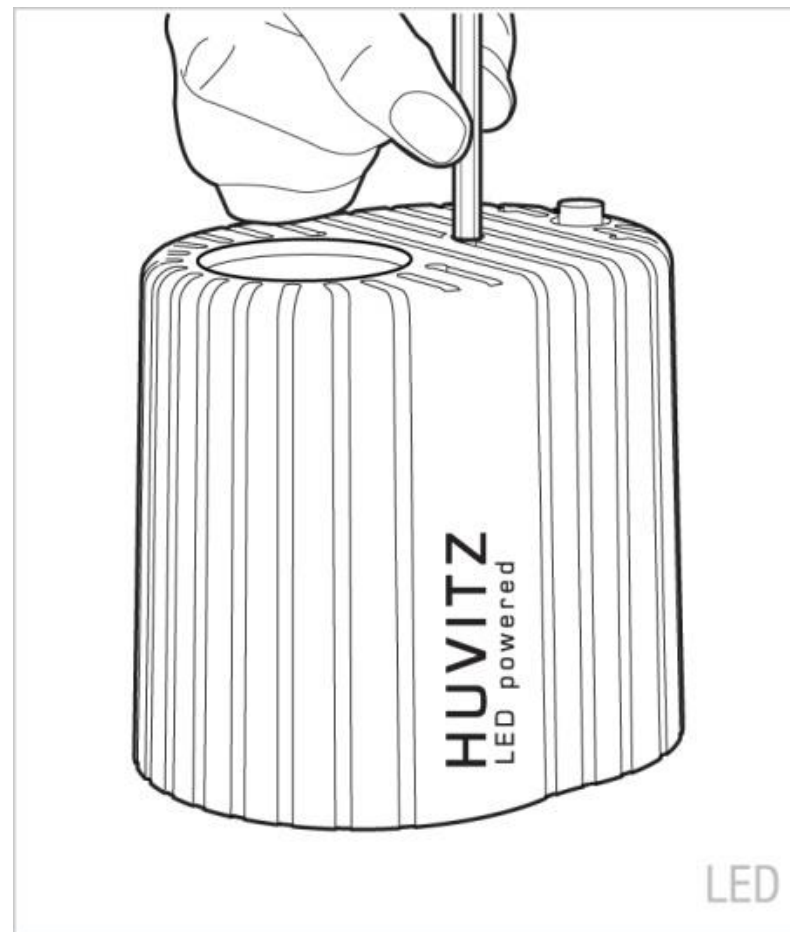


8. Attach the light sensor plate on the table.

Installation HS-5000/7000 (5)



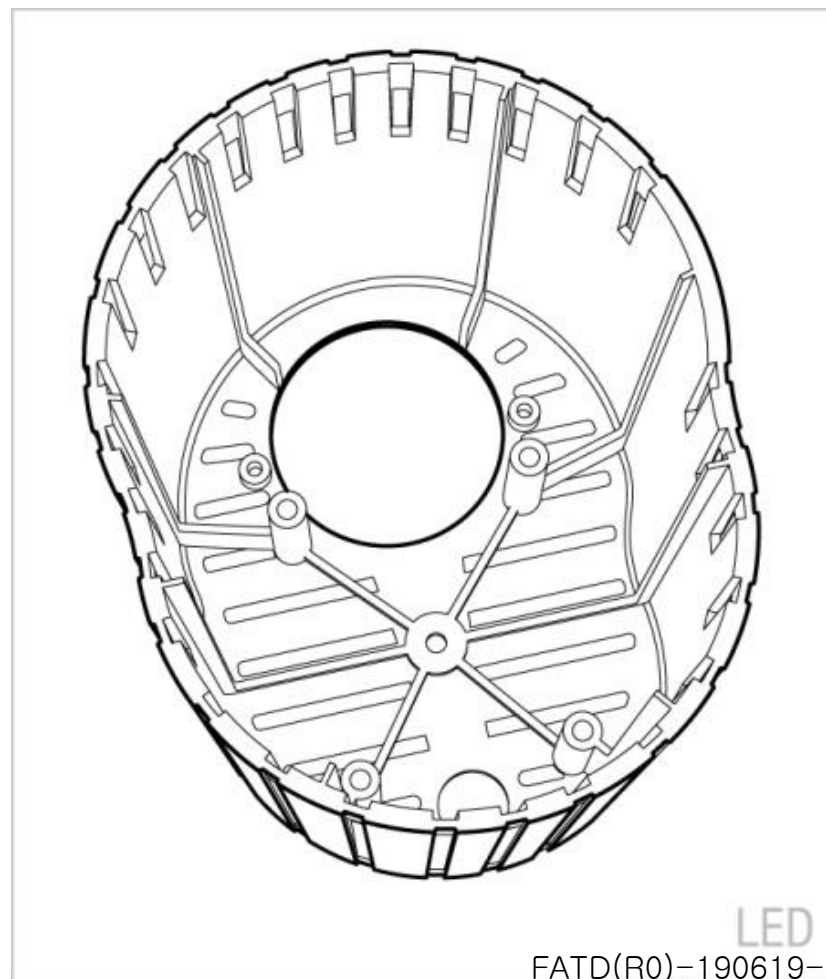
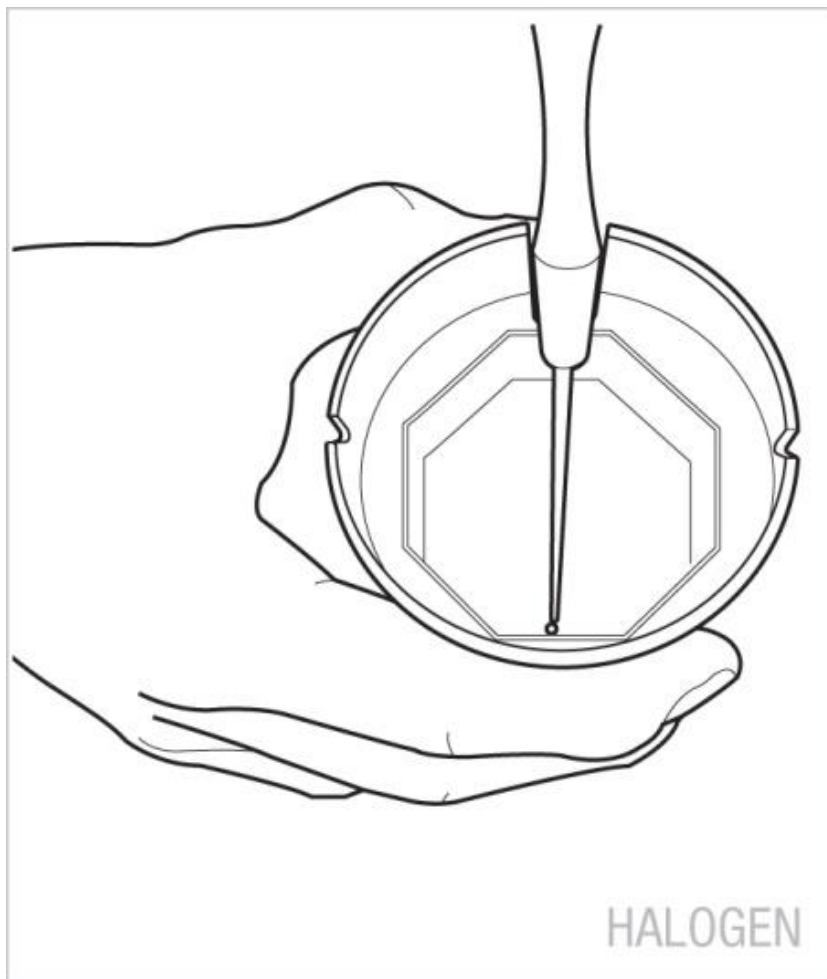
9. Loosen the screws on the side and separate the cover.



10. Use the 2.5mm hexagonal wrench for separation.

Installation HS-5000/7000 (6)

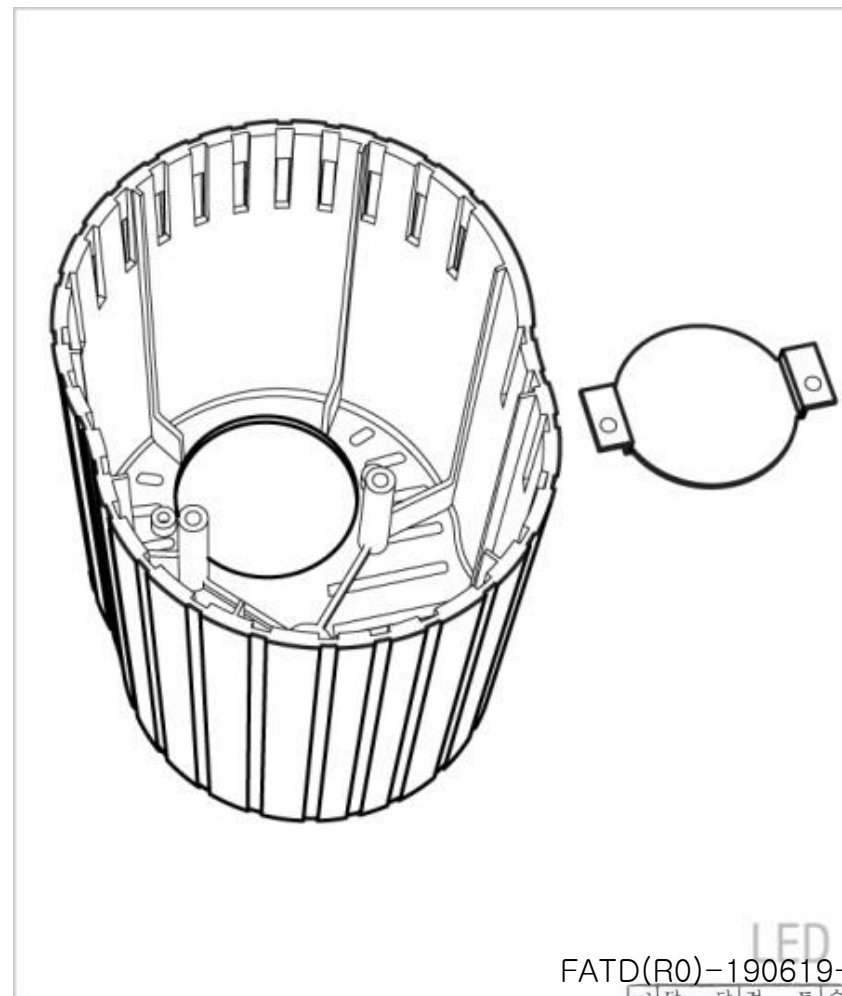
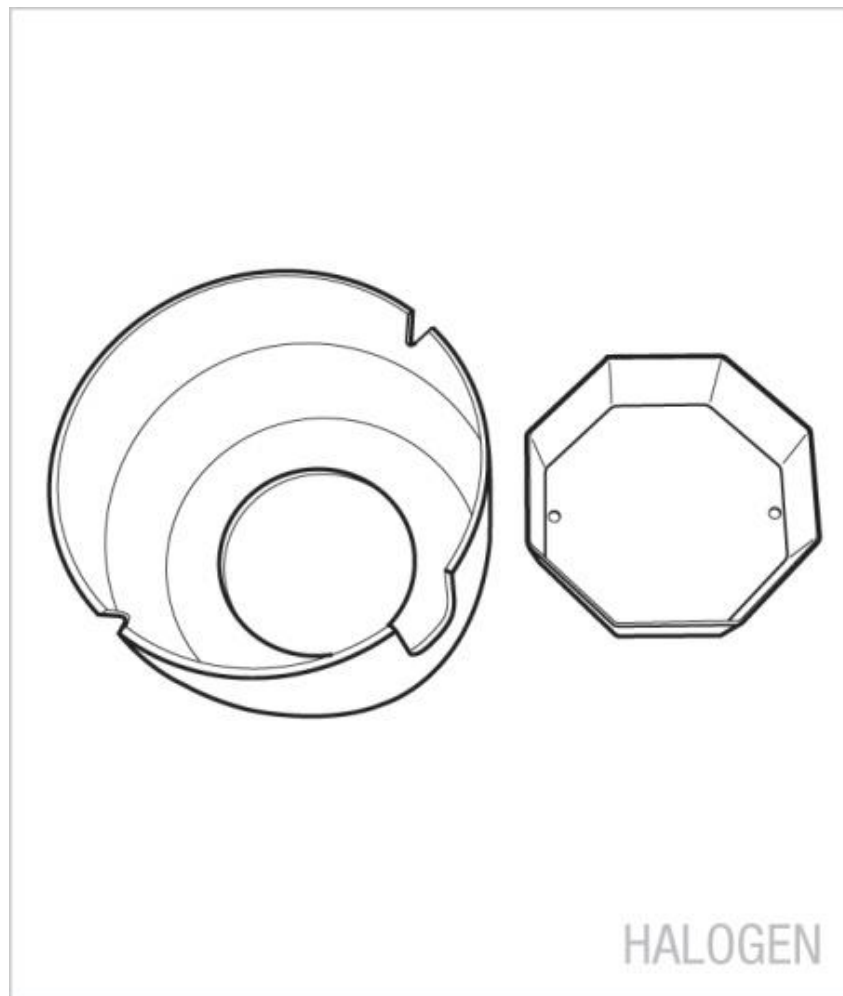
<Separating basic cover>



FATD(R0)-190619-001

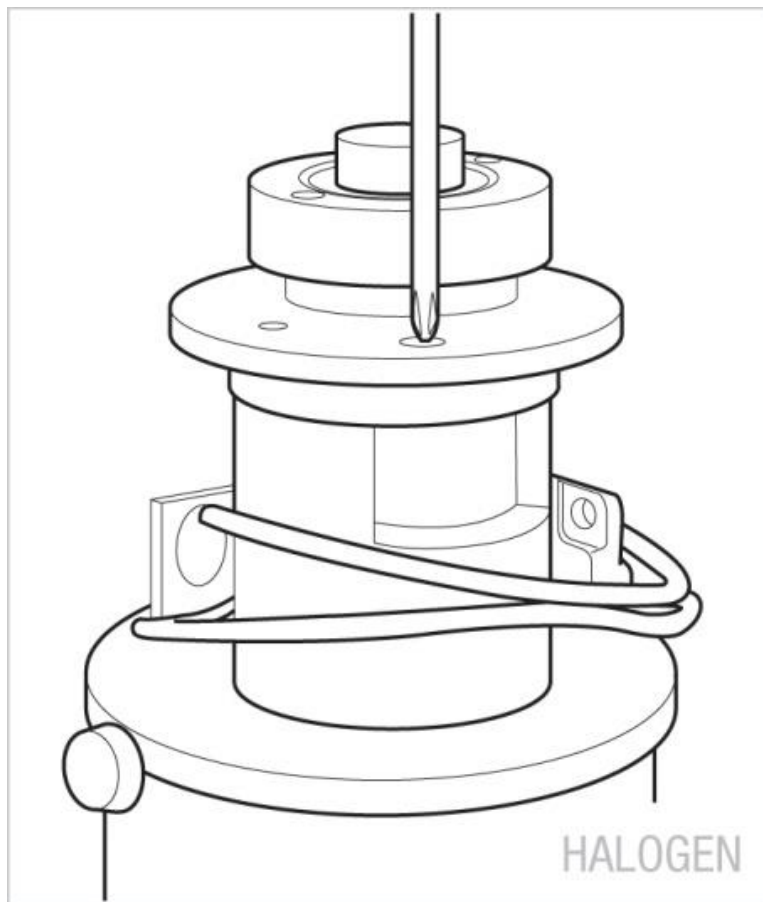
Installation HS-5000/7000 (7)

