iScope

fluorescence with 3-position attachment

supplementary

user manual

euromex
microscopes holland

v.523471

Contents

1. Introduction

The IScope series has been designed with all kinds of life sciences applications and great durability in mind. This resulted in a modern, robust and high level microscope for everyday use, equipped with excellent optical and mechanical components. Specific attention to production methods also resulted in an excellent price/performance ratio

This manual is a supplementary manual and is to be used together with the general manual for the IScope series. Both are supplied with this microscope. Please read the manual in full before you start working on your microscope

2. Safety symbols

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

Symbol	Explanation
	Indicates that the surface becomes hot, and should not be touched with bare hands
	Indicates that the high voltage (upper 1KV) inside could cause electric shock if not handled properly
	Before use, read the user manual carefully. Improper handing could result in personal injury to the user and/or damage to the equipment
	Indicates that the main switch is ON
	Indicates that the main switch is OFF

3. Maintenance and storage

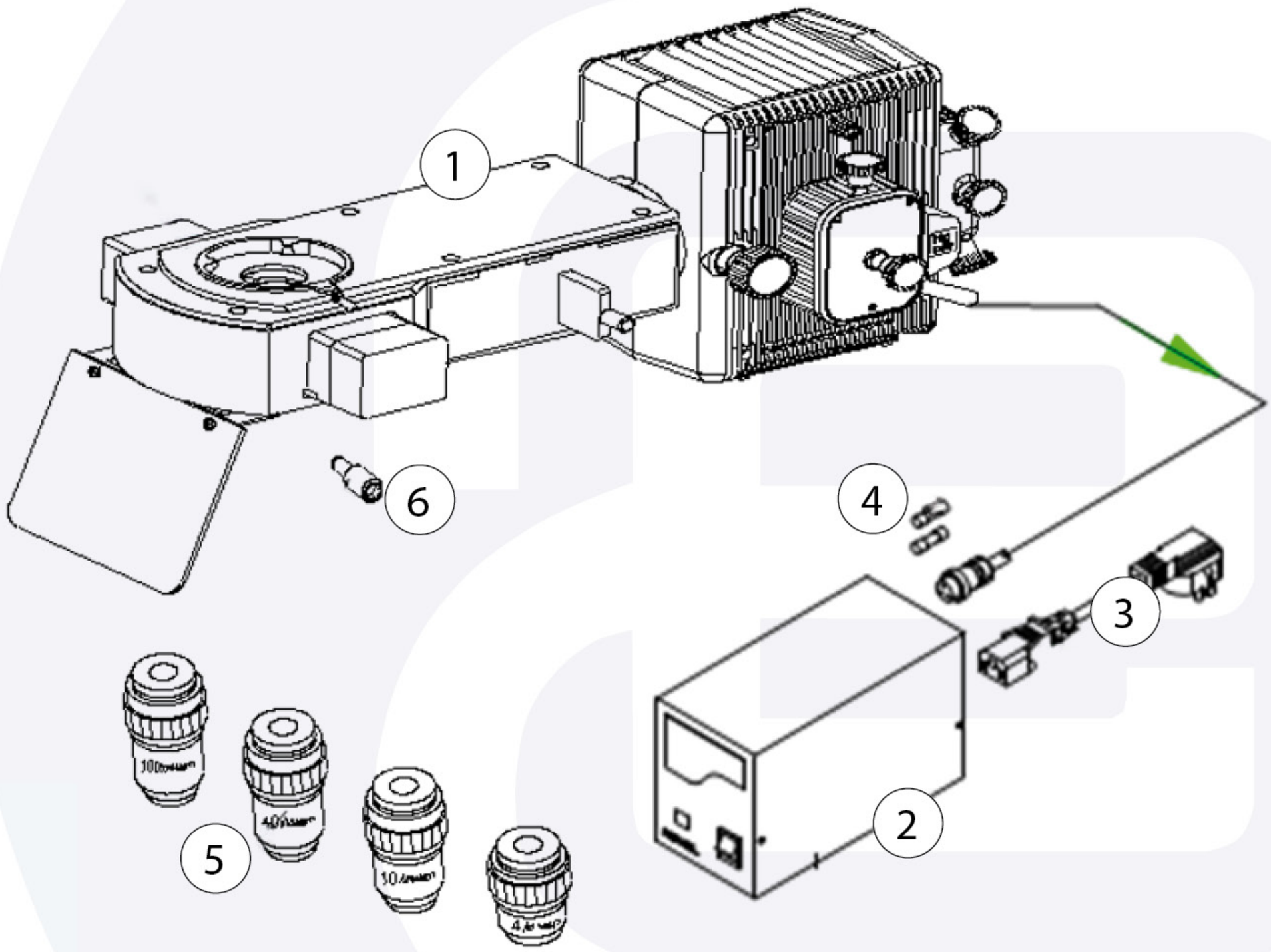
1. 0Clean all glass components by wiping gently with cleaning cloth. To remove fingerprints or oil smudges, wipe with gauze slightly moistened with a mixture of ether (70%) and alcohol (30%). The Euromex cleaning kit is very suitable as it contains all products needed for cleaning the optics

Note: since solvents such as ether and alcohol are highly flammable, they must be handled with care. Be sure to keep these chemicals away from open flames or potential sources of electrical sparks. For example, electrical equipment that is being switched on or off. Also remember to always use these chemicals only in a well-ventilated room. Euromex cleaning kit agents are non-alcohol, non-toxic, and inflammable

2. Do not attempt to use organic solvents to clean the non-optical component of the equipment. To clean these, use a lint-free, soft cloth lightly moistened with a diluted neutral detergent
3. Do not disassemble any part of the power supply unit as malfunction or damage may occur
4. In order not to impair the safety of the equipment, replace the 100W HG Lamp when the counter of power supply indicates “100.00” hours. To prevent any hazard, always turn the main switch on the power supply unit to “O” (OFF), unplug the power cord from the mains outlet, and wait for at least 10 minutes before replacing the 100W HG lamp. High-pressure gas is sealed within the mercury vapor100W Hg lamp. Thus, if it is continued to be used past its service life expectancy, the glass tube may deform and may sometimes rupture, even explode

4. Components

1. Main body of the epi-fluorescent attachment
2. Power supply unit
3. Power cord (please use the power cord provided by Euromex)
4. Fuses (8A)
5. Objectives
6. Clamping screw



5. Assembly of the fluorescent microscope

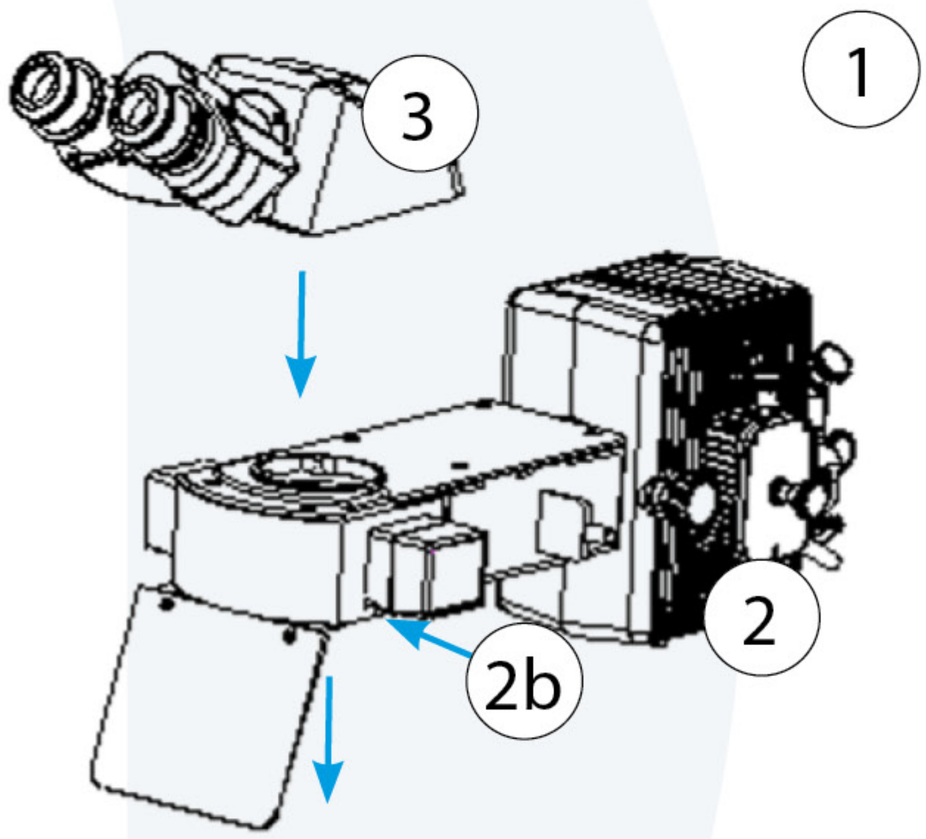
(fig. 1)

A. Loosen the screw (1.1) and take the bino or trinocular viewing head (1.3) from the body of the microscope

B. Insert the epi-fluorescent attachment (1.2) into the microscope correctly and tighten the screw (1.1) until it is installed firmly

C. Insert the viewing head (1.3) into the epi-fluorescent attachment correctly and tighten the screw (1.2b) until it is installed firmly

D. Place the objectives (if not factory pre-installed by Euromex) (no numbers indicated on the image)



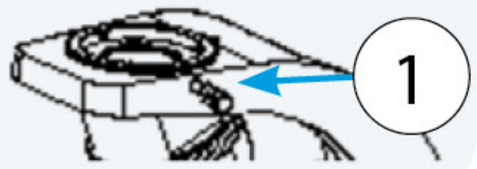
5.1 Mounting the mercury bulb

(fig. 2 and fig. 3)

A. Loosen the lamp socket clamping screw (2.1), and remove the lamp socket (fig.3)

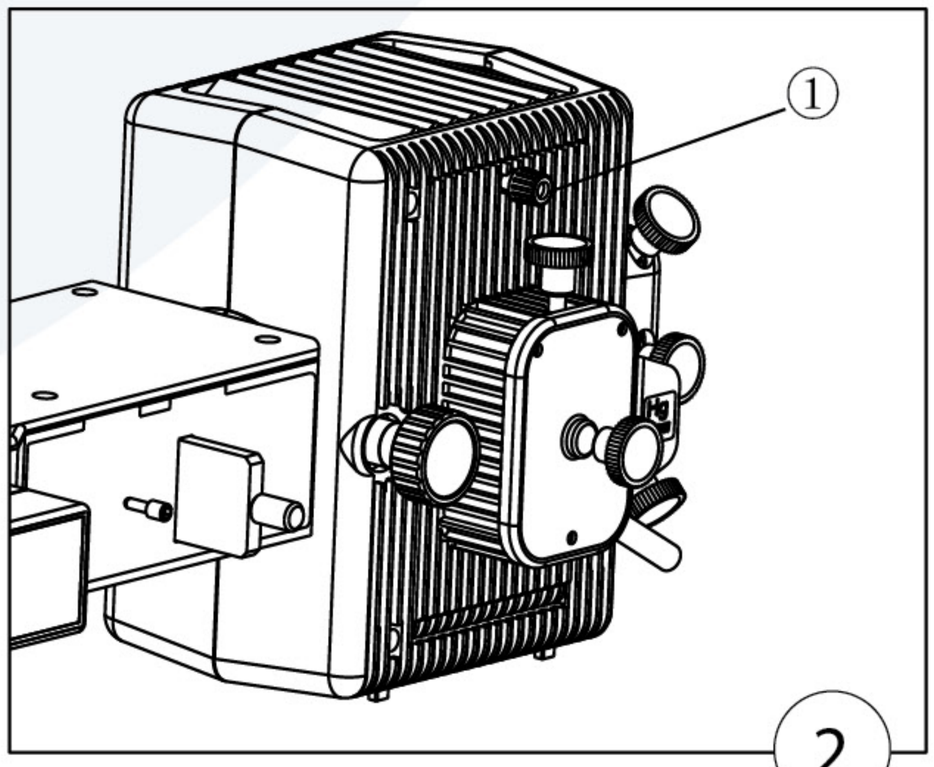
B. After removing the foam backstop (3.2), securely attach the + pole of the specified mercury bulb (3.3) to the lower mount and the - pole to the upper mount, then tighten the socket clamping screws (3.4)

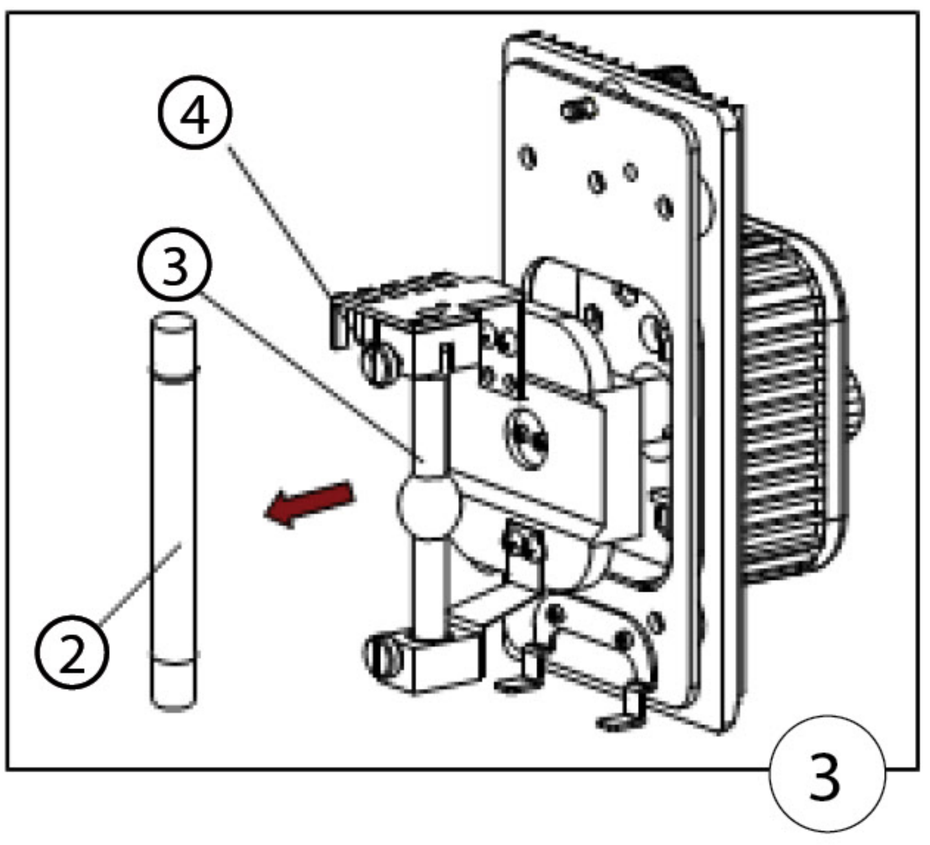
C. Close the lamp socket with lamp into the original position and tighten the socket clamping screw (2.1)



