OPTIKA
MICROSCOPES
ITALY

Ver. 5.0.0

XDS-3FL

OPERATION MANUAL

OPTIKA MICROSCOPES - ITALY
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CONTENTS

This microscope is a scientific precision instrument designed to last for many years with a minimum of maintenance. It is built to high optical and mechanical standards and to withstand daily use.
Optika reminds you that this manual contains important information on safety and maintenance, and that it must therefore be made accessible to the instrument users.
Optika declines any responsibility deriving from instrument uses that do not comply with this ma-nual.

Safety guidelines

This manual contains important information and warnings regarding safety about installation, use and maintenance of the microscope. Please read this manual carefully before using the equipment. To ensure safe use, the user must read and follow all instructions in this manual. OPTIKA products are designed for safe use in normal operating conditions. The equipment and accessories described in the manual are manufactured and tested according to industry standards for safety instrumentation laboratory. Misuse can cause personal injury or damage to the instrument. Keep this manual at hand close to the instrument, for an easy consultation.

Electrical safety

Before connecting the power cord to wall outlet, ensure that your mains voltage for your region corresponds to the voltage supply of the instrument, and that the illuminator's switch is in position OFF. The user must observe the safety regulations in force in his region. The instrument is equipped with CE safety marking, in any case the user has full responsibility concerning the safe use of that instrument.

Warning/Caution symbols used in this manual

The user should be aware of safety aspects when using the instrument. Warning or hazard symbols are shown below. These symbols are used in this manual.

The instructions on this symbol to avoid possible severe personal injuries.

Warning of use; the incorrect operation on the instrument can cause damages to the person or instrument.

Possibility of electric shock.

Attention: high temperature surfaces. Avoid direct contact.

Technical notes or usage tips.

Connect the mains plug into the socket at the base

WARNING

Make sure, before you turn the illumination on, that the voltage selector is set to the mains voltage for your region.

WARNING

The power cord should be used only on network sockets equipped with adequate grounding.
Contact a technician to check the state of your electrical system. If there is no need to install additional accessories, the instrument is now ready for use. Once positioned and installed with the necessary components, the microscope is ready to be used. Your microscope is a laboratory instrument designed to last. Handle it always carefully and avoid abrupt vibrations or shocks. Always disconnect the power cable from the microscope when not in use for long time, while you clean it or when you perform any maintenance.

WARNING

AVOID DISASSEMBLING THE INSTRUMENT

Do not disassemble the instrument. This entails the cancellation of the warranty and may cause malfunction.

Inverted fluorescence microscope specially suit for research work for activity cell, tissue, fluidness and sediment, especially for biology, cytology, oncology, genetics and immunology etc. It is wildly used in Lab, university, medical, epidemic prevention and so on.

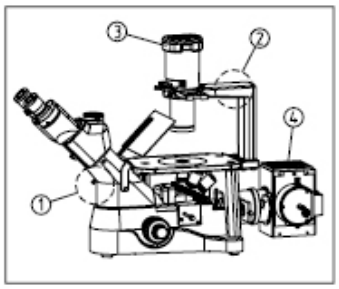


Figure 1

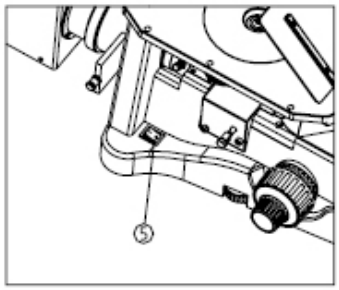


Figure 2

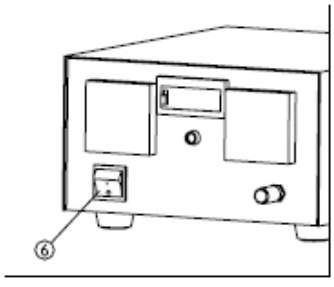


Figure 3

1. Notice:

(1) As the microscope is a precision instrument, a lways operate it with care, avoiding physical shake during the operation.
(2) Do not let the microscope emerge in the sun directly, either not in the high temperature, damp, dusty or acute shake place. Make sure the worktable is horizontal. Following environment is required: Indoor temperature: 5°C~40°C, Max relative humidity:80%.
(3) When moving the microscope, you should use both hands to hold 1 and 2 as shown on figure, and lay it down carefully. (Figure 1)
(4) Fluorescence microscope should be used under dark entironment.
(5) In order to protect eyes, do not stare at fluorescence light directly.
(6) The bulb should be vertical under using, the inclined angle should be less than 15 degrees, otherwise it will make bulb damage.
(7) Fluorescence sample will be faded by ultraviolet radiation, so it can not for long save. Do not expose the sample under fluorescence light for long time, it will be quenched.
(8) When working, the surface of the lamp holder 3 and bulb house 4 will be very hot. Make sure there is enough space (especially its above) for the heat dissipating. (Fig. 1)
(9) Connect the microscope to the land to avoid lightning strike.
(10) Make sure the switch 5, 6 are at "○" position, cut off power supply and wait all parts cool down before replace bulbs, fuse the fuse. It would be better to do so after cooling the bulb and the lamp holder. (Fig. 2, 3)

-Standard bulb:
Fluorescence light: 100W mercury bulb Transmitted light: 6V30W halogen bulb (Philips)
(11) Power supply: 90-240V wildly
(12) Please use the plug provide our company.