◁Separating basic cover▷

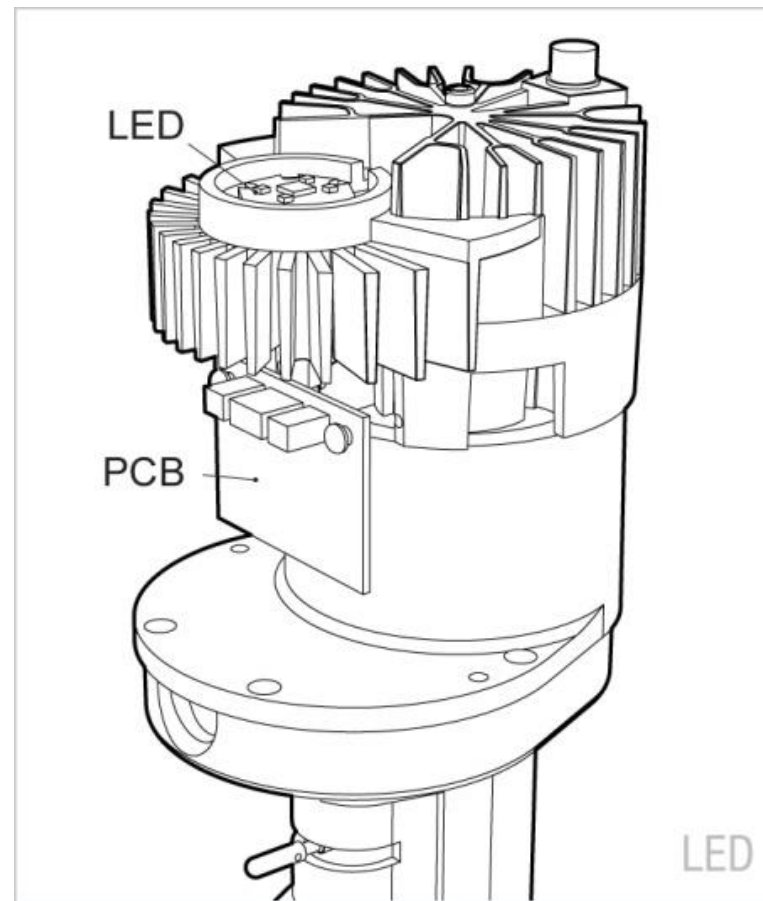


FATD(R0)-190619-001

<Assembling the auxiliary light ass'y>

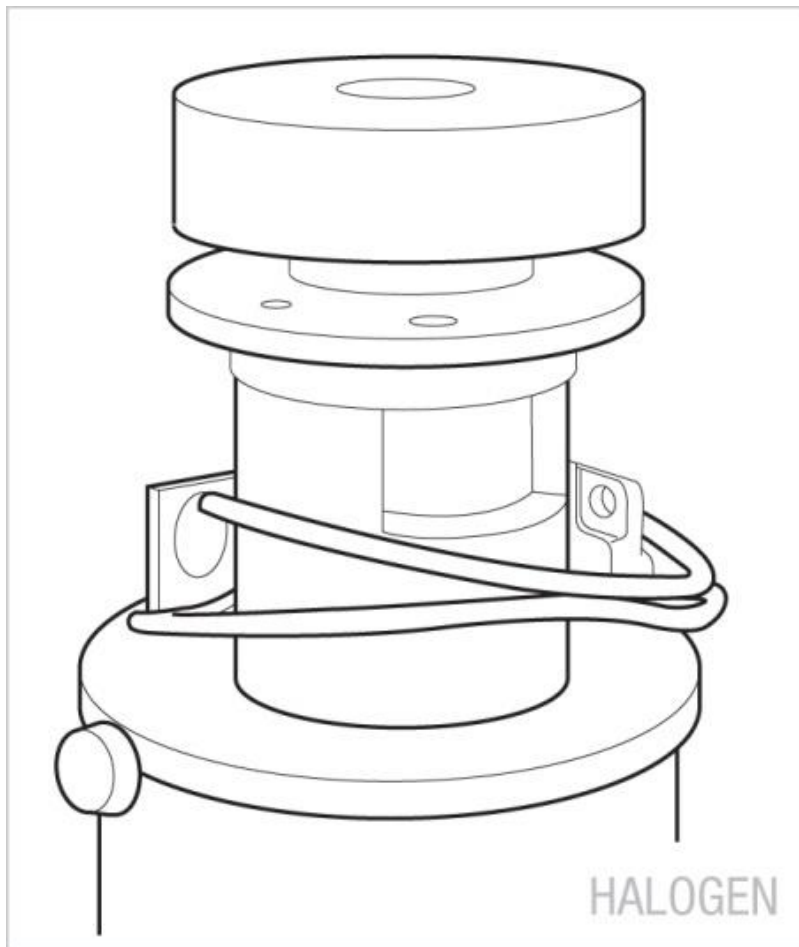


11. Mount the auxiliary light illumination module.

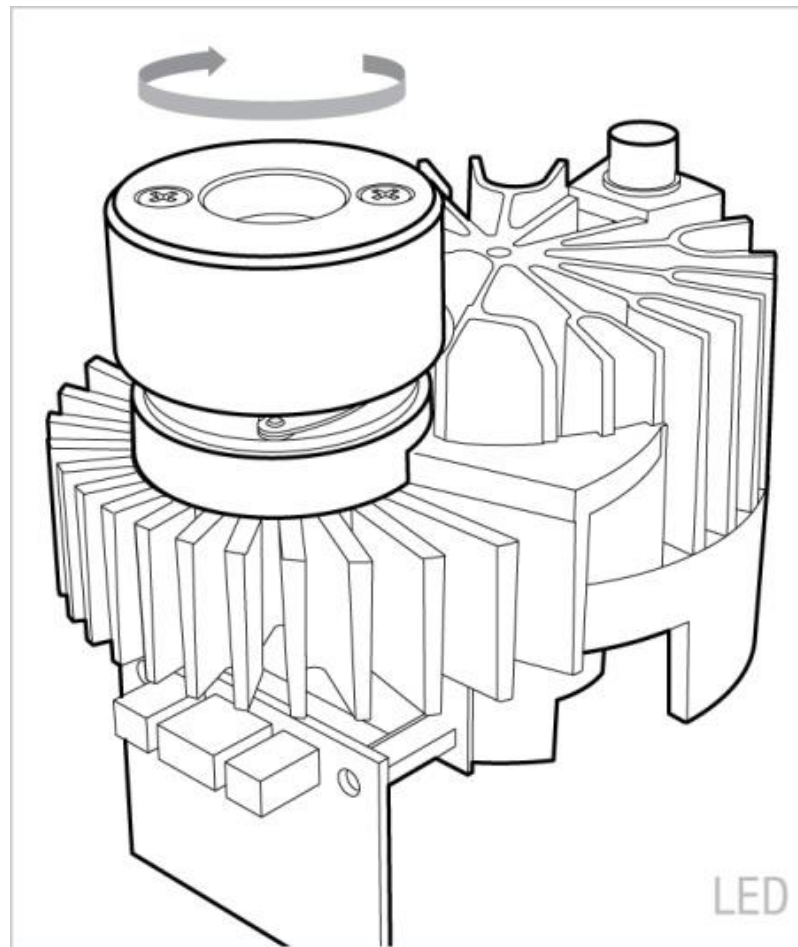


12. Install the LED and PCB

<Assembling the auxiliary light ass'y>

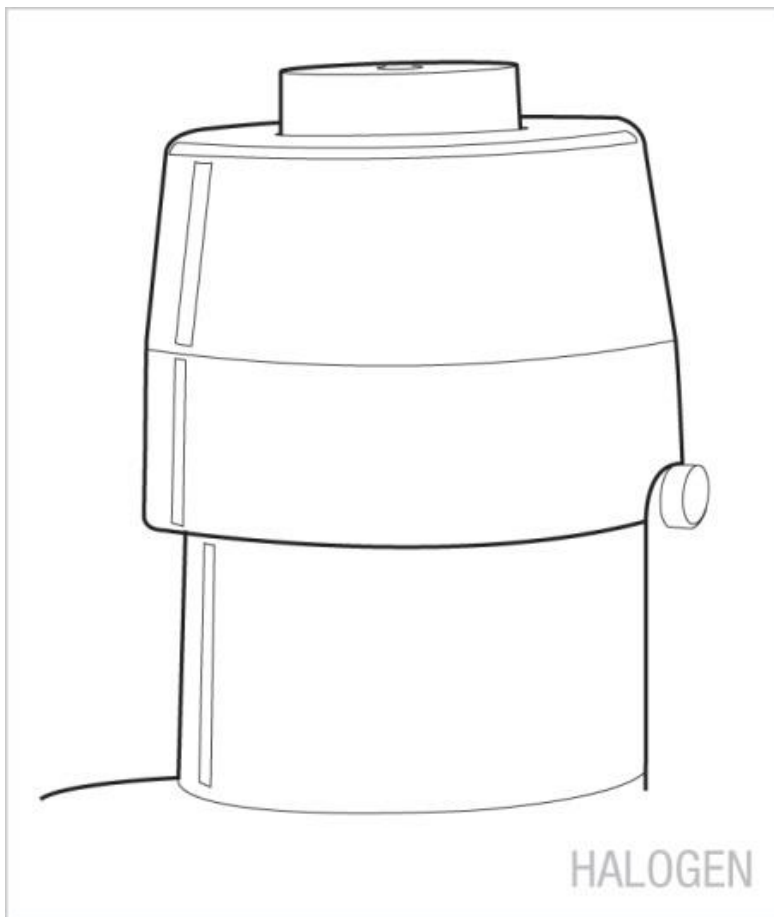


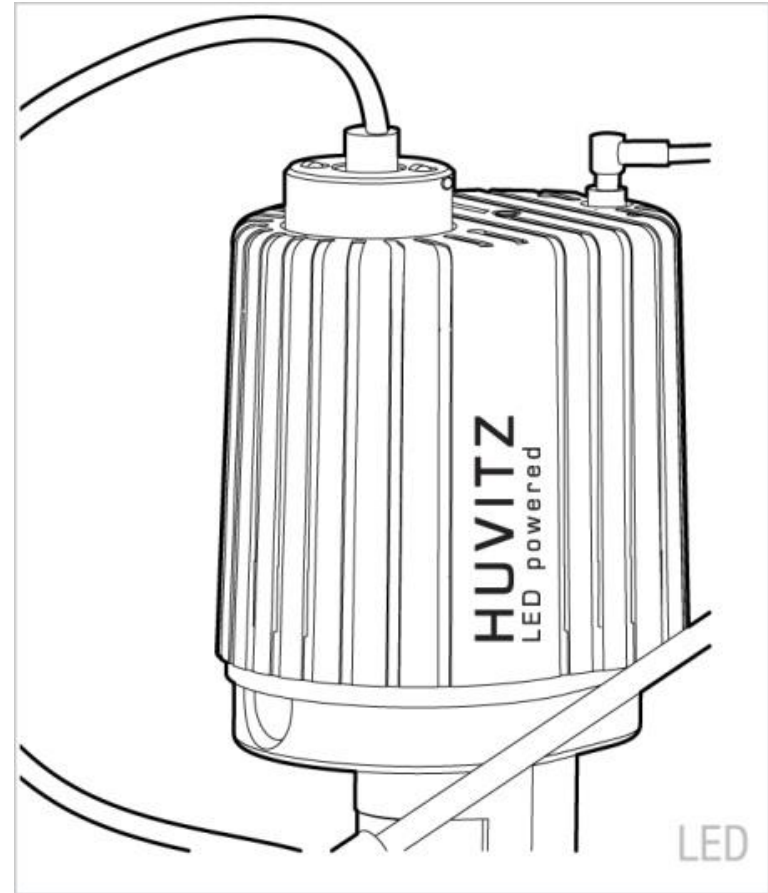
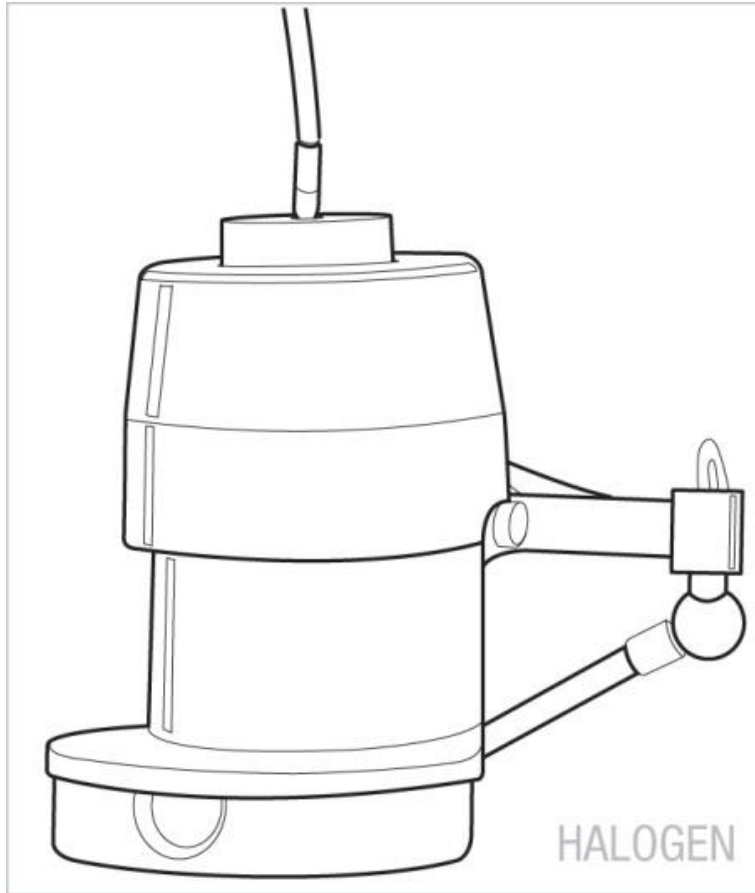
13. Tighten the screw on the upper side.



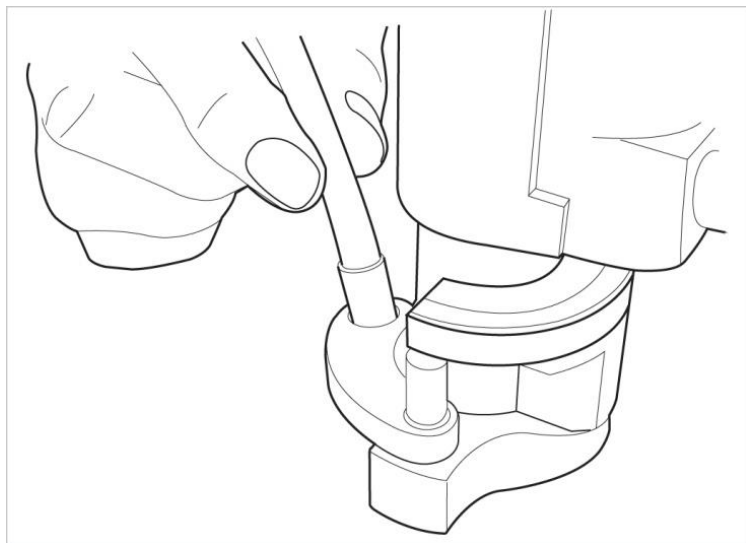
14. Insert the cover by turning.

<Completion auxiliary illumination module>





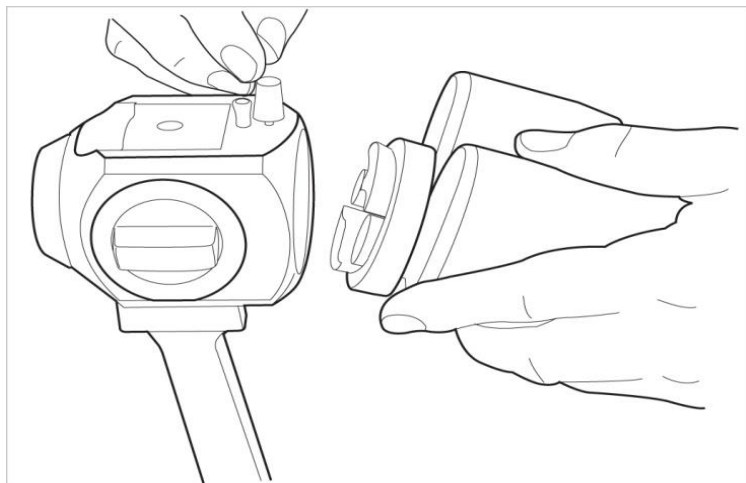
15. Assembly the auxiliary illumination module with support fixture.



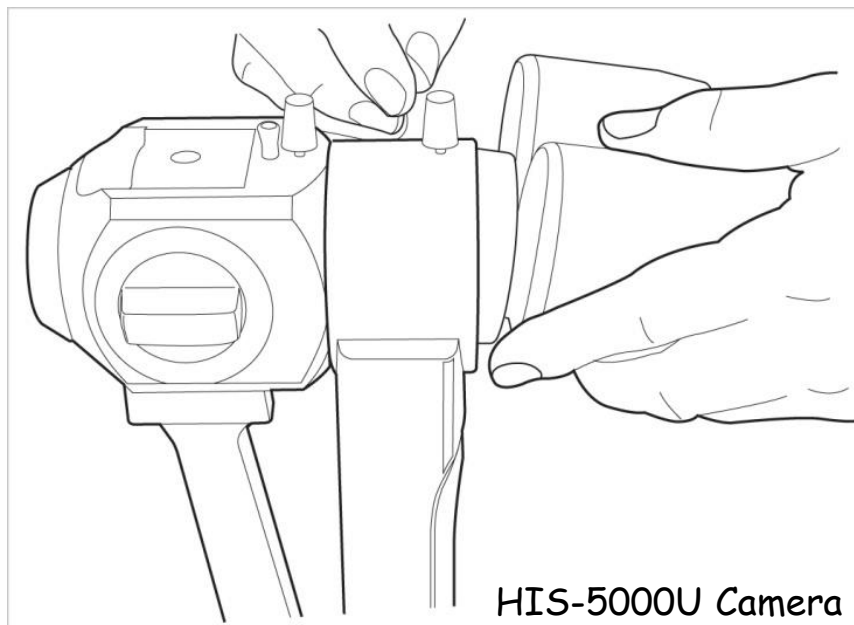
16. Assemble the auxiliary light cable.



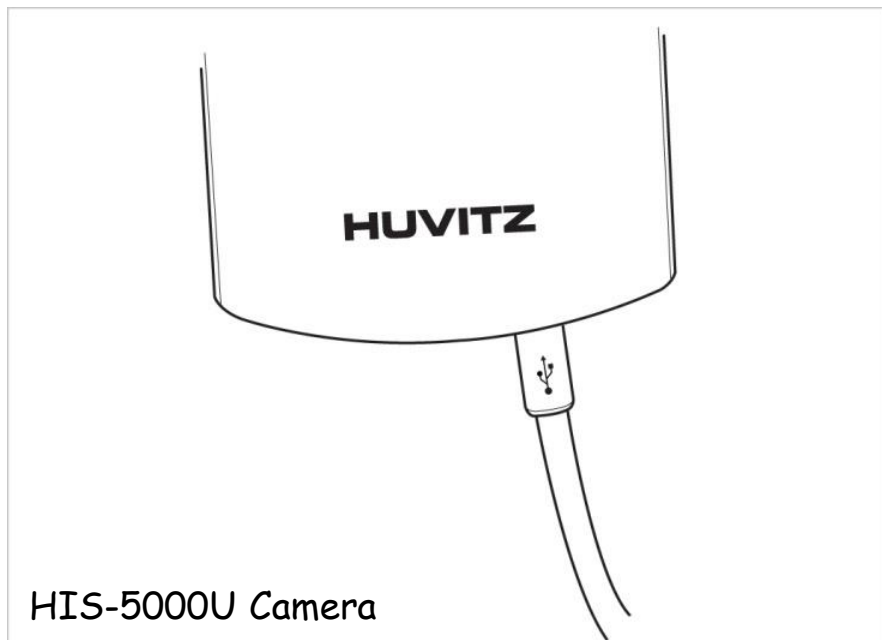
17. Assemble the scatter.



