

Delphi-X Observer

LED fluorescence with 4-position turret attachment



supplementary
user manual

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1. General safety instructions

Intended use: a non-medical device

This microscope is intended for general observation of cells and tissues, with transmitted/reflected illumination and with the specimen fixed on a slide

Intended use as in vitro medical device class A (Regulation (EU) 2017/746)

The models labelled with suffix /MD may be used as in vitro medical device and are intended for observation and diagnostics of cells and tissues in hospitals or by physicians in private practice in pathology, anatomy and cytology applications. To be used with transmitted/reflected illumination and with the specimen fixed on a slide. Physicians use microscopes to identify the different types of cells and spot abnormal cells. This product helps in identifying and treating diseases

1.1 Suffocation hazard

The packaging can contain protective plastic bags without perforations, as well as dust protection bags that could be pulled over the head of a child. To avoid danger of suffocation:

- Keep the bags away from babies and children
- Tie a knot in plastic bags before throwing them out
- Plastic bags should be stored out of reach of children
- The installation and use of this product must always be supervised by a qualified adult

1.2 Dangers associated with the operation

- Improper use could result in injury, malfunction or damage to property. It must be ensured that the operator informs every user of existing hazards
- Danger of electrocution. Disconnect the power to the entire lighting system before installing, adding or changing any component
- Not to be used in corrosive or explosive environments
- Avoid direct exposure of eyes to the collimated light beam or direct light from the light guides or fibres
- To avoid a hazard to children, account for all parts and keep all packing materials in a safe place

1.3 Photobiological safety LED, important safety instructions

- Avoid direct eye exposure to any LED light source while switched on
- Before looking through the eyepieces of the microscope, lower the intensity of the LED illumination
- Avoid long and high-intensity exposure to LED light because this may cause acute damage to the retina of the eye

1.4 Photobiological safety instructions fluorescence light sources

- Fluorescent light sources - such as HBO mercury vapor lamps or LED - can be harmful to human eyes, especially ultraviolet and violet light
- Therefore, always mount and use the orange protection shield, supplied with the fluorescence attachments, when applicable
- Operators must close the shutter of the fluorescence attachment, or switch off the LED for fluorescence, when observation of the sample is postponed for a longer time
- Avoid direct exposure of the eye to any fluorescent light source while switched on
- Before looking through the eyepieces of the microscope, lower the intensity of the LED for fluorescence illumination
- Avoid long and high-intensity exposure to LED light because this can cause acute damage to the retina of the eye

1.5 Prevention of biological and infectious hazards

Infectious, bacterial or viral biohazard substances under observation may be a risk to the health of humans and other living organisms. Special precautions should be taken during in vitro medical procedures:

- **Biological hazards:** keep a logbook of all the biological substances or pathogenic microorganisms that were under observation with the microscope and show it to everybody before they use the microscope or before they do some maintenance work on the microscope! Agents can be bacterial, spores, enveloped or non-enveloped virus particles, fungi or protozoa

- **Contamination hazard:**
 - A sample that is properly enclosed with a cover glass never comes in direct contact with the microscope parts. In that case prevention of contamination lies in the handling of the slides; as long as the slides are decontaminated before use and are undamaged and treated normally, there is virtually zero risk of contamination
 - A sample that is mounted on a slide without cover glass, can come in contact with components of the microscope and may be a hazard to humans and/or the environment. Therefore, check the microscope and accessories on possible contaminations. Clean the microscope surfaces and its components as thoroughly as possible. Should you identify a possible contamination, inform the local responsible person in your organisation
 - Microscope operators could be contaminated from other activities and cross-contaminate components of the microscope. Therefore, check the microscope and accessories on possible contaminations. Clean the microscope surfaces and its components as thoroughly as possible. Should you identify a possible contamination, inform the local responsible person in your organisation. It is recommended to wear sterile gloves when preparing the slides and handling the microscope in order to reduce contamination by the operator
- **Infection hazard:** direct contact with the focusing knobs, stage adjustments, stage and eyepieces/tubes of the microscope can be a potential source of bacterial and/or viral infections. The risk can be limited by using personal eyeshades or eyepieces. You can also use personal protections such as operation gloves and/or safety goggles, which should be changed frequently to minimize the risk
- **Disinfectant hazards:** before cleaning or disinfecting, check if the room is adequately ventilated. If not, wear respiratory protective gear. Exposure to chemicals and aerosols can harm human eyes, skin and respiratory system. Do not inhale vapours. During disinfection, do not eat, drink or smoke. Used disinfectants must be disposed of according to local or national regulations for health and safety

