OPTIKA®
ITALY

B-380 Series

INSTRUCTION MANUAL

Model
B-382PL-ALC
B-383PL
B-382PLI-ALC
B-383PLI
B-382PH-ALC
B-383PH
B-382PHI-ALC
B-383PHI
B-383FL
B-383LD

Ver. 6.7 2025

Table of content

1. Warning

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. We remind you that this manual contains important information on safety and maintenance, and that it must therefore be made accessible to the instrument users. We decline any responsibility deriving from incorrect instrument use uses that does not comply with this manual.

2. Safety Information

Avoiding Electrical Shock

Before plugging in the power supply, make sure that the supplying voltage of your region matches with the operation voltage of the equipment and that the lamp switch is in off position. Users should observe all safety regulations of the region. The equipment has acquired the CE safety label. However, users have full responsibility to use this equipment safely. Please follow the guidelines below, and read this manual in its entirety to ensure safe operation of the unit.

3. Package content

3.1 B-382PL-ALC / B-382PLI-ALC

① Frame
② Objectives
③ ALC observation head
④ Eyepieces
⑤ Tension adjustment tool
⑥ Dust cover
⑦ Power supply
⑧ Immersion oil

3.2 B-383PL / B-383PLI

① Frame
② Objectives
③ Trinocular observation head
④ Eyepieces
⑤ Tension adjustment tool
⑥ Dust cover
⑦ Power supply
⑧ Immersion oil

3.3 B-382PH-ALC / B-382PHI-ALC

① Frame
② Objectives
③ ALC observation head
④ Eyepieces
⑤ Tension adjustment tool
⑥ Dust cover
⑦ Power supply
⑧ Immersion oil
⑨ Green filter + filter holder
⑩ Centering telescope

3.4 B-383PH / B-383PHI

① Frame
② Objectives
③ Trinocular observation head
④ Eyepieces
⑤ Tension adjustment tool
⑥ Dust cover
⑦ Power supply
⑧ Immersion oil
⑨ Green filter + filter holder
⑩ Centering telescope

3.5 B-383FL

① Frame
② Objectives
③ Trinocular observation head
④ HBO fluorescence illuminator
⑤ Fluorescence power supply + power cord
⑥ Eyepieces
⑦ Immersion oil
⑧ Tension adjustment tool
⑨ Dust cover
⑩ Microscope power supply
⑪ Light excluding plate
⑫ HBO mercury bulb
⑬ UV Shield

3.6 B-383LD

① Frame
② Objectives
③ Trinocular observation head
④ LED fluorescence illuminator
⑤ Eyepieces
⑥ Dust cover
⑦ Immersion oil
⑧ Tension adjustment tool
⑨ Allen wrench
⑩ Light excluding plate
⑪ Power supply

4. Unpacking

The microscope is housed in a moulded Styrofoam container. Remove the tape from the edge of the container and lift the top half of the container. Take some care to avoid that the optical items (objectives and eyepieces) fall out and get damaged. Using both hands (one around the arm and one around the base), lift the microscope from the container and put it on a stable desk.

Do not touch with bare hands optical surfaces such as lenses, filters or glasses. Traces of grease or other residuals may deteriorate the final image quality and corrode the optics surface in a short time.

5. Intended use

Standard models

For research and teaching use only. Not intended for any animal or human therapeutic or diagnostic use.

IVD Models

Also for diagnostic use, aimed at obtaining information on the physiological or pathological situation of the subject.

6. Symbols and conventions

The following chart is an illustrated glossary of the symbols that are used in this manual.

CAUTION

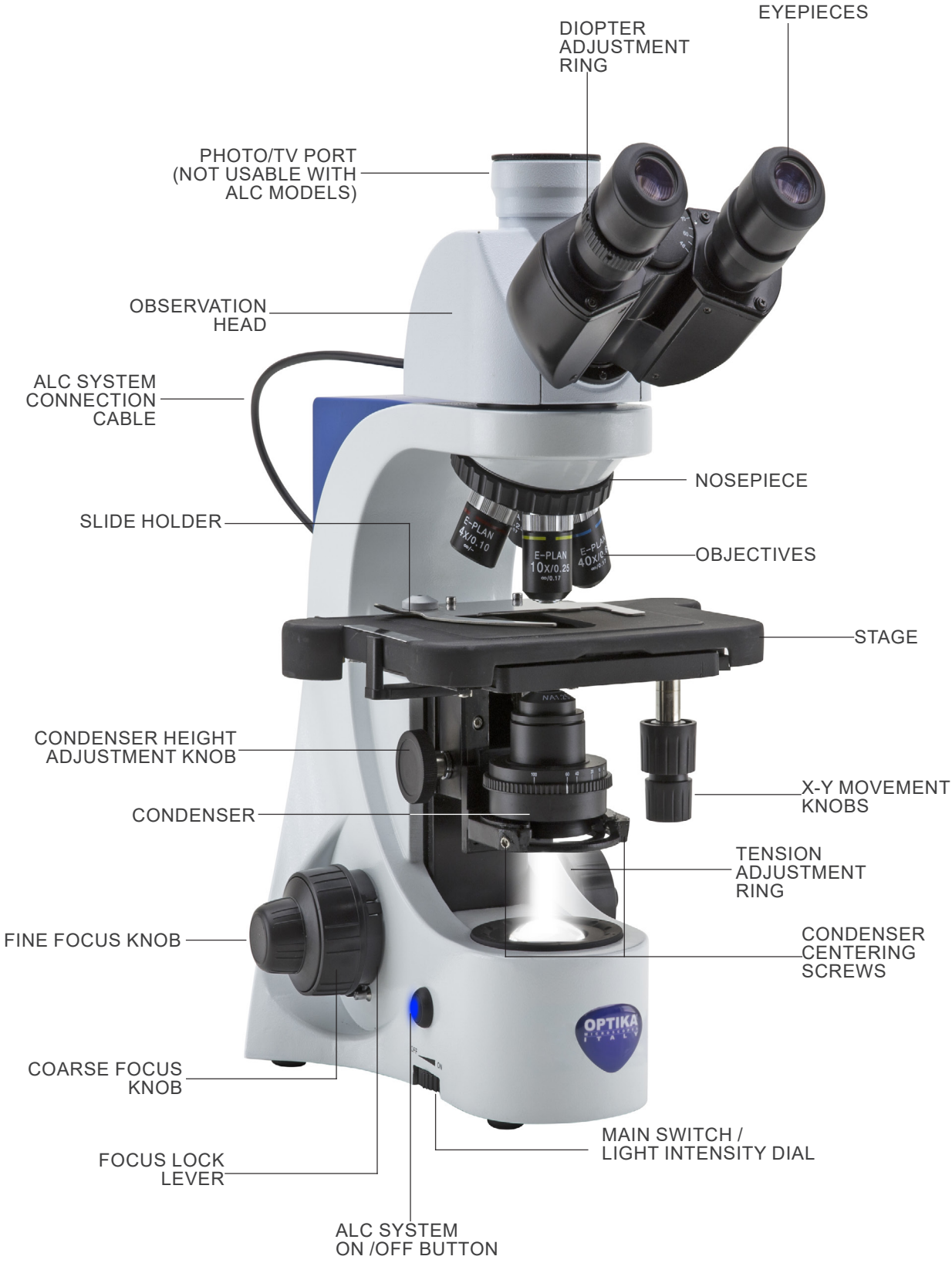
This symbol indicates a potential risk and alerts you to proceed with caution.

ELECTRICAL SHOCK

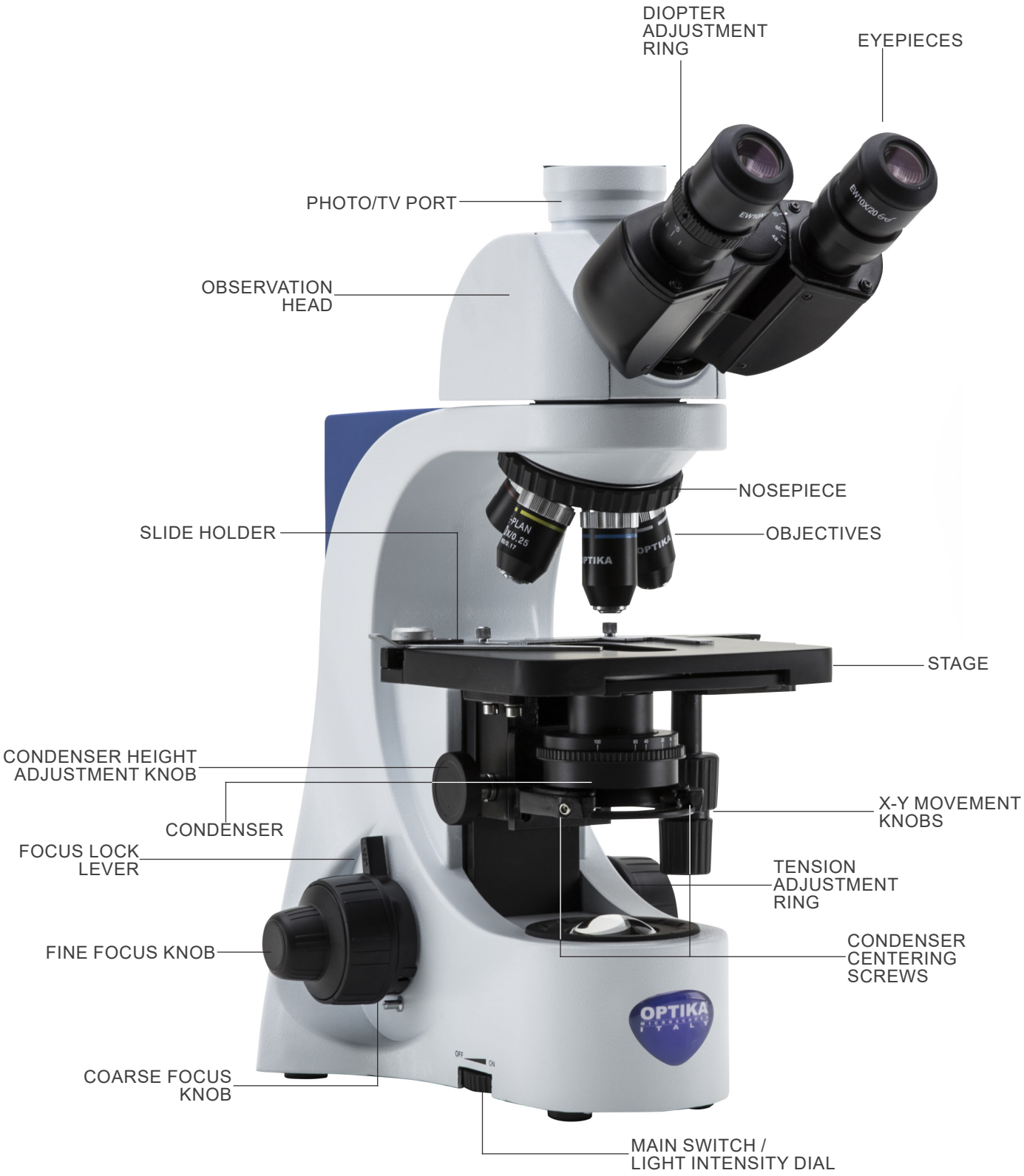
This symbol indicates a risk of electrical shock.