18. Separate microscope binocular.



19. After attaching a camera ass'y, assembly the microscope again.

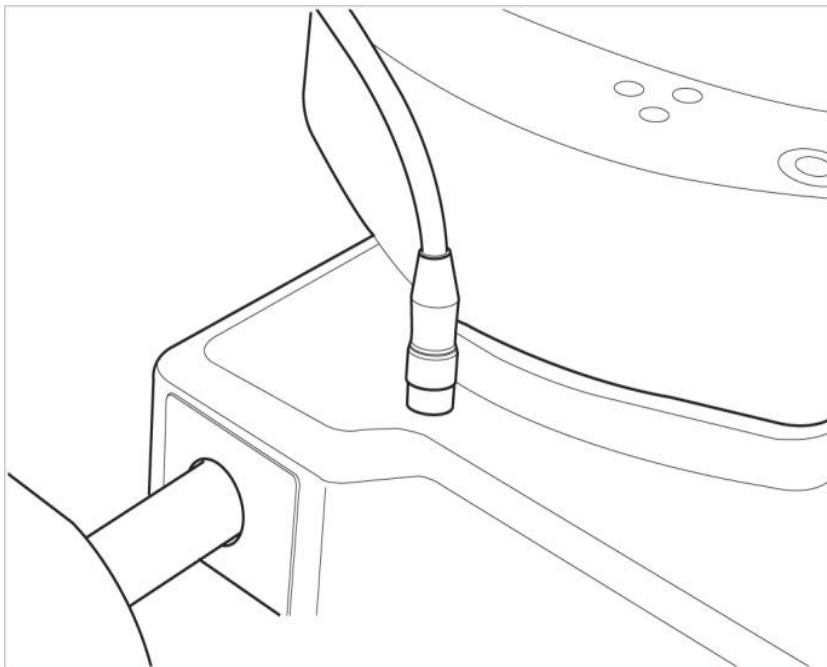


HIS-5000U Camera

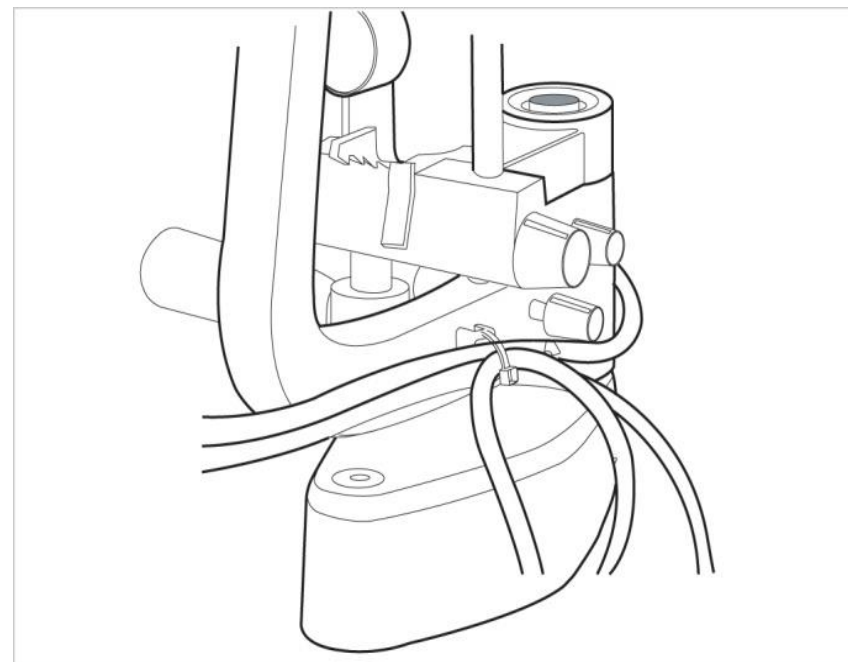


DSLR Adapter

20. Connect camera communication and USB cable in camera ass'y.

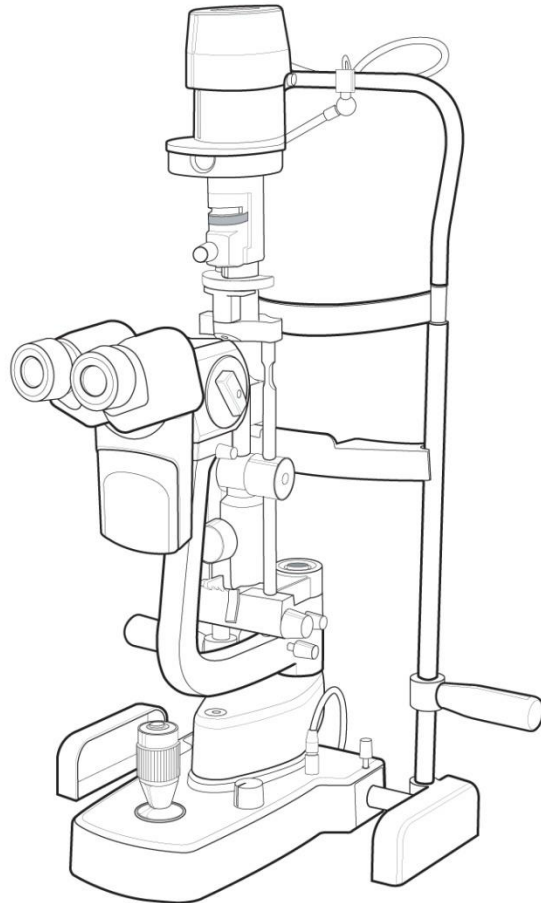


21. Connect camera communication cable in the base.

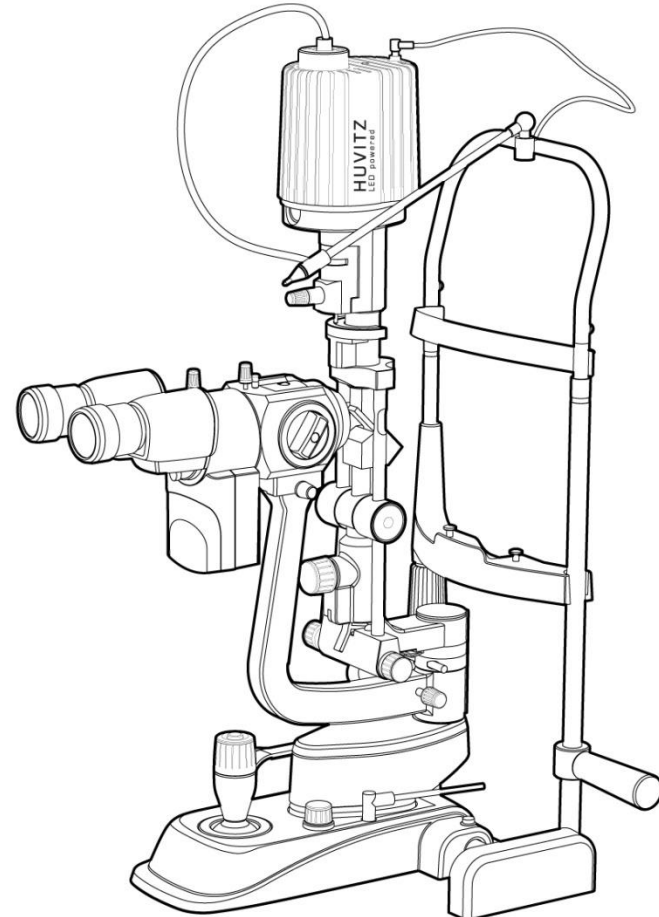


22. Fix cables in the holder, so it doesn't make to be affected in operation.

Installation HS-5000/7000 (16)



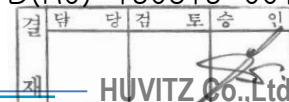
HALOGEN



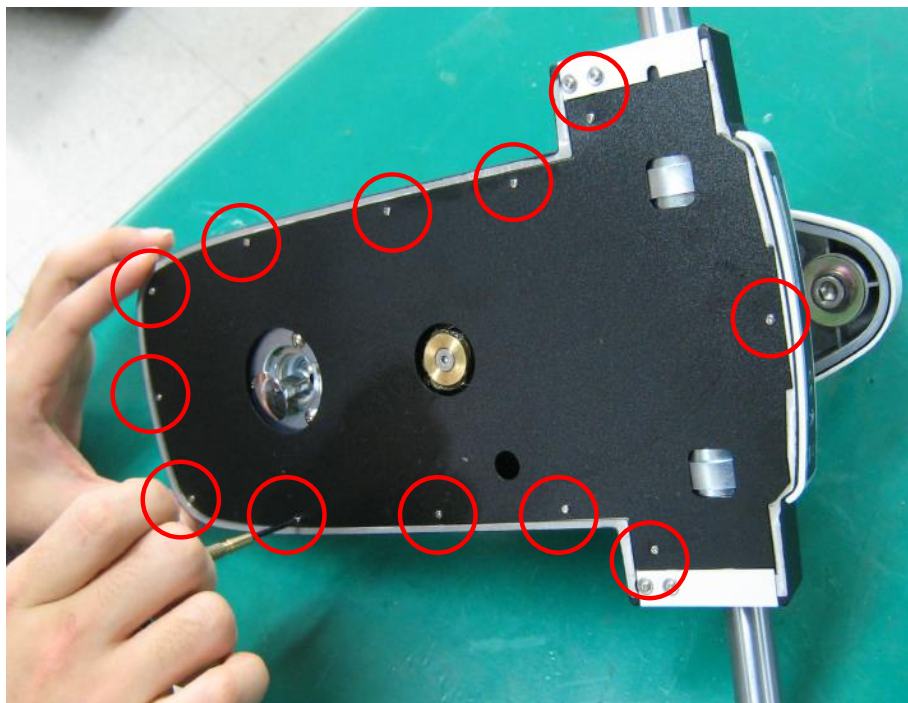
LED

FATD(R0)-190619-001

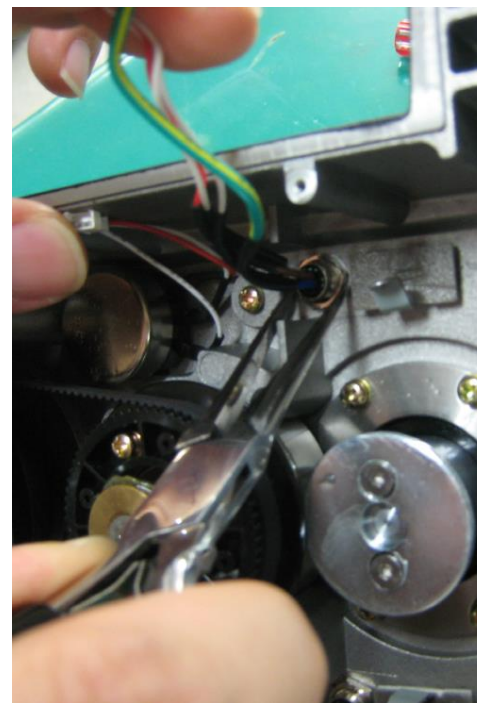
23. Turn on and operate it.



※ **Notice** : In case of equipped camera, you can skip the slide (1) ~ (10)



1. Remove the cover by loosening the screws.



2. Remove the old camera cables
OR remove the Rubber cap.

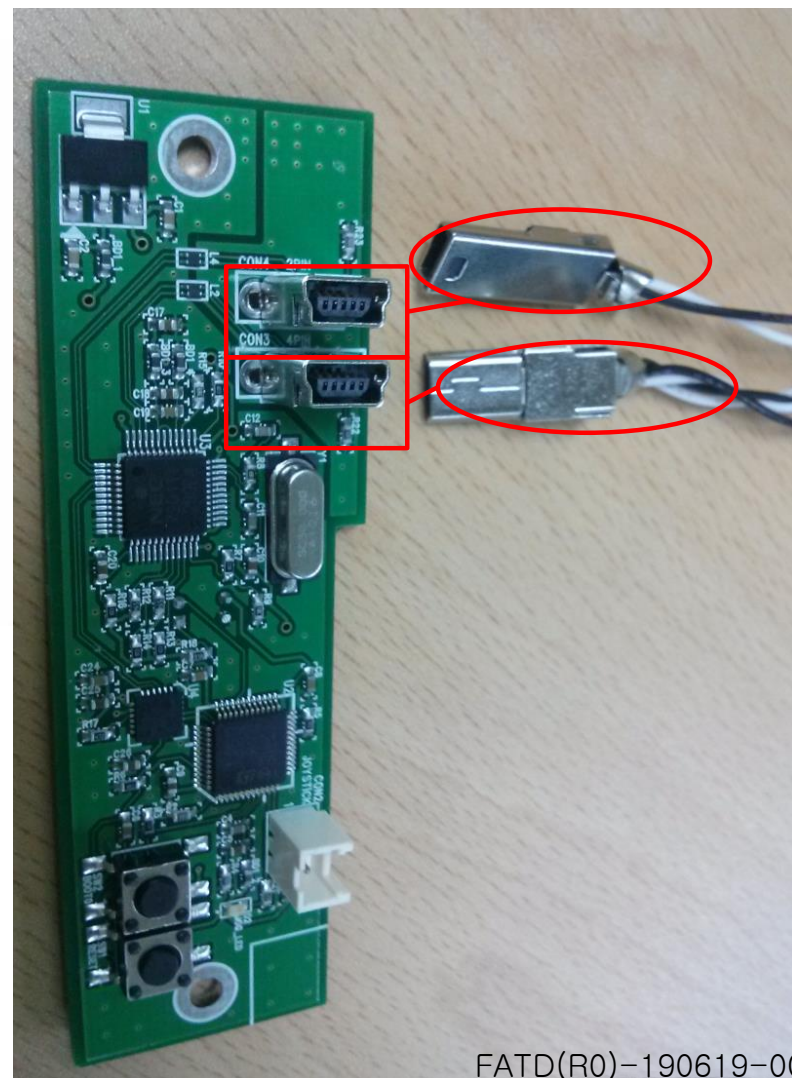
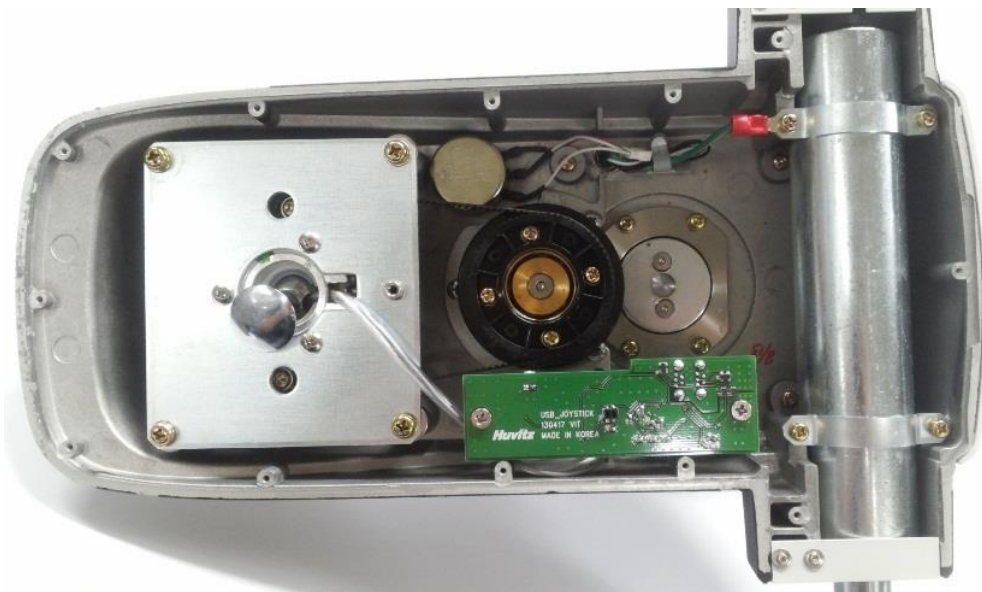




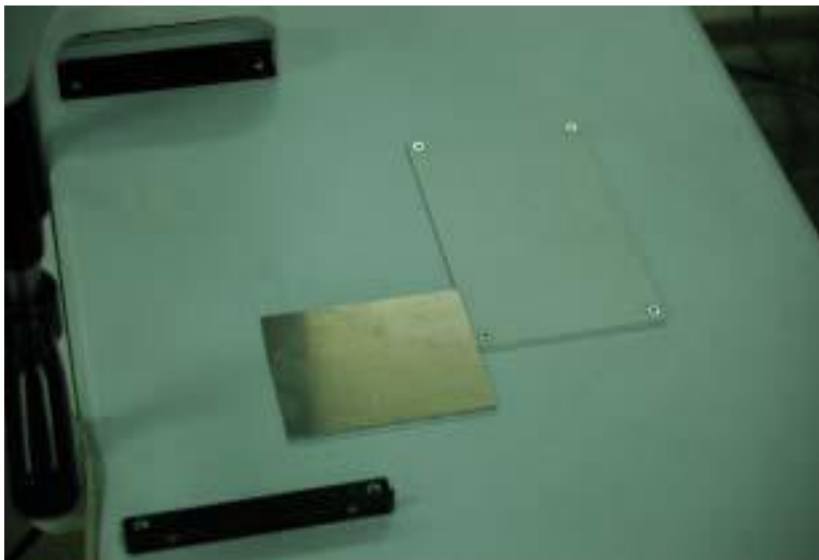
**3. Drill a hole by using 9mm drill.
(only for HS-7000,7500)**

4. Connect the USB camera connector.

Check contact this bump with hole



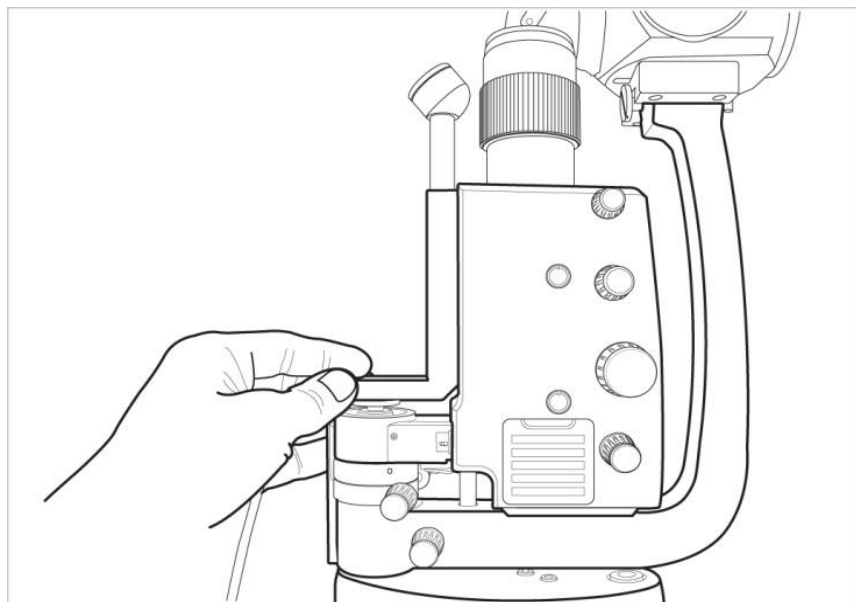
5. Assemble the camera board.
6. You have to connect **4-pin USB cable to COM3** and **2-pin cable to COM4** when you connect the board and cable.
If the cables are twisted, it doesn't work.