2. Maintenance

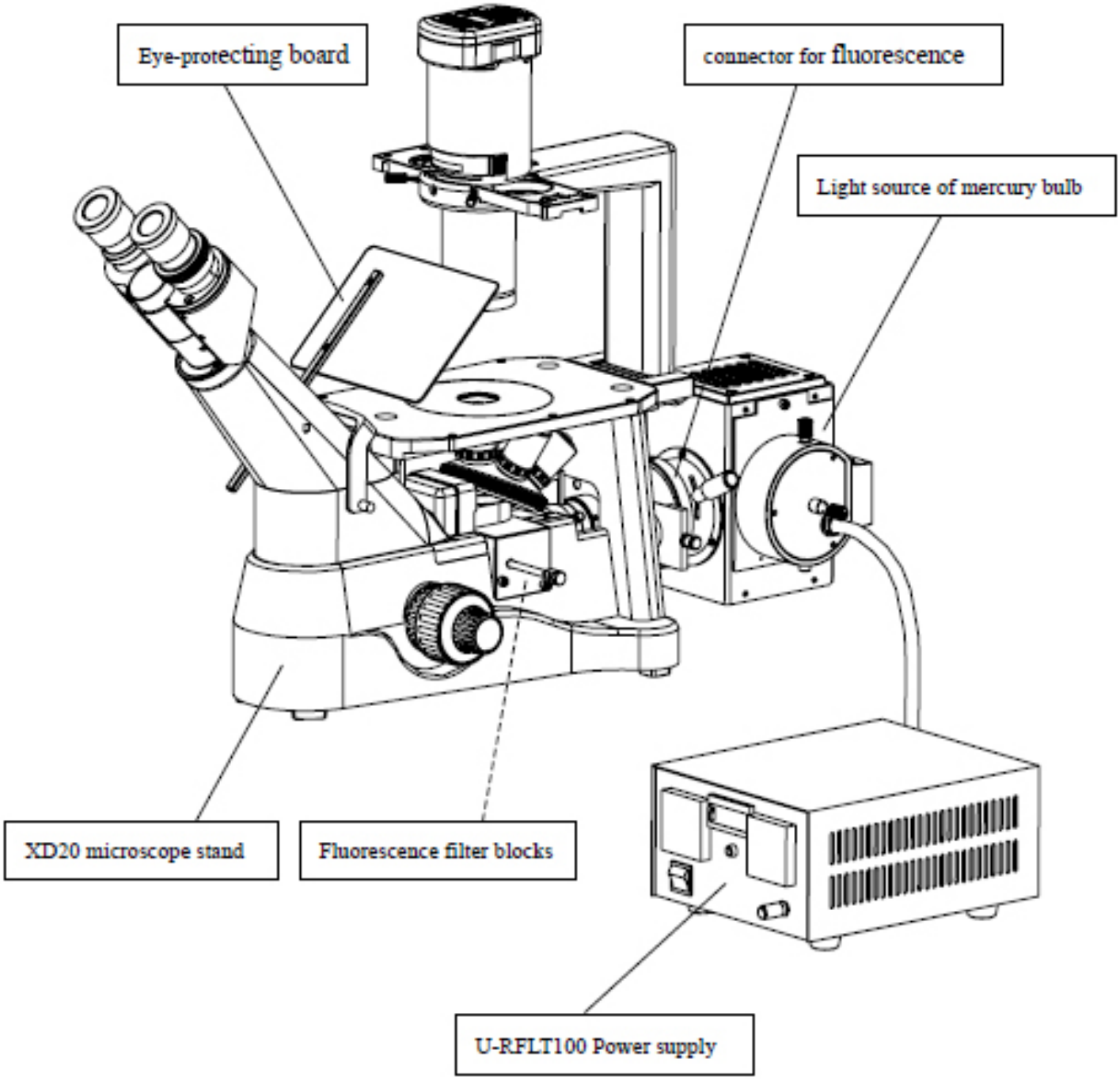
(1) Wipe the lens gently with a soft lens tissue. Carefully wipe off oil or fingerprints on the lens surfaces with tissue moistened with a little of 3:7 mixture of alcohol and ether or dimethy lbenzene.

-Alcohol and ether is flammable. Don't place these chemical near to fire or fire source. For example, when turning on or turning off the electric device, you should use these chemical in a ventilated place.

(2) Don't use organic solution to wipe the surfaces of the other components. Please use the neutral detergent.
(3) If the microscope damped by the liquid, you should cut off the power immediately and wipe it dry.
(4) Never disassemble or service the microscope yourself. It will influence its function or damage it.
(5) After using, cover the microscope with a dust cover.

3. Safety Sign

Sign	Signification
	Hot at surface, do not touch.
	Read manual before using. Faulty operation would lead to person hurt or instrument trouble.
|	Power swatch ON
O	Power swatch OFF