7. Instrument description

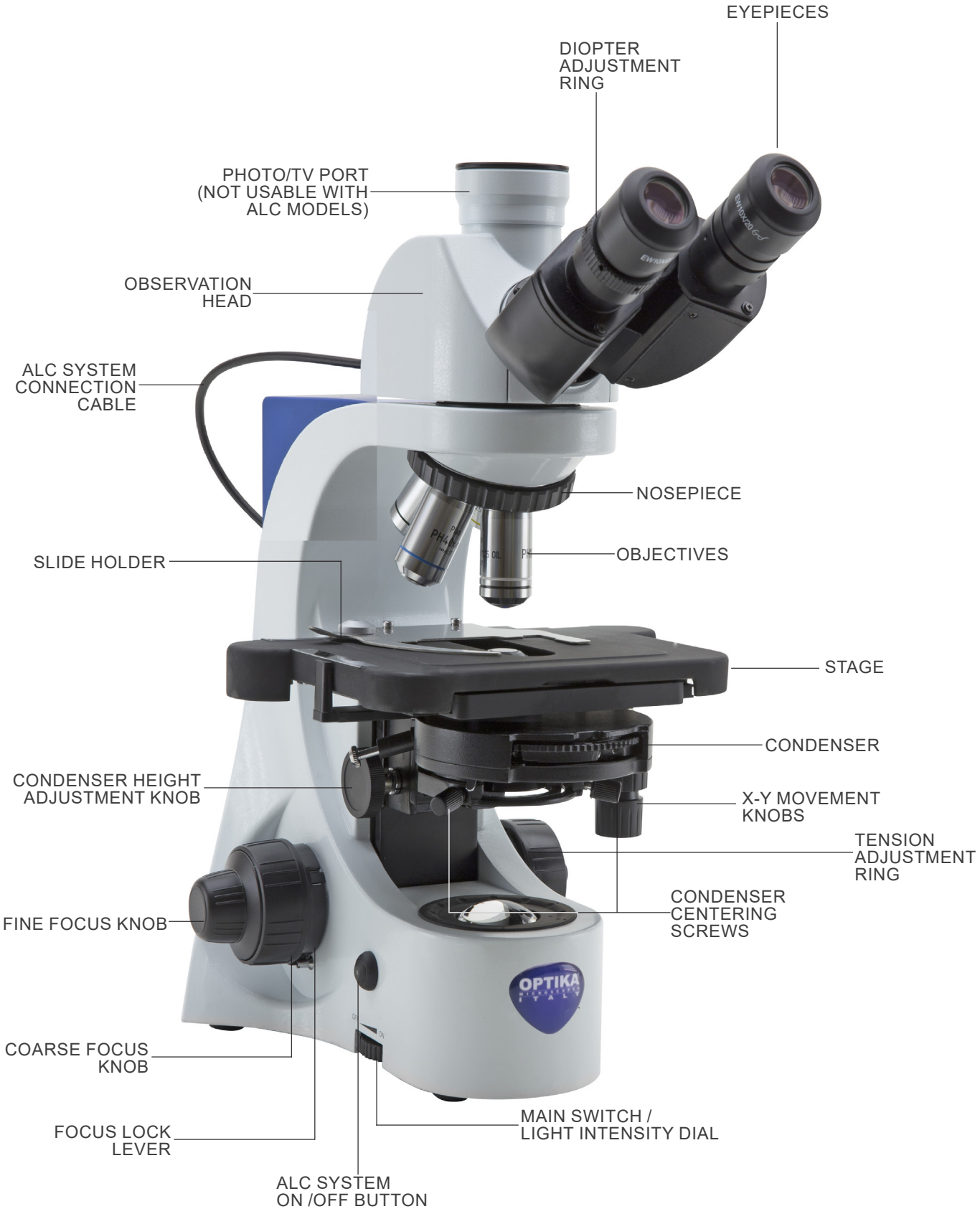
7.1 B-382PL-ALC / B-382PLI-ALC



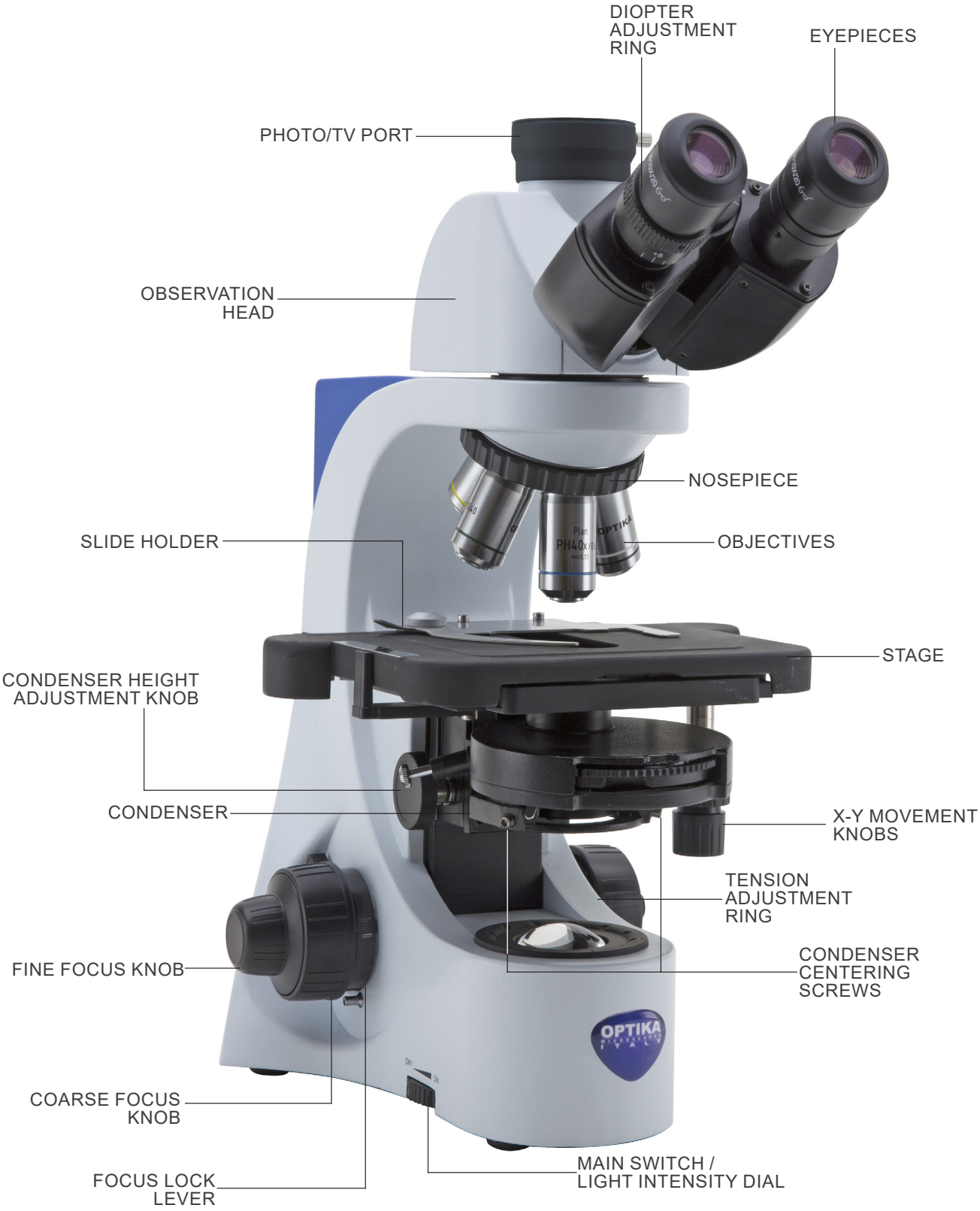
7.2 B-383PL / B-383PLI



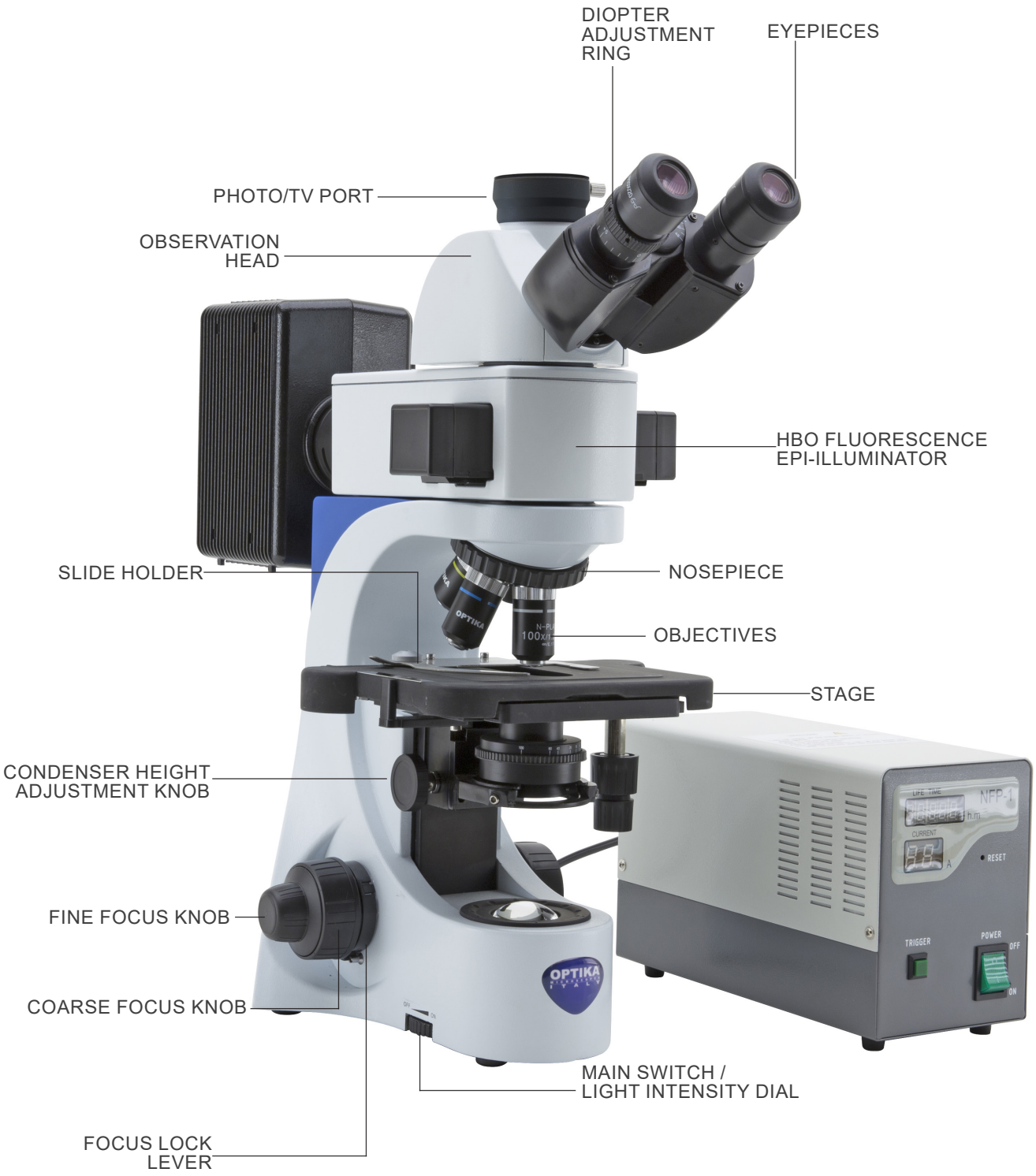
7.3 B-382PH-ALC / B-382PHI-ALC



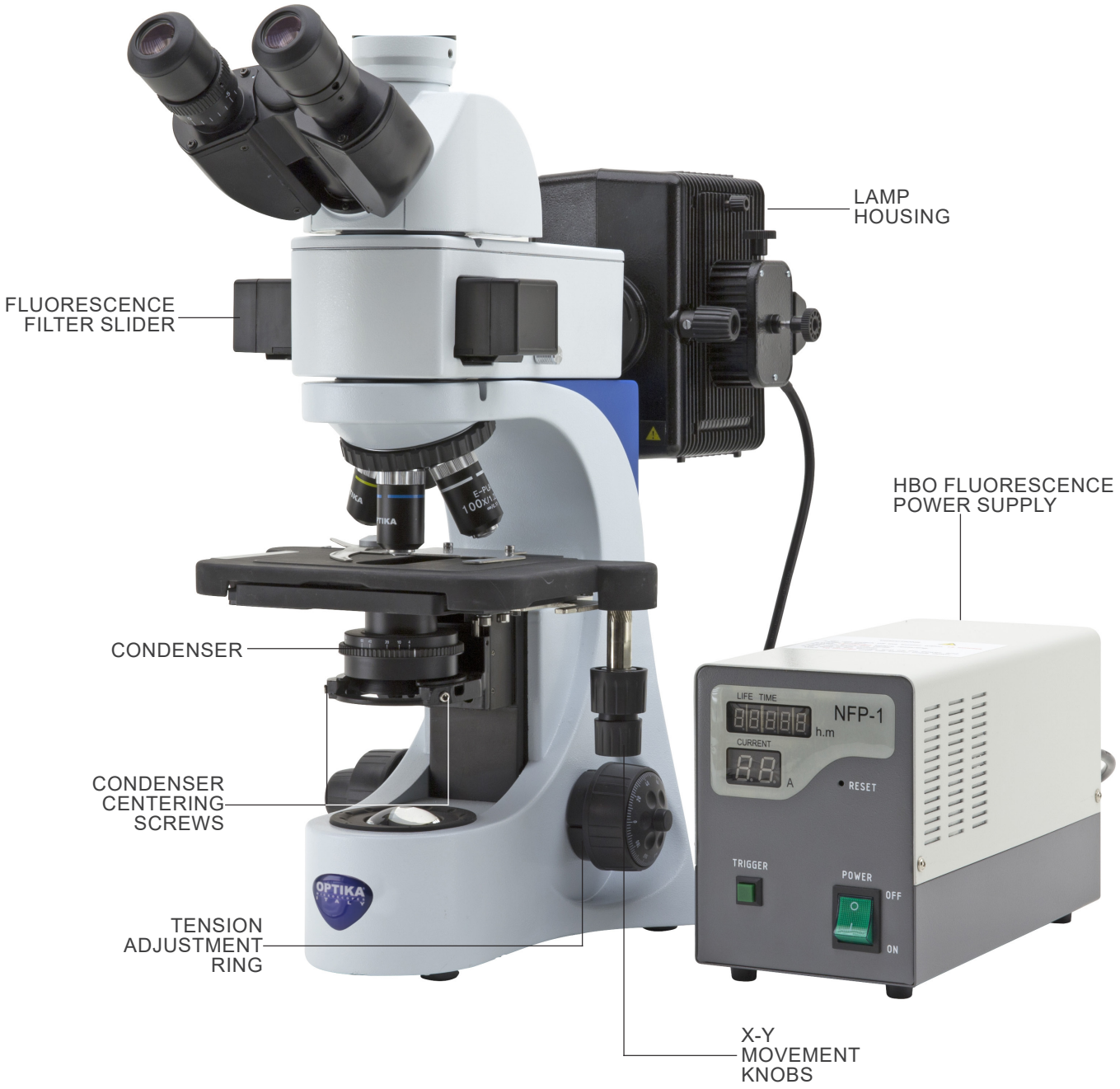
7.4 B-383PH / B-383PHI



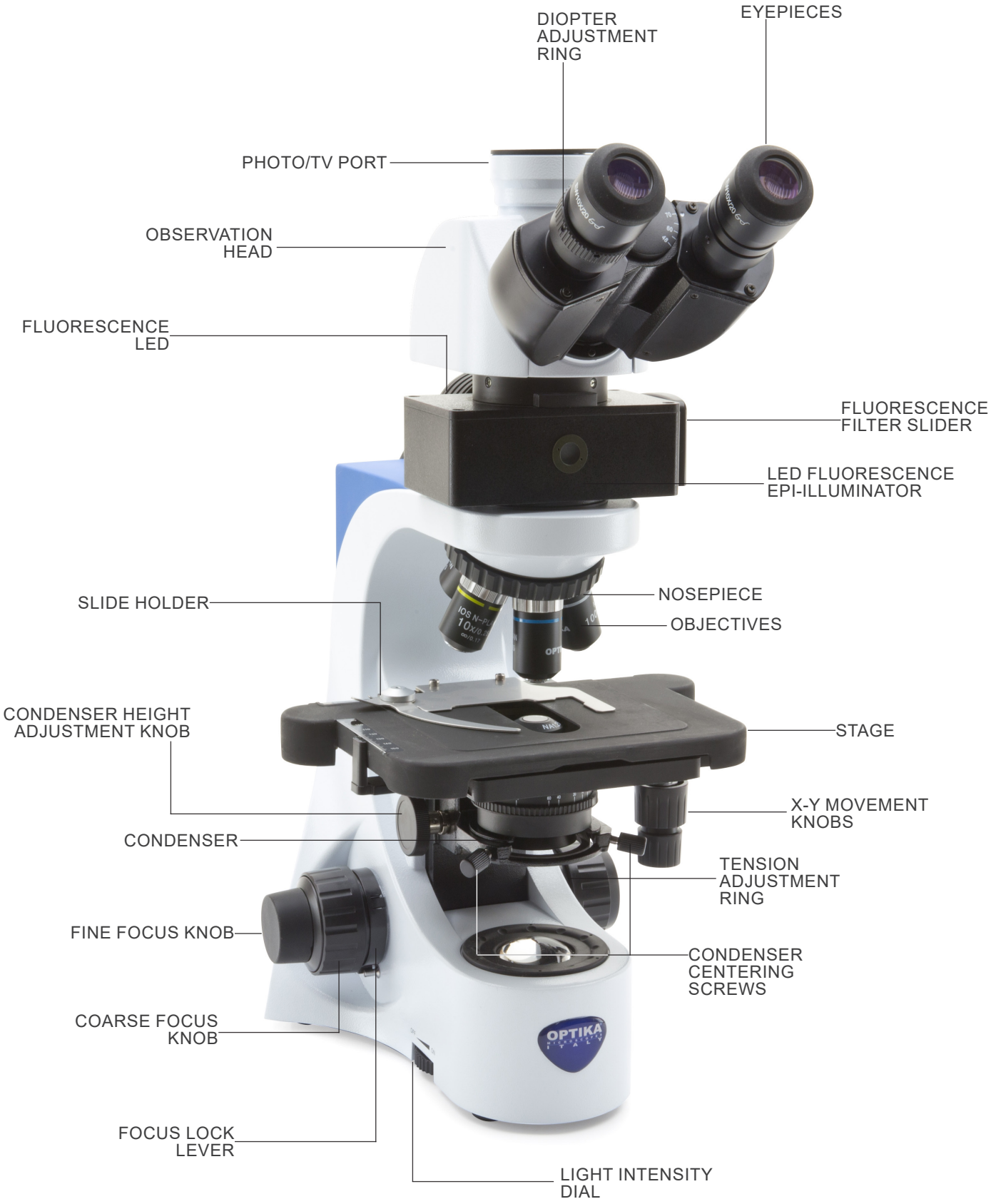
7.5 B-383FL


DIOPTER ADJUSTMENT RING
EYEPIECES
PHOTO/TV PORT
OBSERVATION HEAD
HBO FLUORESCENCE EPI-ILLUMINATOR
SLIDE HOLDER
NOSEPIECE
OBJECTIVES
STAGE
CONDENSER HEIGHT ADJUSTMENT KNOB
FINE FOCUS KNOB
COARSE FOCUS KNOB
MAIN SWITCH / LIGHT INTENSITY DIAL
FOCUS LOCK LEVER
OPTIKA
NFP-1
RESET
TRIGGER
POWER
OFF
ON

B-383FL (Opposite side)



7.6 B-383LD


DIOPTER ADJUSTMENT RING
EYEPIECES
PHOTO/TV PORT
OBSERVATION HEAD
FLUORESCENCE LED
FLUORESCENCE FILTER SLIDER
LED FLUORESCENCE EPI-ILLUMINATOR
SLIDE HOLDER
NOSEPIECE
OBJECTIVES
CONDENSER HEIGHT ADJUSTMENT KNOB
STAGE
X-Y MOVEMENT KNOBS
CONDENSER
TENSION ADJUSTMENT RING
FINE FOCUS KNOB
CONDENSER CENTERING SCREWS
COARSE FOCUS KNOB
FOCUS LOCK LEVER
LIGHT INTENSITY DIAL

8. Assembling

8.1 Assembling the microscope