- Be sure to use an original 100W bulb (lamp)
- Never subject the lamp to excessive force when mounting the mercury bulb
- Be careful and avoid leaving fingerprints or dirt on the mercury bulb. Fingerprints may cause distortion in the glass which could result in a ruptured lamp. If stained, clean by wiping gently with gauze, slightly moistened with a mixture of ether (70%) and alcohol (30%)

Note: to prevent any hazard, always turn the main switch on the power supply unit to "O" (OFF), unplug the power cord plug from the mains outlet, and wait for at least 10 minutes before replacing the lamp





5.2 Cable and cord connections

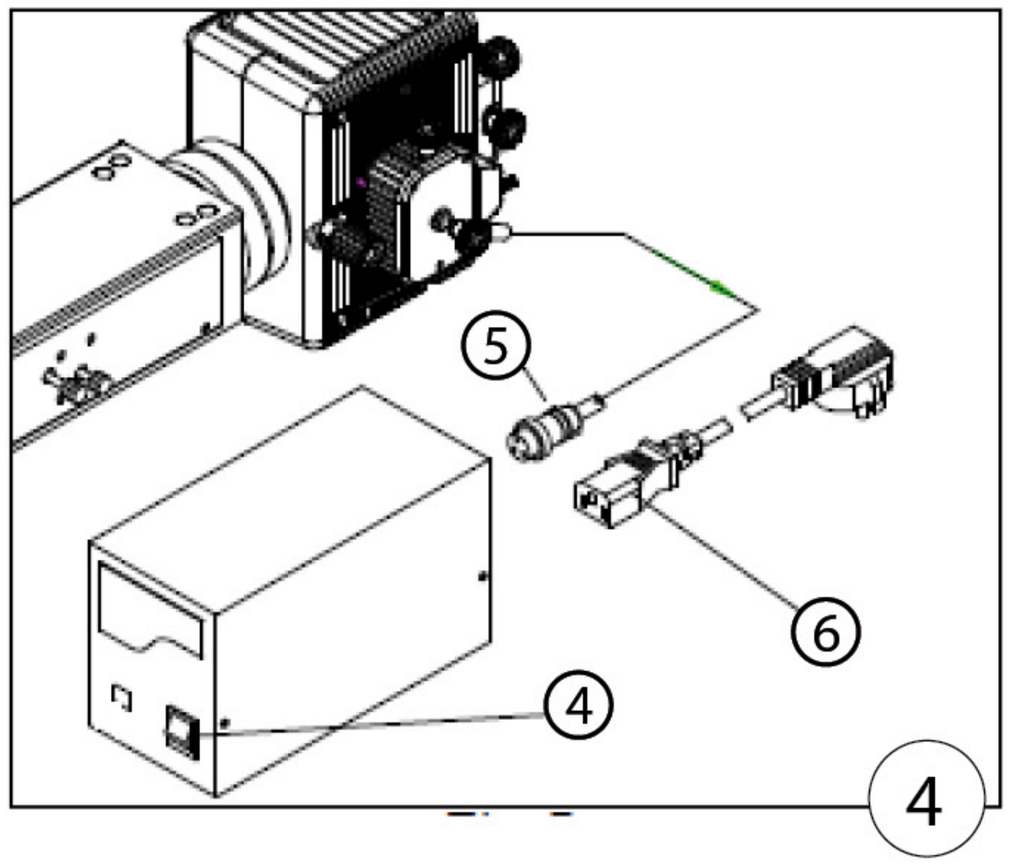
(fig.4)

A. Make sure that the main switch (4.4) of the power supply is set to "O" (OFF) before connecting cables. The power cord should not be connected yet.

B. Plug the connector (4.5) from the lamphouse securely into the connector on the power supply unit and make sure the cord is correctly connected

C. Connect the power cord connector (4.6) into connector on the power supply unit and make sure the cord is correctly connected

- Verify that the voltage and the frequency of the AC mains outlet match the setting of the voltage switch and the frequency switch on the rear of the power supply units. Improper setting may degrade burner performance, or in the worst case (although very rare) cause the burner to explode
- It is recommended to use the power cord provided by Euromex. The same type of power cord should be used if you lose or damage the old one



4

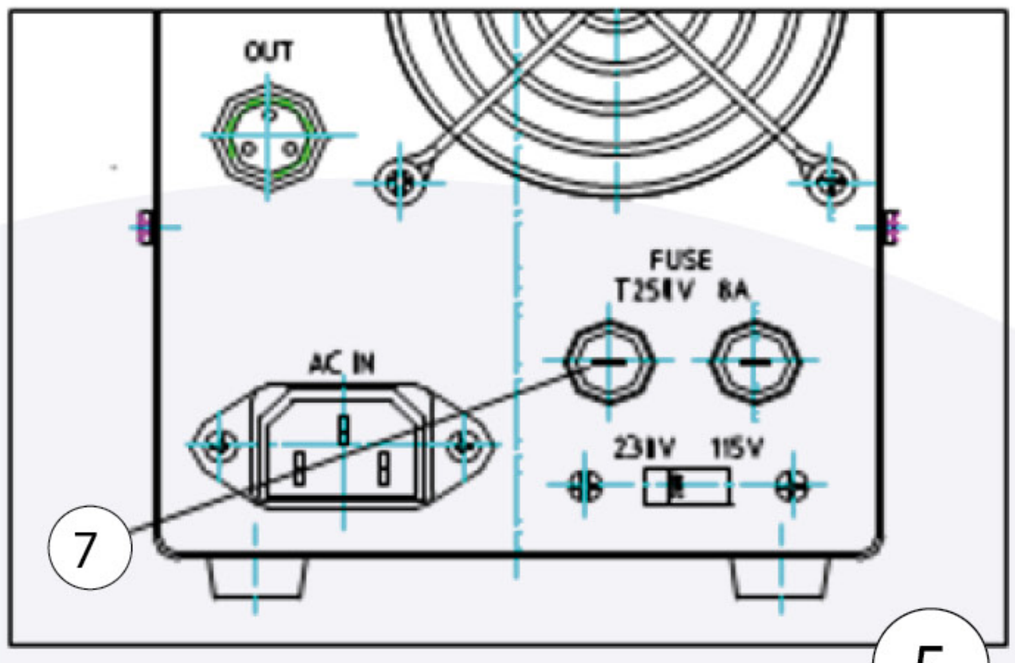
5.3 Fuse replacement

(fig.5)

A. Set the main switch (4.4) to "O" (OFF) and unplug the power cord before replacing a fuse

B. Using a flat screwdriver, remove each of the fuse holders (5.7) by tuning it counter- clockwise and pulling it out

C. Replace both fuses with new ones



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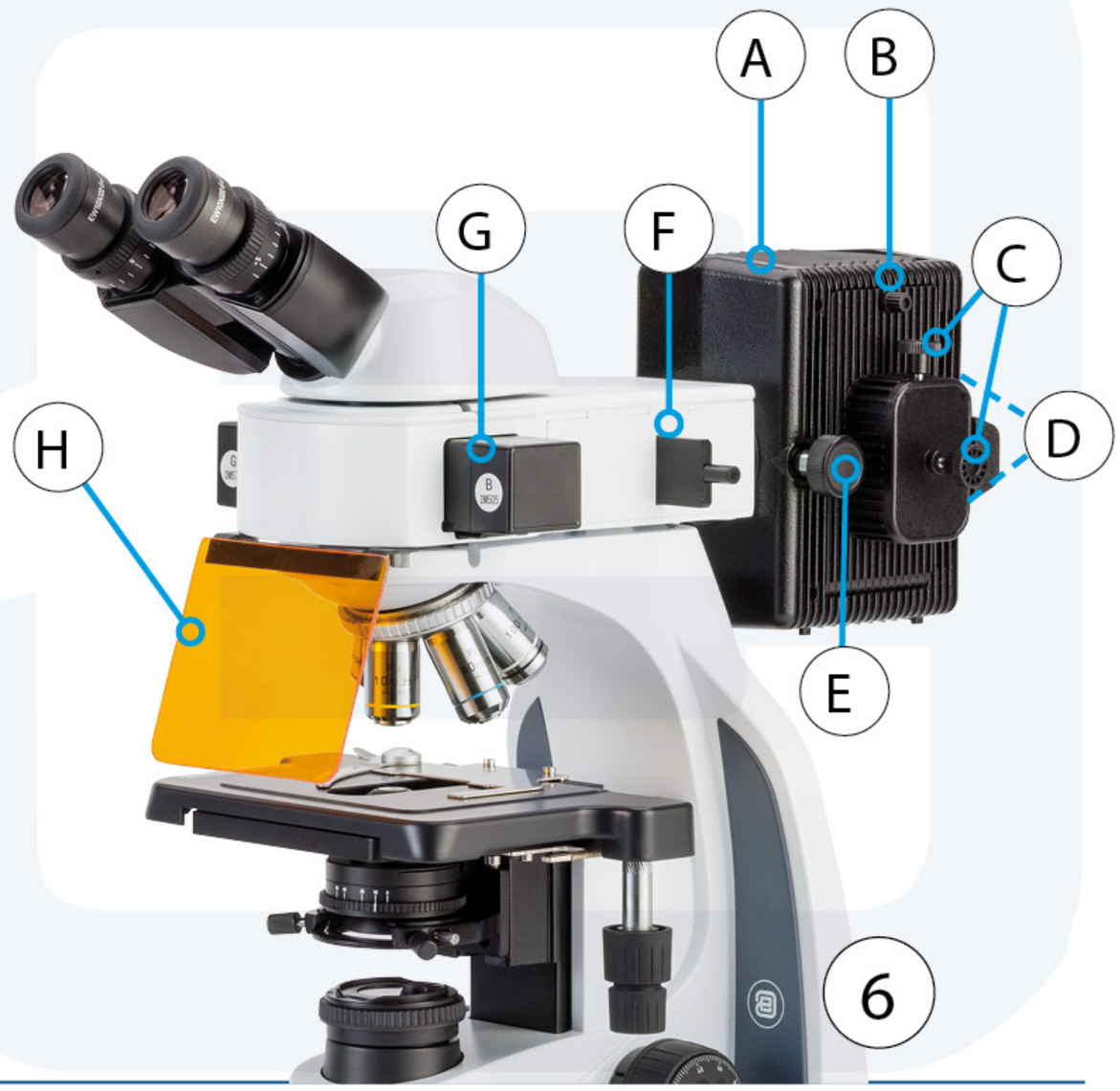
Note: Always use the designated fuses (8A). Make sure the voltage of the fuse matches the voltage of the AC mains outlet

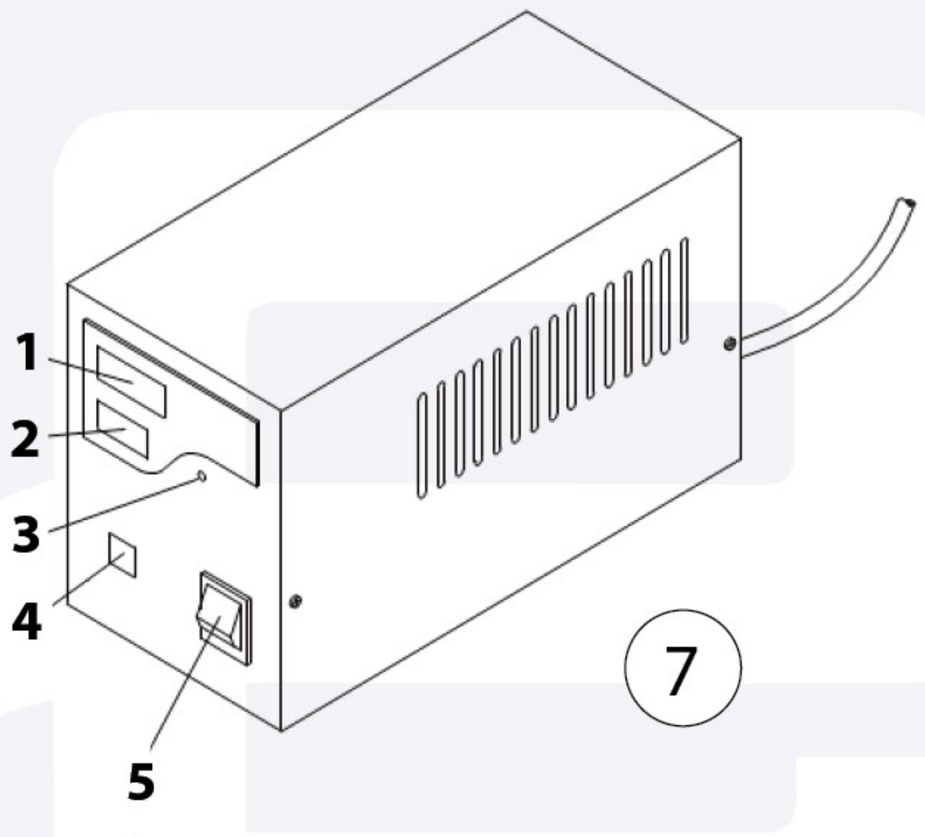
6. Adjustment & operation

6.1 Name of the components

A.	Lamp house for mercury bulb
B.	Screw to open lamp house
C.	Bulb centering knobs
D.	Mirror reflected image centering knobs
E.	Collector adjustable knob
F.	Slider with filter and shutter position
G.	B,G filter block component
H.	Orange protection screen

- The reflected light fluorescent mirrors for B-excitation and G-excitation have been installed in the filter system at the factory
- The filters for the filter holder are optional