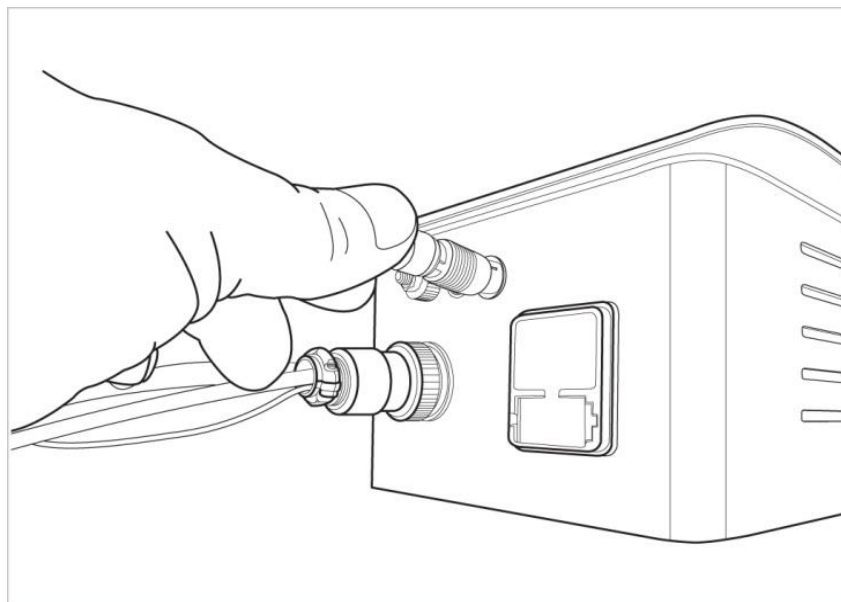
7. Attach the light sensor plate on the table.



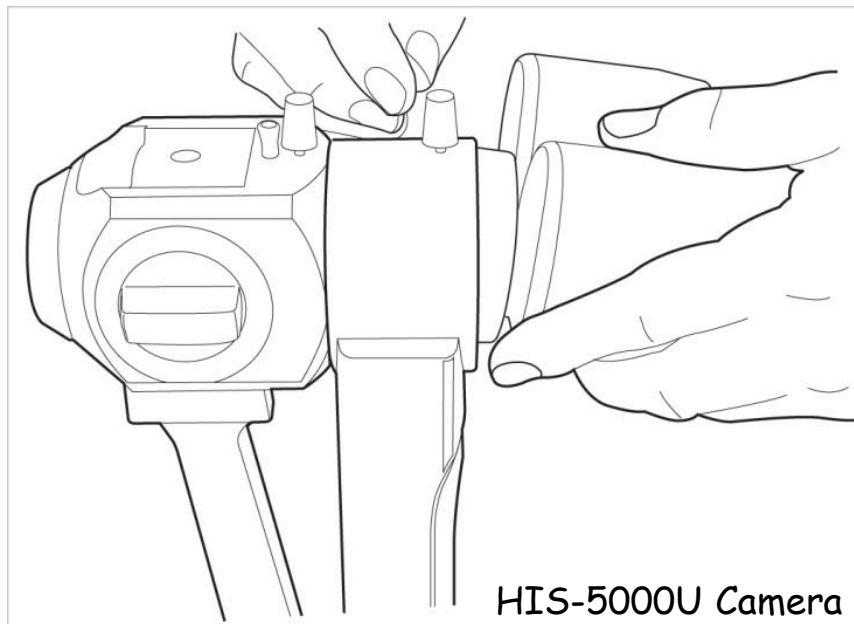
8. Combine the scatter.



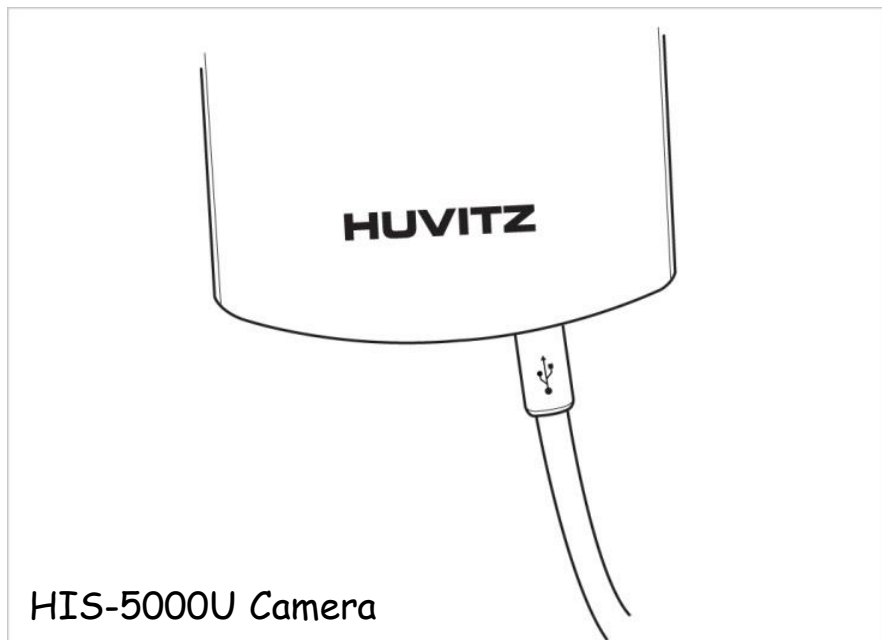
9. Connect the auxiliary illumination module.



10. Connect the cable of auxiliary illumination module to SMPS.



11. After attaching a camera ass'y, assembly the microscope again.

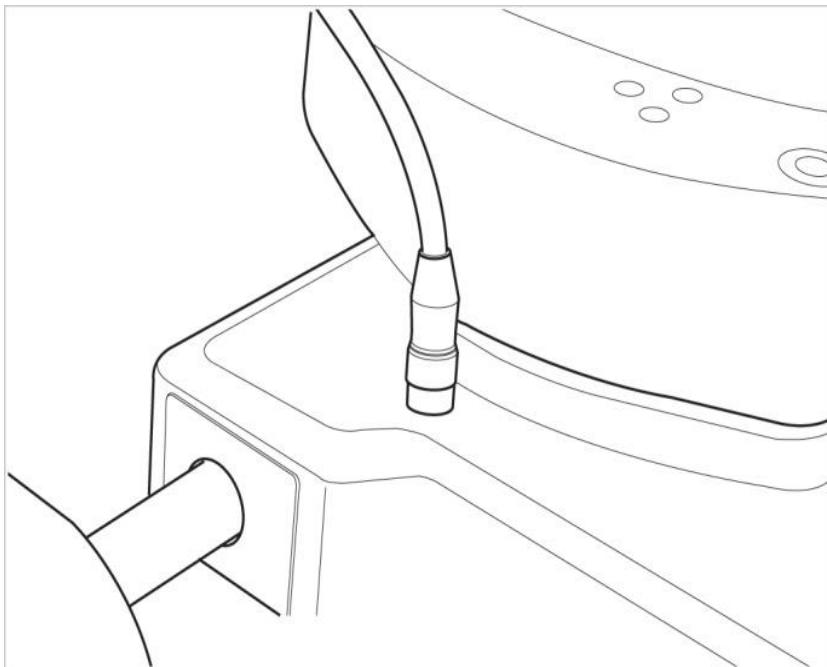


HIS-5000U Camera

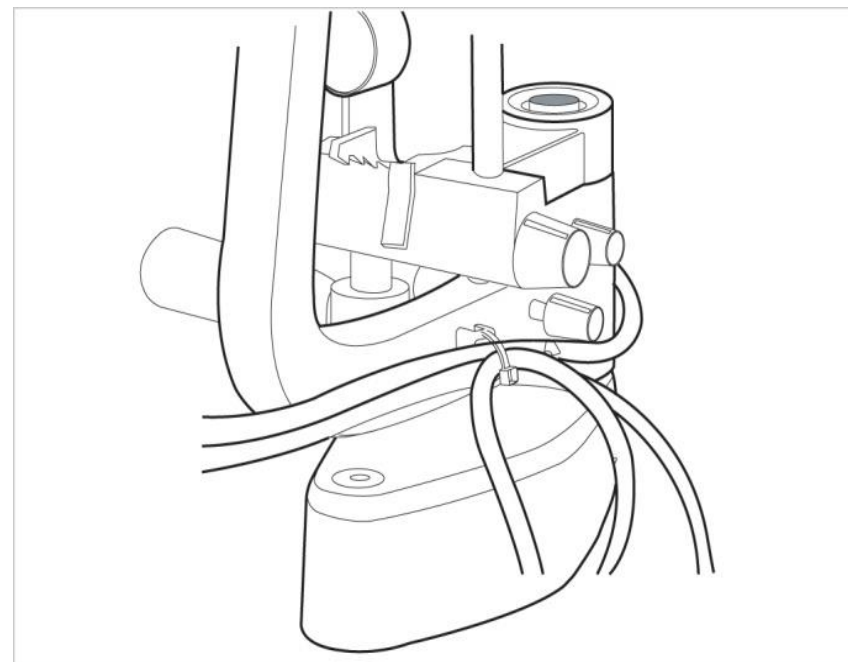


DSLR Adapter

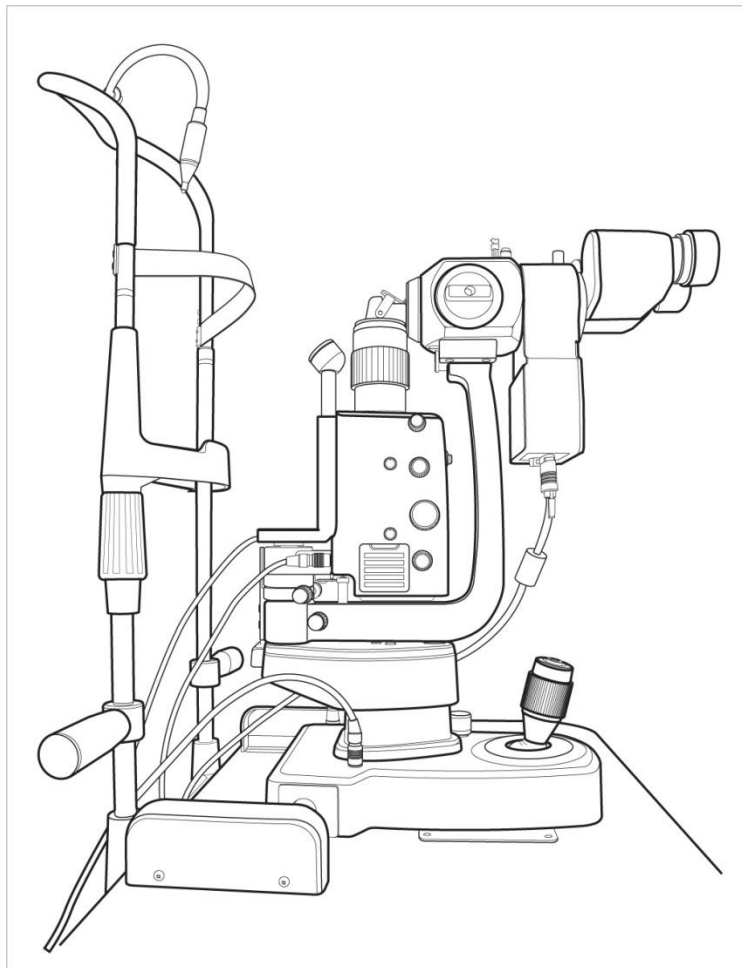
12. Connect camera communication and USB cable in camera ass'y.



13. Connect camera communication cable in the base.



14. Fix cables in the holder, so it doesn't make to be affected in operation.



15. Turn on and operate it.

<Method of Camera focusing>

Step 1. The focus of the eyepiece to match the target

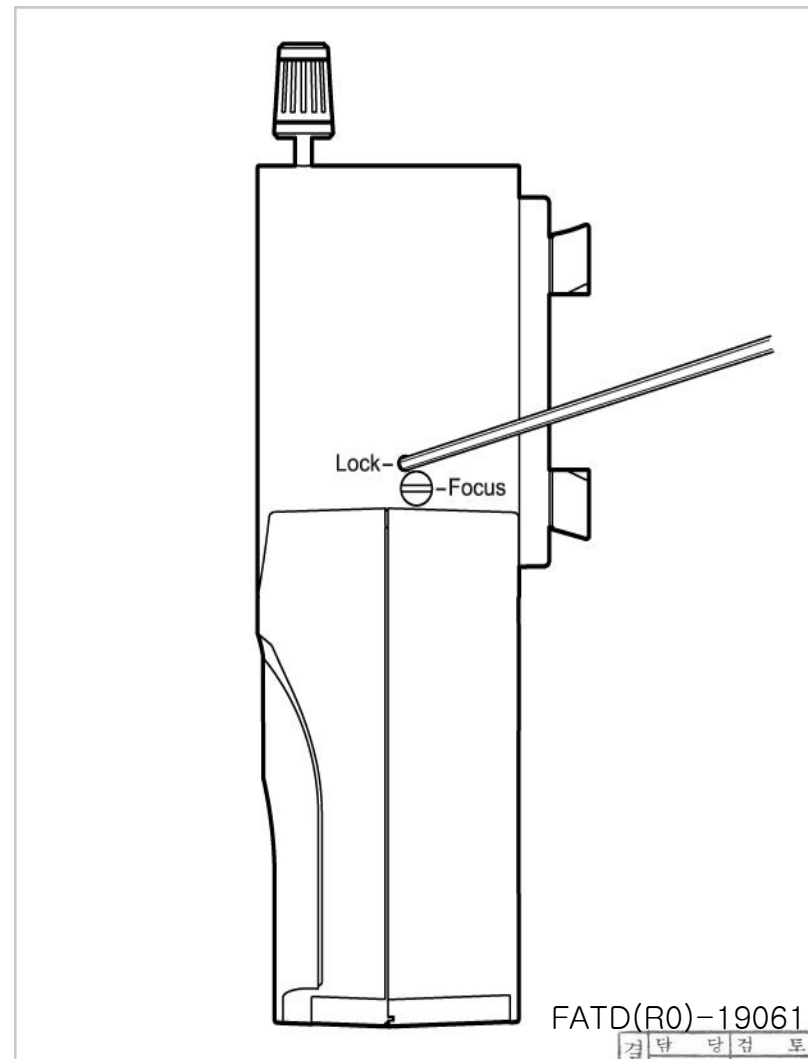
By adjusting the eyepiece diopter to focus on the target

Step 2. Focus of the digital camera

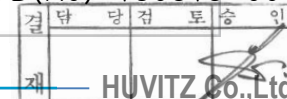
With watching the video of the camera to focus on the target

⦿ HIS-5000U CAMERA

Loosen the lock using a 1.3mm hex wrench and focus on the target to using a one-party drivers.

