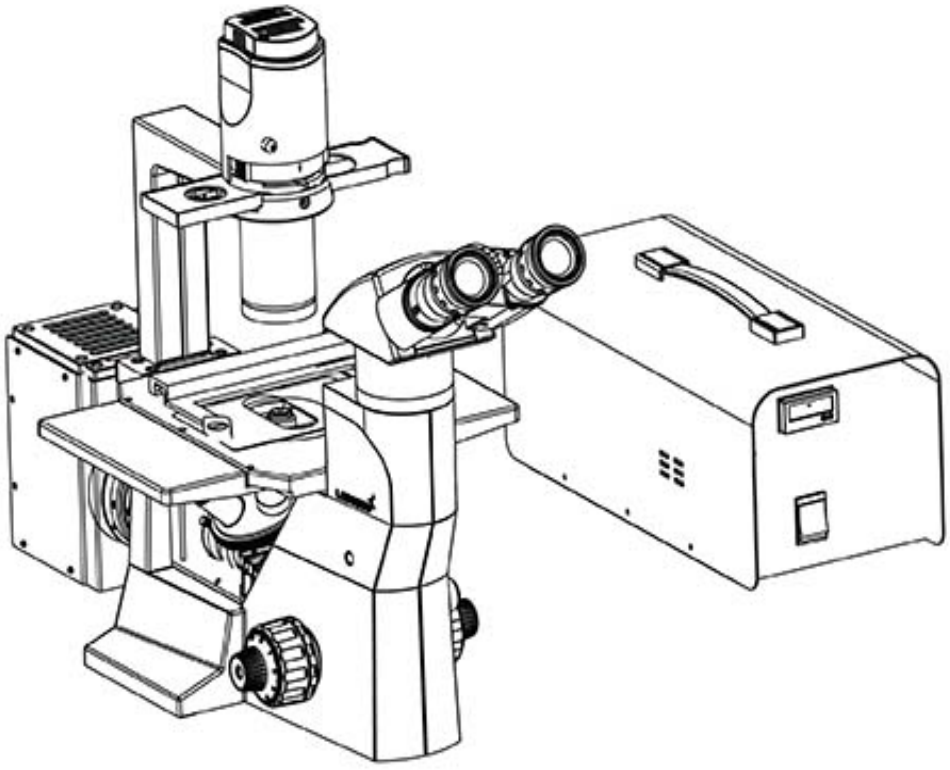
LABOMED®

TCM 400FLR
User Manual

Inverted Microscopy



To ensure proper use of this instrument as well as to avoid injury while operating instrument, understanding this manual completely before use is highly recommended.