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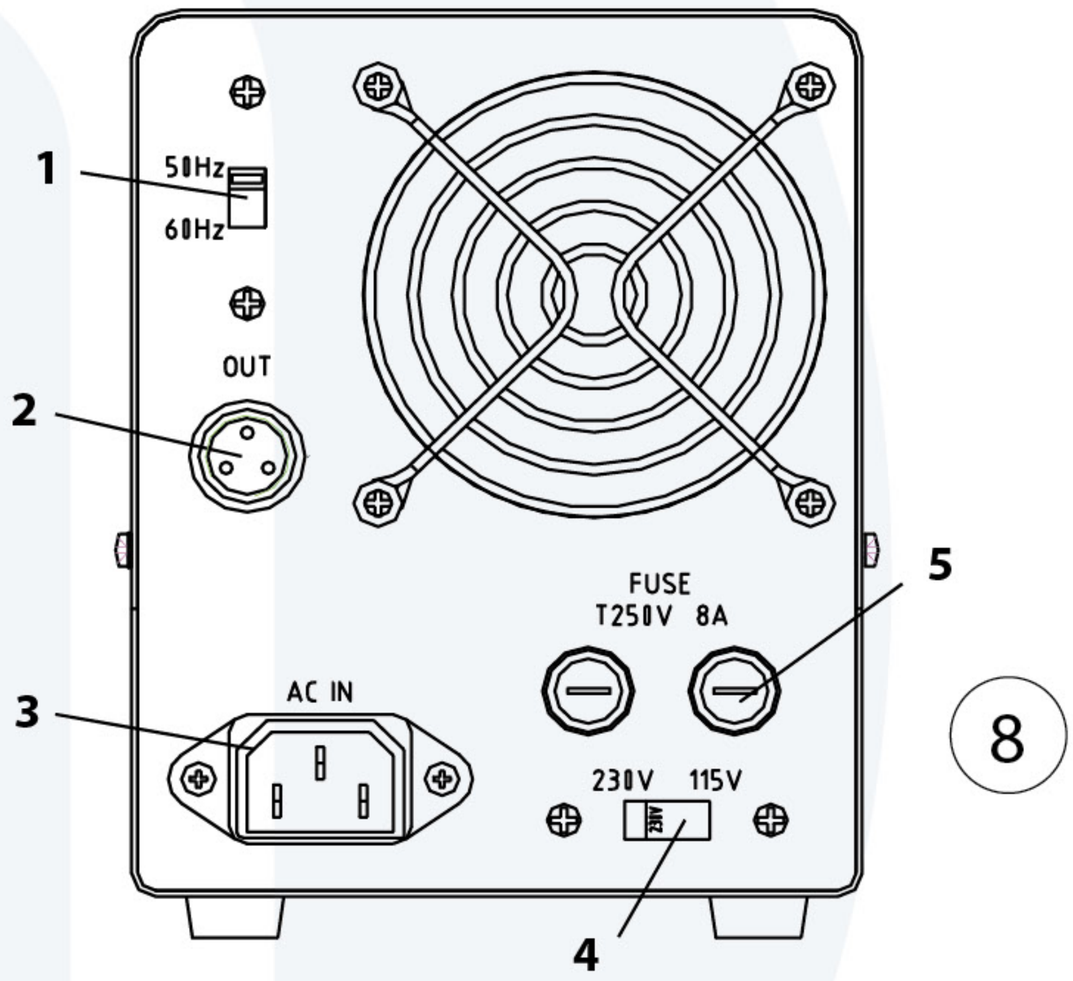
(fig. 7)

1. Hour counter
2. Current indicator
3. Reset button
4. Trigger
5. On/off switch



8

(fig. 8)

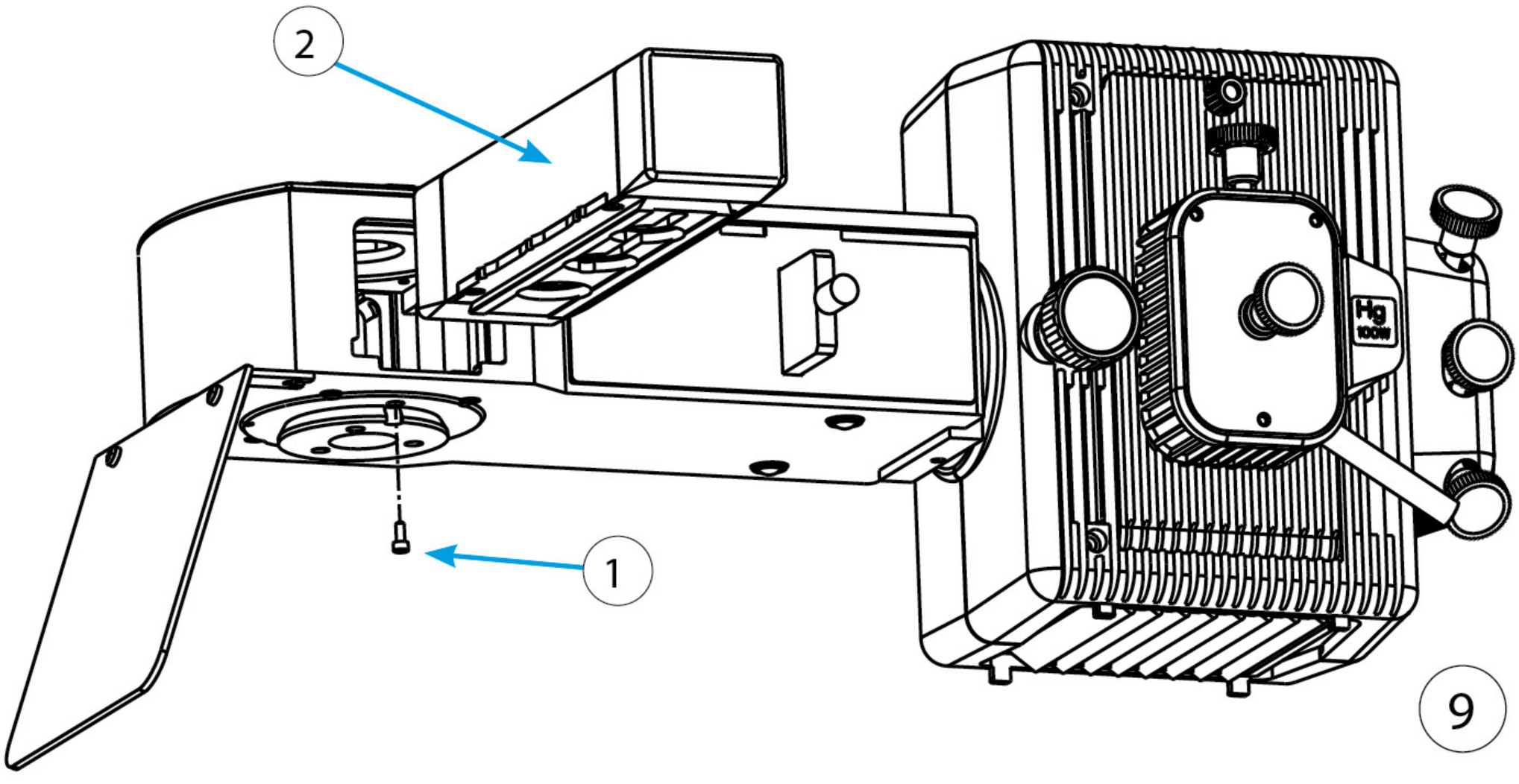
1. Frequency switch
2. Input to lamp house cable
3. Power cord connector
4. Voltage switch
5. Fuse holders

6.2 Assembly of the UV-V filter component

(fig. 9)

This step is only needed when the user replaces one of the filter cubes, otherwise the part is factory preassembled by Euromex.

- Remove the screw (9.1), and pull out the B-G filter component (9.2).
- Insert the UV-V filter component into its slot, tighten the screw and place back



9

7 Operation

7.1 Preparation

1. Verify that the voltage and the frequency of the AC mains outlet match the setting of the voltage switch and the frequency switch on the rear of the power supply units
2. Make sure the cords are connected firmly
3. When it is required to interrupt observation for a short period, use the shield in the holder. (Repeatedly turning the mercury vapor100W Hg lamp on and off will shorten its life span considerably)
4. Precautions on the specimen color fading: The system employs high-intensity excitation light to enable bright observation of dark fluorescent specimens. As a result, if high-power objectives are used frequently, color fading of the specimen occurs early, degrading the view (contrast) of fluorescent images. So it is effective to frequently use the slider in shutter position (F in fig. 6) to avoid illuminating the specimen for a longer period than necessary

7.2 Switch on the power supply

Set the main switch of the power supply unit to “1” (ON). The bulb will stabilize in 5 to 10 minutes after ignition

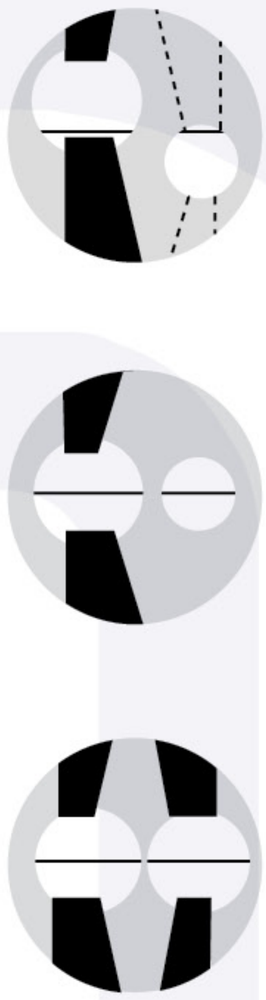
- Some mercury vapor100W Hg lamps may not ignite the first time the power is turned ON due to variance in production. If this occurs, set the main switch to “1” (ON), then press the starter reset switch on the front panel of the power supply between 1 to 4 seconds to ignite the 100W HG Lamp. Repeat if necessary
- To avoid shortening the 100W HG lamp life span, do not turn the 100W HG lamp off within 15 minutes after ignition
- The 100W HG lamp cannot be re-ignited for about 10 mimutes, that is, until the mercury vapour inside it has cooled down and condensed to liquid
- Ensure that the hour counter is reset to “000.00” after replacement of the 100W HG lamp. Resetting is done by inserting a thin object such as a paperclip tip into the reset hole on the front panel of the power supply unit to press the internal switch

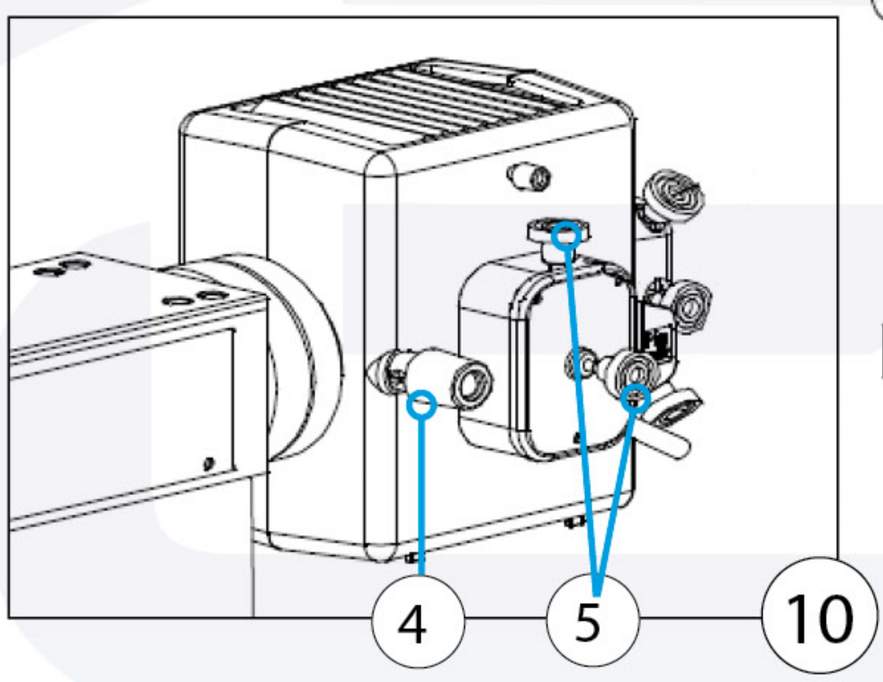
73 Centering the mercury burner

(fig. 10, 11, 12)

Before proceeding to center the burner, wait for the arc image to stabilize to protect against glare during arc image centering, it should be viewed across the excitation light protective shield

1. Push/pull the filter block system to engage the green or blue excitation filter block into the light path
2. Revolve the nosepiece to engage 10x objective into the light path. Place the centering plate on stage, through transmission observation; adjust the stage until the cross is in the center of the field of view
3. Remove the objective from the revolving nosepiece position and engage this position in the light path
4. Turn the collector adjusting knob (10.4) to project the arc image on the centering plate and sharpen it (11.A)
5. Turn the burner adjusting knob (10. 5) to move the arc image and the mirror reflected arc image in the symmetrical position (11.B)
6. Adjust the mirror focusing knob (12.6) to sharpen the mirror reflected arc image (11.C)
7. Turn the burner adjusting knob (10.5) to overlap the arc image with the mirror reflected arc image (11.D)
8. Turn the collector adjusting knob (10.4) to make the field of view as bright and as regular as possible
9. Maintain this condition until the next time the burner is replaced





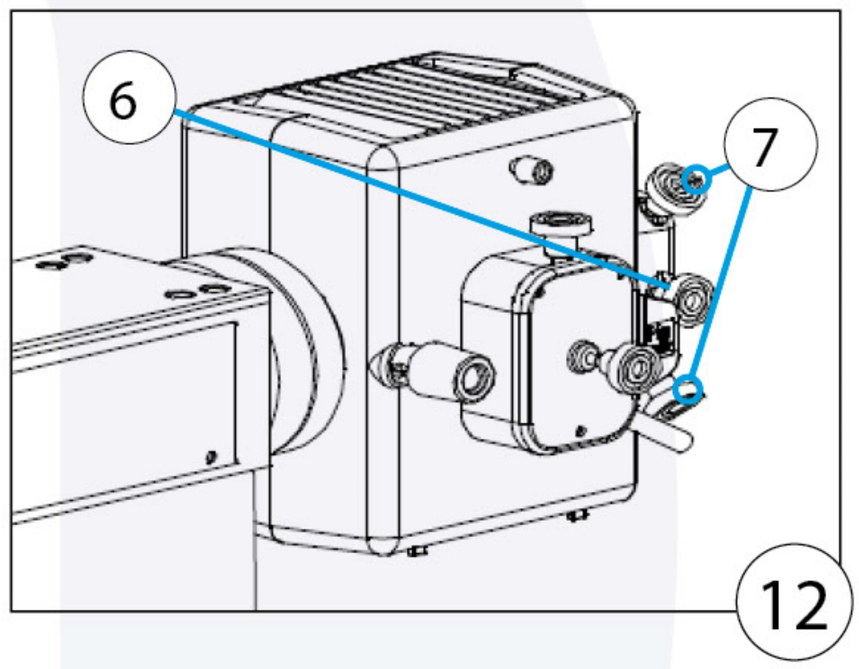
11

7.4 Centering the mirror reflected image

(fig. 12)