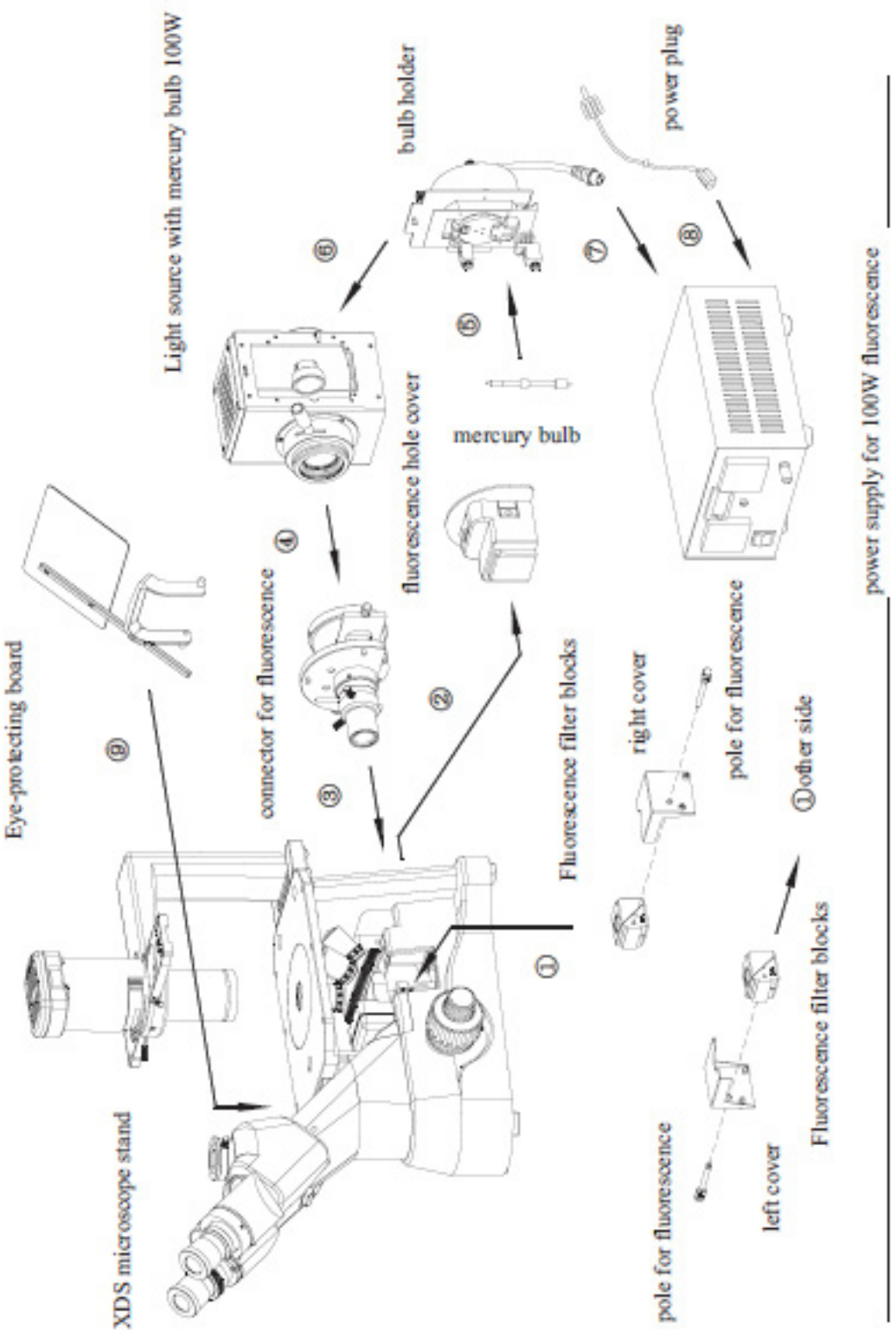

Eye-protecting board
connector for fluorescence
Light source of mercury bulb
XD20 microscope stand
Fluorescence filter blocks
U-RFLT100 Power supply

2.1 Assembling scheme:

Numbers denote the assembling order.

-Before assembling, make sure there is no dust or dirt. Assemble carefully and do not scrap any part or touch the glass face.

-During assembling, please be aware of no scratching and no touching on lenses.



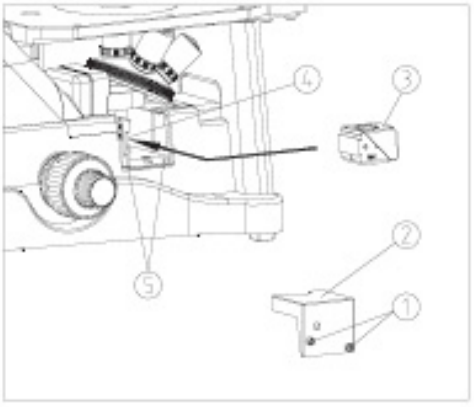


Figure 4

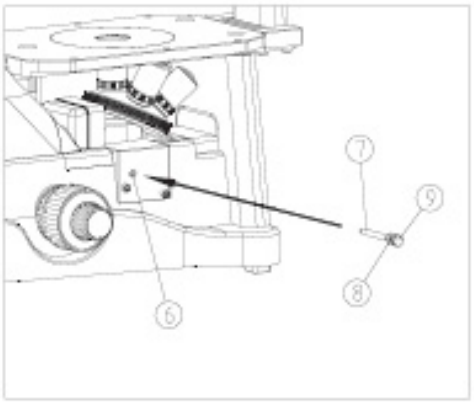


Figure 5

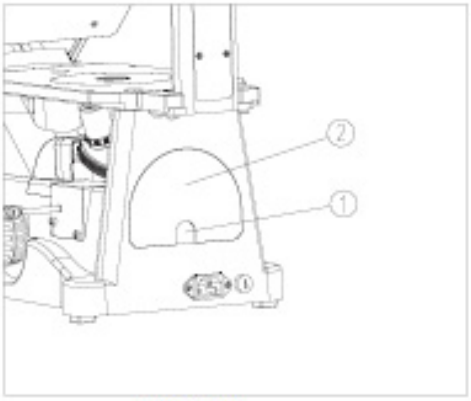


Figure 6

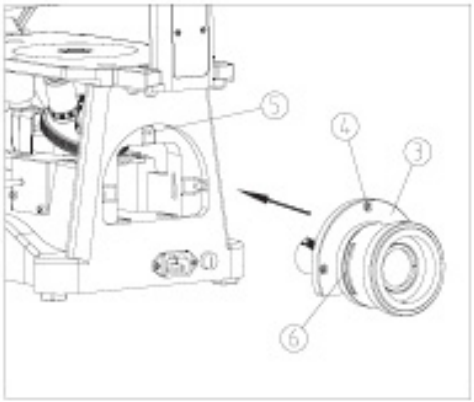


Figure 7

2.2 Assembling steps:

- Before assembling for fluorescence parts, please set power supply at "OFF" and take off the plug in order to operator's safety.

2-2-2 Set the fluorescence blocks

(1) Loose the lock-screw 1 with M4 inner hexagon spanner and take off right cover 2 (Fig. 4)
(2) Match the dovetail glut of filter block B1 3 to the groove of sliding channel 4, and push 3 into sliding channel 4 at right.
(3) Put on the right cover 2, point the screw 1 to the hole 5 on sliding channel 4 and tight it with M4 spanner.
(4) Insert the pole 7 into the hole 6 on right cover 2, and point it to the hole at side of filter block B1 3, then tight. (Fig.5)
(5) Loose the screw cap 9 a little, and turn the remark block 8 to make the letter "B" point to operator, then tight 9.

- XDS-3FL fluorescence microscope can only be equipped with 2pcs filter blocks. The standard is B1 and G1. Others for selection.
- Use the same way to set filter block G1 to the left.
- Please be aware the remark (such as: DMB1) on the side should be correctly, do not overturn with up and down.
- During observation, both right and left cover can't be taken off because it protects the filter while filter exchanging.

2-2-2 Set the fluorescence connector

(1) Hook the hole 1 to take off the fluorescence hole cover 2. (Fig. 6)
(2) Insert the fluorescence connector 3 to the fluorescence hole to make the screw 4 point to thread 5, and tight 3 screws with M4 spanner. (Fig.7)
(3) Turn off one of handles 7 from fluorescence preventing board 8 and insert the board 8 into connector, you will find sound to mean it at middle position (there are 3 positions). And tight the handle 7. (Fig. 8)