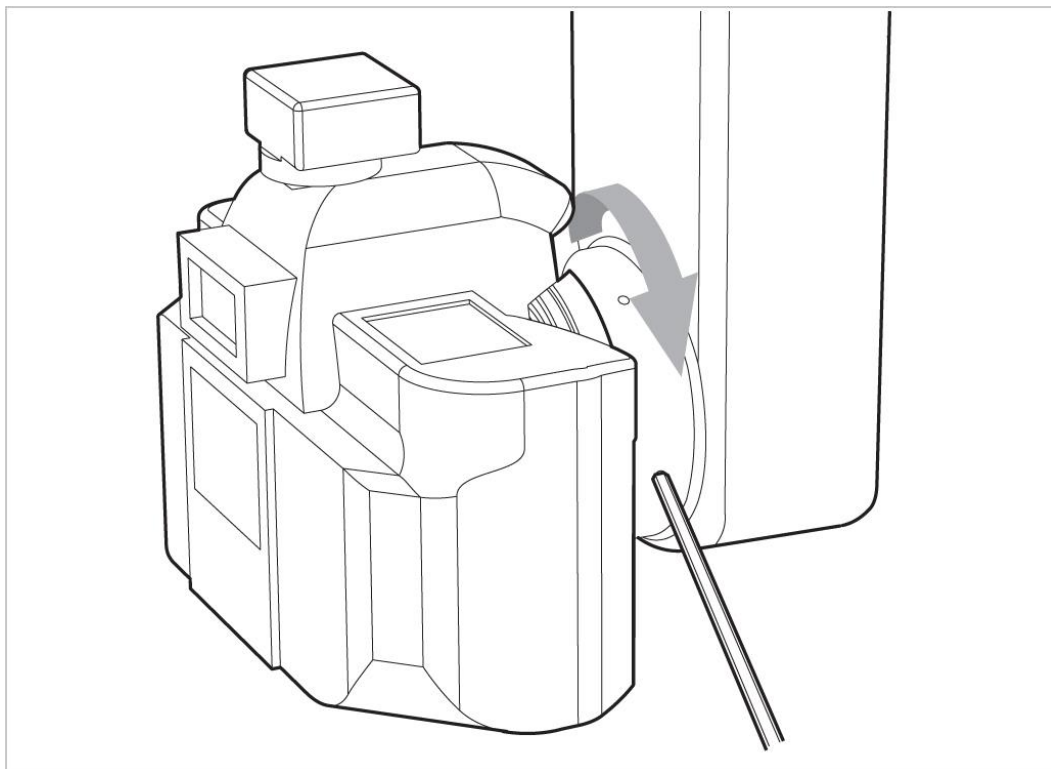


FATD(R0)-190619-001

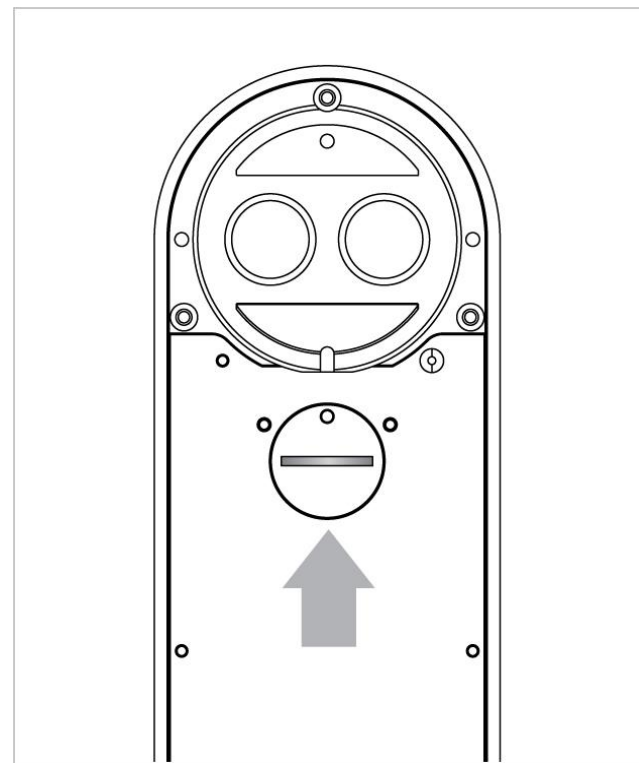


<Method of Camera focusing (DSLR Adapter)>

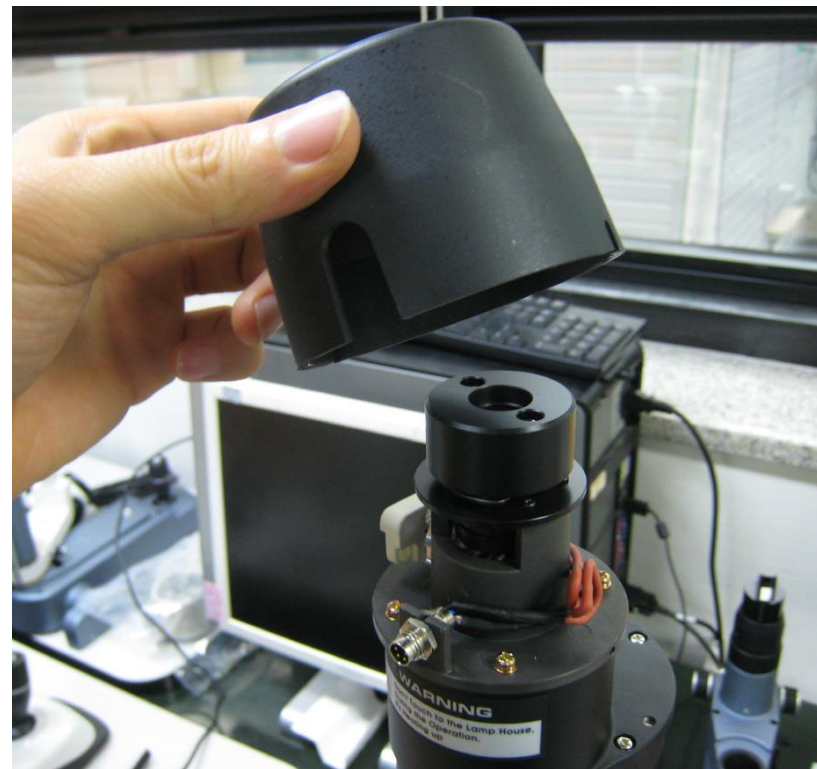
1. Using a 1.5mm hex wrench to loosen the three bolt and focus by turning the ring back and forth.



2. Use a coin to turn left and right the ring, then you can switch the view.

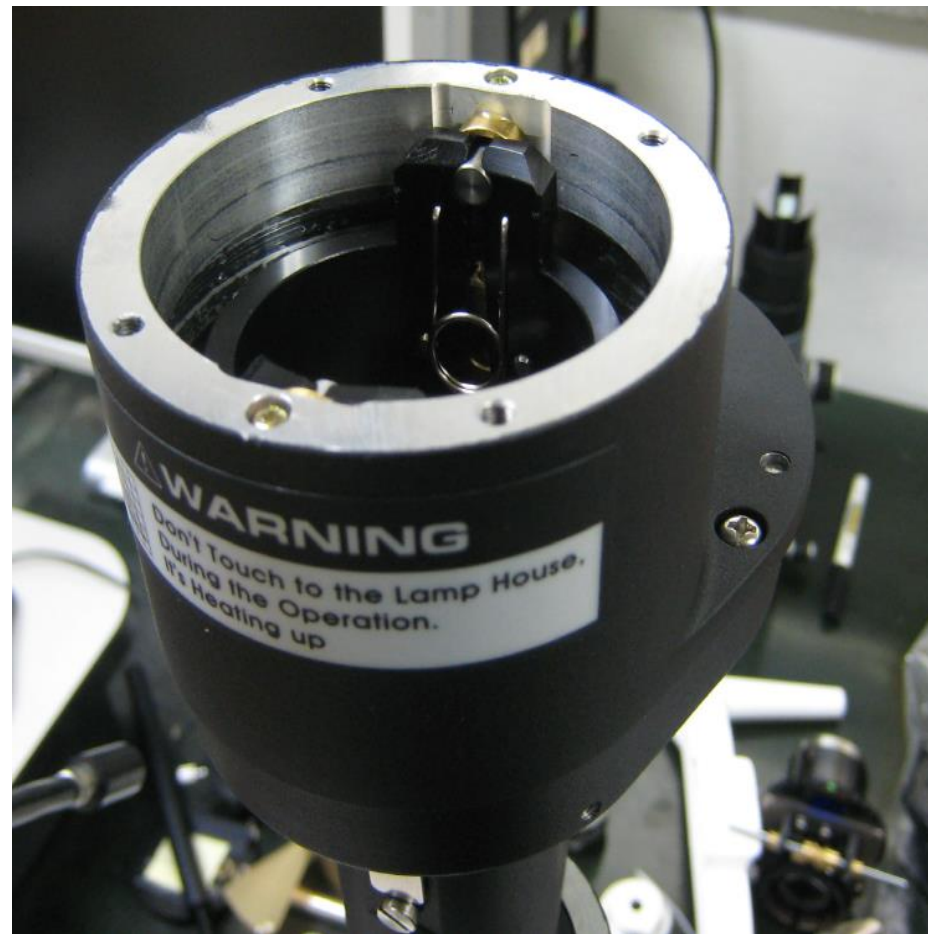


<Install the LED lamp on HS-5000,7000>



1. Separate existing halogen lamp cover by loosening screws on the side.

<Install the LED lamp on HS-5000,7000>



2. Separate halogen lamp module as above the picture.

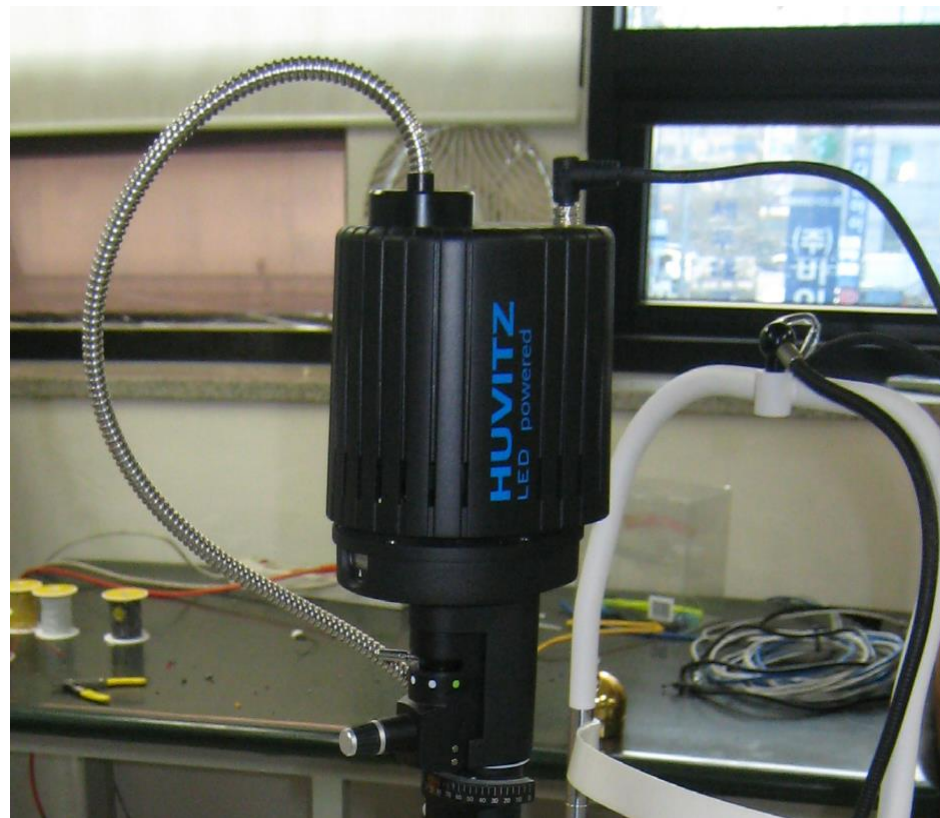
FATD(R0)-190619-001



<Install the LED lamp on HS-5000,7000>



3. After affixing LED lamp module as above the picture, tighten it by using 2.5mm hex wrench.



4. Connect the connector and light-fiber as above the picture.

FATD(R0)-190619-001



<Install the LED lamp on HS-5000,7000>



5. Replace the SMPS and drawer.

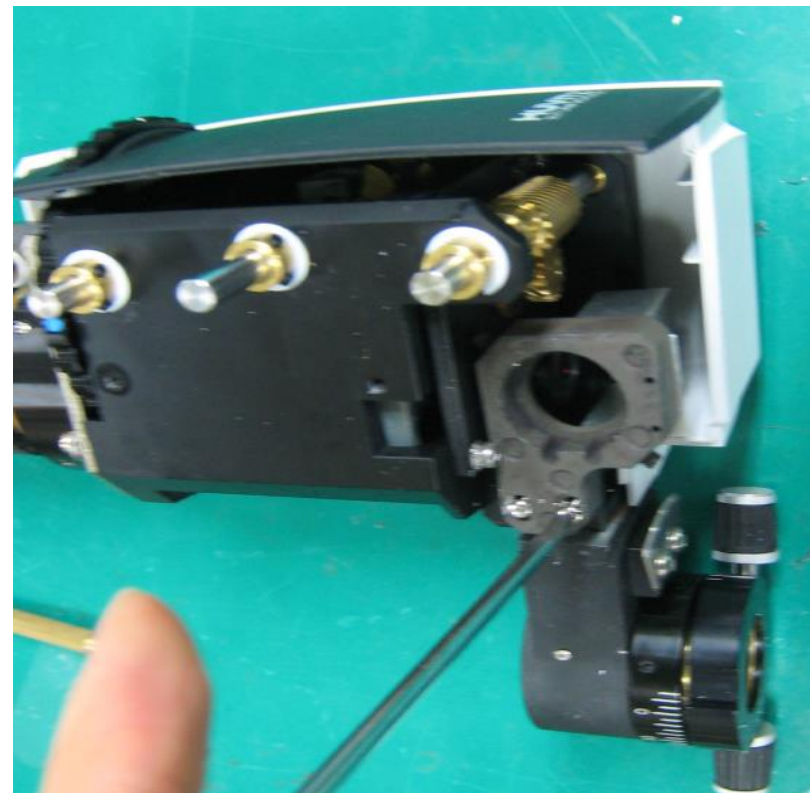


6. Connect power and cable again.

◁Install the LED lamp on HS-5500,7500▷

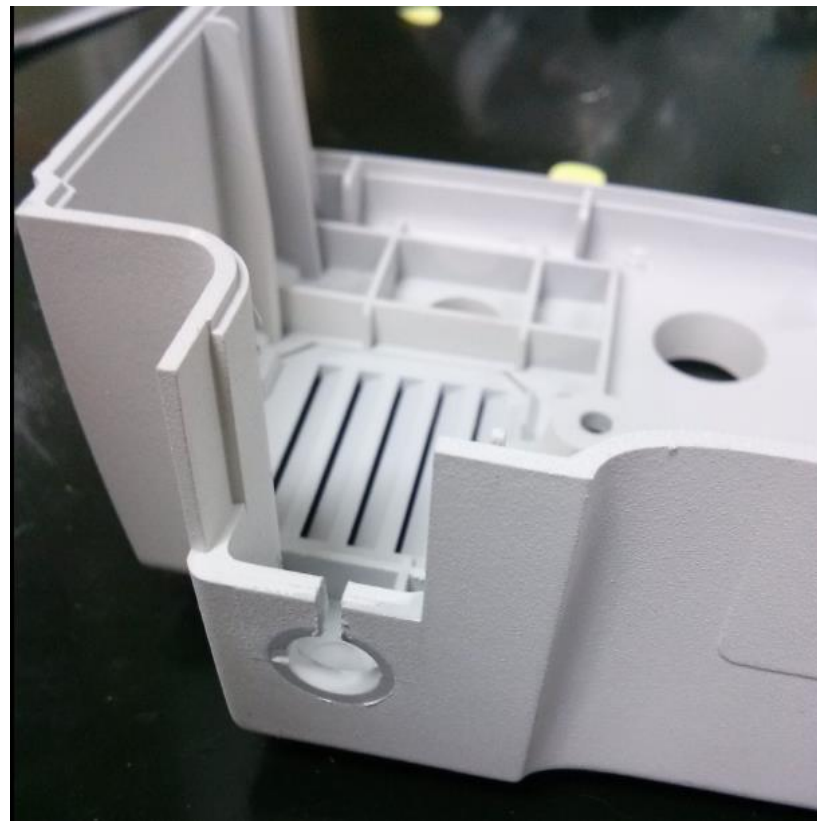
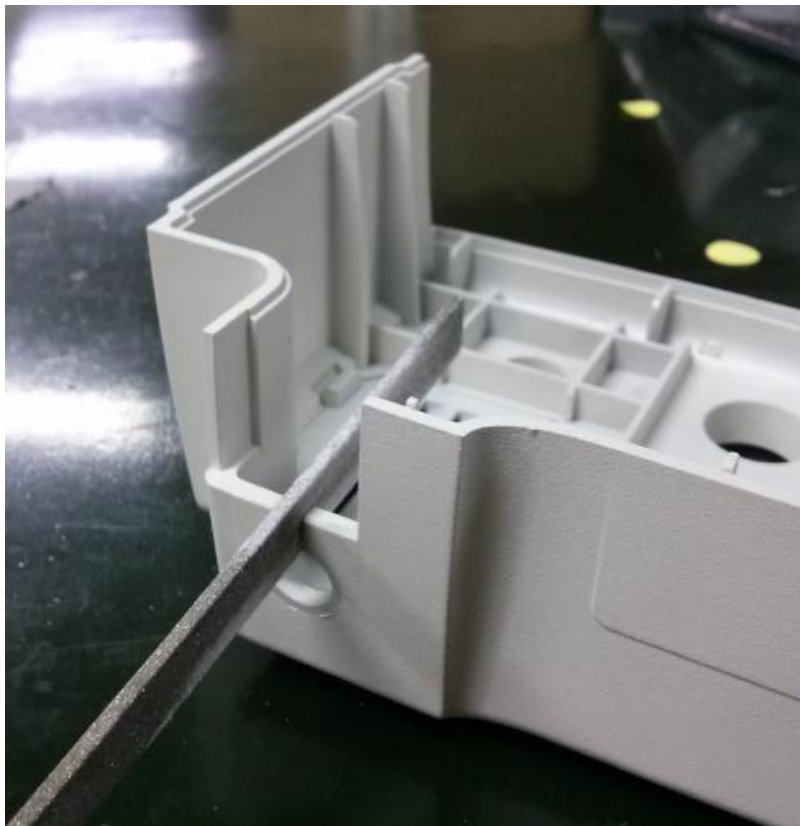