The mirror reflected image has been centered before leaving the factory. Do not adjust the knob (12.7) if not necessary. Only when the burner has been centered precisely, can the knob be adjusted

Note: once the knob is adjusted, the reflected mirror cannot be reconverted to the status when leaving the factory



Knob control

1. The middle knob (12.6) is the mirror reflected image focusing knob which can sharpen the reflected image
2. The knobs at both sides (12.7) can adjust the up/down or left/right position of the mirror reflected image

7.5 Note on the hour counter

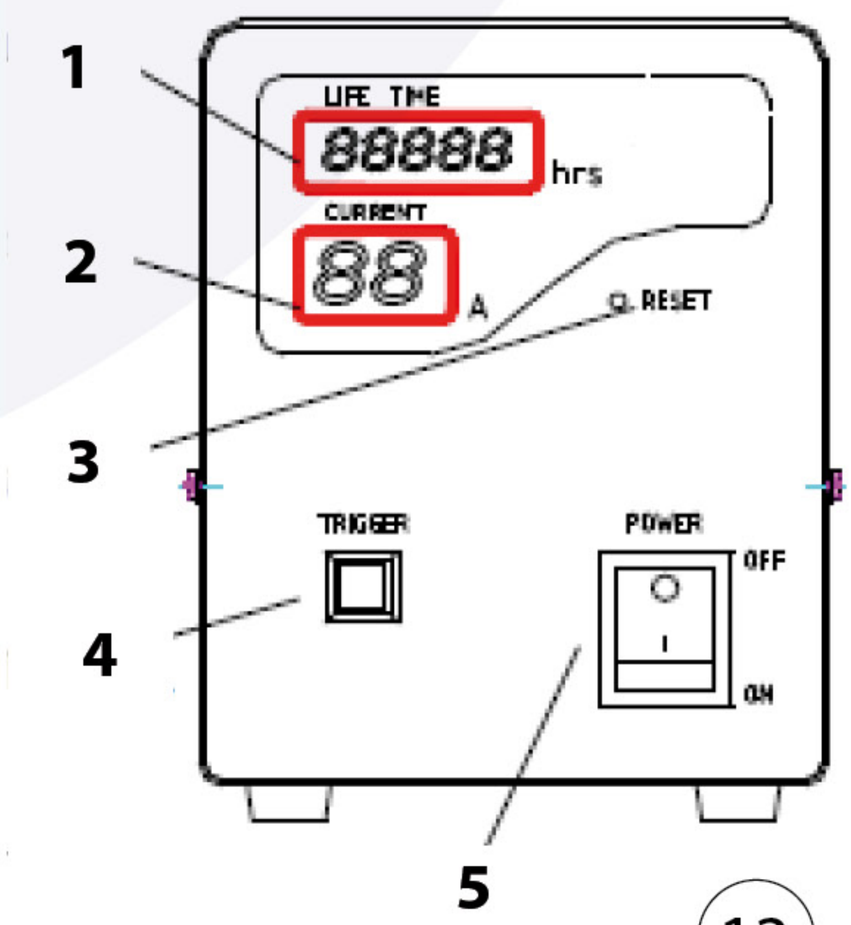
(fig 13)

When the hour counter indicates "100.0":

- Set the main switch to "**O**"(OFF) for safety
- Wait for at least 10 minutes
- Then replace the lamp burner after making sure that the lamp housing has cooled down. A mercury burner contains high-pressure gas inside

Note: If the burner is used beyond its service life, stress may accumulate inside the burner, and in the worst (but very rare) case, the burner could explode

After replacing with a new burner, reset the hour counter, be sure to press the reset switch until "000.00" is displayed



1. Hour counter
2. Current meter
3. Reset button
4. Trigger
5. On/off switch

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fluorescence with 6-position turret attachment

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Contents

1. Introduction

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	Indicates that the main switch is ON
	Indicates that the main switch is OFF

3. Maintenance and storage

1. Clean all glass components by wiping gently with cleaning cloth. To remove fingerprints or oil smudges, wipe with gauze slightly moistened with a mixture of ether (70%) and alcohol (30%). The Euromex cleaning kit is very suitable as it contains all products needed for cleaning the optics

Note: since solvents such as ether and alcohol are highly flammable, they must be handled with care. Be sure to keep these chemicals away from open flames or potential sources of electrical sparks. For example, electrical equipment that is being switched on or off. Also remember to always use these chemicals only in a well-ventilated room. Euromex cleaning kit agents are non-alcohol, non-toxic, and inflammable

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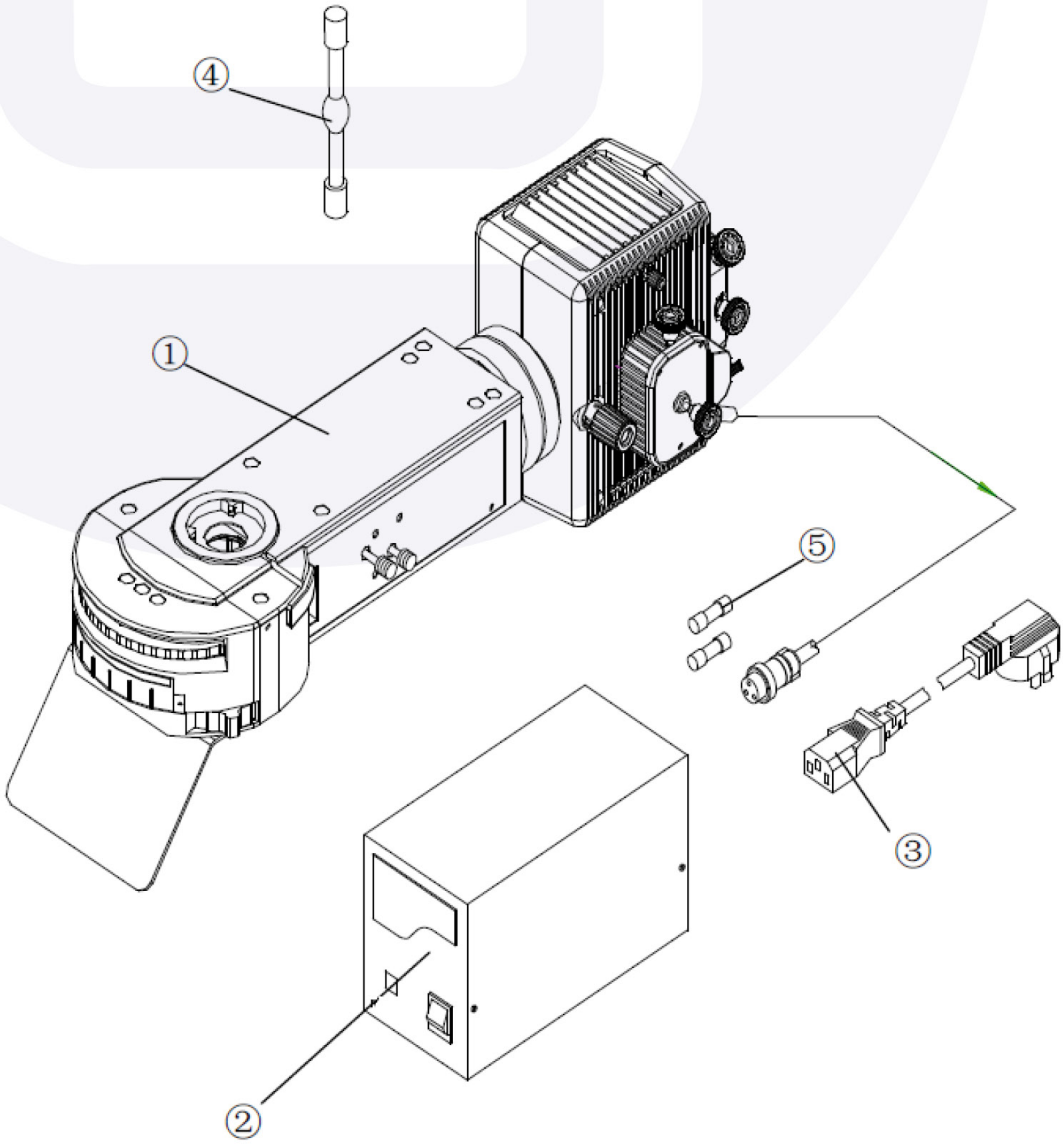
3. Do not disassemble any part of the power supply unit as malfunction or damage may occur
4. In order not to impair the safety of the equipment, replace the 100W HG Lamp when the counter of power supply indicates “100.00” hours. To prevent any hazard, always turn the main switch on the power supply unit to “O” (OFF), unplug the power cord from the mains outlet, and wait for at least 10 minutes before replacing the 100W HG lamp. High-pressure gas is sealed within the mercury vapor100W Hg lamp. Thus, if it is continued to be used past its service life expectancy, the glass tube may deform and may sometimes rupture, even explode

4. Components

1. Main body of the epi-fluorescent attachment
2. Power supply unit
3. Power cord (please use the power cord provided by Euromex)
4. Mercury vapor100W Hg lamp
5. Fuses (8A)



5. Assembly of the fluorescent microscope

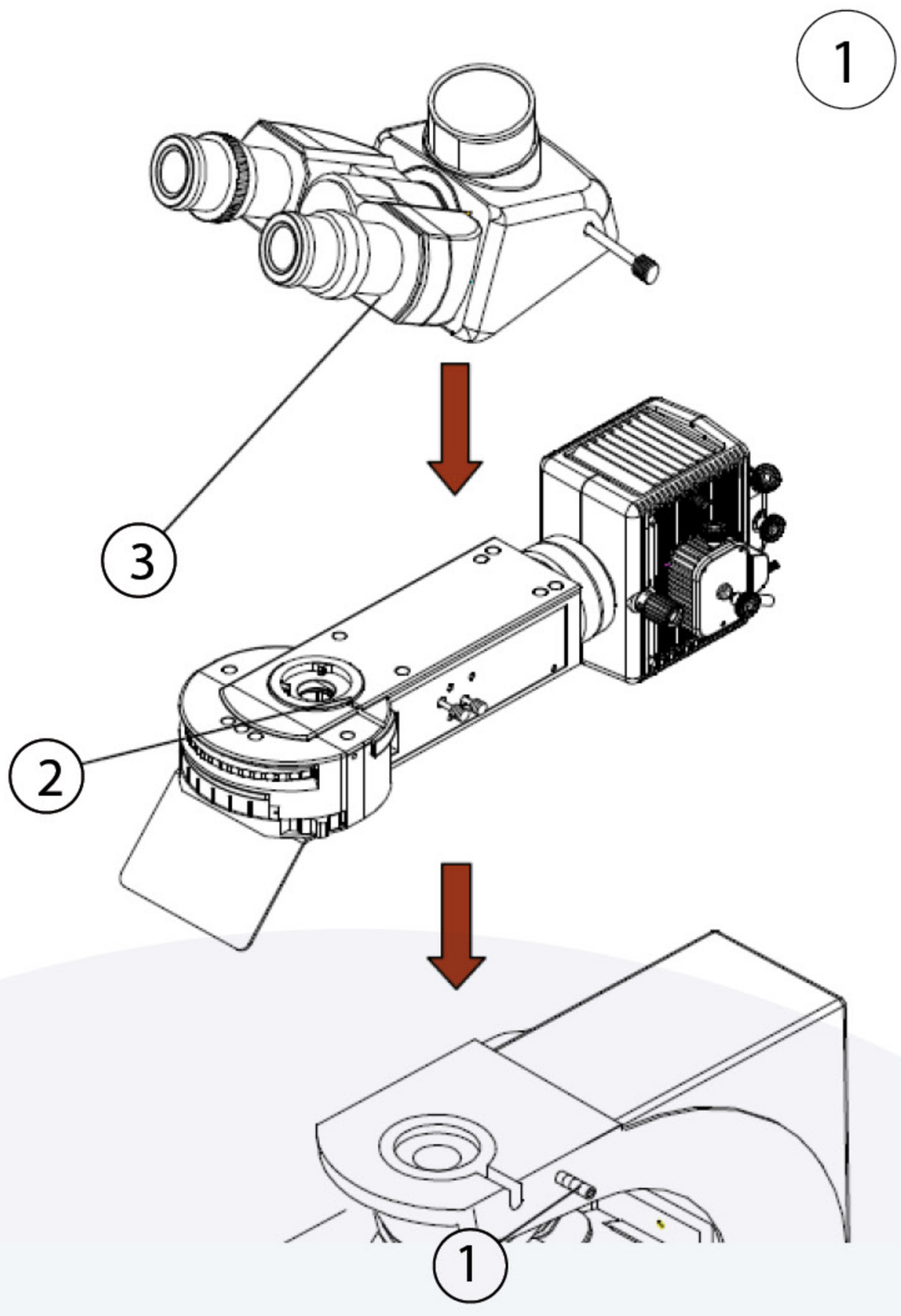
(fig. 1)

A. Loosen the setscrew (1) and take the bino or trinocular viewing head from the body of the microscope. (no numbers indicated on the image)

B. Insert the epi-fluorescent attachment into the microscope correctly and tighten the setscrew (1) until it is installed firmly. (no numbers indicated on the image)

C. Insert the viewing head (3) into the epi-fluorescent attachment correctly and tighten the setscrew (2) until it is installed firmly. (no numbers indicated on the image)

D. Place the objectives (if not factory pre-installed by Euromex)



5.1 Mounting the mercury bulb

(fig. 2 and fig. 3)