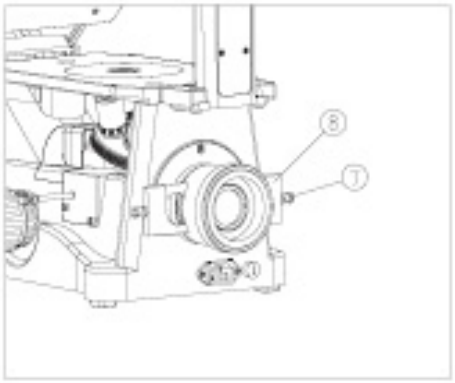


Figure 8

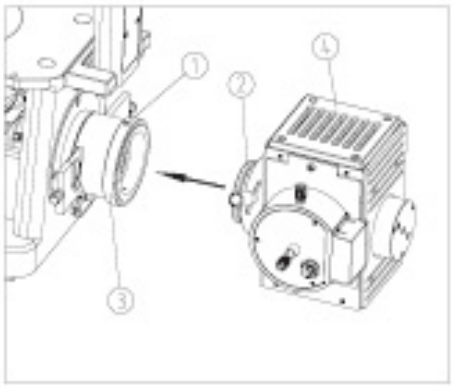


Figure 9

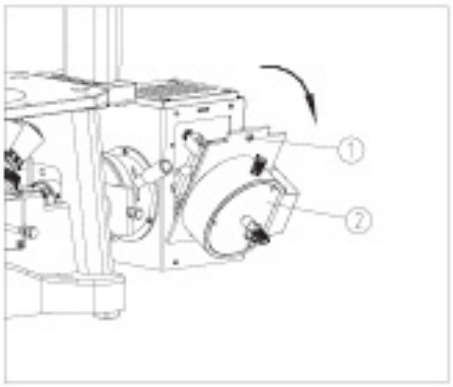


Figure 10

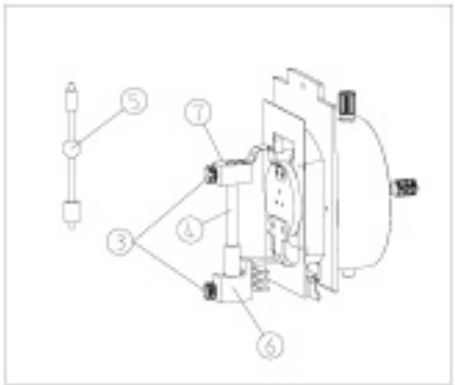


Figure 11

2-2-3 Set light source with mercury bulb

(1) Loose screw 1 with M4 inner hexagon spanner. (Fig.9)
(2) Insert the light source with mercury bulb 2 into fluorescence connector 3, and rotate 2 to make its upper plane 4 as horizontal, then tight the screw 1 with M4 spanner.

-During observation, please make sure enough space for heat-reek around the bulb source, especially the upper and bottom of bulb.

-During observation, please make sure enough distance between light source and power plug to avoid power plug melted by heat on light source.

2-2-4 Set mercury bulb

(1) Loose the lock-screw 1 completely by M4 inner hexagon spanner, rotate about 45 degrees as the direction showed, and take off the bulb holder 2. (Fig. 10)
(2) Loose the lock screw 3 for mercury bulb and take off the supporting pole 4. Insert the anode side (big side) on mercury bulb into the anode holder 6 and set negative holder on small side of bulb, then tight the screw 3. (Fig.11)

- Please make sure the mercury bulb put vertically. If there is aspirating hole on bulb, please make sure the hole directly to ceramic holder.

(3) Put the bulb holder 2 into its house and tight the screw 1.

- It is the same way to replace bulb.
- Replace bulb during or after operation:
During or just after operation, the bulb, bulb house and around is very hot. Before replace the bulb, please set the power supply for fluorescence at “o”(OFF) and take off the power plug. After all cooling down to replace bulb.
- After replace bulb, please be aware the timer on powers upply at zero. See details “3-1”

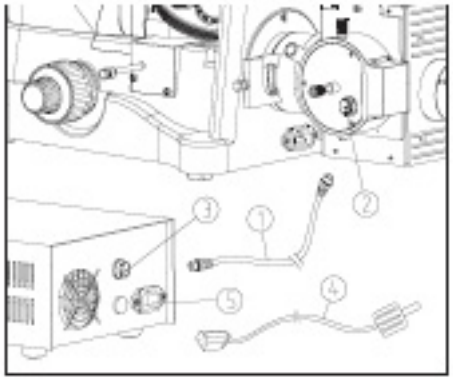


Figure 12

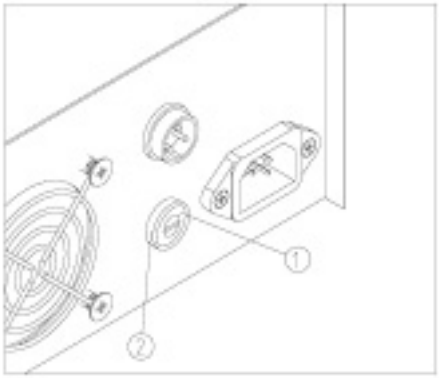
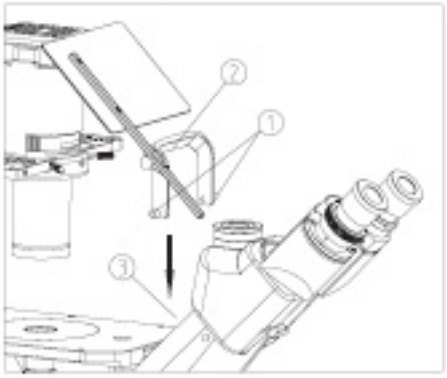


Figure 13



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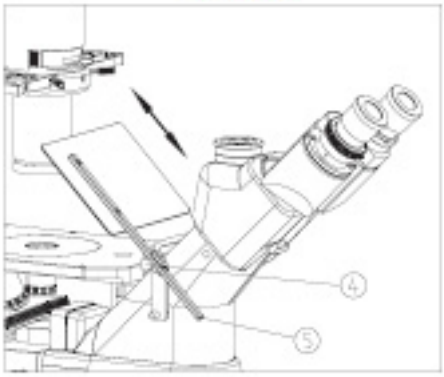


Figure 15

2-2-5 Connect power supply

(1) Make sure that the main power supply and fluorescence
power supply at “o” (OFF).
(2) Connect one side the plug 1 to the connector 2 on light
source with mercury bulb and lock the screo. (Fig. 12)
(3) Use same way to connect other side of the plug 1 to
connector 3 fluorescence power supply.
(4) Connect one side of the plug 4 to socket 5 on fluorescence power supply and other side to power supply socket.

- The fluorescence power supply is 110-240V.
- Please curve and enlace the plug wire softly to avoid
damage it.
- Please use the standard plug wire provide our company. Select suitable one when missing or damagment.
- Connect the power supply correctly, be sure the instrument earth-connecting.