1. Insert the optical head above the stand and tighten the screw with the provided Allen wrench. (Fig. 1)


Fig. 1

ALC models only

2. Connect the ALC cable to the socket on the back of the frame. (Fig. 2)

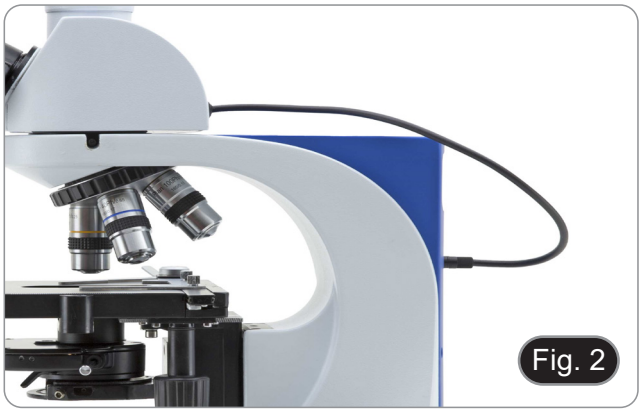


Fig. 2

3. Insert eyepieces into the empty tubes of the optical head. (Fig. 3)


Fig. 3

4. Screw each objective into the thread of the nosepiece, clockwise with increasing magnification. (Fig. 4)


Fig. 4

5. Insert the power supply jack in the socket placed in the rear side of the frame. (Fig. 5)


Fig. 5

8.2 Field Diaphragm (optional)

1. Unscrew the lens at the base of the microscope. (Fig. 6)
• **It may take a little bit of force to unscrew the lens.**
2. Fully screw the field diaphragm (M-156).
3. System is ready for the use.

Fig. 6

8.3 Polarizing set (optional)

1. Place the polarizer on the light exit ① at the base of the microscope. (Fig. 7)

Fig. 7

2. Loosen the head fixing knob ② and remove the head from the microscope frame. (Fig. 8)

Fig. 8

3. Insert the analyzer into the hole inside the frame ③. (Fig. 9)
4. Put back the head into its original position and lock the fixing knob.