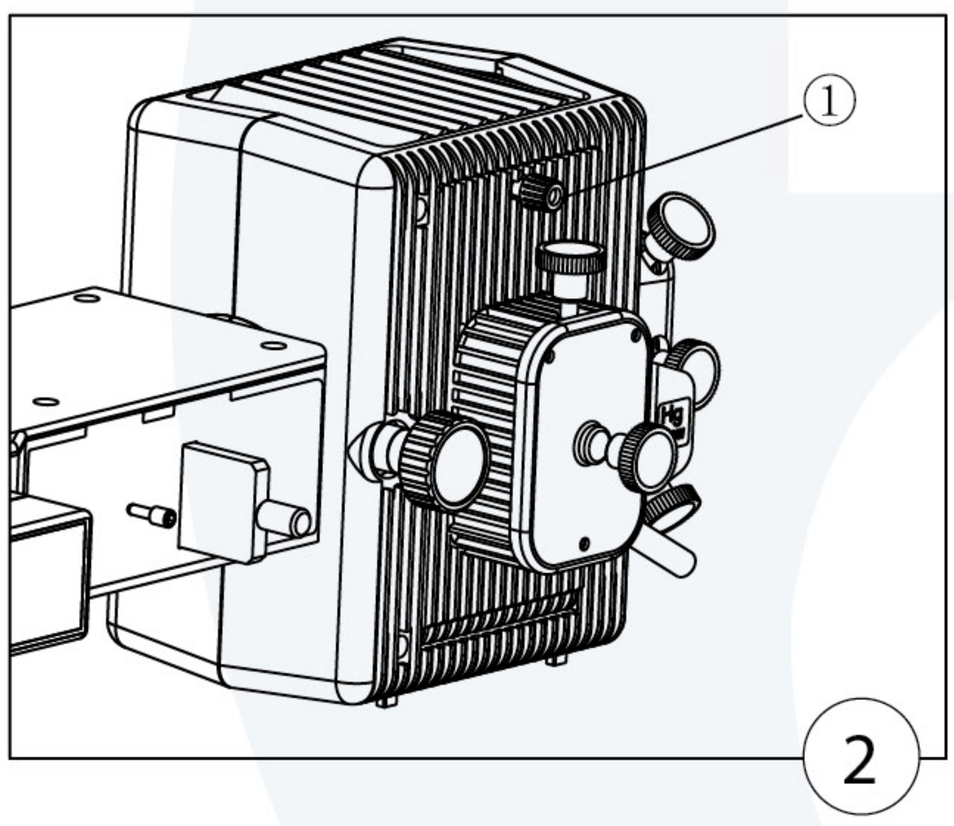
A. Loosen the lamp socket clamping screw (1), and remove the lamp socket (fig.3)

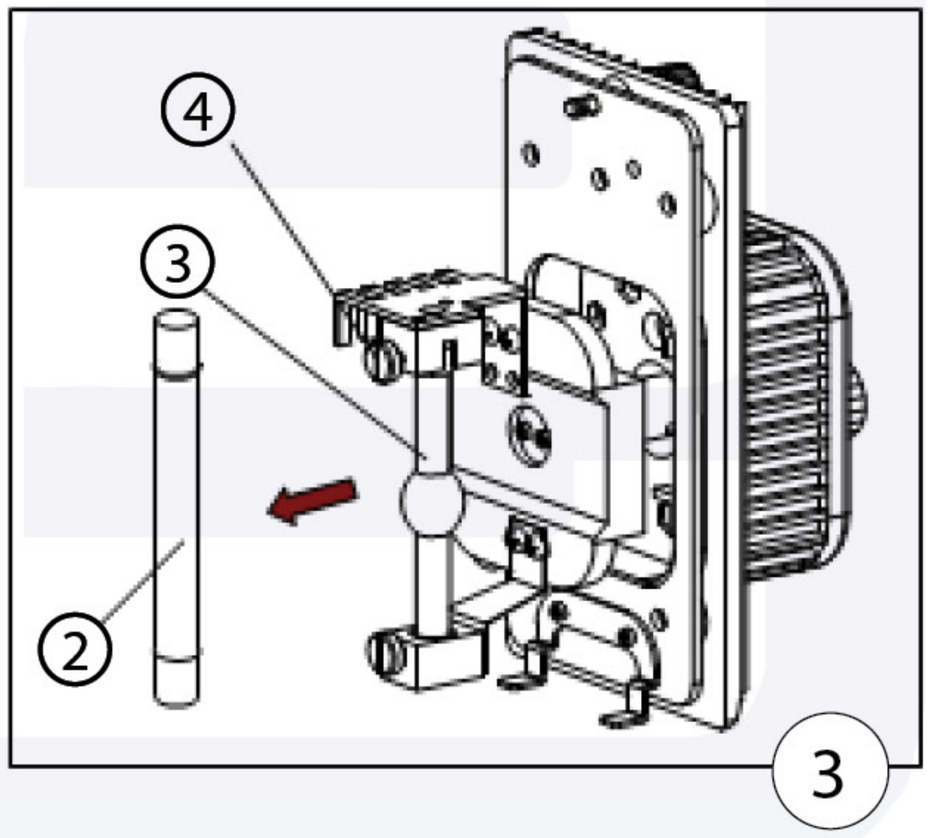
B. After removing the foam backstop (2), securely attach the + pole of the specified mercury bulb (3) to the lower mount and the - pole to the upper mount, then tighten the socket clamping screws (4)

C. Close the lamp socket with lamp into the original position and tighten the socket clamping screw (1)

- Be sure to use an original 100W bulb (lamp)
- Never subject the lamp to excessive force when mounting the mercury bulb
- Be careful and avoid leaving fingerprints or dirt on the mercury bulb. Fingerprints may cause distortion in the glass which could result in a ruptured lamp. If stained, clean by wiping gently with gauze, slightly moistened with a mixture of ether (70%) and alcohol (30%)

Note: to prevent any hazard, always turn the main switch on the power supply unit to "O" (OFF), unplug the power cord plug from the mains outlet, and wait for at least 10 minutes before replacing the lamp





5.2 Mounting filter blocks

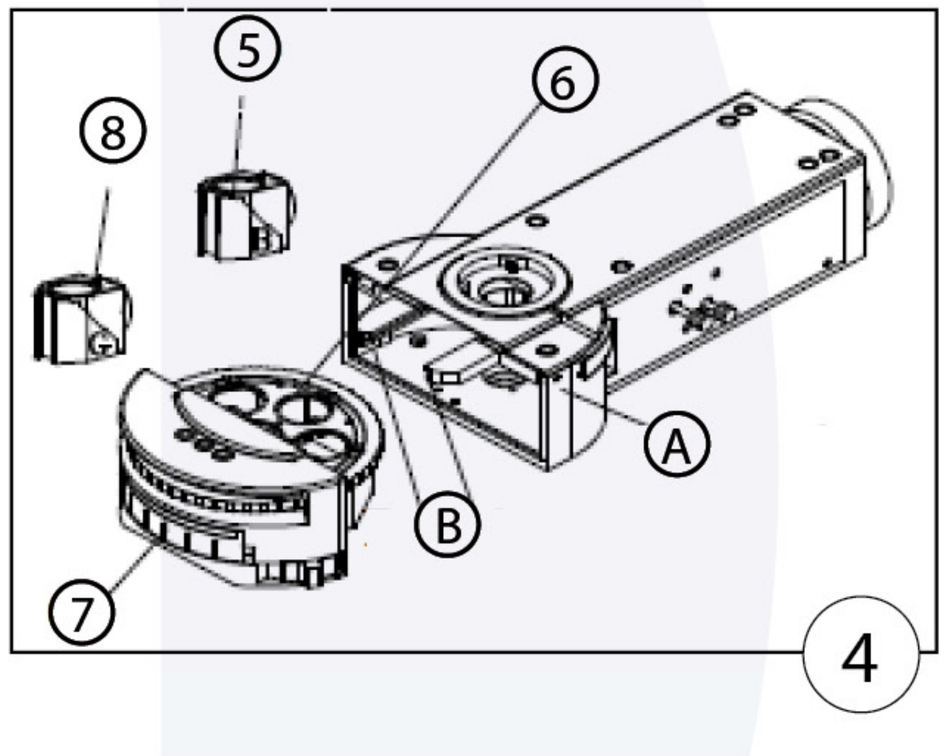
(fig. 4 and fig. 5)

A. Unscrew the hexagon bolt (A) with the a screwdriver and take out the front part of the fluorescence attachment(filter block turret (6))

B. Put the filter block turret (6) on its back, several metal shields (9) are visible. Loosen and take out one of the metal shields by unscrewing the screw (10)

C. Mount the fluorescence filter block (8) and tighten the bolt. Beside the bolt, you can see a number on the turret indicating the fluorescence filter block. This identifies the position for putting a label on the front side of the turret. Mount other filter blocks in the same way

D. Push the complete filter block turret back into the rail slot (B) and tighten the hexangular screw to finalize this procedure



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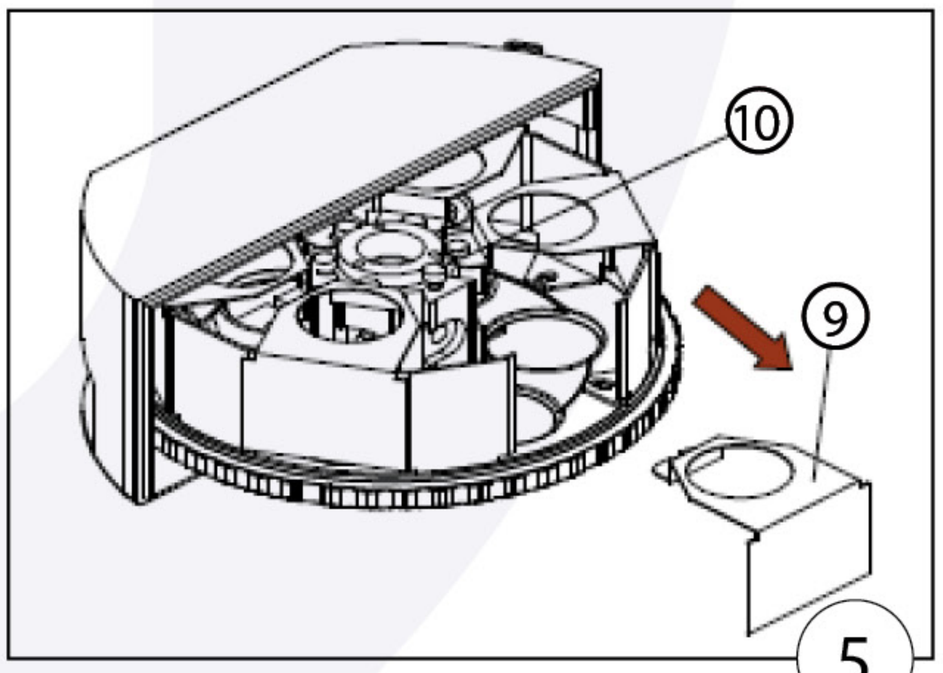

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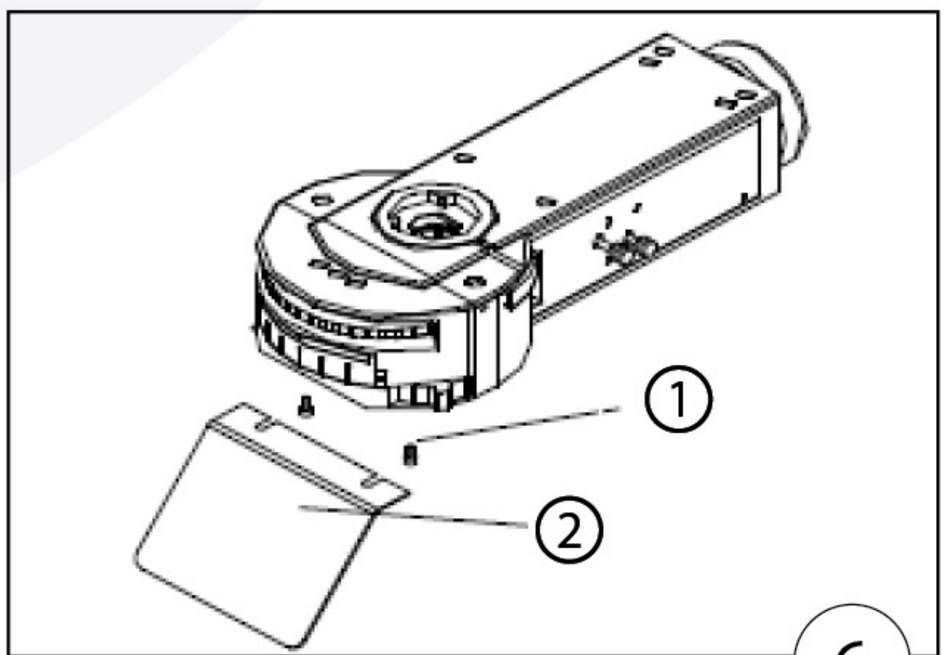
5.3 Mounting the UV protection shield

(fig. 6)

Install the UV protection shield (2) on the attachment by tightening the screw (1)



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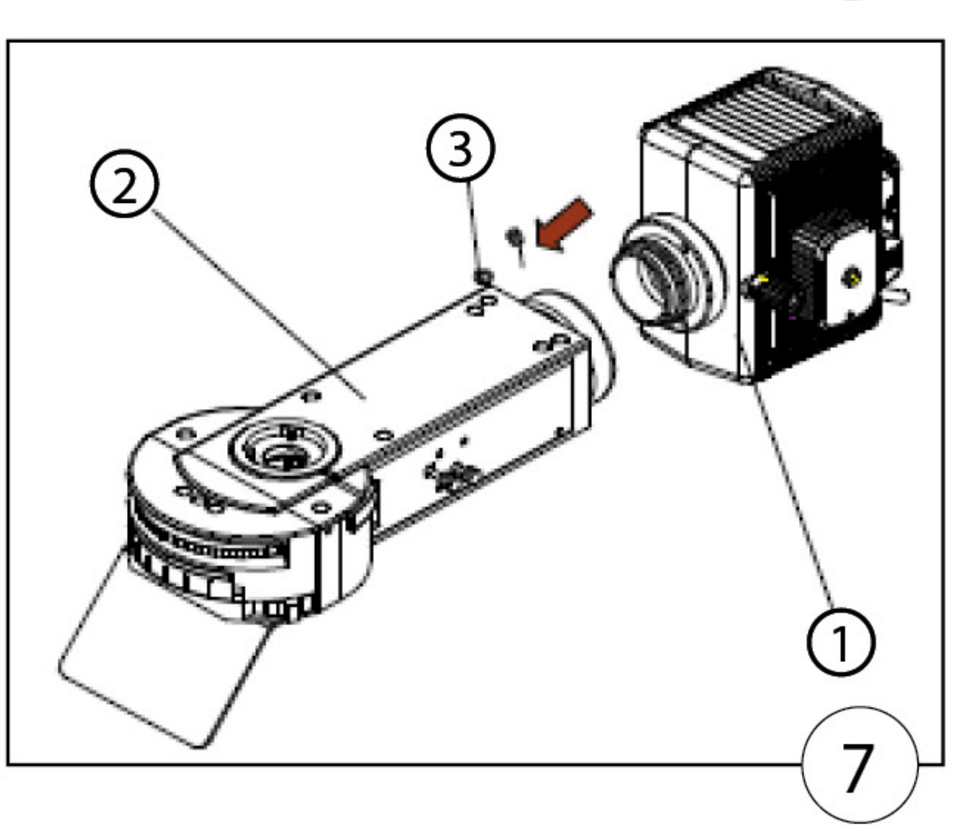
6.4 Assembly of the fluorescent attachment