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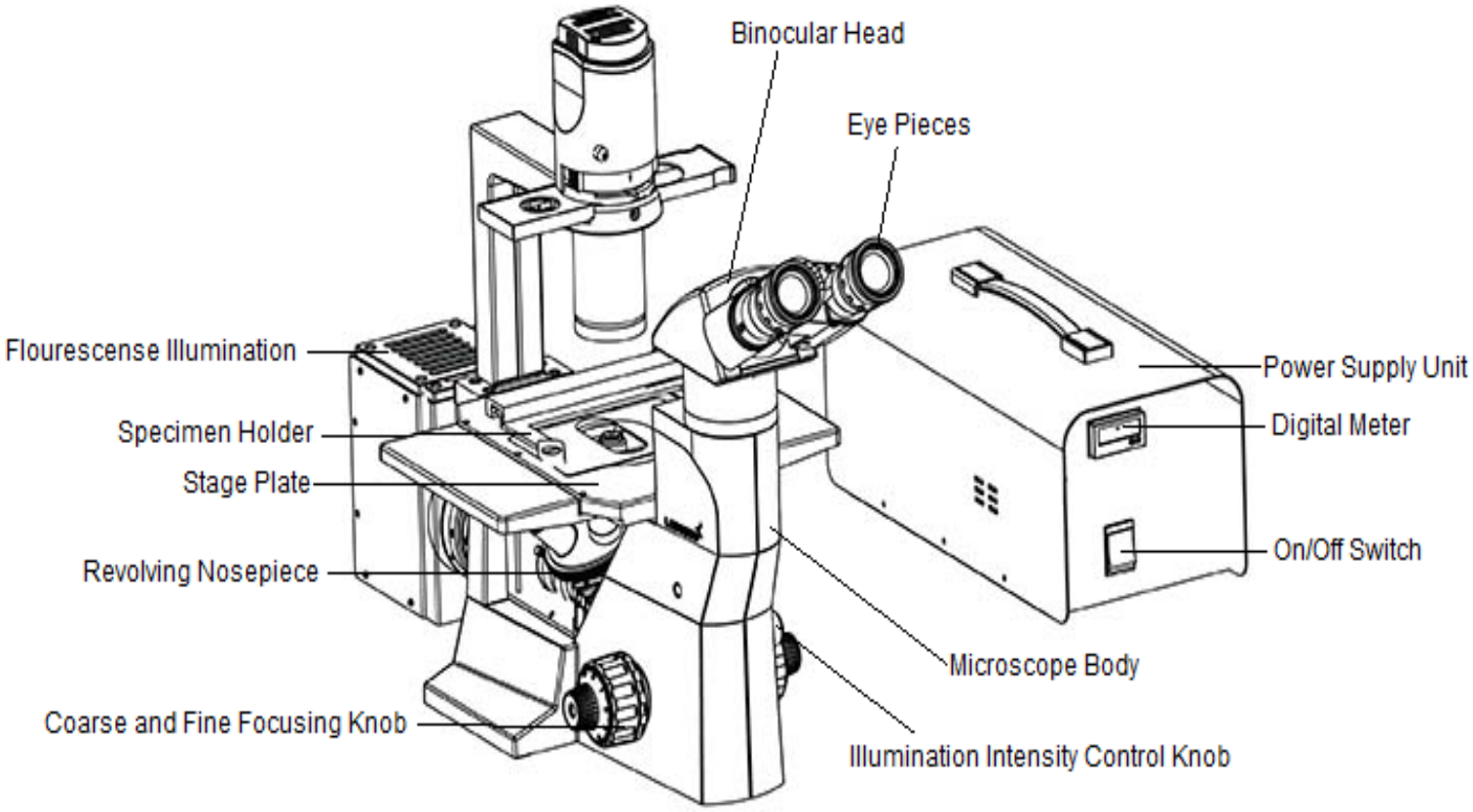
TCM 400 FIr


Binocular Head
Eye Pieces
Flourescense Illumination
Power Supply Unit
Specimen Holder
Digital Meter
Stage Plate
On/Off Switch
Revolving Nosepiece
Microscope Body
Coarse and Fine Focusing Knob
Illumination Intensity Control Knob

CONTENTS

PACKAGING CONTENTS

1. FL attachment in 2 parts
2. 2 Filter cube
3. Power Supply
4. Power cord
5. UV protection shield

SAFETY INSTRUCTIONS

- Fluorescent attachment is manufactured according to CE safety norms and regulations.
- Fluorescent attachment is intended for use only as prescribed in this manual.
- Make sure the main switch on the power supply unit is set to OFF (O) before supplying power to the unit.
- The power supply unit contains high voltage components. Do not attempt to disassemble the unit when turned ON (I).
- To avoid injury, do not remove the lamp housing while the lamp is lit. Also, do not turn the lamp ON while the lamp housing is removed to avoid damaging the instrument.
- Before opening lamp housing for replacement of the lamp, set the main switch to OFF (O) and unplug the lamp housing's connecting cord plug from the output connector on the power supply unit. Wait at least 10 minutes or until the lamp housing cools down before any changes are made.
- Do not open the lamp housing while the system is turned ON, for any user contact with internal parts may cause injury.
- A used mercury burner should be disposed of in compliance with the ordinances or regulations of your national or local government.
- The manufacturer will not accept any liability for damage caused by any user following unsafe practice of the instrument.

⚠ Avoid using the lamp beyond its service life. The mercury lamp seals high pressure gasses. If the lamp is used beyond its service life, stress may accumulate inside the lamp and in the worst but very rare case, the lamp may burst.

INSTALLATION

Remove all parts from the packing carefully.

1. Remove the plastic cover (1) from the microscope to make room for the fluorescence attachment.
   Bring the nosepiece to the maximum height by rotating the coarse knob (2) anti- clockwise. Remove the illumination power cable before removing the cover. Apply similar pressure by thumbs on the inner sides of the panel (3 & 4) to push it out. Refer to figure 1 and 2.