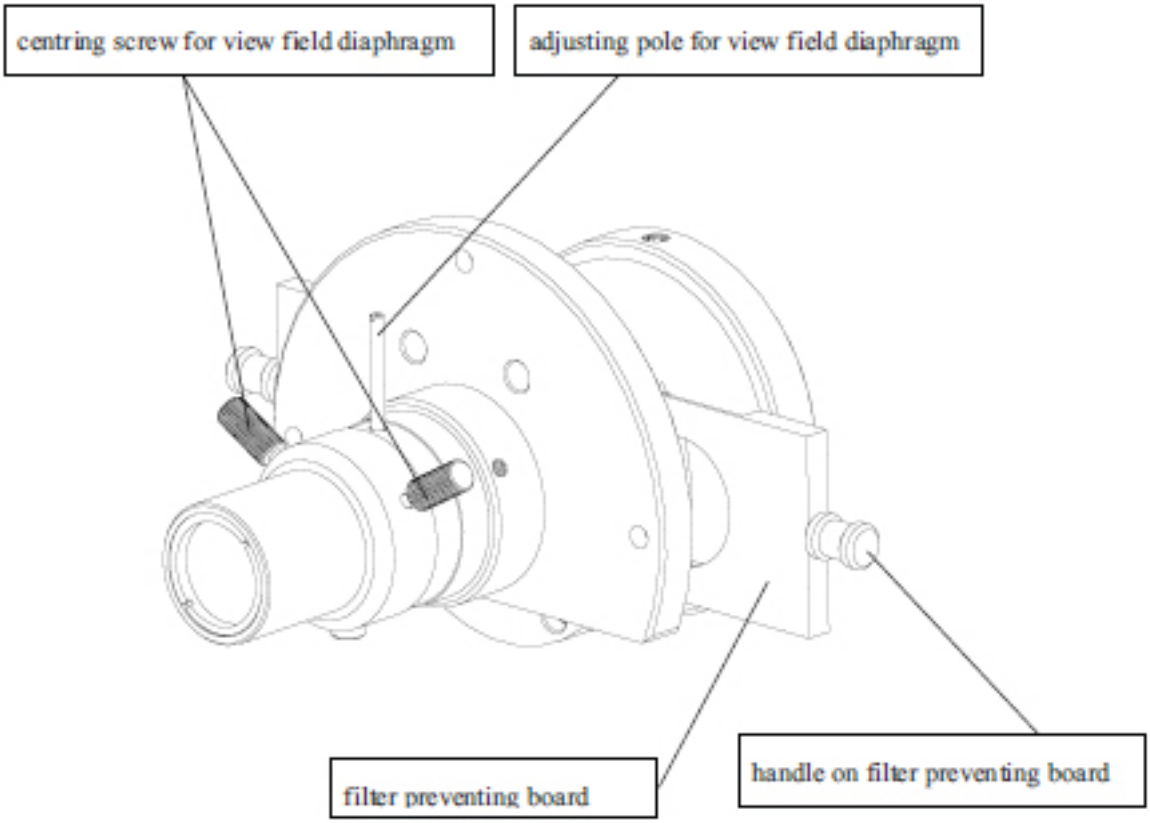
2-2-6 Replace fuse

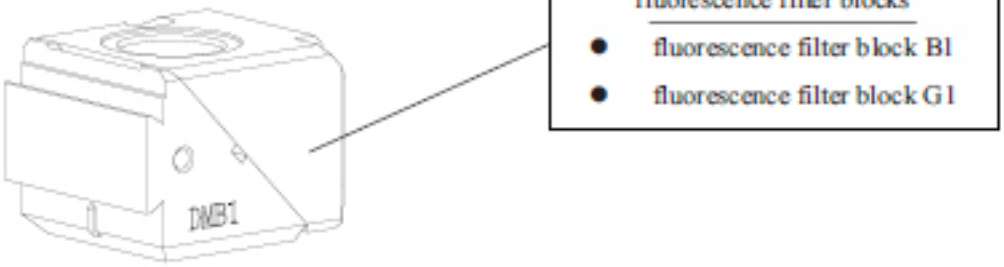
Before replace fuse, please set the main power supply and fluorescence power supply at “o” (OFF) and take off plug.
Use “_” screw driver to take off fuse set 1 from holder 2 and change a new one. (Fig. 13)