(fig.7)

Mount the lamp housing (1) into the other end of the attachment (2) and fix it with two screws (3)



7

5.5 Cable and cord connections

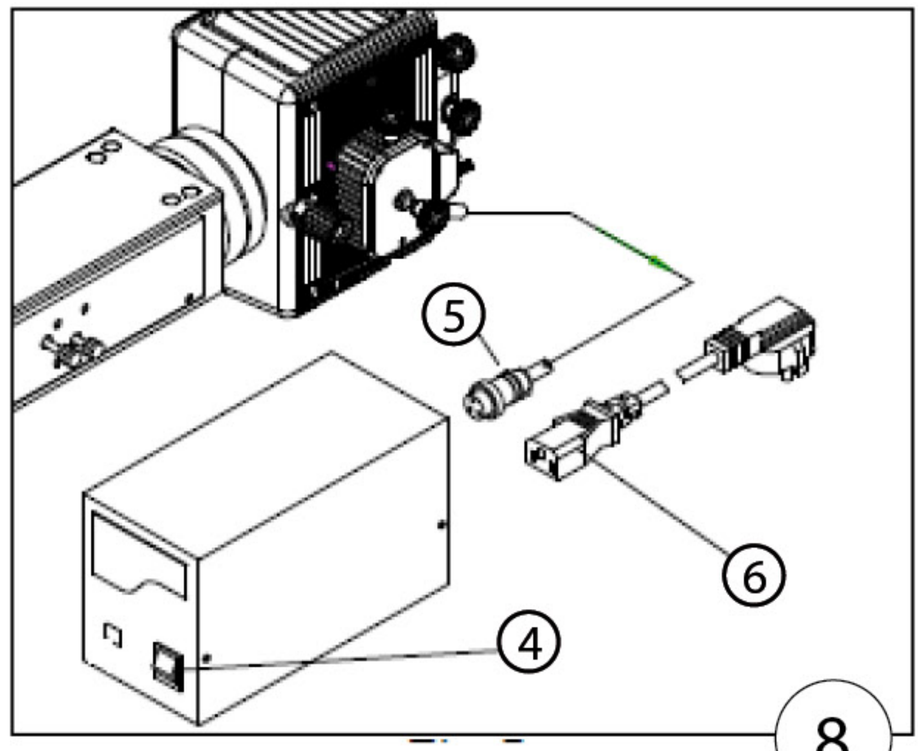
(fig.8)

A. Make sure that the main switch (4) of the power supply is set to "O" (OFF) before connecting cables. The power cord should not be connected yet.

B. Plug the connector (5) from the lamphouse securely into the connector on the power supply unit and make sure the cord is correctly connected

C. Connect the power cord connector (6) into connector on the power supply unit and make sure the cord is correctly connected

- Verify that the voltage and the frequency of the AC mains outlet match the setting of the voltage switch and the frequency switch on the rear of the power supply units. Improper setting may degrade burner performance, or in the worst case (although very rare) cause the burner to explode
- It is recommended to use the power cord provided by Euromex. The same type of power cord should be used if you lose or damage the old one



8

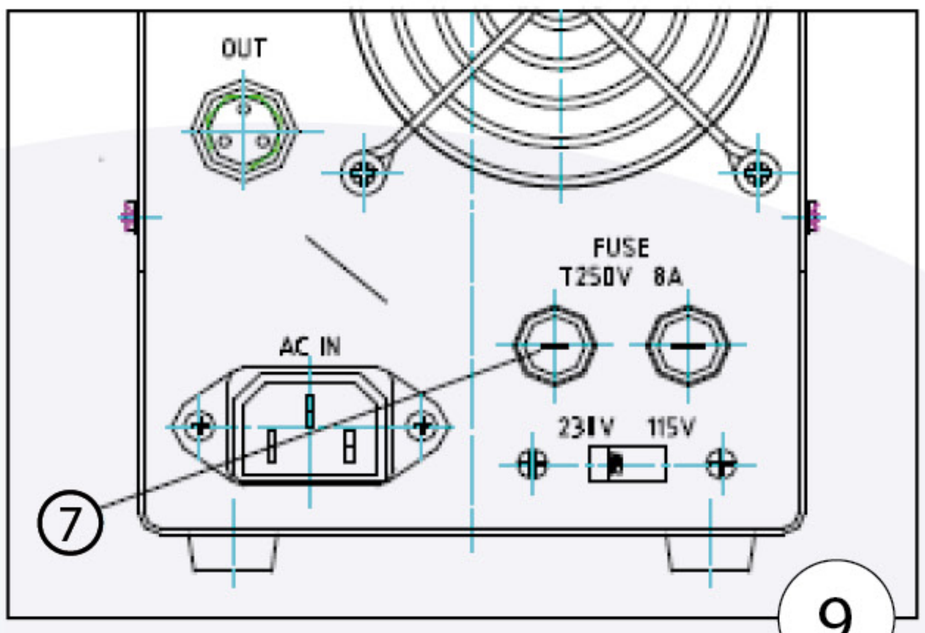
5.6 Fuse replacement

(fig.9)

A. Set the main switch (4, fig. 8) to "O" (OFF) and unplug the power cord before replacing a fuse

B. Using a flat screwdriver, remove each of the fuse holders (7) by tuning it counter- clockwise and pulling it out

C. Replace both fuses with new ones



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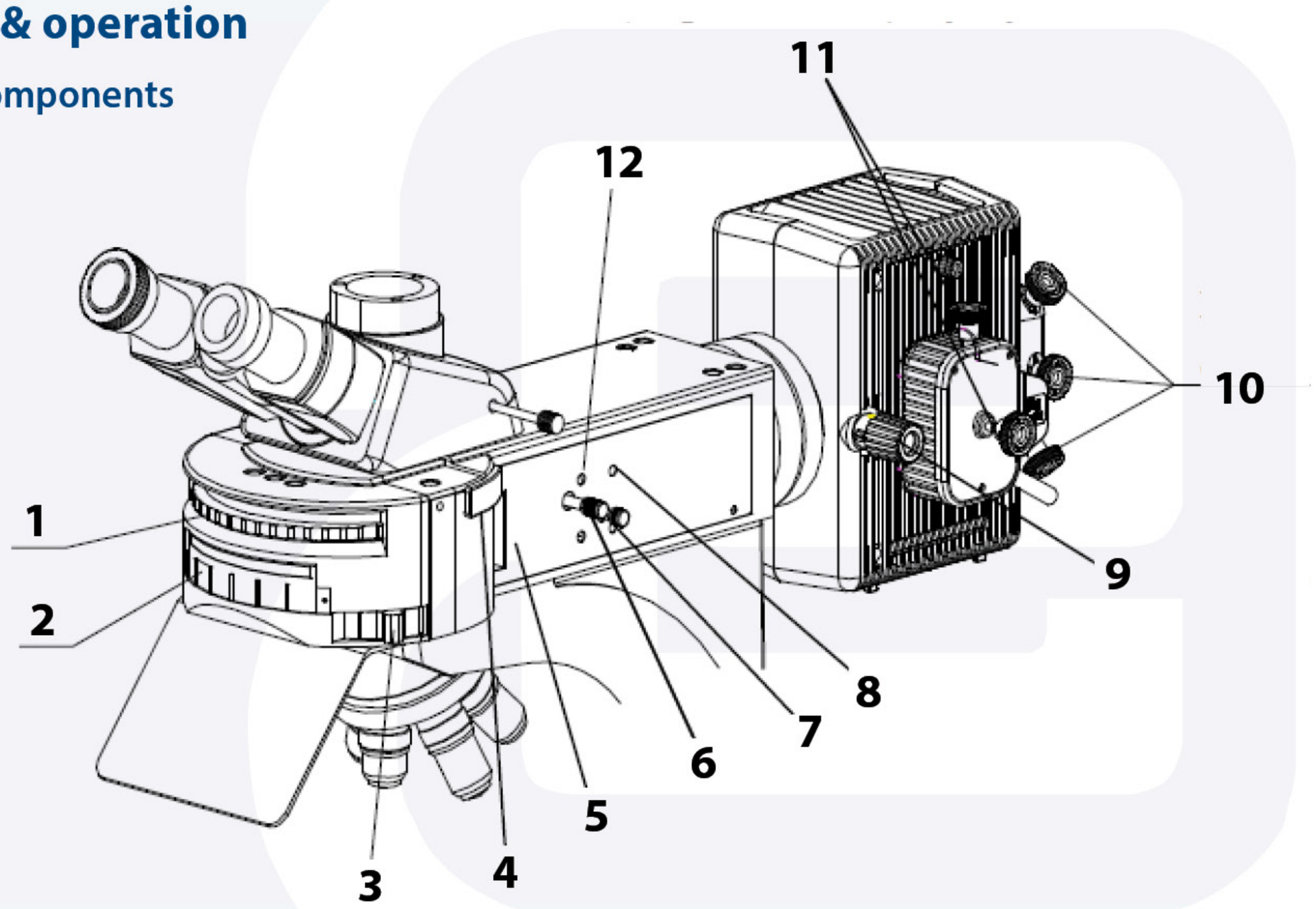
Note: Always use the designated fuses (8A). Make sure the voltage of the fuse matches the voltage of the AC mains outlet

6. Adjustment & operation

6.1 Name of the components

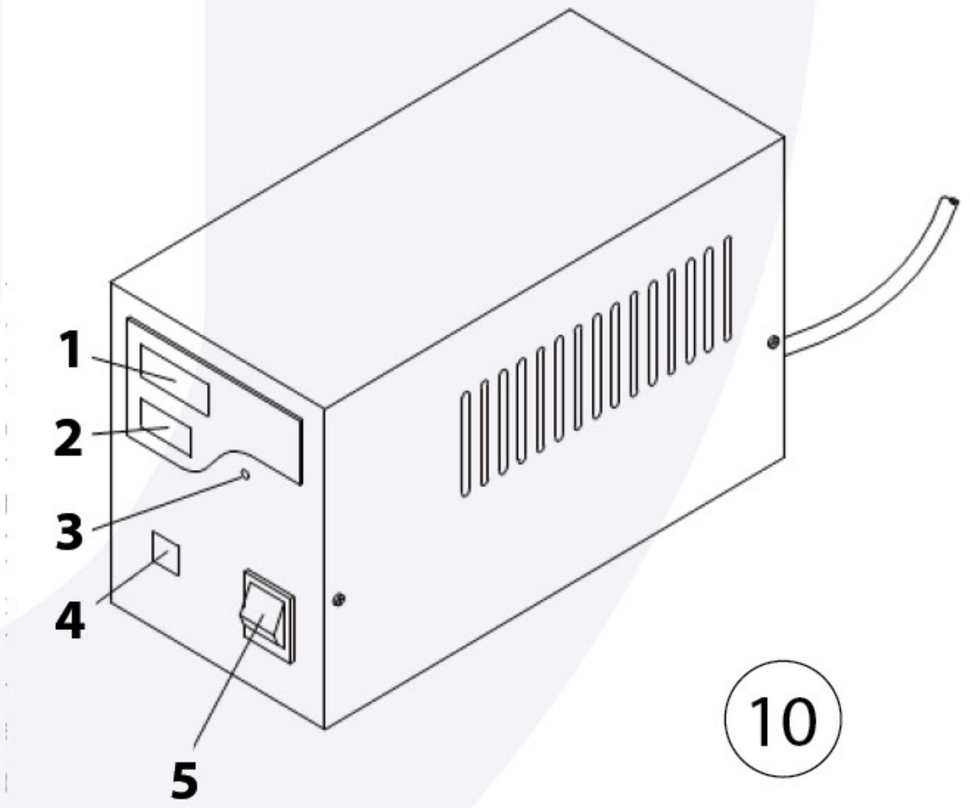


1. Filterblock turret	**7.** Aperture diaphragm lever
2. Filterblock label	**8.** Aperture diaphragm centering screw
3. Light shutter	**9.** Collector adjustable knob
4. Slot for slider	**10.** Mirror centering knob
5. Slot for slider	**11.** Lamp centering knob
6. Field diaphragm lever	**12.** Field diaphragm centering screw

- The reflected light fluorescent mirrors for B-excitation and G-excitation have been installed in the filter turret at the factory
- More filters and filter holders are optional

(fig. 10)