- **The use of the polarization set, although possible for models B-383FL and B-383LD, is not recommended. The presence of the analyzer within the optical path, during the use of fluorescence, causes a significant reduction in the amount of light projected on the sample, resulting in difficulty of observation.**

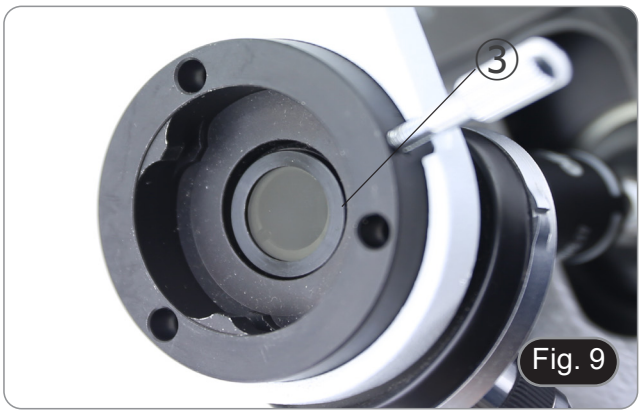
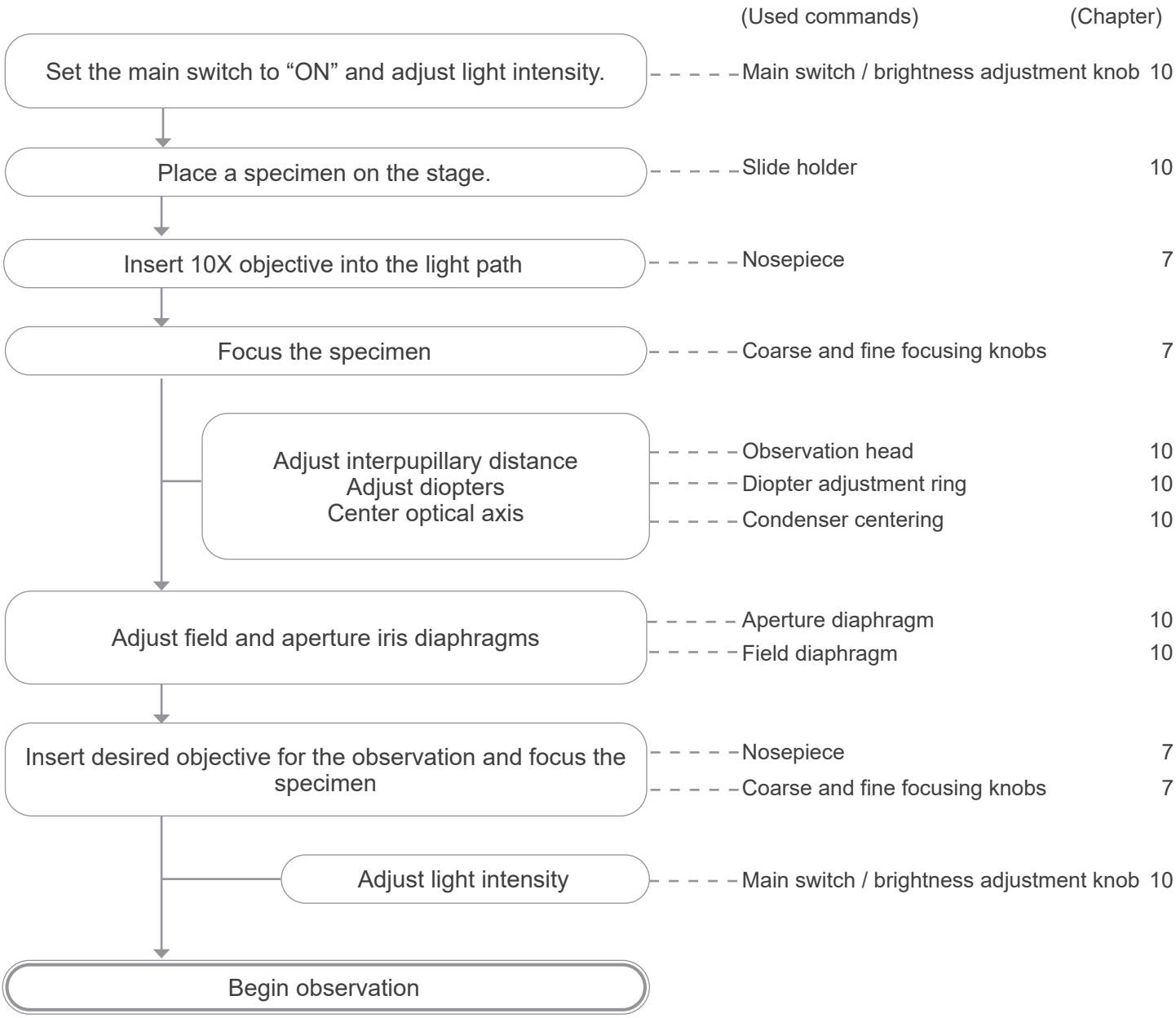


Fig. 9

9. Brightfield transmitted light observation procedures



10. Use of the microscope (Brightfield transmitted light)

10.1 Light intensity adjustment

Operate on the light intensity dial ① to turn ON/OFF the microscope and to increase or decrease the illumination intensity. (Fig. 10)

- **Only for B-383LD: the switch located at the back of the microscope operates to turn on the transmitted light (position “I”) or the reflected light (position “II”). Turn on the microscope for transmitted light by turning the switch to “I”.**

Fig. 10

10.2 Adjust the interpupillary distance

Hold the right and left parts of the observation head using both hands and adjust the interpupillary distance by turning the two parts until one circle of light can be seen. (Fig. 11)

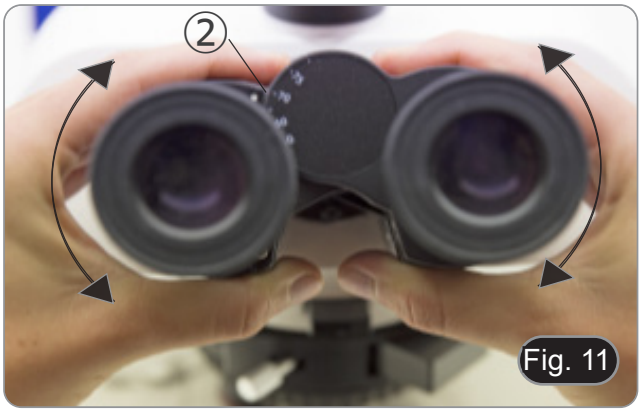


Fig. 11

10.3 Diopter adjustment

1. Look into the right eyepiece with your right eye only, and focus on the specimen.
2. Look into the left eyepiece with your left eye only. If the image is not sharp, use the diopter adjustment ring ③ to compensate. (Fig. 12)

- Highpoint eyepieces allow the use also to glass wearers.

- NOTE: For optimal parfocality, we recommend using your glasses during normal microscope use.

Fig. 12

10.4 Coarse focus tension adjustment

To adjust the tension according to personal’s needs, rotate the ring ④ using the provided tool (Fig. 13). Clockwise rotation increases the tension.

- **NOTE: If the tension is too loose, the stage could go lower by itself or the focus easily lost after fine adjustment. In this case, rotate the knob in order to increase the tension.**

Fig. 13

10.5 Focus lock lever

The upper limit knob has two functions: prevent the contact between slide and objective and acts as focus memory.

1. After focusing the specimen, rotate the knob ① and lock it (Fig. 14). In this way the focus upper limit is set.
2. Lower the stage with coarse focus knob and replace the specimen.
3. Raise again the stage up to the upper limit: specimen will be in approximate focus and will need a fine adjustment to get the proper focus. Fine focus movement is not affected by the coarse focus lock.

- **To unlock, move the knob in the opposite direction to the one used for the lock.**

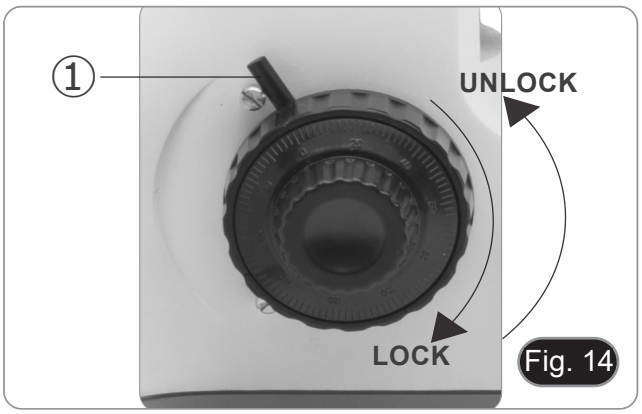


Fig. 14

10.6 Stage

Stage accepts standard slides 26 x 76 mm, thickness 1,2 mm with coverslide 0,17mm. (Fig. 15)
It is possible to place two slides side by side on the stage.

1. Open the spring arm of the slide holder ② and place frontally the slides on the stage.
2. Gently release the spring arm of the slide holder.

- **A sudden release of the spring arm could cause the falling of the slide.**

Fig. 15

10.7 Condenser centering

10.7.1 Centering without field diaphragm

The condenser is installed and pre-centered in the factory.
To remove the condenser use an Allen wrench 1.5 mm and operate on the fixing knob placed on the right side of the condenser holder.
Should a new centering is needed, operate in this way:

1. Insert 4x objective in the light path (in case 4x is not available use the lower magnification available).
2. Focus the specimen.
3. Close the aperture diaphragm using the ring ③, moving the ring to the value “4” related to the 4x objective. (Fig. 16)
4. Raise the condenser to the upper limit using the height adjustment knob ④ placed on the left side of the condenser holder.
5. Center the condenser using the centering screws ⑤ until the field of view is evenly illuminated (in the field of view no dark and bright areas must be noticed).
6. Fully open the diaphragm.

Fig. 16

10.7.2 Centering with field diaphragm

1. Put the specimen on the stage, insert 10X objective and focus the specimen.
2. Rotate the field diaphragm ring ① to fully close the diaphragm. (Fig. 17)
3. Rotate the height adjustment knob ② to focus the edges of the diaphragm.
4. Rotate the centering screws ③ to bring the diaphragm's image into the center of the field of view.
5. Gradually open the diaphragm. The condenser is centered when the diaphragm's image is symmetrical to the edges of the field of view.
6. In the normal use, open the diaphragm until it circumscribes the field of view.

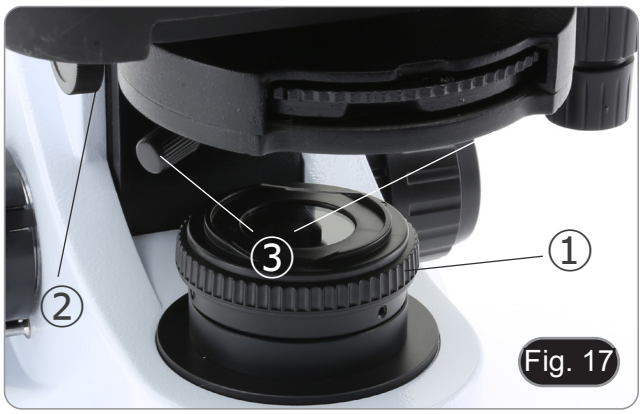


Fig. 17

10.8 Effects of the field diaphragm

Field diaphragm adjusts the illuminated area to obtain a high contrast image.
Set the diaphragm according to the objective in use until it circumscribes the field of view, in order to eliminate unnecessary light to eyepieces. (Fig. 18)

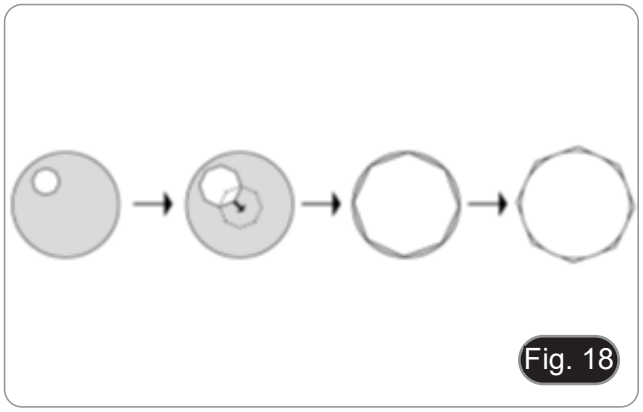


Fig. 18

10.9 Aperture diaphragm

- The Numerical Aperture (N.A.) value of the aperture diaphragm affects the image contrast. Increasing or reducing this value one can vary resolution, contrast and depth of focus of the image.
- Move the diaphragm ring ① (Fig. 19) on the value corresponding to the objective in use. In this case the optimal setting of the condenser is achieved. It is possible, however, move the ring to lower or higher values to adapt the observation to personal preferences.