1. After disassembling screw cover and knob, loosen the screws on the side for separating cover.



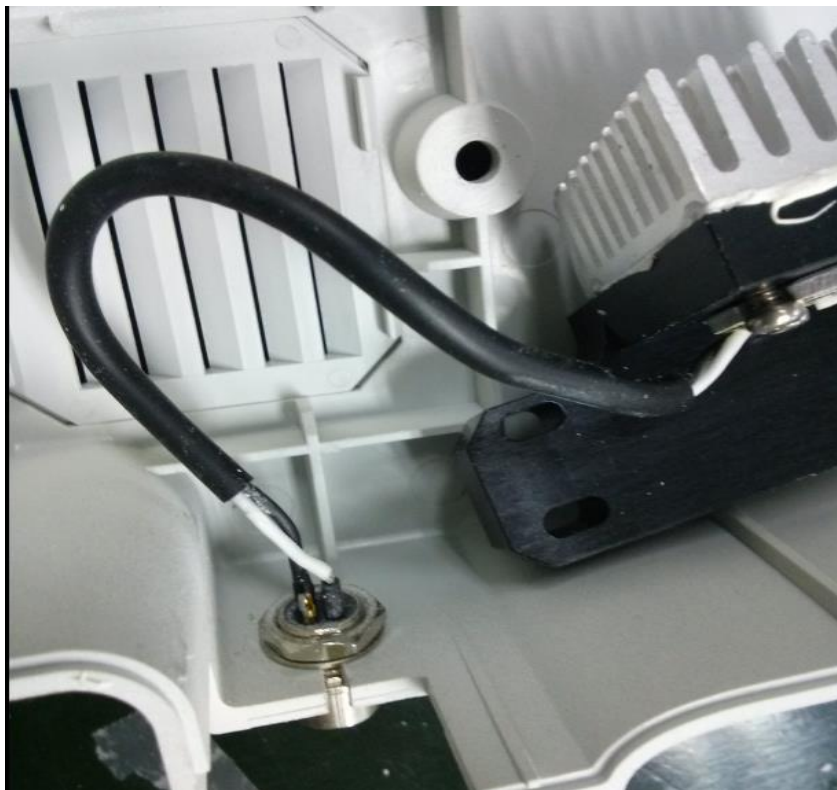
2. Separate fixed bracket of halogen lamp as above the picture.

◁Install the LED lamp on HS-5500,7500▷

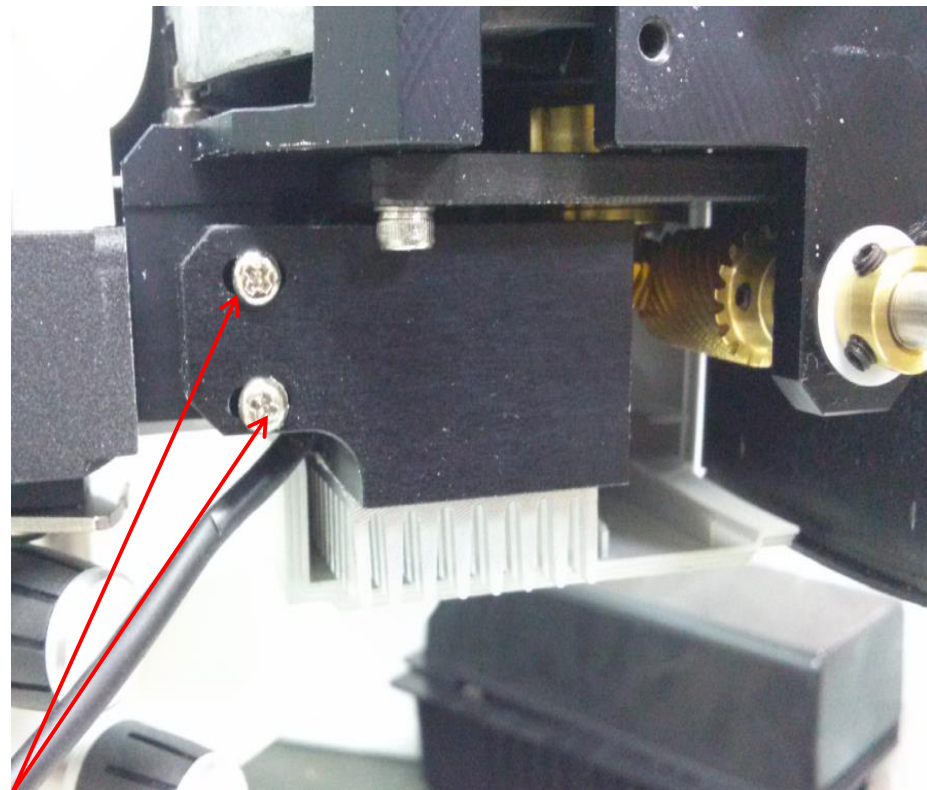


3. After separating the connector, using 2mm string or nipper to cut as above the picture.

<Install the LED lamp on HS-5500,7500>



4. Connect the LED Connector



5. Assemble the LED bracket and tighten the screws on the middle of hole.

◁Install the LED lamp on HS-5500,7500▷



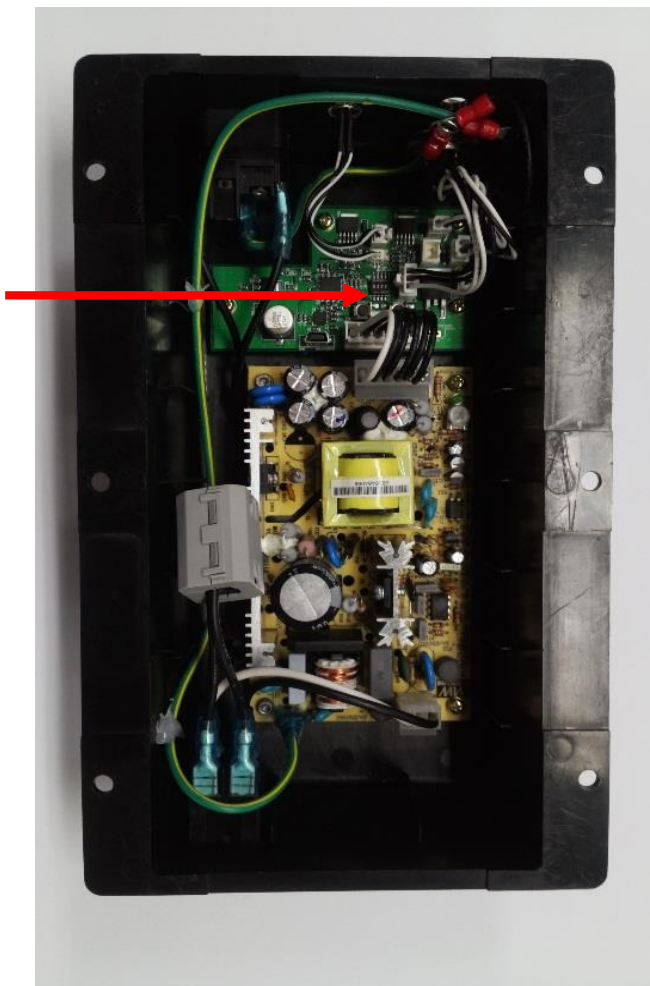
6. Connect the cable to cover.



7. Replace the SMPS and drawer.

- What is the difference between NEW and Old ?

Setting
Switch!



New SMPS

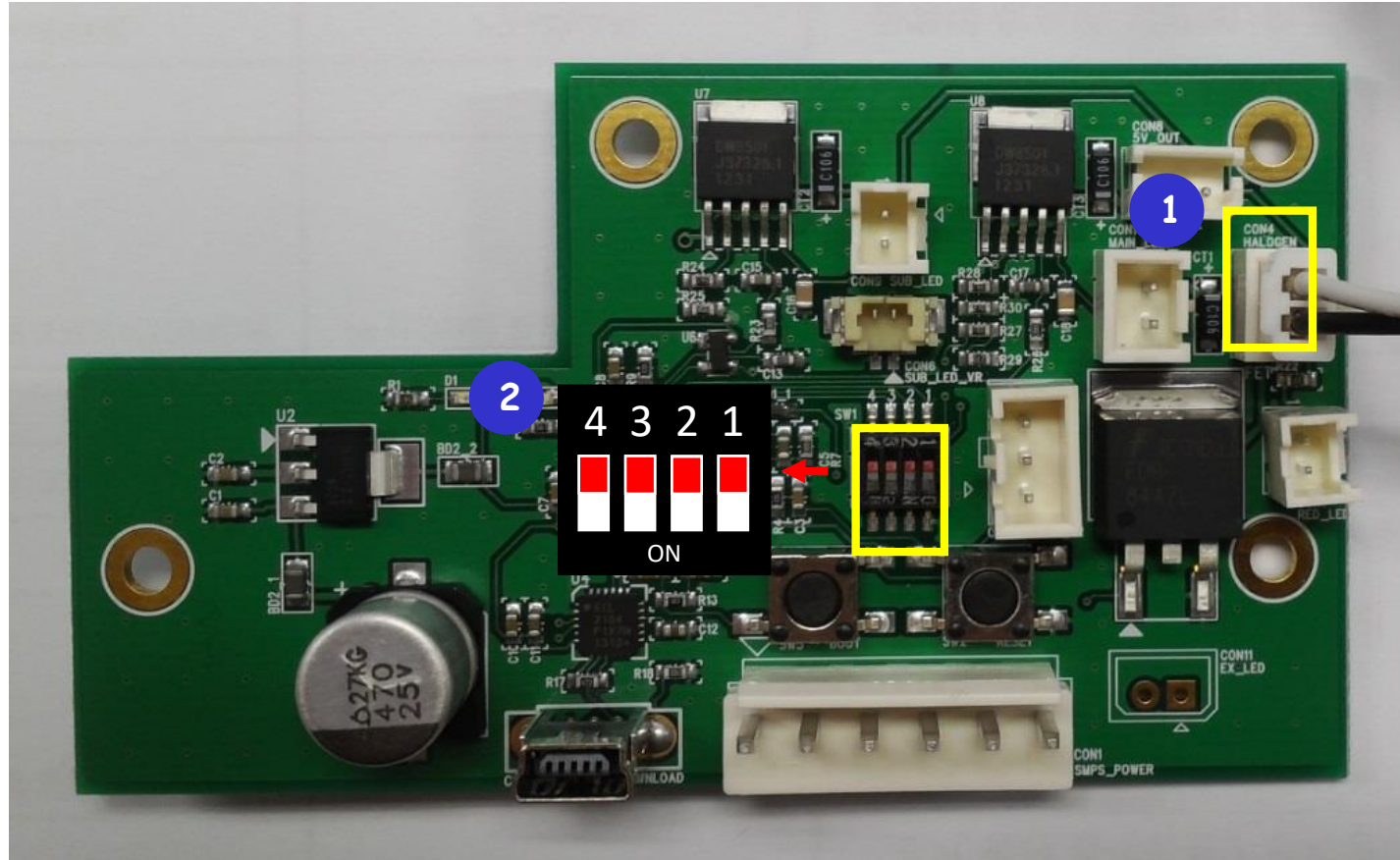


Old SMPS

FATD(R0)-190619-001



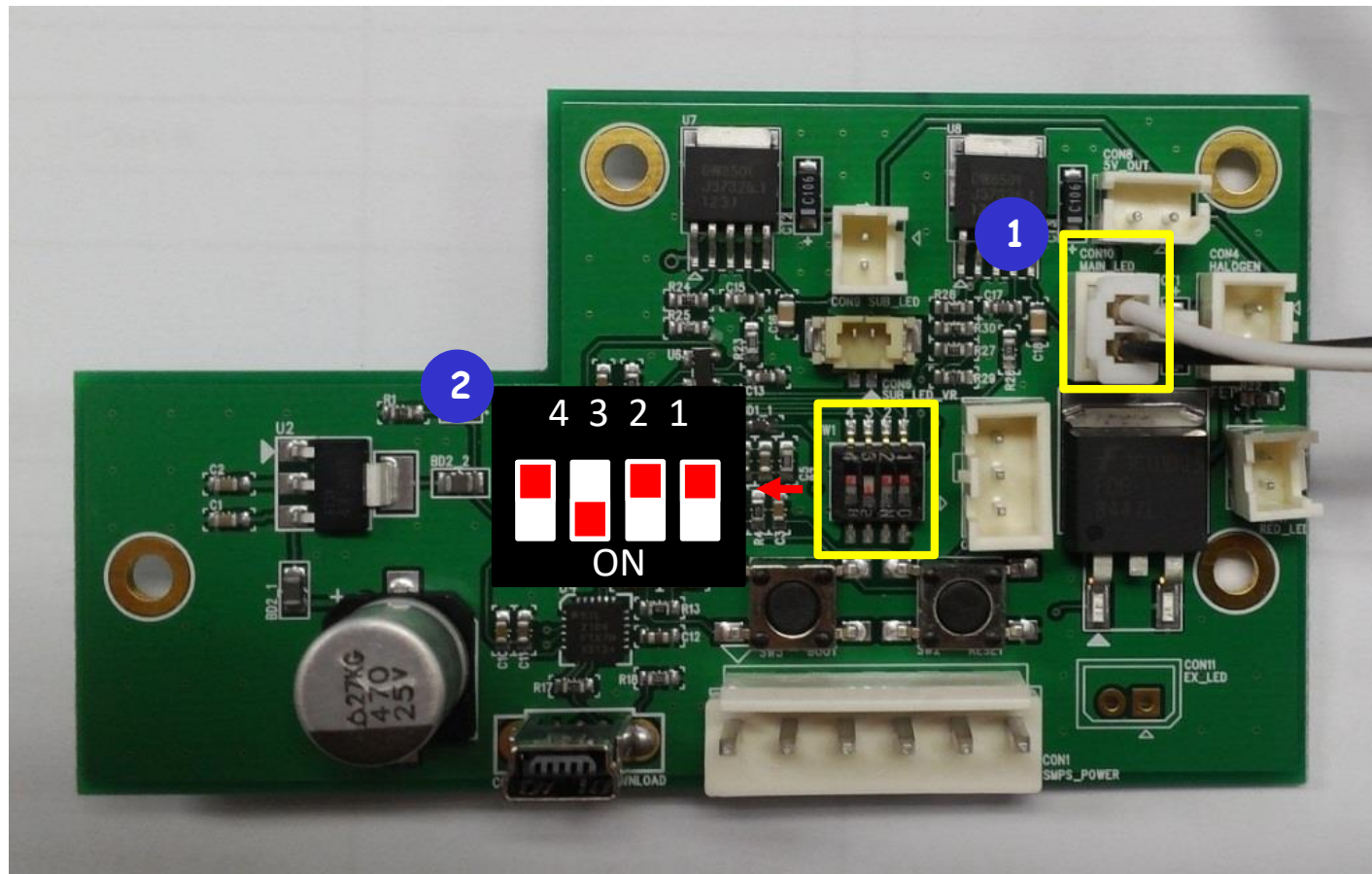
- In case of using a main light, Halogen (HS-5000, HS-5500, HS-7000, HS-7500)