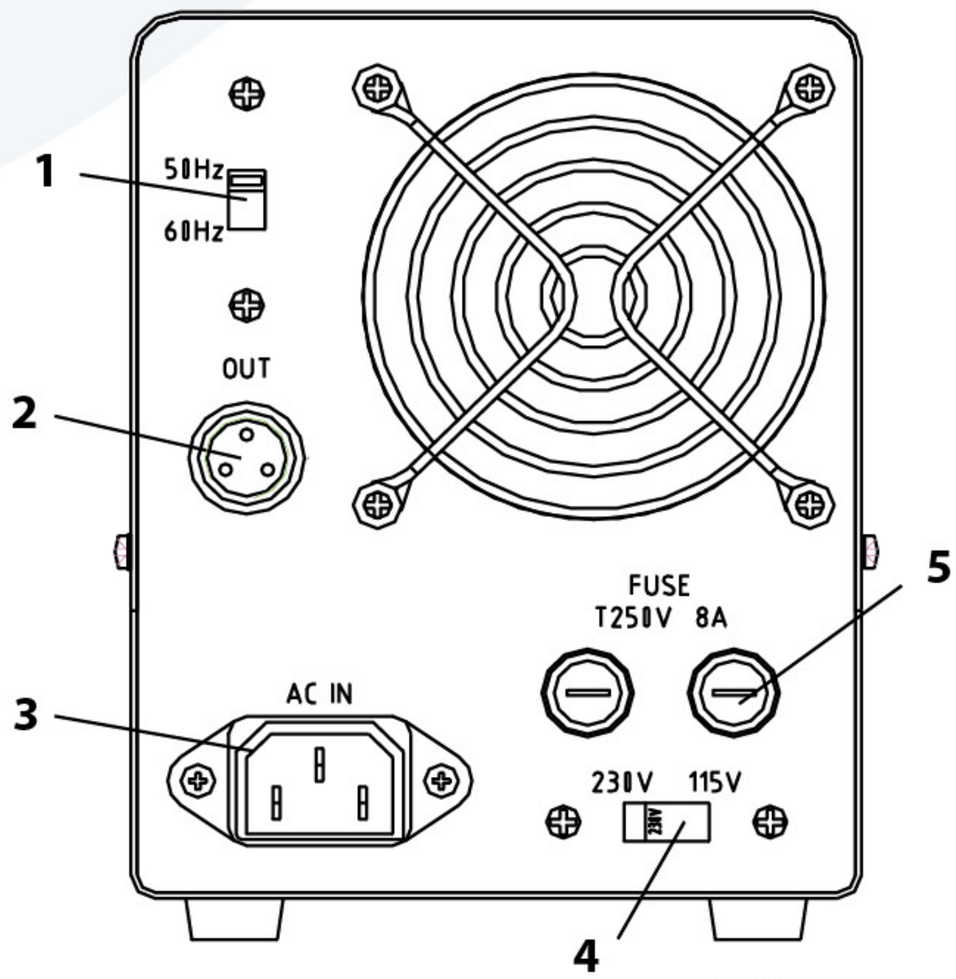
1. Hour counter
2. Current indicator
3. Reset button
4. Trigger
5. On/off switch



10

(fig. 11)

1. Frequency switch
2. Input to lamp house cable
3. Power cord connector
4. Voltage switch
5. Fuse holders



11

6.2 Operation

6.2.1 Preparation

1. Verify that the voltage and the frequency of the AC mains outlet match the setting of the voltage switch and the frequency switch on the rear of the power supply units
2. Make sure the cords are connected firmly
3. When it is required to interrupt observation for a short period, use the shield in the holder. (Repeatedly turning the mercury vapor100W Hg lamp on and off will shorten its life span considerably)
4. Precautions on the specimen color fading:

   The system employs high-intensity excitation light to enable bright observation of dark fluorescent specimens. As a result, if high-power objectives are used frequently, color fading of the specimen occurs early, degrading the view (contrast) of fluorescent images. So it is effective to use the shutter frequently to avoid illuminating the specimen for a longer period than necessary

6.2.2 Switch on the power supply

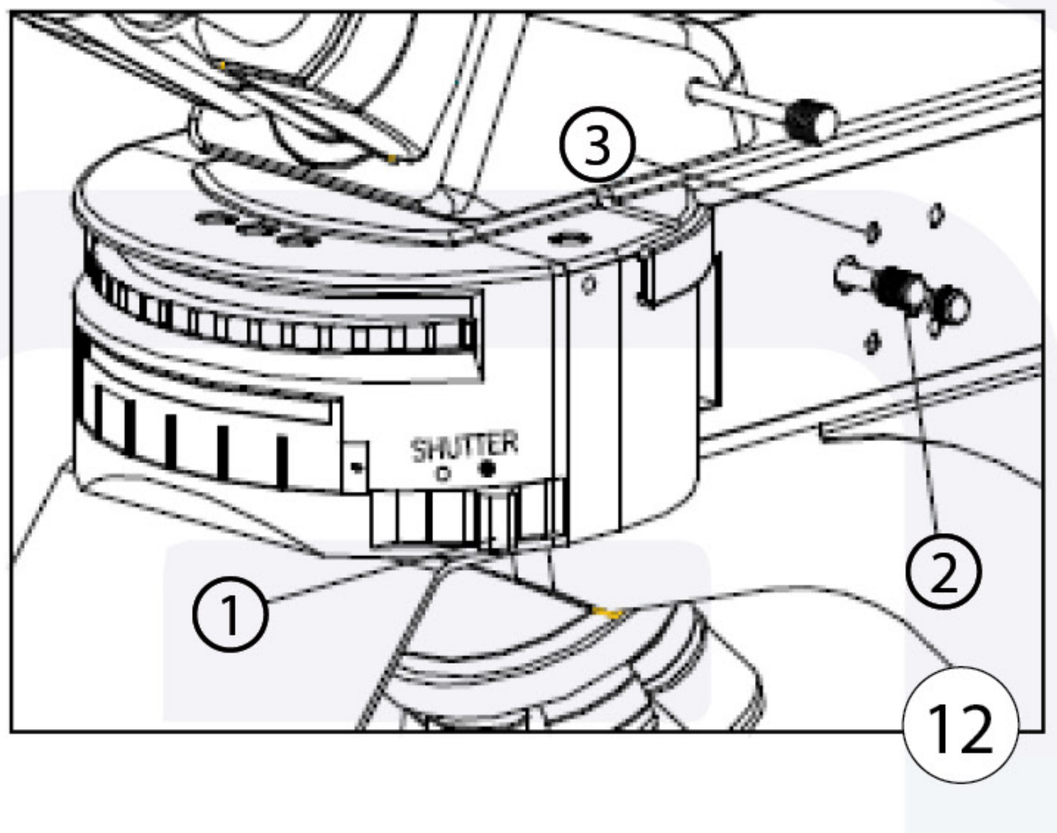
Set the main switch of the power supply unit to "1" (ON). The bulb will stabilize in 5 to 10 minutes after ignition

- Some mercury vapor100W Hg lamps may not ignite the first time the power is turned ON due to variance in production. If this occurs, set the main switch to "1" (ON), then press the starter reset switch on the front panel of the power supply between 1 to 4 seconds to ignite the 100W HG Lamp. Repeat if necessary
- To avoid shortening the 100W HG lamp life span, do not turn the 100W HG lamp off within 15 minutes after ignition
- The 100W HG lamp cannot be re-ignited for about 10 mimutes, that is, until the mercury vapour inside it has cooled down and condensed to liquid
- Ensure that the hour counter is reset to "000.00" after replacement of the 100W HG lamp. Resetting is done by inserting a thin object such as a paperclip tip into the reset hole on the front panel of the power supply unit to press the internal switch

6.2.3 Centering the field Iris diaphragm

(fig. 12)

1. Switch the light shutter (1) to "●"position
2. Revolve filter block turret to engage the one of the fluorescence filter blocks in the light path
3. Switch the light shutter (1) to "**O**"position.
4. Engage the 10X objective in the light path, place a specimen on the stage and bring into approximate focus
5. Pull the field iris diaphragm lever (2) out until the iris diaphragm closes to his maximum
6. Use the hexangular screwdriver to adjust the two field iris diaphragm centering screws alternately to move the image of the diaphragm to the center (fig. 13 shows the adjustment of diaphragm)
7. Push in the field diaphragm lever to open the diaphragm. If this makes slight deviation noticeable, adjust the centering again
8. Open the diaphragm until the iris diaphragm has disappeared just outside the field of view

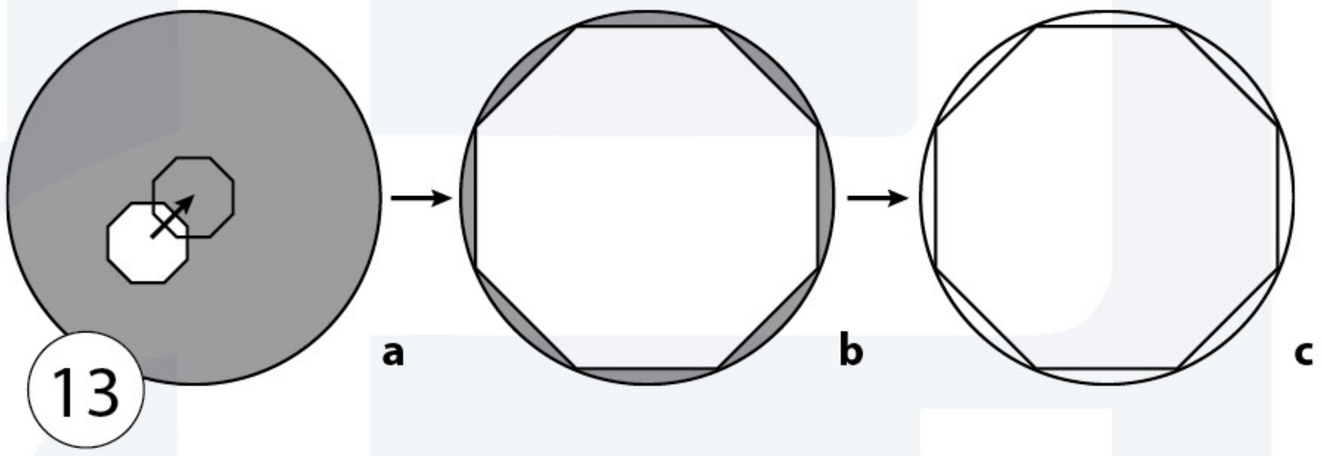


6.2.4 Adjusting the field iris diaphragm

(fig.13)

The field diaphragm adjusts the diameter of the illuminating beam to obtain good image contrast

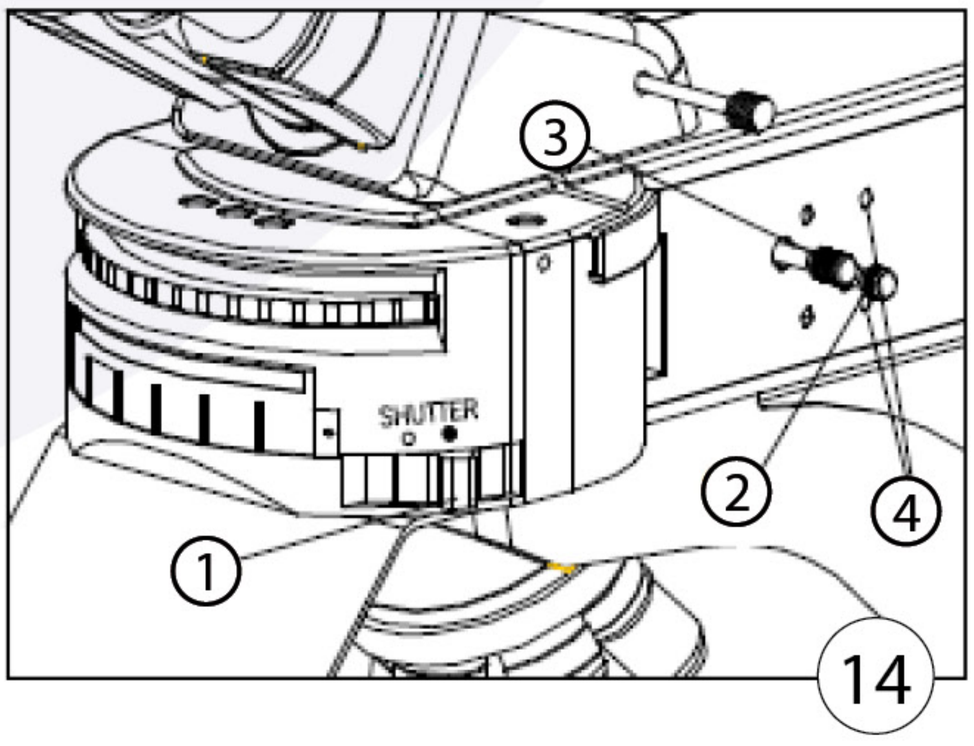
Keeping the field diaphragm stopped down to the smallest required area for each observation makes it possible to prevent color fading of areas outside the observation target region



6.2.5 Centering the aperture iris diaphragm

(fig. 14)

1. Switch the light shutter (1) to "●"position to shut off the light path
2. Revolve the filter block turret to engage one of the fluorescence filter blocks into the light path
3. Switch the light shutter (1) to "**O**" position to open the light path
4. Engage the 10X objective in the light path, place a small white paper with a cross on the stage and bring into approximate focus
5. Move the cross of the centering plate to the center of the field of view
6. Remove any of objectives from the light path
7. Pull out the aperture diaphragm lever (2) to adjust the aperture iris diaphragm to the smallest diameter
8. Pull out the field iris diaphragm lever (3) to adjust the field iris diaphragm to the smallest diameter. The image of the aperture iris diaphragm can be found on the centering plate
9. Adjust the aperture iris diaphragm centering screws (4) with attached wrench to superimpose the image of aperture iris diaphragm on the cross of centering plate



6.2.6 Adjusting the aperture iris diaphragm

(Fig. 14)

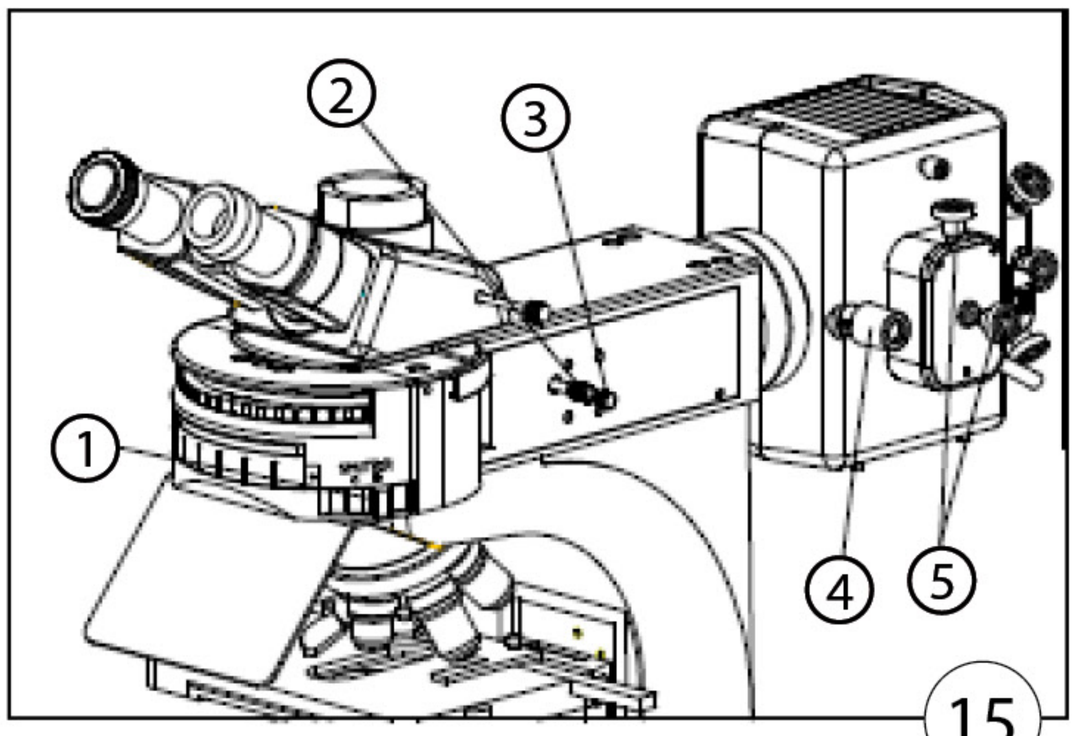
The aperture iris diaphragm adjusts image resolution and contrast