- With low contrast specimens set the numerical aperture to about 70%-80% of the objective's N.A. If necessary, remove on eyepiece and, looking into empty sleeve, adjust the condenser's diaphragm in order to obtain an image like the one in Fig. 20.

Fig. 19

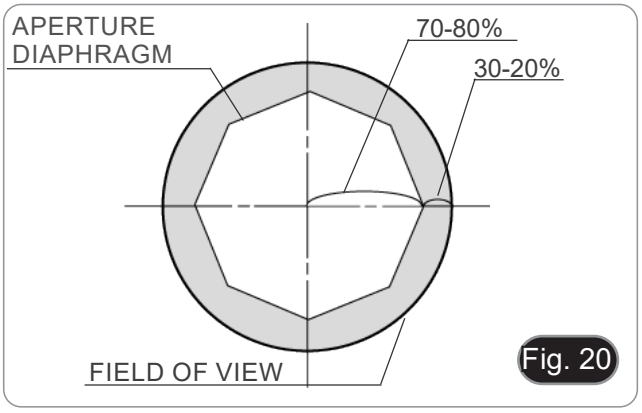


Fig. 20

10.10 Use of oil immersion objective


Fig. 21

1. Focus the specimen with a low power objective.
2. Lower the stage.
3. Put a drop of oil (provided) on the area of the specimen to be observed. (Fig. 21)

- **Make sure that there are no oil bubbles. Air bubbles in the oil damage the image quality**.
- To check for bubbles: remove an eyepiece, fully open the aperture diaphragm and observe the objective exit pupil. (The pupil must be circular and bright).
- To remove the bubbles, gently move the nosepiece to the right and left to move the immersion objective a few times and allow the air bubbles to move.

4. Insert immersion objective.
5. Return the stage to the upper focusing point and obtain an optimal focus using the fine focus knob.
6. After use, gently remove the oil with a soft paper towel or a lightly moistened optic paper with a mixture of ethyl ether (70%) and absolute ethyl alcohol (30%).

- **The immersion oil, if not immediately cleaned, could crystallize creating a glass-like layer. In this situation the observation of the specimen would be difficult (even not impossible) due to the presence of an additional thickness on the objective.**

10.11 Use of ALC system

Fig. 22

- **The ALC system does NOT allow a camera to be mounted. The photo port is closed with a cap engraved with "ALC", and the cap is glued to prevent the photo port from being used.**
- **If you need to use a camera: remove an eyepiece and insert the projection lens into the empty eyepiece sleeve.**

1. Adjust the desired brightness through the eyepieces using the light intensity dial (chapter 10.1).
2. Press the ALC button ① to store this setting (Fig. 22). The light on the microscope will turn off for some seconds, then will turn on again; ALC button will light up in blue showing that ALC system is active.

- **The settings could not be working when the light intensity is too low or too high. This is not a defect.**

3. Now the system will automatically adapt the brightness to the eyepieces when an objective is changed, when the aperture diaphragm is used or when another specimen is placed on the stage.
4. Pressing the ALC button again, the ALC system will be disabled.

- **When ALC system is active the light intensity dial is not active.**

10.12 Use of the polarizer (optional)

1. Remove the specimen from the stage.
2. Looking inside the eyepieces, rotate the polarizer until the darkest position is achieved.
3. Once the dark is achieved ("extinction" or "Crossed Nicol" position) it is possible to begin the observation.

11. Use of universal condenser for Brightfield/Darkfield/Phase Contrast

Universal condenser provided with B-382PH-ALC, B-383PH, B-382PHI-ALC, B-383PHI allows observation in brightfield, darkfield and phase contrast.

Fig. 23

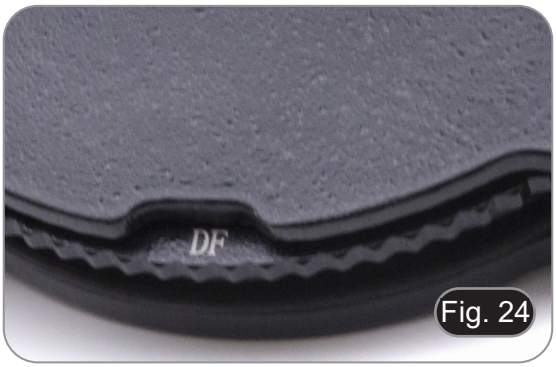


Fig. 24

Fig. 25

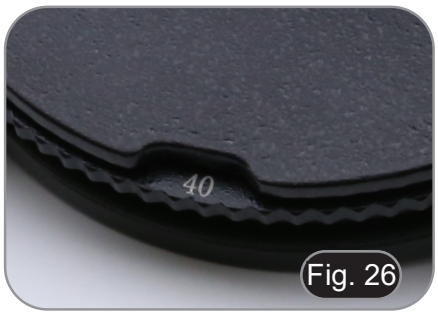


Fig. 26

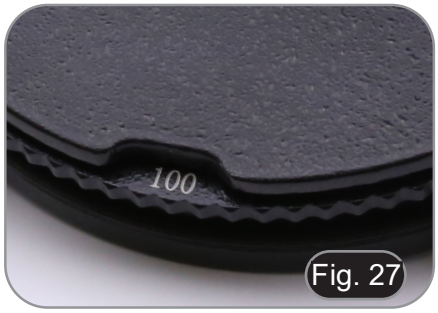


Fig. 27

Observation Mode	Condenser Turret position
Brightfield	BF (Fig. 23)
Darkfield	DF (Fig. 24)
Phase contrast (10x)	10/20 (Fig. 25
Phase contrast (20x)	10/20 (Fig. 25)
Phase contrast (40x)	40 (Fig. 26)
Phase contrast (100x)	100 (Fig. 27)

11.1 Brightfield observation (BF)

Rotate the condenser turret to insert the “BF” position. Now repeat the steps described in “Brightfield transmitted light observation procedures” at page 18.

11.2 Darkfield observation (DF)

1. Rotate the condenser turret to insert the “DF” position.
2. Open the aperture diaphragm.
3. Place a specimen on the stage and focus.
4. Observing into eyepieces raise or lower the condenser until a homogeneous illumination of the specimen can be achieved, thus obtaining a proper darkfield effect.

- **Darkfield requires a huge amount of light. Switching from darkfield to brightfield, one could be dazzled. Do not keep your eyes on the eyepieces when moving the condenser turret from DF to BF.**
- **“Dry” darkfield observation, that is, without the use of oil, is only possible with objectives with N.A. lower than 0,7.**
- **Observing in darkfield, it may be necessary to raise the condenser from the normal position to obtain a more homogeneous illumination. This is not a defect.**

11.3 Phase contrast observation (PH)

1. Center the condenser as already described at page 20-21.
2. Rotate the condenser turret to insert the “10/20” position.
3. Insert 10x objective into the light path.
4. Open aperture diaphragm.
5. Place a specimen on the stage and focus.
6. Remove one eyepiece and insert the centering telescope. (Fig. 28)
7. Rotate the upper part of the centering telescope until the two phase rings (one dark and one bright) visible in the telescope are in focus. (Fig. 29)
8. Using centering screws on the condenser ①, (Fig. 30) center the phase rings to make the bright ring ② be concentric to the dark ring ③.
9. Insert 20x objective (do not rotate the condenser turret) and check the centering of the two rings. (Fig. 31)
10. Repeat the same operation with other objectives to check the ring centering: 40x objective – turret position “40”, 100x objective – turret position “100”.
11. At the end remove the centering telescope, reinstall the eyepiece and begin observation.

- **With 40x and 100x objectives it may be useful to slightly raise the condenser, to obtain a better projection of the phase rings. This is not a defect.**
- **With the 4X objective, the condenser could have a dark halo at the periphery of the field of view. This is not to be considered a defect.**