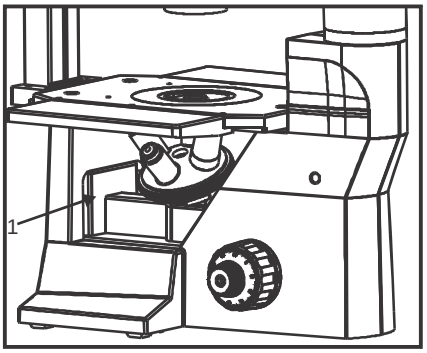


Fig. 1

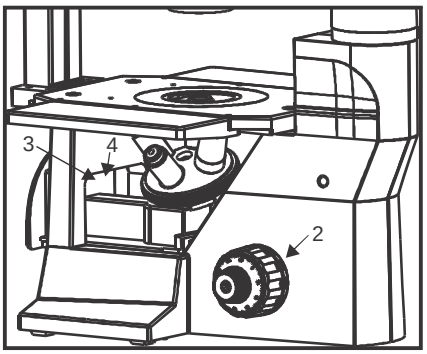


Fig. 2

2. Join the Optical assembly and illumination assembly to complete the FL attachment. Guide the illumination assembly to the optical assembly. Secure both parts by the allen screws (1) provided. Refer Fig. 3.

3. Assemble attachment in the microscope as shown in Fig. 4 and secure it with 3 Nos of Screws. Then install filter in the guide slot as shown in Fig. 5.

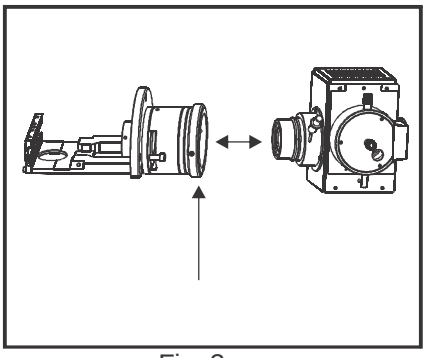


Fig. 3

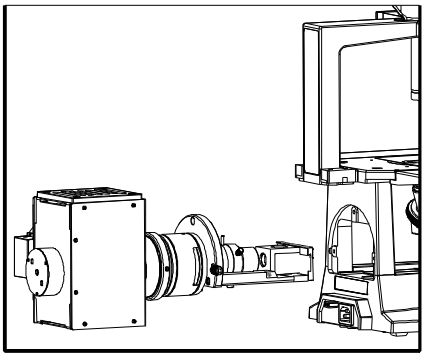


Fig. 4

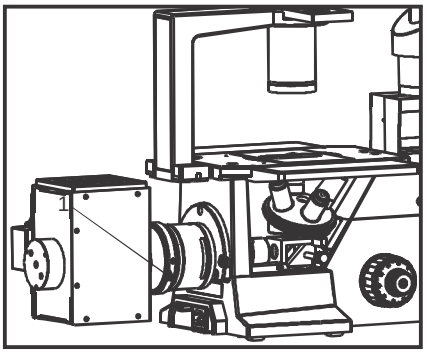


Fig. 5

INSTALLATION

Open the illumination house to install the mercury lamp. Loosen the thumbscrew indicated by the arrow and gently pull out lamp door from lamp housing.

To avoid any damage to the mercury vapor lamp, a plastic rod (1) is fitted in place of lamp during transit. Remove this rod by loosening the two screws indicated by the two arrows A and B shown in Fig. 6.

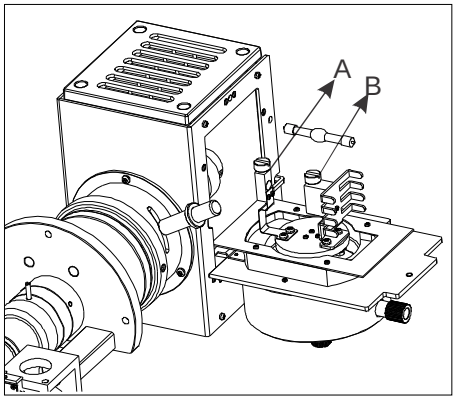


Fig. 6

Mount the mercury vapor lamp in place of plastic rod and tighten the screws to secure the lamp. install as shown in Fig. 6.A.

Avoid touching the lamp in order to prevent leaving finger prints on the glass. If there is any residue on the lamp's surface, gently wipe it off with soft tissue paper.

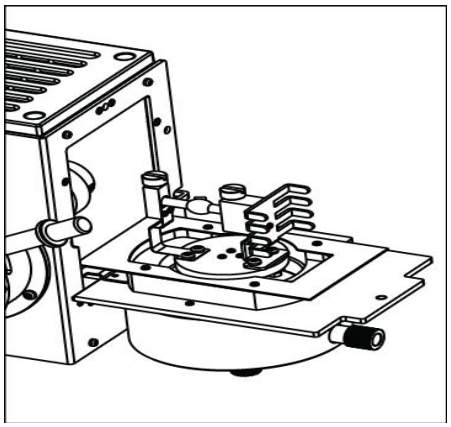


Fig. 6A

Install the power cable coming from the illumination house to the power unit indicated by arrow A in Fig. 7.