- For fluorescent observation, push in the aperture iris diaphragm lever (3). Both ND filter and small aperture diaphragm can help weaken the intensity of the excitation light to delay color fading of the specimen
- According to the objective in use, adjust the iris diaphragm using the field iris diaphragm lever (3) until the iris diaphragm has disappeared just outside the field of view

6.2.7 Centering the mercury burner

(fig. 15 - 16 - 17)

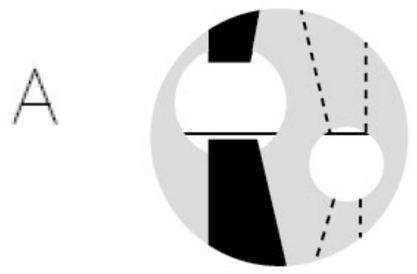
Before proceeding to center the burner, wait for the arc image to stabilize to protect against glare during arc image centering, it should be viewed across the excitation light protective shield

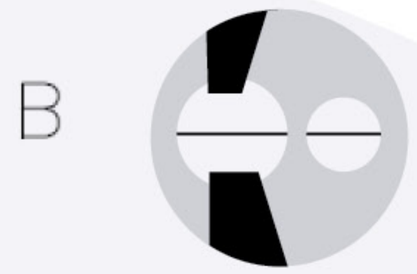


15

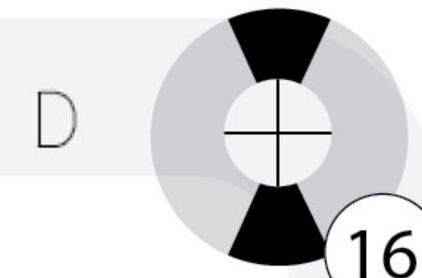
1. Switch the light shutter (1) to" ●" position to shut off the light path
2. Revolve the filter block turret to engage the green or blue excitation filter block into the light path. If U/V excitation filter block is used, be sure to use the protective shield
3. Revolve the nosepiece to engage 10X objective into the light path. Place the centering plate on stage, through transmission observation; adjust the stage until the cross is in the center of the field of view
4. Remove the objective from the revolving nosepiece position and engage this position in the light path
5. Pull out the field iris diaphragm lever (2) to close the iris diaphragm and push in the aperture iris diaphragm lever (3) to open the iris diaphragm to the limit
6. Switch the light shutter (1) to "**O**" position to open the light path
7. Turn the collector adjusting knob (4) to project the arc image on the centering plate and sharpen it (A)
8. Turn the burner adjusting knob (5) to move the arc image and the mirror reflected arc image in the symmetrical position (B)
9. Adjust the mirror focusing knob (6 fig. 17) to sharpen the mirror reflected arc image (C)
10. Turn the burner adjusting knob (5) to overlap the arc image with the mirror reflected arc image (D)

- Turn the collector adjusting knob (4) to make the field of view as bright and as regular as possible
- Maintain this condition until the next time the burner is replaced


A


B


C


D

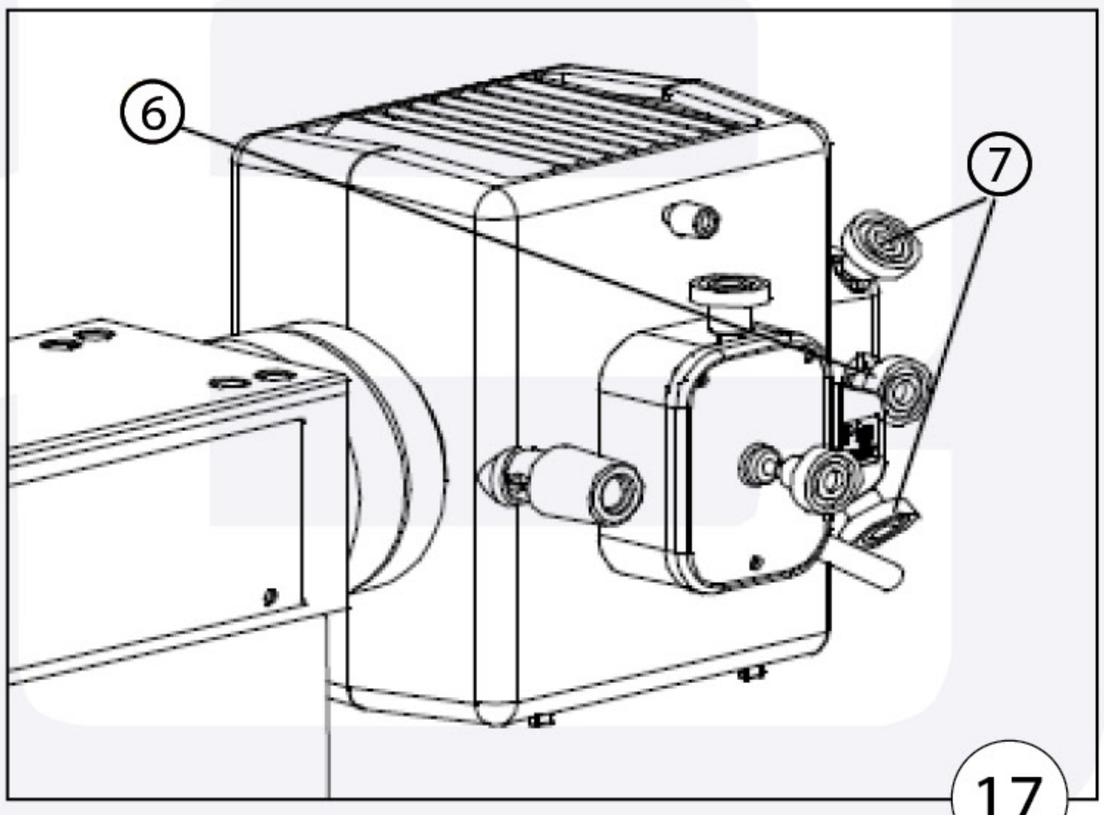
16

6.2.8 Centering the mirror reflected image

(fig. 17)

The mirror reflected image has been centered before leaving the factory. Do not adjust the knob (7) if not necessary. Only when the burner has been centered precisely, can the knob (7) be adjusted

Note: once the knob is adjusted, the reflected mirror cannot be reconverted to the status when leaving the factory



17

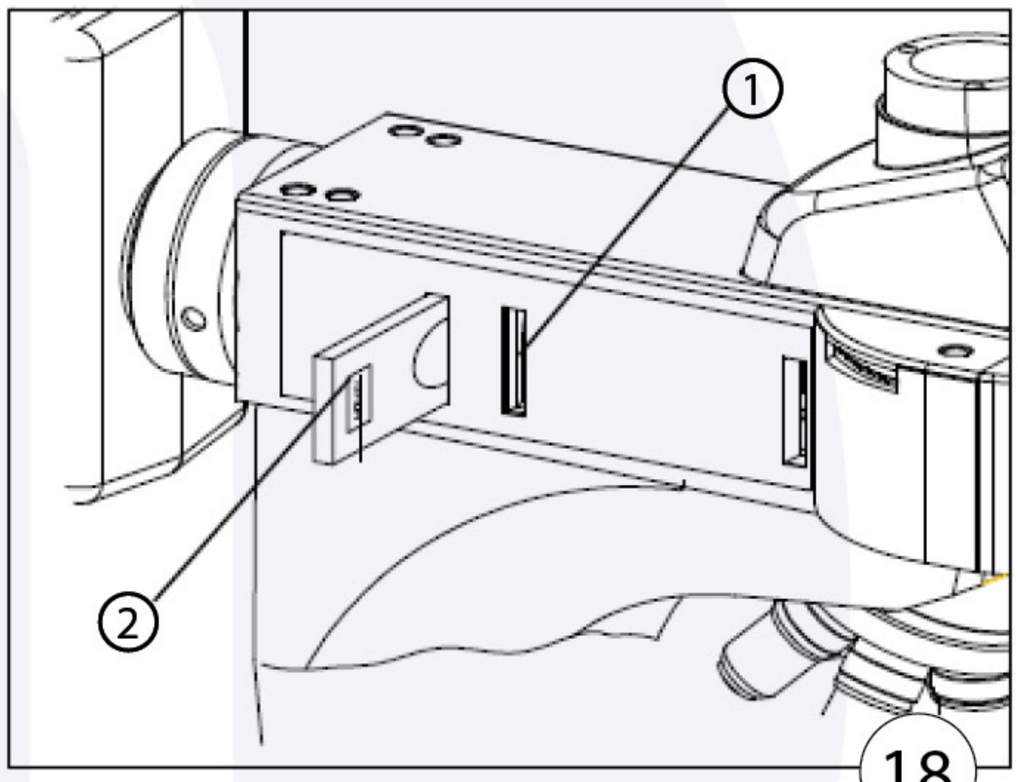
Knob control: fig. 17

1. The middle knob (6)is the mirror reflected image focusing knob which can sharpen the reflected image
2. The knobs at both sides (7) can adjust the up/down or left/right position of the mirror reflected image

6.2.9 Mounting ND filter

(fig. 18)

1. The ND filter can reduce the excitation light intensity to delay color fading of the specimen. Use the ND filter as far as this does not hinder observation
2. There are two kinds of ND filters for option:
   ND6 and ND25 for position (1) and (2) respectively (fig. 18).
   To prevent the ND filter from being damaged, insert the filter with the indication surface facing the observation side
3. When the filter is inserted, there are two audible clicks.
   The filter is in the light path on the second click



18

Note: When the mercury burner is lit for a long period while an ND filter is inserted, the filter and its metallic frame would become very hot. Take care not to burn yourself. When replacing the ND filter, be sure to wait until the ND filter cools down

6.2.10 Note on the hour counter

(fig 19)

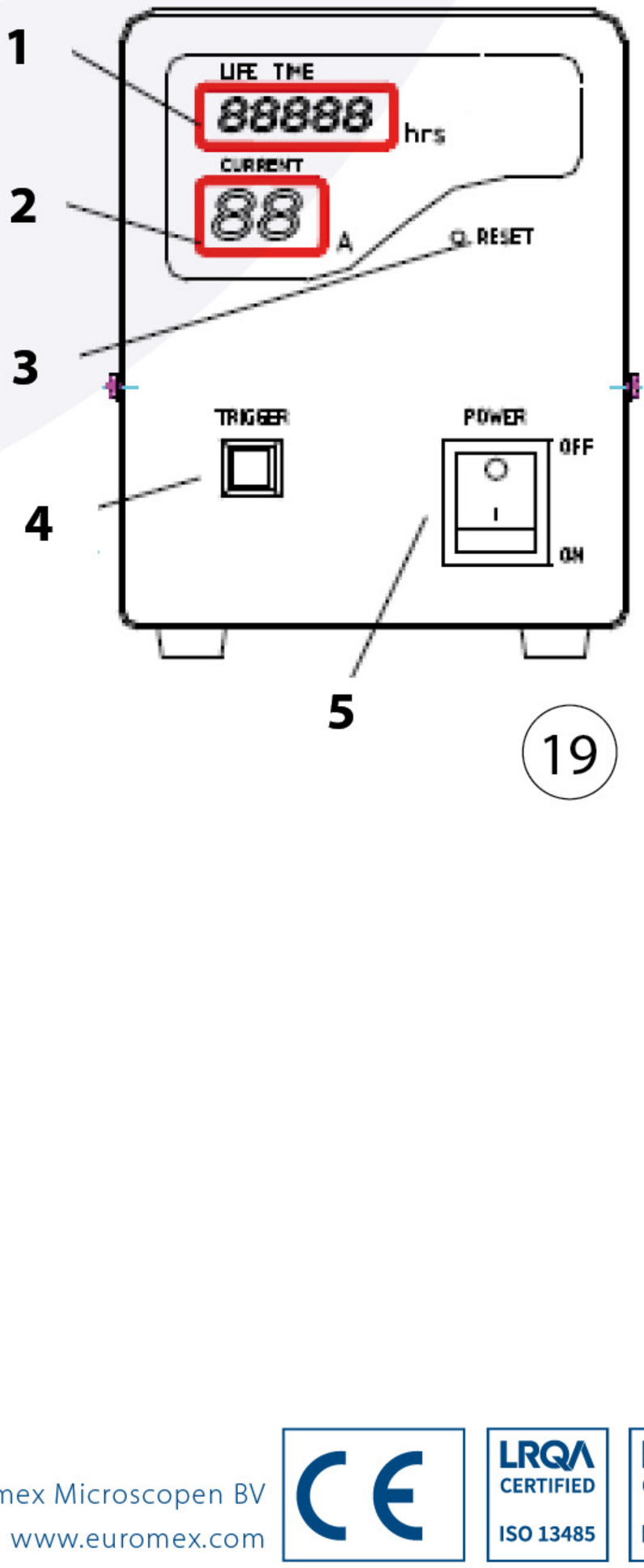
When the hour counter indicates "100.0":

- Set the main switch to "**O**"(OFF) for safety
- Wait for at least 10 minutes
- Then replace the lamp burner after making sure that the lamp housing has cooled down

A mercury burner contains high-pressure gas inside

Note: If the burner is used beyond its service life, stress may accumulate inside the burner, and in the worst (but very rare) case, the burner could explode

After replacing with a new burner, reset the hour counter, be sure to press the reset switch until "000.00" is displayed. (fig.19)



19

1. Hour counter
2. Current meter
3. Reset button
4. Trigger
5. On/off switch

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