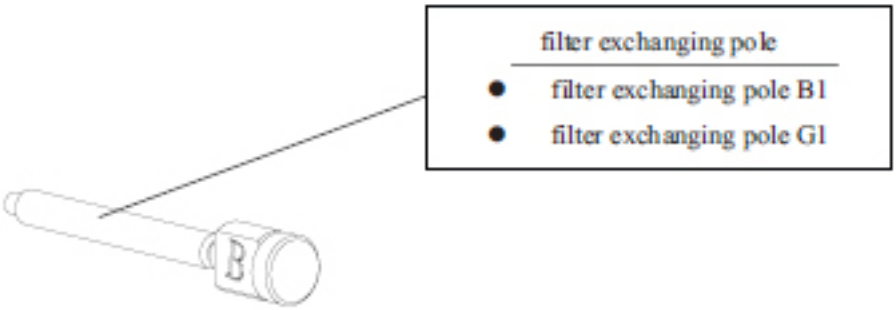
- Fuse specification: 250V, 3.15A

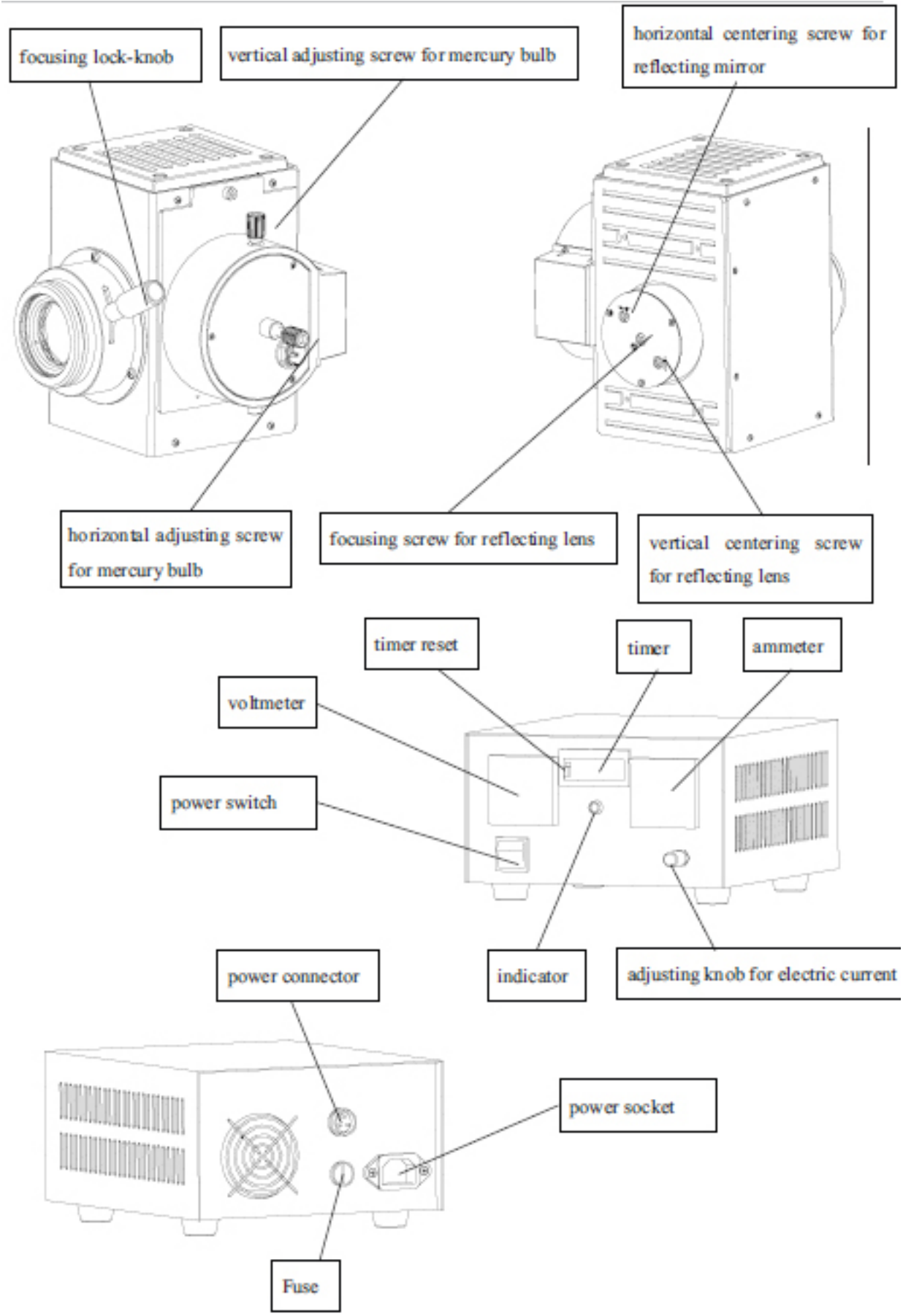
2-2-7 Set eye-protecting board

(1) Loose screw 1 till enough to put in trinocular cover. (Fig.14)
(2) Set the holder 2 close with trinocular cover 3 and horizontal the eye-protecting board, then tight the screw 1.
(3) Loose the screw 4 a little to let connecting pole 5 moving as showed direction. And adjust the eye-protecting board to suitable position, then tight the screw 4.


centring screw for view field diaphragm
adjusting pole for view field diaphragm
filter preventing board
handle on filter preventing board


fluorescence filter blocks
fluorescence filter block B1
fluorescence filter block G1
DMB1


filter exchanging pole
filter exchanging pole B1
filter exchanging pole G1
B


focusing lock-knob
vertical adjusting screw for mercury bulb
horizontal centering screw for reflecting mirror
horizontal adjusting screw for mercury bulb
focusing screw for reflecting lens
vertical centering screw for reflecting lens
timer reset
timer
ammeter
voltmeter
power switch
power connector
indicator
adjusting knob for electric current
power socket
Fuse

While using transmitted illumination, the operation way is the same as inverted biological microscope. Below is the operation way under reflected fluorescence illumination.

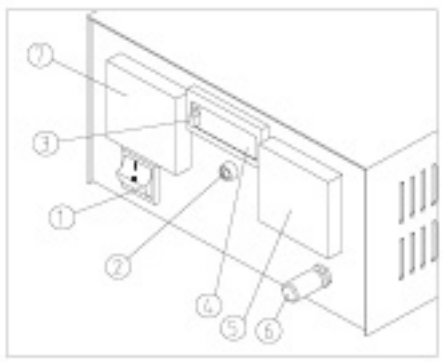


Figure 16

3-1 Illumination

(1) After connect with main power supply, please set the switch 1 on fluorescence power supply at "_" (ON), then the indicator light. It costs 5 minutes to warm up mercury bulb. (Fig. 16)

(2) Use adjusting knob for electric current 6 to make out-put power as same as mercury bulb 100W.

Min. scale for ammeter 5 is 0.4A and Max. is 2A.

Min. scale for voltmeter 7 is 0.4A and Max. is 2A.

- No need to switch on for transmitted illumination

when using fluorescence illumination.

- When use mercury bulb for first time or just replace

bulb, please set the timer reset 3 to highest position

as till timer 4 indicates "000.00", then set 3 to lowest position.

- Do not cut off power supply within 15 minutes after

mercury bulb light on to avoid it damaged.

- In order to prolong the life of mercury bulb, please do

not re-light on it within 3 minutes after it turned off.

- When the timer 4 indicates "200.00", it means the

mercury bulb had lighted on for 200 hours and it is its

utmost and it is time for replacement.

- Don't stare at fluorescence light directly.

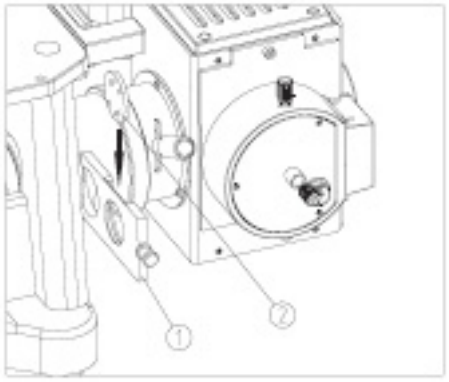


Figure 17

3-2 Use filter preventing board

Pull the filter preventing board 1 to the most left position,it prevents fluorescence light while middle position for light. If set □32 filter in the right groove on board 1 and pull it to most right position for light filtration.

- When no need observation under fluorescence light, please pull the filter preventing board to most left position to protect the slide from fluorescence quenching by long time exposure.