1. Connect main light connector to **CON4(HALOGEN)**
2. Adjust the switch as above the picture.

* Only for HS-5000, HS-5500, HS-7000, HS-7500

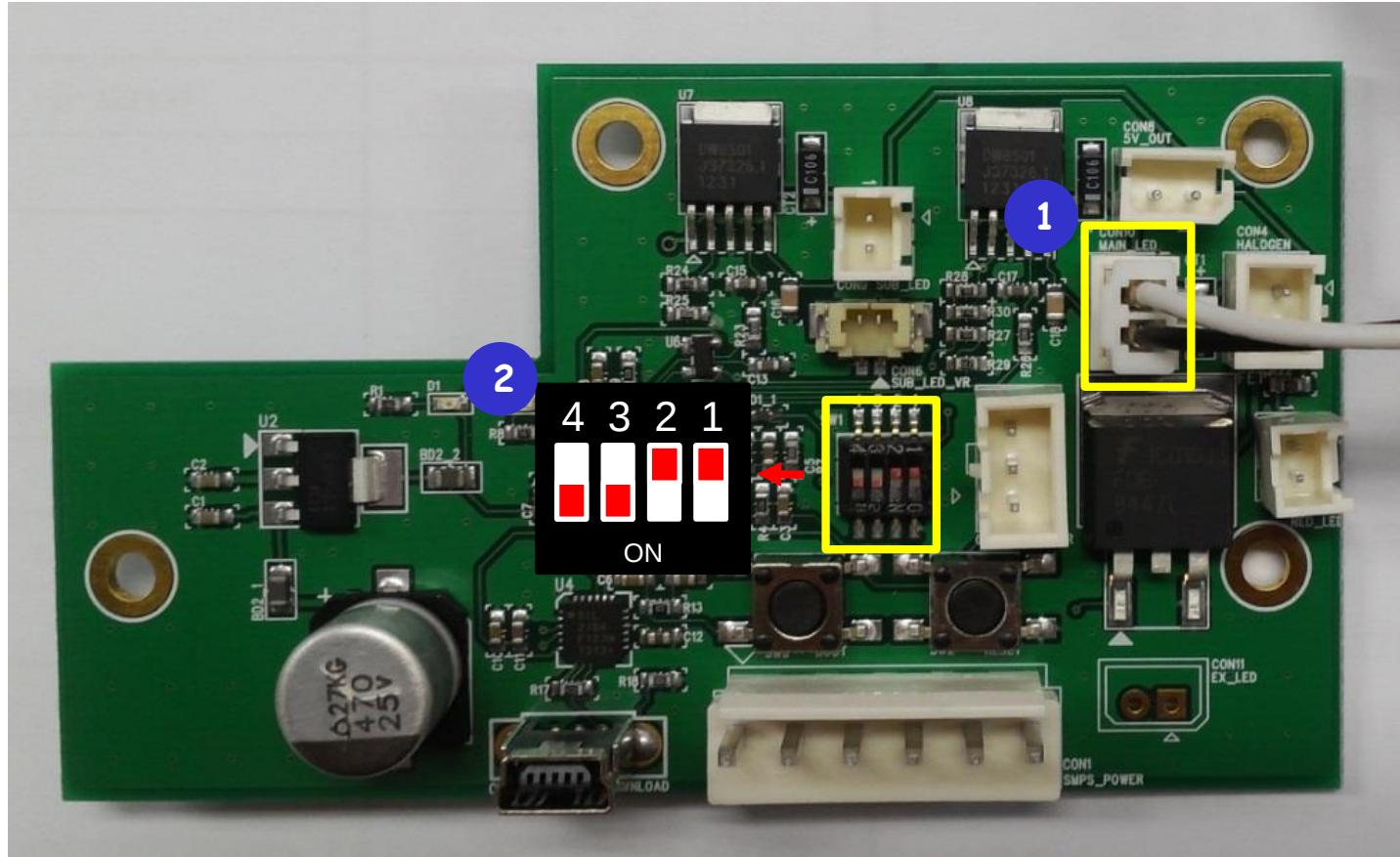
- In case of using a main light, LED LAMP(5000/7000/5500/7500)



1. Connect main light connector to **CON10 (MAIN_LED)**
2. Adjust the switch as above the picture.

* Only for HS-5000, HS-7000, HS-5500, HS-7500

- ☐ In case of using a main light, LED LAMP(5000/7000) + LED auxiliary light(5000/7000)

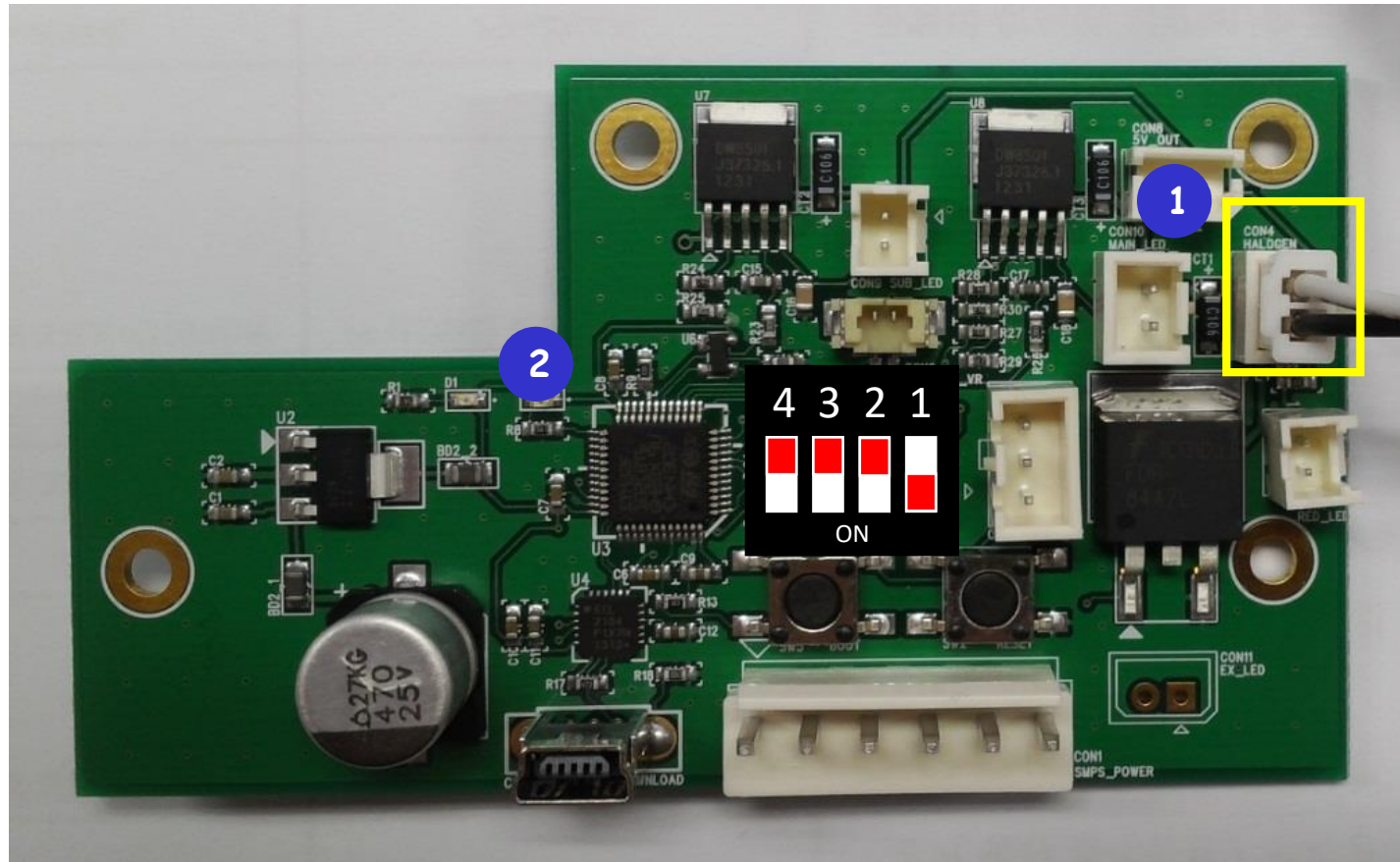


1. Connect main light connector to **CON10 (MAIN_LED)**

2. Adjust the switch as above the picture.

* Only for HS-5000, HS-7000

- In case of reducing 75% of the halogen light (HS-6300)



1. Connect main light connector to **CON10 (MAIN_LED)**

2. Adjust the switch as above the picture.

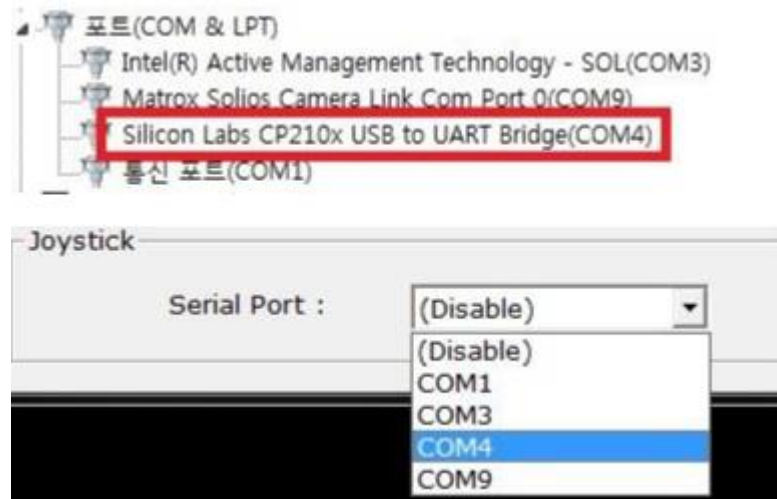
* Only for HS-6300

<Serial Port>

- Select the COM port that is connected to the **Joystick**

※ If you are connected to the Serial Port Joystick only one COM port if it is not displayed, but several COM ports are displayed. In this case, open Device Manager, Ports(COM & LPT) to see.

As follows: Silicon Labs CP210x USB to UART Bridge marked with a check to set the COM number.



- ☐ **STAND ALONE TABLE TOP** - Useful to set unit table

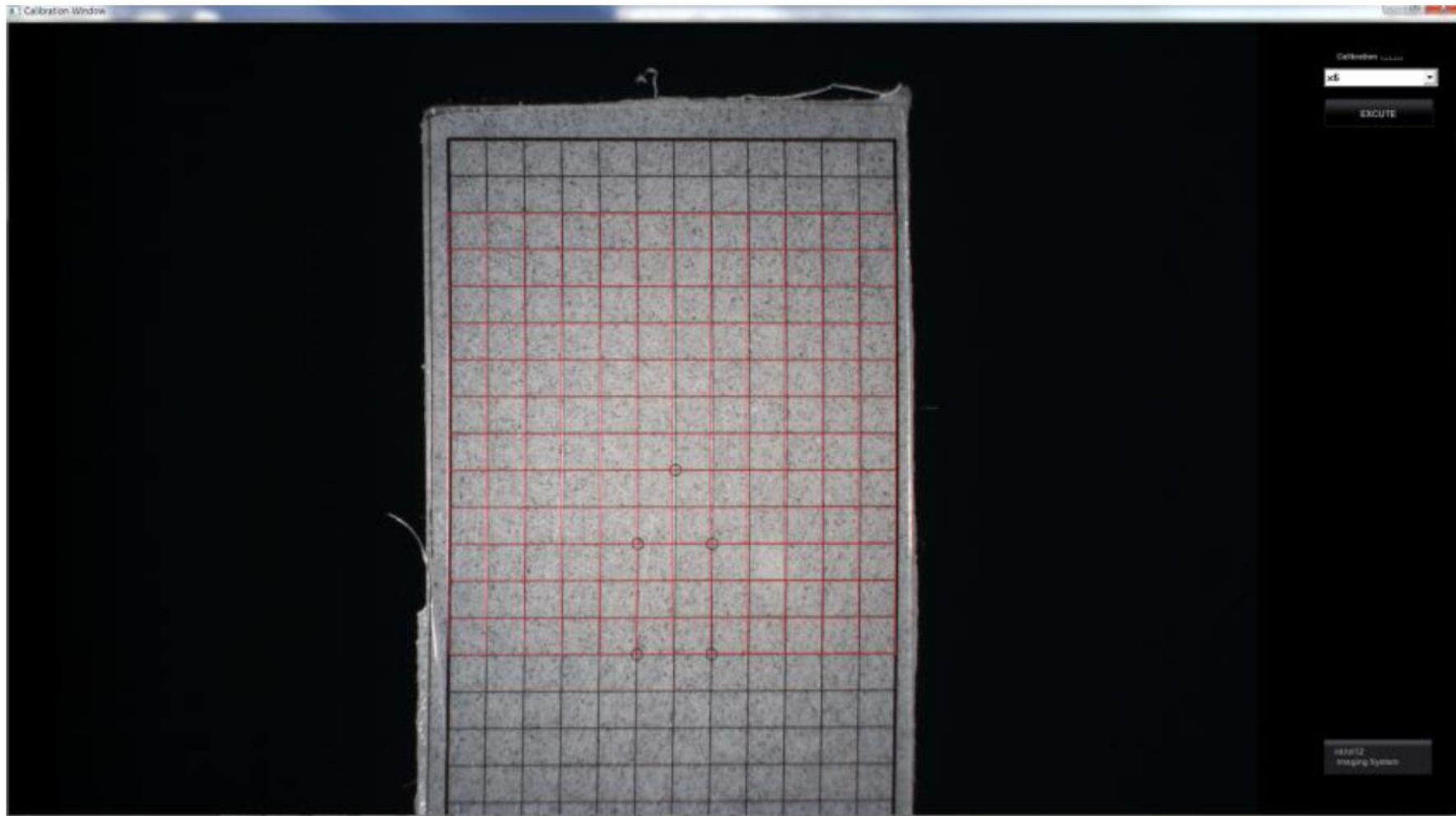


FATD(R0)-190619-001



OPTION

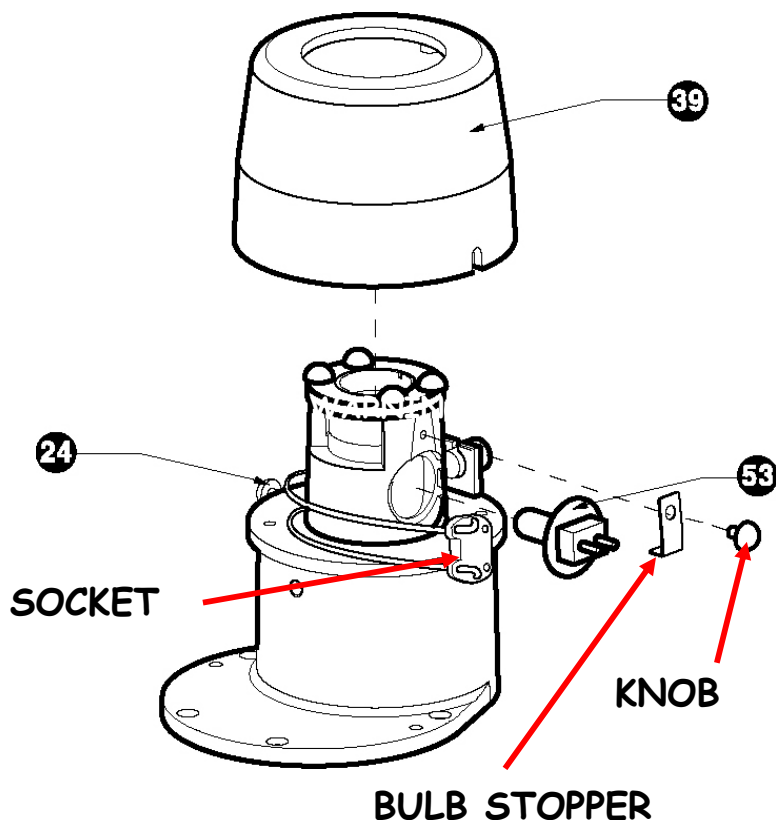
- ☐ **Size Calibration TOOL** - You can measure distance, angle, dimension and diameter through the shot
- If you want to know more, please refer to S/W manual.



[Calibration Window]

FATD(R0)-190619-001

Repair - Halogen Projection Bulb

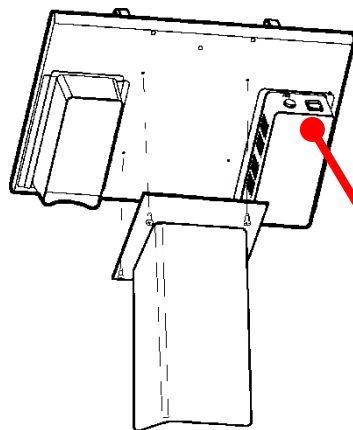


* To replace the Halogen projection bulb proceed as follows.

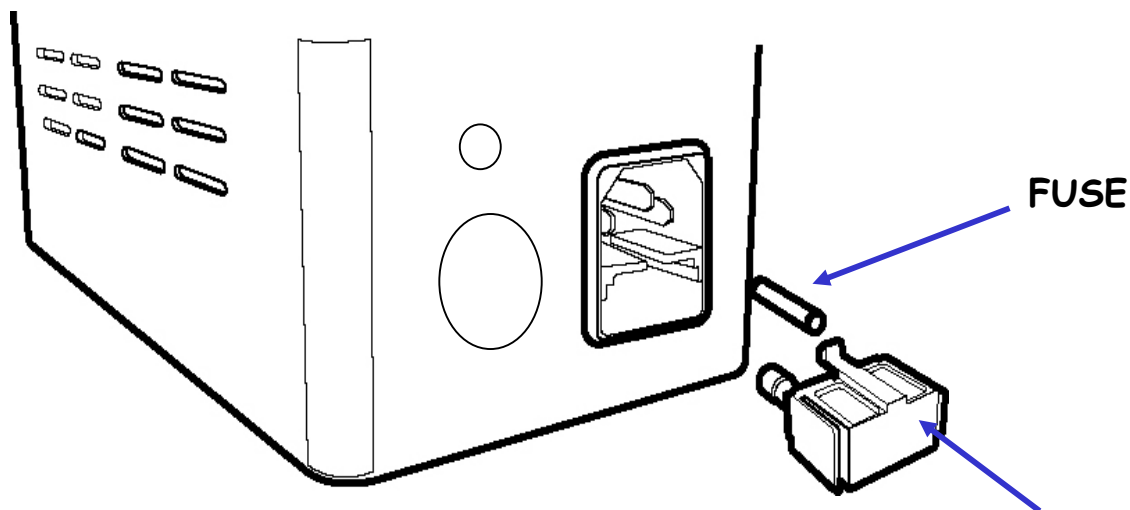
1. Before doing anything else, disconnect the plug from the main supply socket.
2. Remove the screws(24), Remove the cover(39),
3. Remove the socket from the bulb stems.
4. Rotate the knob(54) to loosen the bulb stopper
5. Remove the burn out bulb; be careful , it could be very hot;
6. Replace it with a new one(12V30W Halogen using the plastic envelope (never touch the bulb whit fingers)
7. Fasten the bulb with the knob

**Warning : Don't Touch the Lamp House,
During Operation. It's Heating up.**

Repair - Fuse

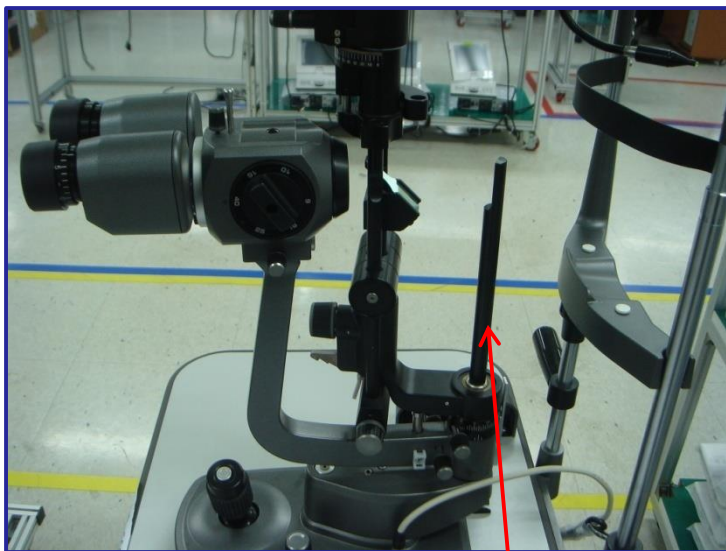


1. Before doing anything else, disconnect the plug from the main supply socket.
2. Remove the fuses housing, Replace the fuses.