(1). Connect the power cord to the AC Inlet indicated by arrow B in Fig. 7.

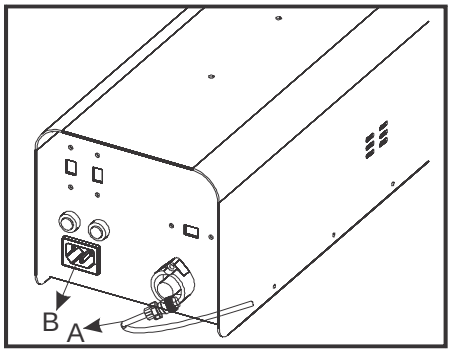


Fig. 7

INSTALLING THE FILTER B & G

Select the filter to be used on the fluorescence attachment.

Engage the slider to the filter house and gently slide it in.

It will stop at the index position.

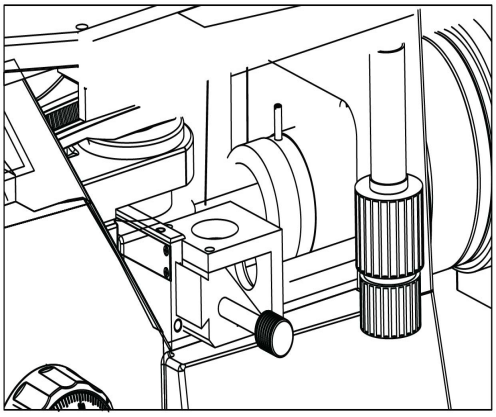


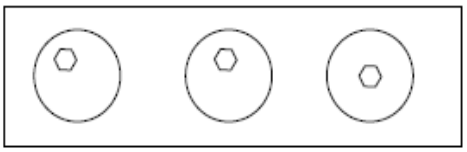
Fig. 8

MAINTAINING OPERATING LIFE

- Ensure that the power supply unit has been connected to proper power supply voltage.
- Set the main switch on the power supply unit to (|). After the lamp is ignited, at least 5 minutes required to stabilize light..
- To avoid shortening the power supply unit's operating life, avoid turning power ON while the lamp is not mounted
- Avoid turning power ON and OFF within short intervals for this may reduce working life of the power supply.
- After the lamp is turned OFF, it should not be re-ignited before the mercury vapors cool and condense. Wait approximately 10 minutes before turning power to the fluorescent attachment ON again.

CENTERING THE LIGHT BEAM

- Turn the power supply ON. Allow the lamp at least 5 minutes to fully illuminate for optimal use.
- The halogen illumination of the microscope should be kept off while working with FLR.
- Place the specimen slide on stage. Select the excitation light by installing the filter block as follows :



For G-excitation - Install red sliding block to its outermost position.

For B-excitation - Push blue sliding block in to its innermost position.

For O light (non-excited light) - Slide out the filer to parking point.

- Observe the specimen slide through the microscope's eyepieces.
- When no fluorescent light is required, turn the attachment's power supply OFF and set the sliding filter block to its middle / neutral position. To view the specimen in normal condition under the microscope's light, turn the microscope ON.

OBSERVING A SPECIMEN

First allow the mercury vapor lamp at least five minutes to fully illuminate for optimal use (it is very important to allow the system enough time to fully ignite in order to achieve a fully illuminated centering beam). Look into the eyeppiece aanddmanipulate the ccollector focusing knobb to make the field asd bright as regular asapossible, then, turn the knobb clockwise to tighten as shown in Fig.#9/Part 1. When the lamp is fully illuminated, a beam of light is visible through the eyepieces in the field of view

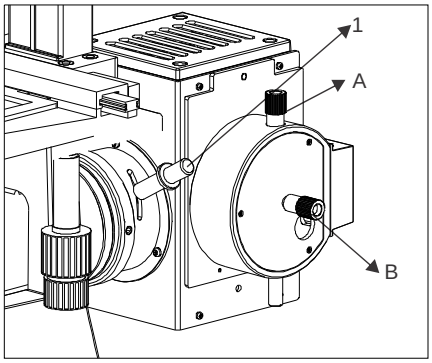


Fig. 9

To center this beam of light in the field of view, two centering knobs are located on the lamp housing as indicated by the two arrows (A & B) in Fig. 9. By adjusting these two knobs, the focused beam will shift. Adjust the beam position to the center of the field of view as shown in Fig. 9. A.