Fig. 28

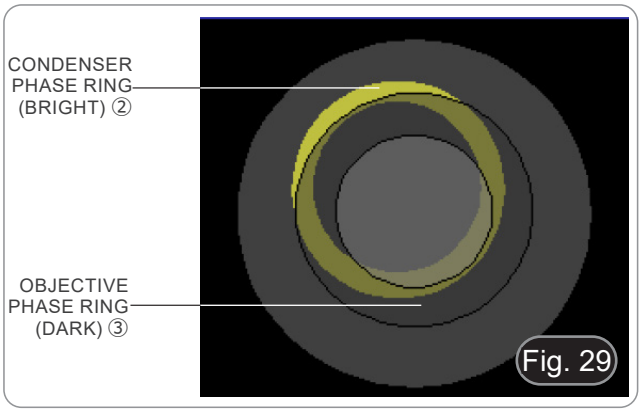


Fig. 29

Fig. 30

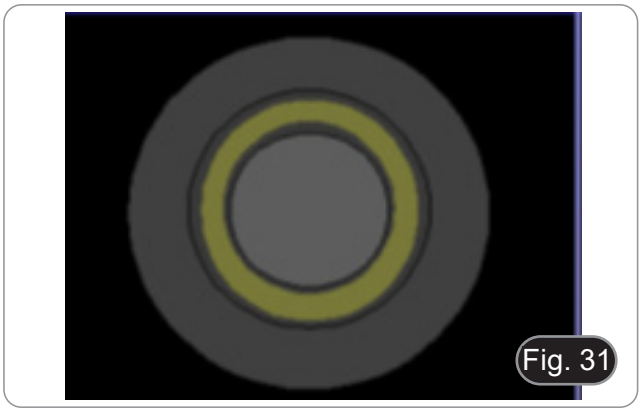


Fig. 31

11.4 Use of the green filter

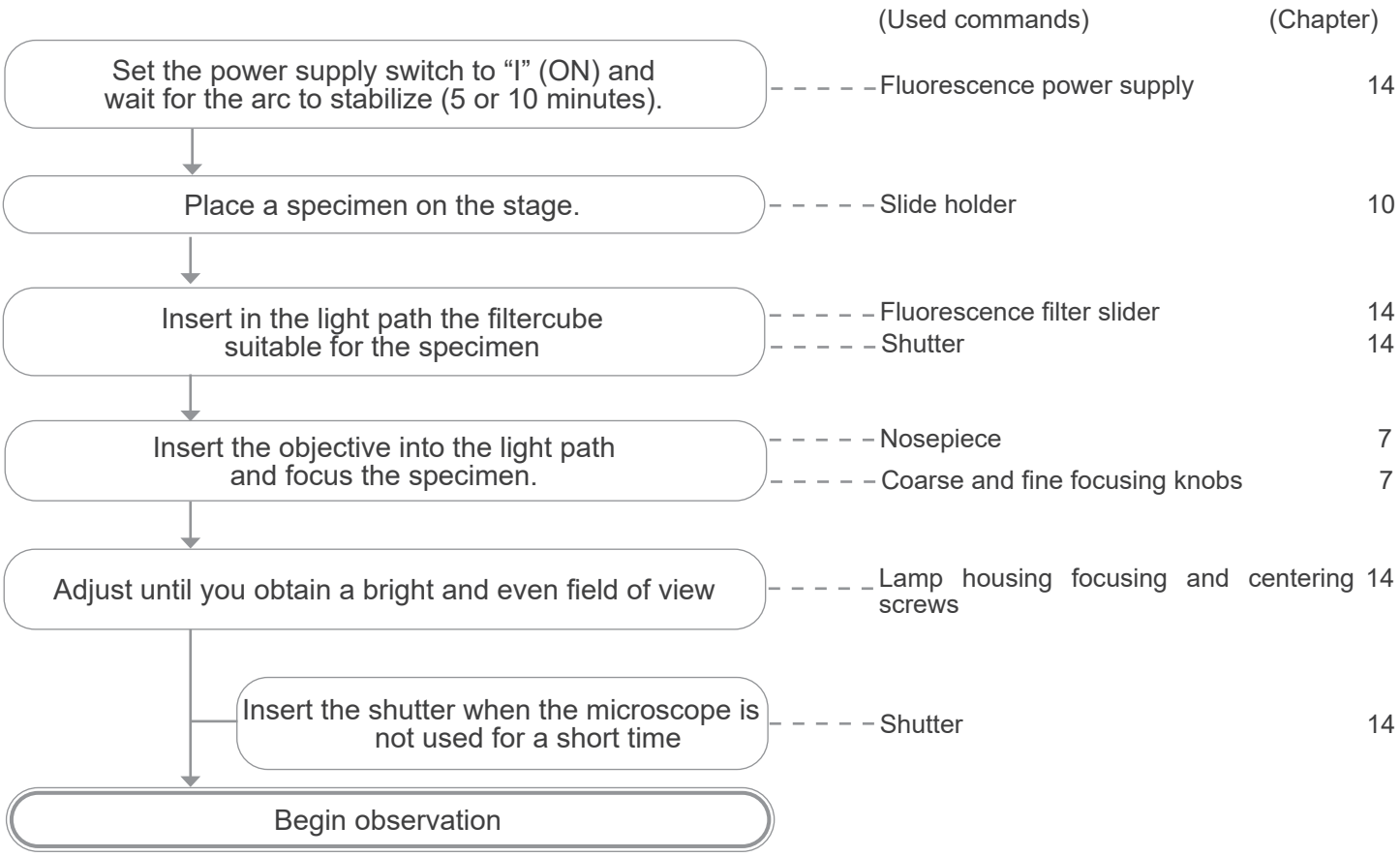
- The green filter is used to increase the contrast of the image during phase contrast observation.

1. Place the filter on the field lens of the microscope (Fig. 32) and begin the observation.

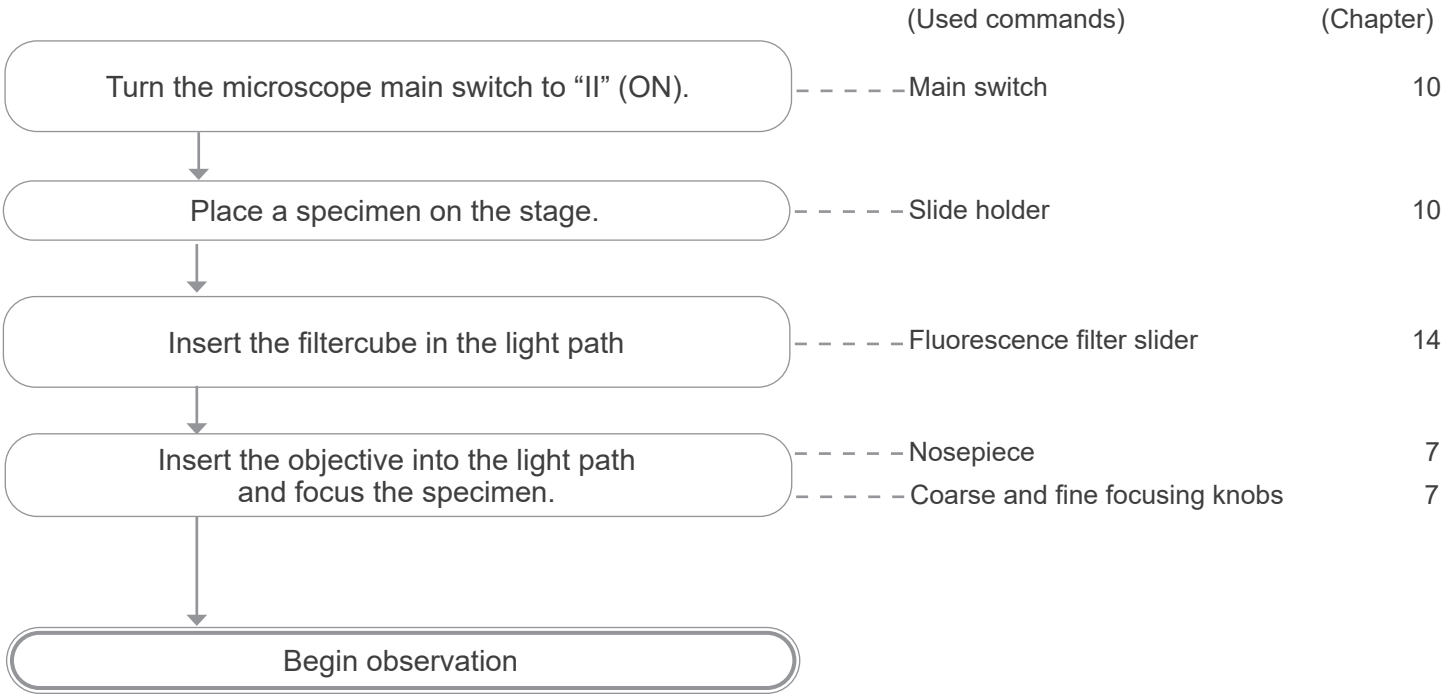
- For observation in brightfield or darkfield it is advisable to remove the filter from the optical path.


Fig. 32

12. Fluorescence reflected light observation procedures (B-383FL)



13. Fluorescence reflected light observation procedures (B-383LD)



14. Use of the microscope (Fluorescence reflected light)

This section refers exclusively to the use of the reflected light fluorescence microscope.
For transmitted light operations, refer to this manual in sections 9-10-11 from page 18 to page 22.

14.1 Assembling procedure (B-383FL)

1. Insert the round dovetail socket of the illuminator ① into the hole in the microscope body and tighten the locking screw ②. (Fig. 33).
2. Install the observation head as already explained at page 16.

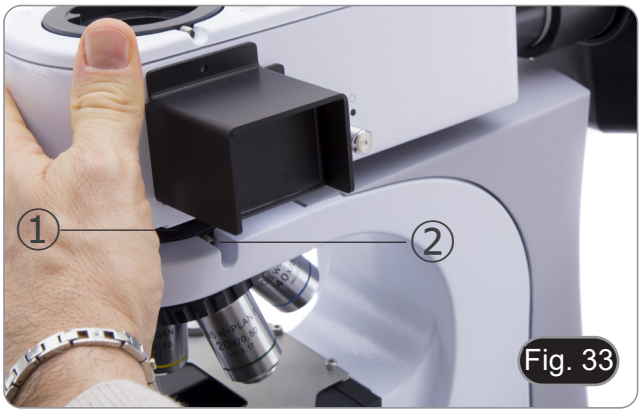


Fig. 33

14.2 Assembling procedure (B-383LD)

1. Insert the round dovetail socket of the illuminator ③ into the hole in the microscope body and tighten the locking screw ④. (Fig. 34).

Fig. 34

2. Connect the cable into the socket ⑤ placed in the back side of the microscope. (Fig. 35)

Fig. 35

3. Install the observation head and tighten the locking screw ⑥. (Fig. 36)

Fig. 36

ONLY FOR B-383FL

- Disconnect all electrical cables before installing or replacing the bulb.
- The bulb has an anode and a cathode of different sizes. Respect the polarity during assembly, respecting the bulb dimensions.
- Do not touch the bulb with bare hands to leave no traces of grease on the bulb. If this happens, clean the bulb with a soft cloth before turning on the lamp.
- The bulb has an average life of about 200-250 hours: a time counter and a voltage indicator are shown on the bulb power supply. Replace the bulb when the hour count exceeds 250 or if the voltage drops below 4.5A.
- During use, the bulb, the lamp housing and the surrounding environment become hot.
- Before replacing the bulb, switch off the power supply, disconnect all cables and wait for the bulb and the lamp housing to cool.
- After switching on the bulb, wait at least 10-15 minutes before switching it off.
- After switching off the bulb, wait for 5-10 minutes before switching it on again so that the mercury vapors have time to condense.
- The bulb emits ultraviolet radiation that could be harmful to eyes and skin.

14.3 HBO bulb assembling (B-383FL)

1. Open the lamp housing using the door lock screw ① and remove the lamp holder. (Fig. 37)

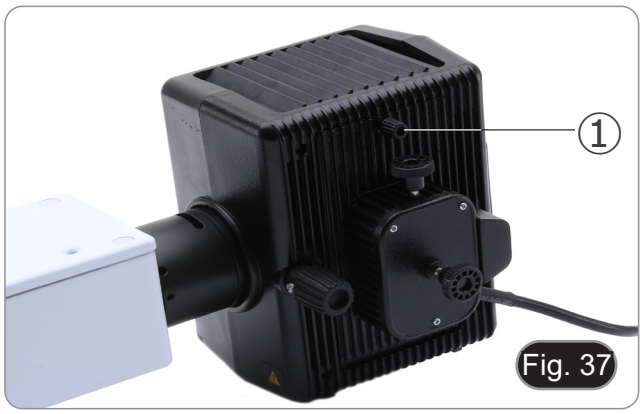


Fig. 37

2. Remove the plastic block ② from the lamp holder (or the exhausted lamp in case of replacement) by loosening the two locking screws ③. (Fig. 38)

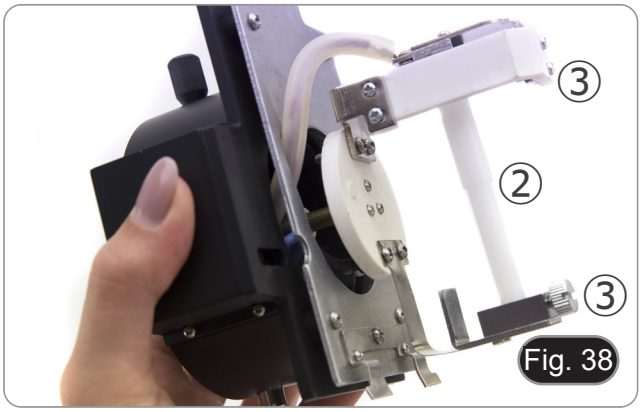


Fig. 38

3. Insert the mercury bulb ④ (respect the polarity of the bulb), tighten the locking screws and refit the lamp holder inside the lamp housing. (Fig. 39)

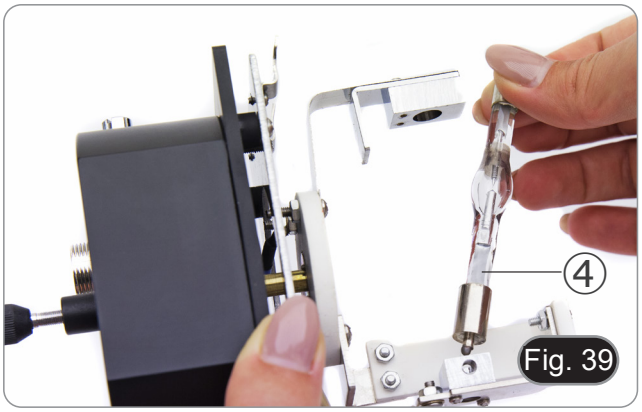


Fig. 39

4. Insert the lamp housing cable into the fluorescence power supply, aligning the notches on the connectors. (Fig. 40)


Fig. 40

5. Insert the power cord into the connector ⑤. (Fig. 41)

Before connecting the power cord, secure the lamp housing cable of the power supply.
If the power cord is connected before, there may be a risk of electrical shock.