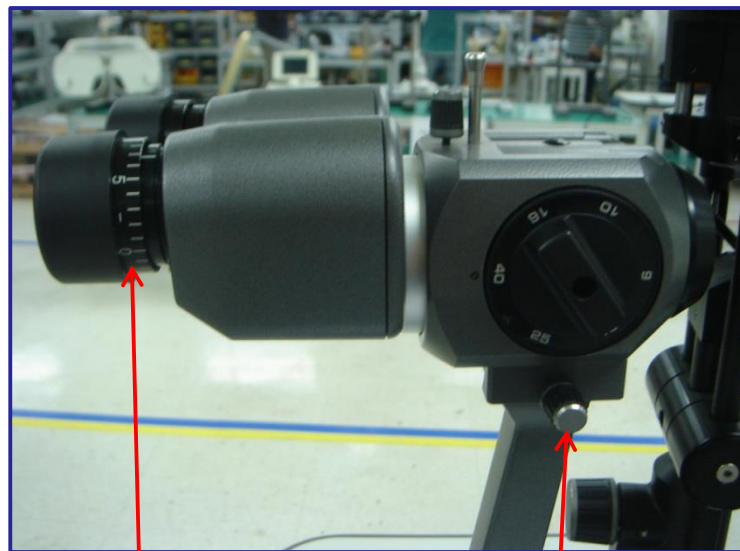


How to find a clear point

1. Put the test bar on the holder.
2. Find the clear point (Camera image).
3. Take a picture and check whether the picture is clear or not.
4. When you have the clear point, adjust eye piece and find the clear point (Real image).
(If you can't find clear point use the eye piece, please loosen the M MAIN FIXING SHAFT KNOB a little and move(front or rear) the DRUM ASSY.)
5. After fix the clear point, compare the camera image and real image.
And do step 2 to 5 until find the clear point.



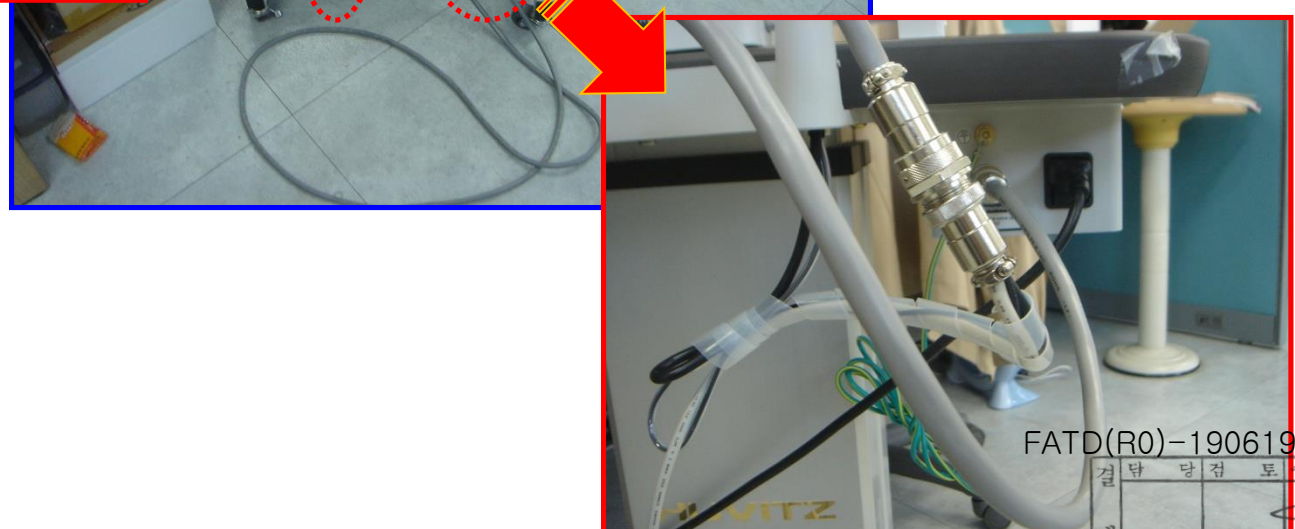
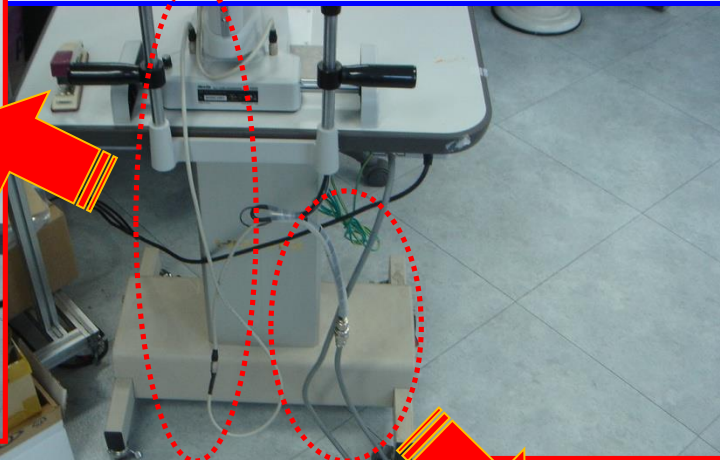
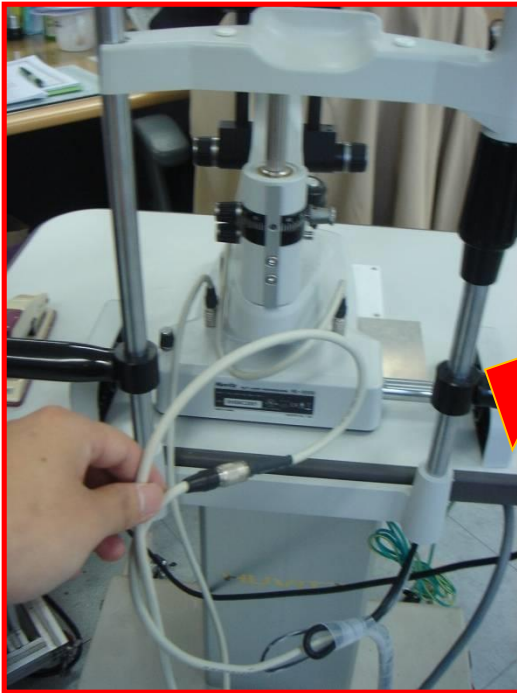
1) Test bar



2) Eye Piece

3) The M MAIN FIXING SHAFT KNOB

How to connect extension cables



FATD(R0)-190619-001

결	탁	당	검	토	승	인
재						

HUVITZ Co., Ltd

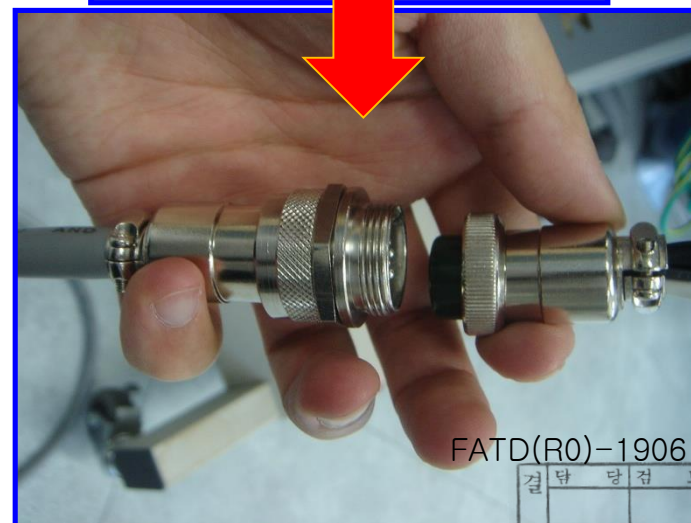
How to connect extension cables



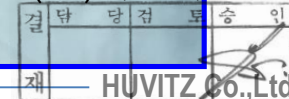
VR EXT cable(600mm)



POWER EXT cable(5M)



FATD(R0)-190619-001



1. Not aligned focus between microscope and image.

- After setting a target of slit-lamp, adjust diopters for aligning.
- Aligning camera focus with 4.3F adjustment method.
- If you modify target's angle about 45 degrees, you can align focus more clearly.
- That focus is not aligned because you might omit some of above process or did have some fault.
If some problems continue on, you'd better inquire to agency.

2. Image is black out.

- Check the cable connection between camera and computer.
- Check the installation of camera driver properly.
- Check the option regarding the camera selection on program.
(If you want to know more, please refer to software manual)

3. It doesn't capture the image.

- Check the installation of joystick driver properly.
- Check the setup of joystick serial port on computer properly. (refer to S/W manual)
- Generally, the joystick port is listed at the bottom of the list on software.

4. The left and right was not realized.

PCB ASSY(Z1_USB_JOYSTICK) has the location correction function using PI Sensor.

Please refer to the steps as below.

1. Press the Joystick Button for 4 seconds. < Refer to the photo 1) >
2. Move the Slit lamp from the end of the left to the end of the right. < Refer to the photo 2), 3) >
3. In order to get out location correction function, click the Joystick Button. < Refer to the photo 1) >

1)



▶ Press the Joystick Button

2)



▶ Move the Slit lamp to the end of the left

3)



▶ Move the Slit lamp to the end of the right

※ Notice

1. It is possible that you execute location correction function if you put the power to the PCB ASSY(Z1_USB_JOYSTICK)
2. It is irrelevant to HIS program.

FATD(R0)-190619-001



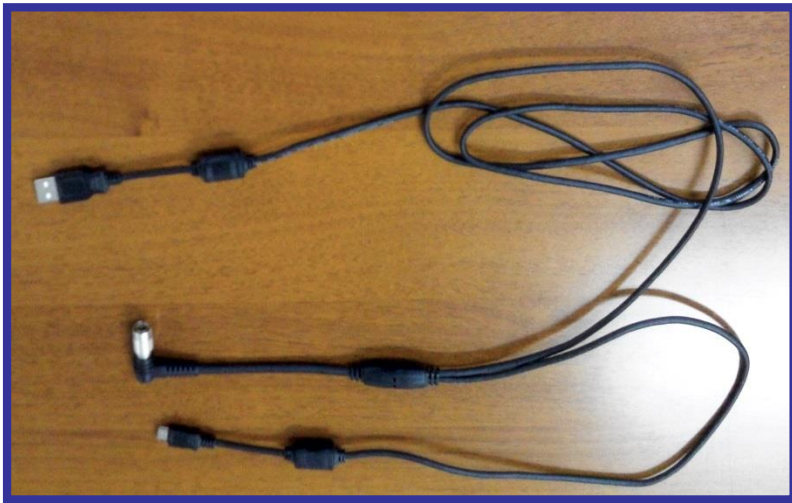
5. Computer can't realize the camera (USB and DSLR type camera).

The latest IMAC(2013) that have USB 3.0 ports can't realize the camera intermittently.

In this case, You can solve this problem if you use the cables that you connect camera and Slit Lamp Body with computer separately.

(Y cable is connected with Slit Lamp Body / USB cable is connected with HIS Camera)

So you should use USB cable one more if your customer use the latest IMAC(2013) that have USB 3.0 ports.



< Existing Y cable >

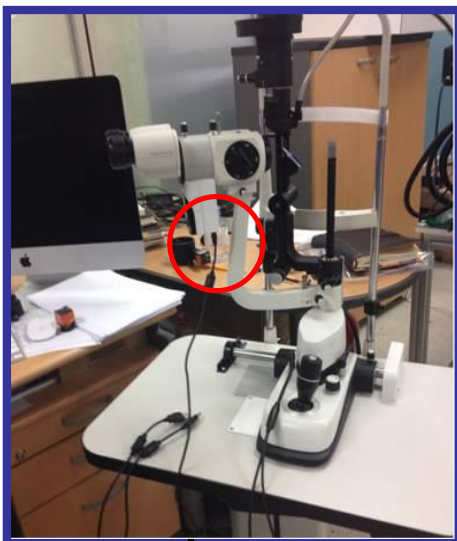


<USB cable for the latest IMAC(2013)>

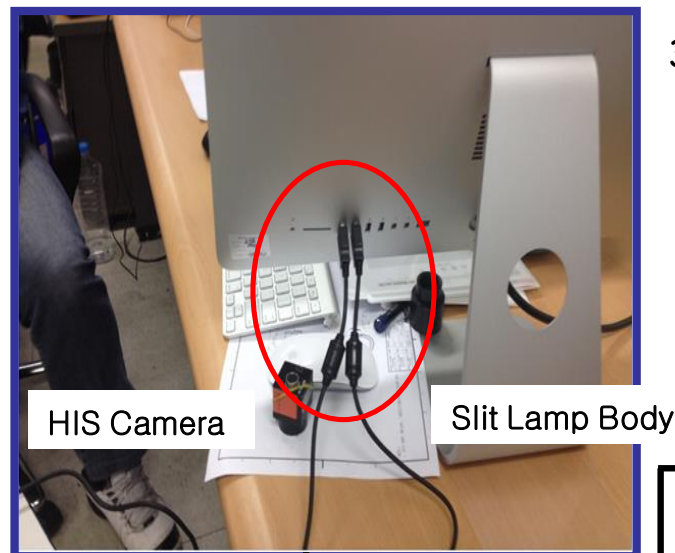
5. Computer can't realize the camera (USB and DSLR type camera).

1. Prepare the Slit Lamp, HIS camera, Y cable and USB cable. < Refer to the photo 1) >
2. Please connect Slit Lamp Body with PC using Y cable and connect HIS Camera with PC using USB cable. < Refer to the photos 2), 3) >

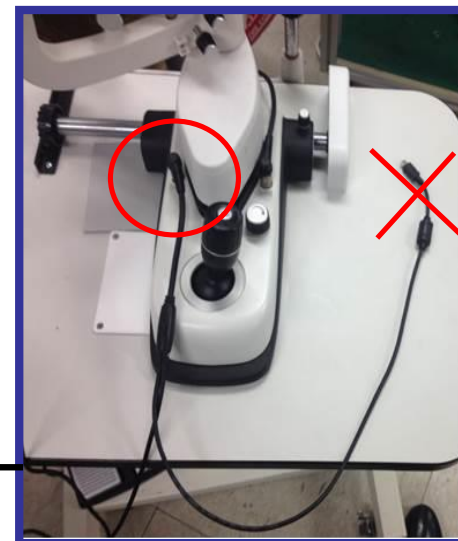
1)



2)



3)



USB Camera Connection

USB CAMERA CONNECTOR Description

USB 2.0 10M Camera



No.	Description
1	USB 2.0 interface
2	9Pin I/O Connector

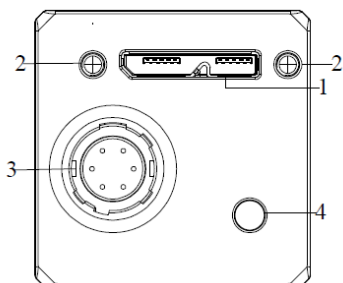
Pin assignment I/O connector

1	Flash output with optocoupler (-)
2	Trigger input with optocoupler (+)
3	Shielding
4	USB Power supply (VCC) 5 V
5	USB Ground (GND)
6	Flash output with optocoupler (+)
7	Trigger input with optocoupler (-)
8	USB data (+)
9	USB data (-)



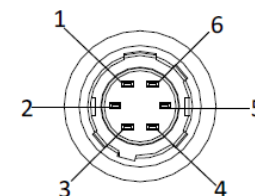
Camera rear view

USB 3.0 5M Camera



No.	Description
1	USB 3.0 interface
2	M2 screw holes for USB 3.0 cable securing
3	6-pin power and I/O interface
4	Status indicator LED

No.	Signal	I/O Type	Description
1	12 V	Input	12 V DC
2	Opt-Iso In	Input	Opto-isolated input
3	GPIO	Input/output	Can be configured as input or output
4	Opt-Iso Out	Output	Opto-isolated output
5	I/O Ground	Input	Ground for opt- isolated I/O, not connected to camera ground
6	GND	Input	Power ground



Warning

Use only the USB cable(USB 2.0/3.0) that connects to PC
IO connectors are not used. IO cable is not provided. Do not connect
Must use connector rubber fittings during installation.

"Re:define, Re+create"

We are making a great company together!!

- Thanks -