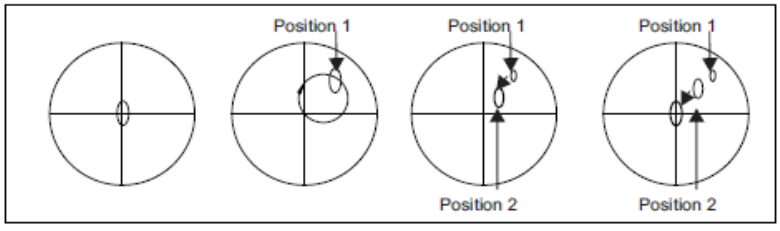


Fig. 9A.

TROUBLESHOOTING

Problem	Cause	Remedy
Optical System		
1) The mercury lamp lights up, but field of view remains dark	**Filter slider is not engaged properly in light path.**	**Adjust filter to required setting.**
2) Image is unclear, blurred or has poor contrast.	**a) Objectives and/or filters are dirty.**	**Clean them with tissue/lens paper.**
	b) Field iris diaphragm is not fully opened.	**Adjust field iris diaphragm so that the image circumscribes the field of view.**
3) Field of view is vignetted or it is not evenly illuminated.	**a) Objective is not engaged properly in light path.**	**Be sure when rotating nosepiece that objective clicks into position.**
	b) Filter slider is not engaged properly in light path.	**Engage required filter properly in light path.**
	c) Mercury lamp is not centered properly.	**Center mercury lamp correctly. This process is shown on Page 7**
	d) Beam focus deviates from correct position.	**Adjust the condenser knob. This process is shown on Page 7**
4) Mercury lamp is not illuminating after switching power supply ON.	**Some mercury lamps may not ignite the first time the power supply is turned ON.**	**Press the Trigger button provided on the front panel of power supply unit and wait for lamp to ignite.**
Electrical System		
1) Lamp housing / Main switch indicator does not light up.	**a) Power cord is not connected properly.**	**Make sure power cord is firmly in place.**
	b) The fuse is blown.	**Replace with fuse of same type and rating.**
2) Main switch indicator lights up, yet mercury lamp remains OFF.	**a) Connector cable is not engaged properly.**	**Verify connection is secure.**
	b) Mercury lamp is not mounted.	**Install mercury lamp as indicated on Page 5**
3) Light demonstrates partial flickering.	**a) Sufficient time has not been allowed for the lamp to fully illuminate.**	**Allow at least 5 minutes after turning power supply ON for the lamp to fully illuminate. If flickering persist press Trigger button.**
	b) Lamp's service life has expired.	**Replace the mercury lamp**

TECHNICAL SPECIFICATIONS

Type cubes	:	Transmitted Fluorescent illumination based on switching of dichroic mirror
Observation modes	:	B-excitation and G-excitation
Lamp type	:	HBO 50 W, high pressure Mercury vapor lamp
Supply Voltage	:	110V AC, 60 Hz / 220V AC, 50Hz
Operating environment	:	Indoor use Ambient temperature 5 ^{0}C to 40^{0}C Maximum relative humidity 80% at 40 ^{0}C

FILTER SPECIFICATIONS

B-excitation

Excitation filter	**:**	**Transmission 90% at wavelength 420 to 480 nm. Transmission 0% at wavelength 485 nm onwards.**
Dichroic mirror	**:**	**Transmission 93% at wavelength 540 nm onwards Transmission 0% at wavelength 400 to 530 nm.**
Barrier filter	**:**	**Transmission 95% at wavelength 535 nm onwards Transmission 0% at wavelength 400 to 500 nm.**
Recommended Fluorescent Dye	**:**	**Acridine Orange, both DNA & RNA**

G-excitation

Excitation filter	**:**	**Transmission 85% at wavelength 490 to 525 nm. Transmission 0% at wavelength 530 nm onwards.**
Dichroic mirror	**:**	**Transmission 90% at wavelength 600 nm onwards Transmission 0% at wavelength 400 to 595 nm.**
Barrier filter	**:**	**Transmission 92% at wavelength 615 nm onwards Transmission 0% at wavelength 400 to 575 nm.**
Recommended Fluorescent Dye	**:**	**Acridine Red FM™ 5-95**

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