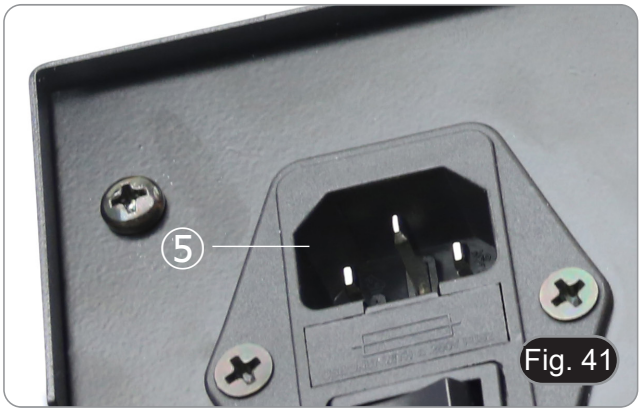


Fig. 41

14.4 Centering the HBO bulb (B-383FL)

- **Wait around 5 minutes before proceeding with this operation to allow the bulb to warm up properly.**

1. Turn on the mercury bulb by operating the power supply switch ①. (Fig. 42)
2. Turn the nosepiece into an empty position (without objectives) and remove the protective cap, or remove an objective from the nosepiece.
3. Place a piece of white paper on the stage and insert the fluorescent cube “B” into the optical path.

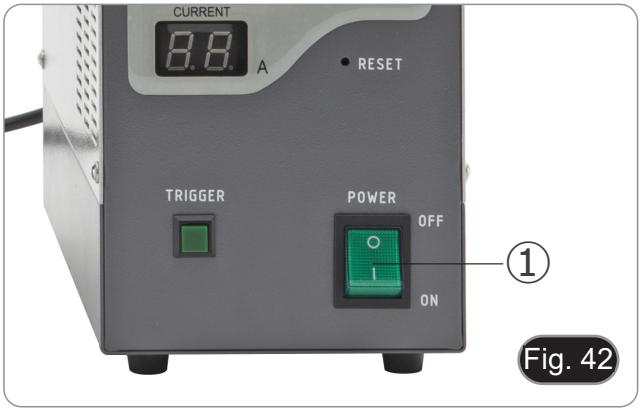


Fig. 42

4. Acting on the focus screw of the collector lens ② and on the centering screws ③ try to obtain the light spot of the bulb’s arc. (Fig. 43-44)

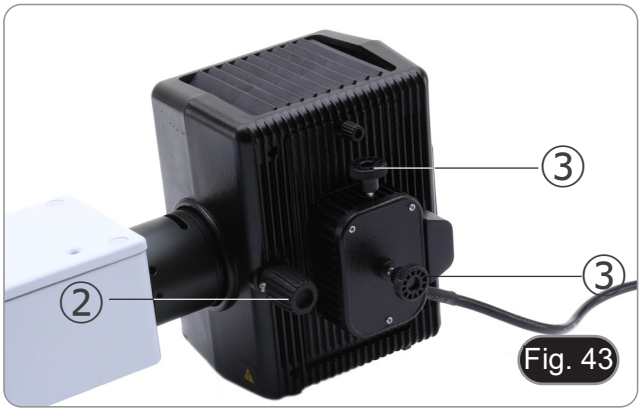


Fig. 43

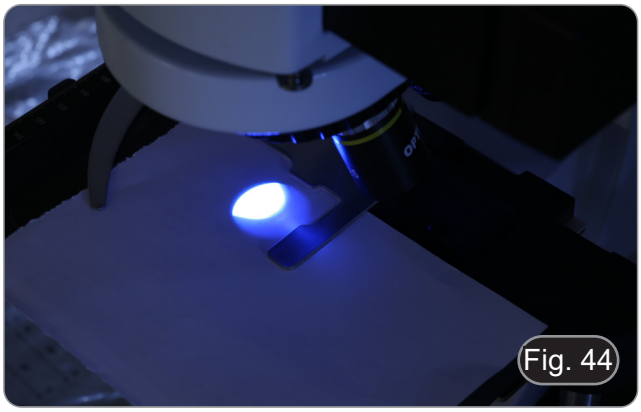


Fig. 44

5. Using the focus screw of the collector lens ②, put the image of the arc projected onto the paper. The light spot must be brighter and sharper as possible. (Fig. 45)

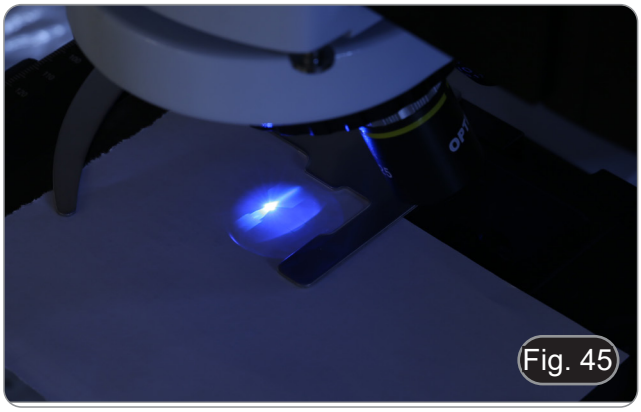


Fig. 45

6. Using the centering screws ③ on the side of the lamp housing, center the image of the arc. (Fig. 45-46)

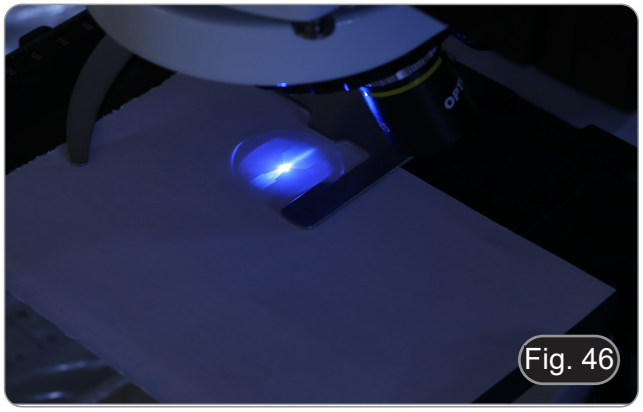


Fig. 46

7. Using the focusing screw of the collector lens ② enlarge the image until a homogeneous illumination is achieved (Fig. 47). At this point, insert an objective into the optical path and, looking into the eyepieces, optimize the illumination always using the screws ② and ③.

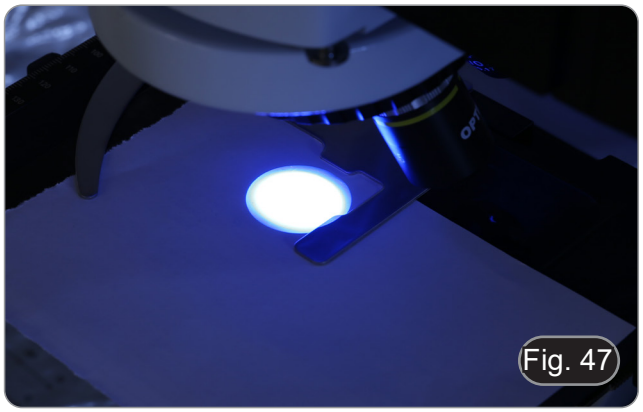


Fig. 47

8. After replacing the exhausted bulb, reset the time counter on the power supply by pressing the “Reset” button ① (Fig. 48)

Fig. 48

14.5 Use of the microscope (B-383FL)

1. Turn on the power supply for the mercury bulb and wait 5 minutes for the arc to stabilize.
2. Move the filter selector ① to one of the 2 available positions until the click stop. (Fig. 49).
3. The microscope has a 3-position filter holder. The leftmost position allocates the B filter, the central position is empty for transmitted light observation and the rightmost position allocates the G filter.

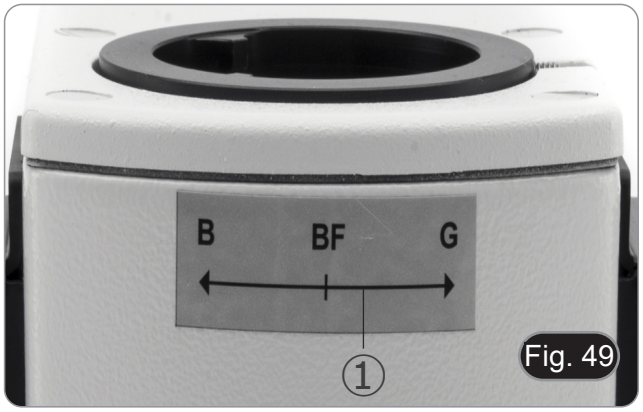


Fig. 49

14.6 Use of the microscope (B-383LD)

1. Turn on the fluorescence LED, by switching on “II” the main switch placed on the back side of the frame. (Fig. 50)

Fig. 50

2. Move the filter slider ② all the way in. (Fig. 51)

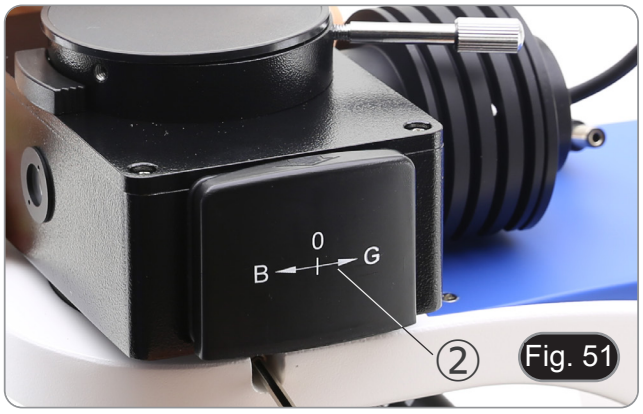


Fig. 51

FILTER CUBE	EXCITATION FILTER	DICHROIC MIRROR	EMISSION FILTER	APPLICATIONS
B	460-495 nm	505 nm	510LP nm	• FITC: fluorescent antibodies • Achridine orange: DNA, RNA • Auramine
G	510-550 nm	570 nm	575LP nm	• Rhodamine, TRITC: fluorescent antibodies • Propidium iodide: DNA, RNA • RFP

14.7 Use of the shutter

- **The epi-illuminator is equipped with a shutter ① located on the right side of the fluorescent illuminator. (Fig. 52)**

1. Close the shutter by interrupting the observation for a limited time and not subjecting the sample to unnecessary lighting in the period in which it is not observed.
   (Frequently switching off and on the HBO bulb considerably reduces its lifetime).

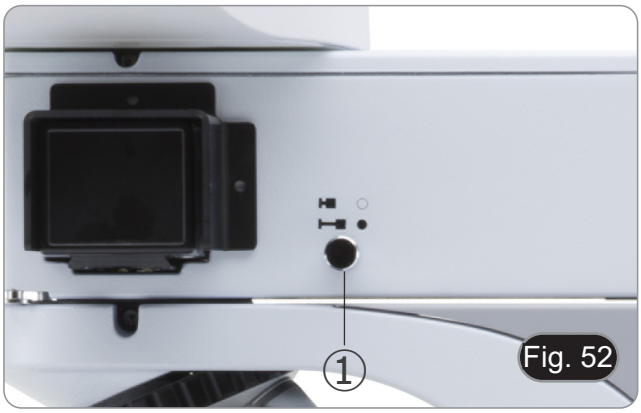


Fig. 52

14.8 Use of the light excluding plate

- **Microscope is provided with a light excluding plate that can be placed on the stage and prevents flare and reflections coming from the condenser front lens.**

The plate can be used in two different ways.