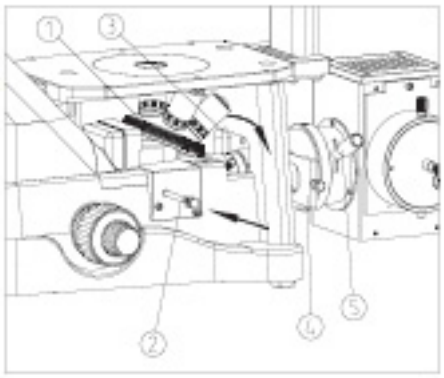


Figure 18

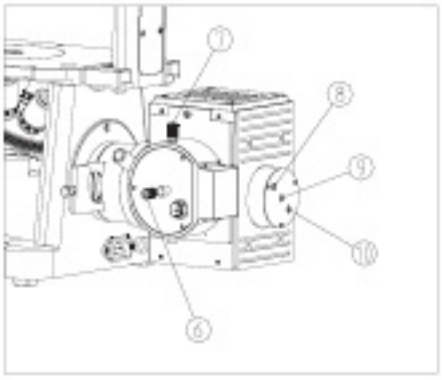


Figure 19

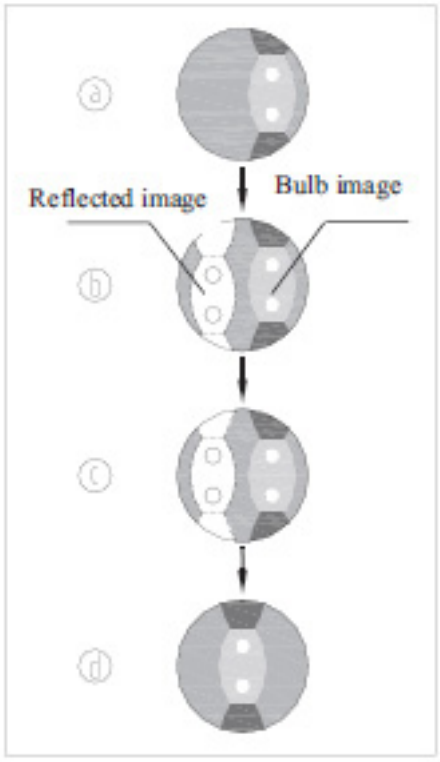


Figure 20

3-3 Centering mercury bulb

(1) Turn the nosepiece 1 to make blank hole into light-path. Take off nosepiece cap when it has. (Fig.18)

Figure 18

(2) Pull filter exchanging pole 3 to the middle position for B1 observation.

(3) Turn adjusting pole 3 for view field diaphragm by clock-wise to make the view field to largest. (Fig. 18).

(4) Set a white paper on stage and pull filter preventing board 4 to middle position for observation.

(5) Adjust focusing lock-knob 5, vertical adjusting screw 7 for mercury bulb, horizontal adjusting screw 6 for mercury bulb to make the bulb image on white paper. (Fig.18, 19, 20a)

(6) Adjust focusing screw 9 for reflecting lens, horizontal centering screw 8 for reflecting mirror, vertical centering screw 10 for reflecting lens to make the bulb reflected image on white paper. (Fig. 19, 20b)

(7) Adjust screw 8 and 10 to make the bulb image and bulb reflected imagte symmetry. Adjust screw 10 to make

both images with same size. (Fig. 19, 20c)

(8) Adjust screw 6 to make the two images superposition. (Fig. 19, 20a)

(9) Turn 10X objective into light-path and set slide on stage for observation under B1. Find the image and make it clear.

(10) Observe through eyepieces and adjust focusing lock-knob 5 to make view field to best, then lock the knob.

- Centering the bulb after it warmed up will be more

precision.

- Adjust the vertical and horizontal screw for bulb

image, the reflected image will also be moved.

- After replace the mercury bulb, it should be re-center

the bulb.

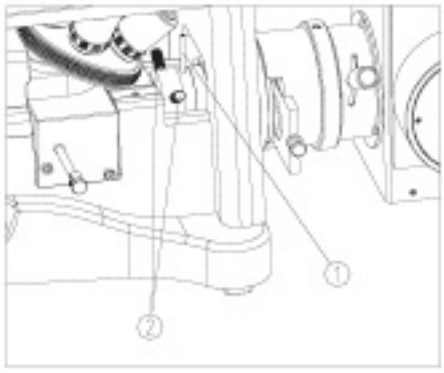


Figure 21

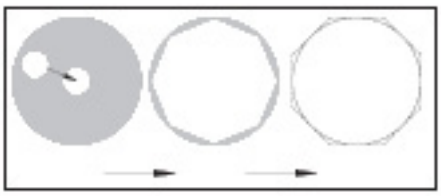


Figure 22

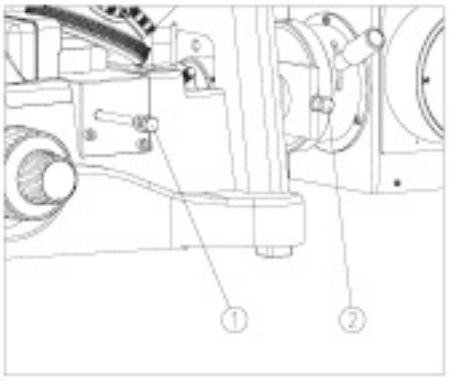


Figure 23

3-4 View field diaphragm

Field diaphragm limits the light beam diameter into condenser, therefore eliminates the surround light in order to enhance image contrast. When field diaphragm image is just at edge of field, objective can provide best performance and the image is clearest.

(1) Turn adjusting pole 1 for view field diaphragm clock-wisely to open the view field diaphragm, otherwise to close. (Fig. 21)

(2) Observe through eyepiece to find image of view field diaphragm.

(3) Adjust two screws 2 at both side of view field diaphragm to center the image.

(4) Open the field diaphragm gradually. If the image of field diaphragm is just inscribed to the view field, it means the field diaphragm had been centered. (Fig.22)

(5) While actual operation, please open the field diaphragm a little to make it ex-scribed with view field in order to obtain better image.

- In order to prevent the specimen from fluorescence quenching, don't expose the same position of the specimen for long time.

3-5 Fluorescence filter block

The filter block should be accordance with specimen. Please
see the parameters "Sheet 1" for spectrum.
Standard filter block: B1, G1

(1) Pull the filter preventing board 2 to the most right position. (Fig.3)

(2) Use filter exchanging pole 1 to select needed filter block.

- When using transmitted illumination, please pull both B1, G1 filter blocks to most left and right position.

Filter block	Module	Specification	Fluorescence dyes
B1	Exciter	475AF40	EGFP, FITC, Cy2@, AlexaFluor@488, DIO, Fluo-4
	Dichroic	505DRLP	
	Emitter	535AF45	
G1	Exciter	560AF55	Texas Red@, Texas Red@-X, Cy3.5@, Mito Tracker@ Red
	Dichroic	595DRLP	
	Emitter	645AF75	

Typology	INVERTED RESEARCH MICROSCOPE
Description	Laboratory inverted microscope for research applications. Dye-cast frame, with high stability and ergonomy, for transmitted light and and reflected fluorescence observation.
Illumination	**Transmitted Light:** Light source type X-LED8 with white 8W LED; light intensity control using a knob on left side of the frame. Color temperature: 6300K LED average life time approx. 50.000h Voltage: 110/240Vac, 50/60Hz, 1A ; Fuse: T500mA 250V Max power required: 13W **Reflected Light:** Mercury burner 100W HBO, light control based on external power supply. Bulb average life time approx. 300 hours. Voltage: 10/240Vac, 50/60Hz, 1A ; Fuse: F8AL 250V. Max power required: 125W
Observation Modes	Brightfield, phase contrast, Fluorescence B and G Fluorescence B: EX 460-490, DM 500, EM 520LP; Fluorescence G: EX 480-550, DM 570, EM 590LP; Fluorescence UV (optional): EX 325-375, DM 400, EM 420LP; Fluorescence V (optional): EX 385-425, DM 440, EM 455LP.
Fluorochromes	Excitation B: Acridine Yellow, Acridine Orange, Auramine, DiO, DTAF, FITC, GFP, YFP, ecc. Excitation G: DiL; Blu Evans, Feulgen, Rhodamine, Texas Red, TRITC, PI, ecc. Excitation UV (optional): AMCA, AutoFluorescence, BAO, BFP, Blu Cascade, DANS, DAPI, Hoechst, Indo-1, SITA, ecc. Excitation V (optional): ANS, Fluorescamine, Catecholamine, ecc.
Focusing	Coaxial coarse and fine focusing mechanism (graduated, 0.002mm) with upper stop, to prevent the contact between objective and specimen. Adjustable tension of coarse focusing knob.
Stage	Fixed stage, dimensions 250x230 mm. Mechanical stage mountable on the right side of the stage, X-Y translation range 114x81 mm, with metallic interchangeable inserts for slides, Petri dishes, Terasaki, multi-Well plates, etc. Pair of side extensions to expand the surface of the stage. Glass stage insert with hole for small dimension specimens.
Nosepiece	Quintuple revolving nosepiece, rotation on ball bearings.
Head	Trinocular observation head, inclined 45°. Diopter adjustment on left eyepiece. Interpupillary adjustment 55-75 mm.
Eyepieces	Wide field eyepieces EWF10X/22 with field number 22.
Objectives	Infinity corrected optical system IOS (Infinity Optical System). Plan-achromatic LWD objectives infinity corrected, for thickness 1.2 mm, made by following objectives: -) Plan-achromatic IOS FLUO LWD 10X, N.A. 0.30, W.D. 10.0 mm -) Plan-achromatic IOS FLUO LWD 20X, N.A. 0.45, W.D. 5.1 mm -) Plan-achromatic IOS FLUO LWD 40X, N.A. 0.65, W.D. 2.6 mm All objectives are treated with an anti-fungus treatment.

4.0 GENERAL SPECIFICATION

Condenser	LWD condenser, N.A. 0.30, working distance 72 mm. The condenser can be removed to extend the working distance up to 150 mm.
Dimensions	HEIGHT: 485 mm WIDTH: 300 mm DEPTH: 600 mm WEIGHT: 10 kg
Accessories	Interferential filter IF550, blu filter LBD. Instruction manual and dust cover included.

5.0 TROUBLESHOOTING

SYMPTOM	CAUSE	REMEDY
1. OPTICS		
(1) THE LAMP IS NOT BRIGHT ENOUGH	VIEW FIELD DIAPHRAGM IS NOT LARGE ENOUGHT	OPEN THE DIAPHRAGM MORE
	FILTER BLOCKS ARE NOT AT CORRECT POSITION	ADJUST THEM
(2) IMAGE BLUR	THE OBJECTIVE IS NOT UNDER LIGHT	TURN THE NOSEPIECE TO LOCK POSITION
	DIRT ON LENS	CLEAN IT
	FIELD DIAPHRAGM IS TOO LARGE OR NARROW	ADJUST IT
	THE FILTER BLOCK IS NOT ACCORDANCE WITH SPECIMEN	ADJUST FILTER BLOCK
(3) BLUR FIELD OR BRIGHTNESS ASYMMETRY	NOSEPIECE IS NOT AT LOCK POSITION	TURN THE NOSEPIECE TO LOCK POSITION
	FILTER BLOCKS ARE NOT AT CORRECT POSITION	ADJUST THEM
	BULB IS NOT CENTERED	CENTER THE BULB
	CONDENSER ADJUSTING KNOB IS NOT AT CORRECT POSITION	ADJUST IT
	FIELD DIAPHRAGM IS NOT CENTERED	ADJUST IT

2. ELECTRICS		
(1) INDICATOR ON FLUORESCENCE POWER SUPPLY IS NOT LIT	NO POWER SUPPLY	CHECK THE CONNECTION OF POWER SUPPLY
	THE FUSE IS BURNT OUT	REPLACE FUSE
(2) INDICATOR ON FLUORESCENCE POWER SUPPLY LIGHT, BUT BULB IS NOT LIGHT	INCORRECT CONNECTION OF POWER SUPPLY	CHECK THE CONNECTION
	DESTRUCTION OF POWER PLUG	CHANGE A NEW ONE
	THE MERCURY BULB BURNT OUT	REPLACE BULB
(3) MERCURY BULB FLASHES	THE POWER SUPPLY HAS JUST BEEN CONNECTED	WAIT THE BULB WARM UP
	INCORRECT CONNECTION OF POWER SUPPLY	CHECK THE CONNECTION
	THE MERCURY BULB WILL BE BURNT OUT SOON	REPLACE BULB

Art.13 Dlsg 25 july 2005 N°151. “According to directives 2002/95/EC, 2002/96/EC and 2003/108/EC relating to the reduction in the use of hazardous substances in electrical and electronic equipment and waste disposal.”

The basket symbol on equipment or on its box indicates that the product at the end of its useful life should be collected separately from other waste.
The separate collection of this equipment at the end of its lifetime is organized and managed by the producer. The user will have to contact the manufacturer and follow the rules that he adopted for end-of-life equipment collection. The collection of the equipment for recycling, treatment and environmentally compatible disposal, helps to prevent possible adverse effects on the environment and health and promotes reuse and/or recycling of materials of the equipment. Improper disposal of the product involves the application of administrative penalties as provided by the laws in force.

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