1. Mode n° 1: place the plate on the stage (under the slide holder) and place the slide directly over the plate. (Fig. 53)

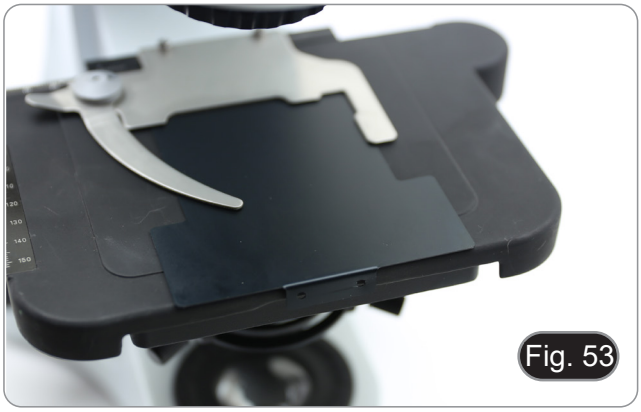


Fig. 53

2. Mode n° 2: lower the condenser and insert the plate between the two layers of the stage. (Fig. 54)

- **In both cases it is possible to move the sample using the stage X-Y translation knobs.**


Fig. 54

14.9 Use of UV shield

- **Microscope is provided with a UV protection shield. This can be used to protect user from unwanted UV rays coming from the fluorescence light source.**

1. Loosen the two locking screws ①. (Fig. 55)

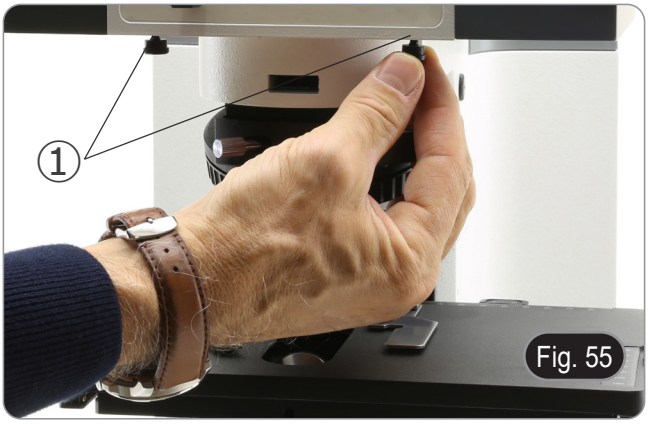
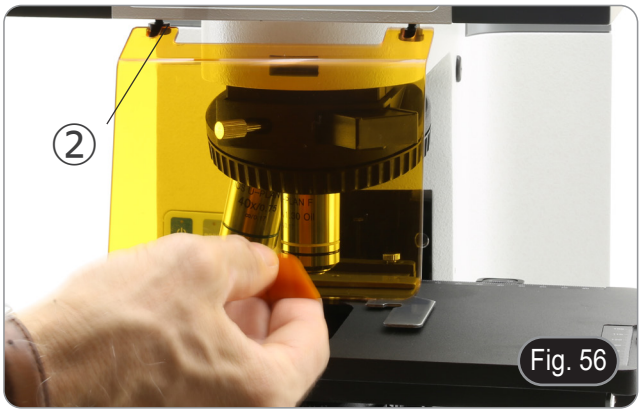


Fig. 55

2. Insert the grooves of the UV shield ② into the holes (Fig. 56) and tighten the screws ① again.



15. Simultaneous observation Phase Contrast + Fluorescence (B-383FL)

- **This microscope allows observation in transmitted light Phase contrast in combination with reflected light Fluorescence. Samples with rapid decay must first be observed in Fluorescence and then in Phase Contrast. The combined observation allows you to easily identify some areas of the sample that emit fluorescence.**

1. Turn on the power supply for the HBO fluorescent bulb and wait 5 minutes before the arc stabilizes.
2. Move the filter selector to an empty position.
3. Insert the desired PH lens and rotate the phase contrast condenser turret to the position containing the corresponding phase ring.
4. Focus the sample.
5. Adjust the light intensity of the transmitted light.
6. Move the fluorescence filter selector to the desired position.
7. To obtain the proper observation of the sample, adjust the light intensity of the transmitted light to modulate the intensity of the fluorescence with the one of the phase contrast.

16. Microphotography

16.1 Installing the C-mount adapter

1. Loosen the clamping screw ① on the trinocular port and remove the dust cap ②. (Fig. 57)

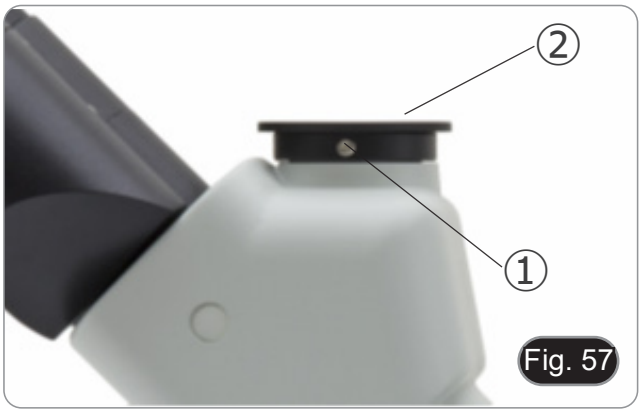


Fig. 57

2. Screw the C-mount adapter ③ to the camera ④ and insert the round dovetail of the C-mount into the empty hole of the trinocular port, then tighten the clamping screw ①. (Fig. 58)

Fig. 58

16.2 Use of reflex cameras

1. Insert the Reflex adapter ① into the relay tube ②.
2. Screw the “T2” ring ③ (not provided) to the reflex adapter.
3. Connect the Reflex camera ④ to the “T2” just installed. (Fig. 59*)
4. Mount the other end of the relay tube ② into the empty hole of the trinocular port, then tighten the clamping screw. (Fig. 57)

- “T2” ring is not provided with the microscope, but is commercially available.
- While shooting dark specimens, darken eyepieces and viewfinder with a dark cloth to minimize the diffused light.
- To calculate the magnification of the camera: objective magnification * camera magnification * lens magnification.
- **If using an SLR camera, mirror movement may cause the camera to vibrate.**
- **We suggest lifting the mirror, using long exposure times and a remote cord.**

Fig. 59

17. Maintenance

Microscopy environment

This microscope is recommended to be used in a clean, dry and shock free environment with a temperature of 5°-40°C and a maximum relative humidity of 85 % (non condensing). Use a dehumidifier if needed.

To think about when and after using the microscope

- The microscope should always be kept vertically when moving it and be careful so that no moving parts, such as the eyepieces, fall out.
- Never mishandle or impose unnecessary force on the microscope.
- Never attempt to service the microscope yourself.
- After use, turn off the light immediately, cover the microscope with the provided dust-cover, and keep it in a dry and clean place.

Electrical safety precautions

- Before plugging in the power supply, make sure that the supplying voltage of your region matches with the operation voltage of the equipment and that the lamp switch is in off-position.
- Users should observe all safety regulations of the region. The equipment has acquired the CE safety label. However, users do have full responsibility to use this equipment safely.

Cleaning the optics

- If the optical parts need to be cleaned try first to: use compressed air.
- If that is not sufficient: use a soft lint-free piece of cloth with water and a mild detergent.
- And as a final option: use the piece of cloth moistened with a 7:3 mixture of ethanol and ether.
- **Note: ethanol and ether are highly flammable liquids. Do not use them near a heat source, near sparks or near electric equipment. Use these chemicals in a well ventilated room.**
- Remember to never wipe the surface of any optical items with your hands. Fingerprints can damage the optics.
- Do not disassemble objectives or eyepieces in attempt to clean them.

For the best results, use the OPTIKA cleaning kit (see catalogue).

If you need to send the microscope to Optika for maintenance, please use the original packaging.

18. Troubleshooting

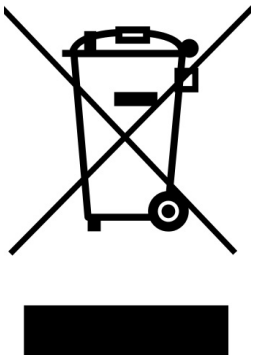
Review the information in the table below to troubleshoot operating problems.

PROBLEM	CAUSE	SOLUTION
I. Optical Section:		
LED operates, but field of view remains dark	Power supply is unplugged	Connect
	Brightness is too low	Set brightness to a proper level
	Fluorescence filter selector is not in a click stop	Move the selector to a click stop
	Fluorescence shutter is closed	Open the shutter
	Fluorescence filter is not suitable for the specimen	Use a suitable filter
Field of view is obscured or not evenly illuminated	Revolving nosepiece is not correctly engaged	Make sure that the revolving nosepiece clicks properly into place
	The turret of the phase contrast condenser is in an incorrect position	Move the turret to a click stop
Dirt or dust is visible in the field of view	Dirt/dust on the specimen	Clean the specimen
	Dirt/dust on the eyepieces	Clean the eyepieces
Image looks double	Aperture iris diaphragm is stopped down too far	Open aperture iris diaphragm
	The condenser is not well centered or it is in a wrong height	Set the condenser according to Koehler settings
Visibility is poor • Image is not clear • Contrast is poor • Details are indistinct • Image glares	Revolving nosepiece is in an incorrect position	Move the nosepiece to a click stop
	Aperture iris diaphragm is too closed or too open	Adjust aperture iris diaphragm
	Dust or dirt on lenses (condenser, objectives, eyepieces and slide)	Clean thoroughly
	For transmitted light observation, the coverglass thickness must not exceed 0.17mm	Use a coverglass with thickness 0.17mm
	For phase contrast observation, a brightfield objective is used instead a phase contrast one	Use a phase contrast objective
	Phase rings of objective and condenser are not well centered	Operate on centering screws
	Objective in use is not compatible with condenser phase ring	Use a compatible objective
	Focus is not even	Slide holder is not flat. Move the specimen to a flat position
One side of the image is unfocused	Revolving nosepiece is in an incorrect position	Move the nosepiece to a click stop
	Slide is mounted not in a flat position (tilted)	Place the specimen in a flat position on the stage
	Poor quality of the glass slide	Use a glass slide with higher quality
II. Mechanical Section:		
Coarse focus knob is hard to turn	Tension adjustment ring is too tight	Loosen tension adjustment ring
Focus is unstable	Tension adjustment ring is too loose	Tighten tension adjustment ring
III. Electrical Section:		
LED doesn't turn on	Power supply not connected	Check for proper connection
Brightness is not enough	Brightness setting is too low	Adjust brightness
Light blinks	Power supply not well connected	Check for proper connection

IV. Observation tube:		
Field of view of one eye does not match that of the other	Interpupillary distance is incorrect	Adjust interpupillary distance
	Incorrect diopter adjustment	Adjust diopter
	Your view is not accustomed to microscope observation	Upon looking into eyepieces, try looking at overall field before concentrating on specimen range. You may also find it helpful to look up and into distance for a moment before looking back into microscope
V. Microphotography:		
Image edge is unfocused	To a certain extent it is due to achromatic objectives features	To minimize the problem, set the aperture diaphragm in a proper position
Bright spots appear on the image	Stray light entering in the microscope through eyepieces or camera viewfinder	Cover eyepieces and viewfinder with a dark cloth

Equipment disposal

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.