1.6 Disinfection and decontamination:

- Exterior casing and mechanical surfaces must be wiped with a clean cloth, dampened with a disinfectant
- Soft plastic parts and rubber surfaces can be cleaned by gently wiping a clean cloth, dampened with a disinfectant. Discoloration can occur if alcohol is used
- The front lens of eyepieces and objectives are sensitive to chemicals. We recommend not to use aggressive disinfectants but to use lens paper or a soft fibre-free tissue, dampened in cleaning solution. Cotton swabs may also be used. We recommend you use personal eyepieces without eyeshades in order to minimize risk
- Never immerse or dip the eyepiece or objective into a disinfectant liquid! This will damage the component
- Never use abrasive compounds or cleaners that may damage and scratch optical coatings
- Properly clean and disinfect all possible contaminated surfaces of the microscope or contaminated accessories before storing for future use. Disinfection procedures must be effective and appropriate
- Leave the disinfectant on the surface for the required exposure time, as specified by the manufacturer. If the disinfectant evaporates before the full exposure time, reapply disinfectant on the surface
- For disinfection against bacteria, use a 70% aqueous solution of isopropanol (isopropyl alcohol) and apply for at least 30 seconds. Against viruses, we recommend to refer to specific alcohol or non-alcohol based disinfection products for laboratories

Before returning a microscope for repair or maintenance through a Euromex dealer, an RMA (return authorization form) together with a decontamination statement must be filled in! This document - available from Euromex for any reseller- must be shipped together with the microscope at all times

Reference documents:

World Health Organisation:

<https://www.who.int/>

US Centre for Disease Control and prevention

<https://www.cdc.gov/infectioncontrol/guidelines/disinfection/index.html>

Handle with care

- This product is a high quality optical instrument. Delicate handling is required
- Avoid subjecting it to sudden shocks and impacts
- Impacts, even small ones, can affect the precision of the instrument

Dirt on the lenses

- Dirt on or inside the optical components, such as eyepieces, lenses, etc., affects the image quality of your system negatively
- Always try to prevent your microscope from getting dirty by using the dust cover, prevent leaving fingerprints on the lenses and clean the outer surface of the lens regularly
- Cleaning optical components is a delicate matter. Please, read the cleaning instructions further on in this manual

1.7 Environment, storage and use

- This product is a precision instrument and it should be used in a proper environment for optimal use
- Install your product indoors on a stable, vibration free and level surface in order to prevent this instrument to fall thereby harming the operator
- Do not place the product in direct sunlight
- The ambient temperature should be between 5 to +40°C and humidity should be within 80% and 50%
- Although the system is anti-mold treated, installing this product in a hot, humid location may still result in the formation of mold or condensation on lenses, impairing performance or causing malfunctions
- Never turn the right and left focus knobs in opposite directions at the same time or turn the coarse focus knob past its farthest point as this will damage this product
- Never use undue force when turning the knobs
- Make sure that the microscope system can dissipate its heat (fire hazard)
- Keep the microscope away from walls and obstructions for at least approximately 15 cm
- Never turn the microscope on when the dust cover is in place or when items are placed on the microscope
- Keep flammable fluids, fabric, etc. well out of the way

Disconnect power

Always disconnect your microscope from power before doing any maintenance, cleaning, assembling or replacing LEDs to prevent electric shocks

Prevent contact with water and other fluids

Never allow water or other fluids to come in contact with your microscope, this can cause short circuiting your device, causing malfunction and damage to your system

Moving and assembling

- This microscope is a relatively heavy system, consider this when moving and installing the system
- Always lift the microscope by holding the main body and base of the microscope
- Never lift or move the microscope by its focusing knobs, stage or head
- When needed, move the microscope with two persons instead of one

2. Introduction

The Delphi-X Observer 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 Delphi-X Observer series. Both are supplied with this microscope. Please read the manual in full before you start working on your microscope

3. 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 handling 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

4. 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

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

5. Components

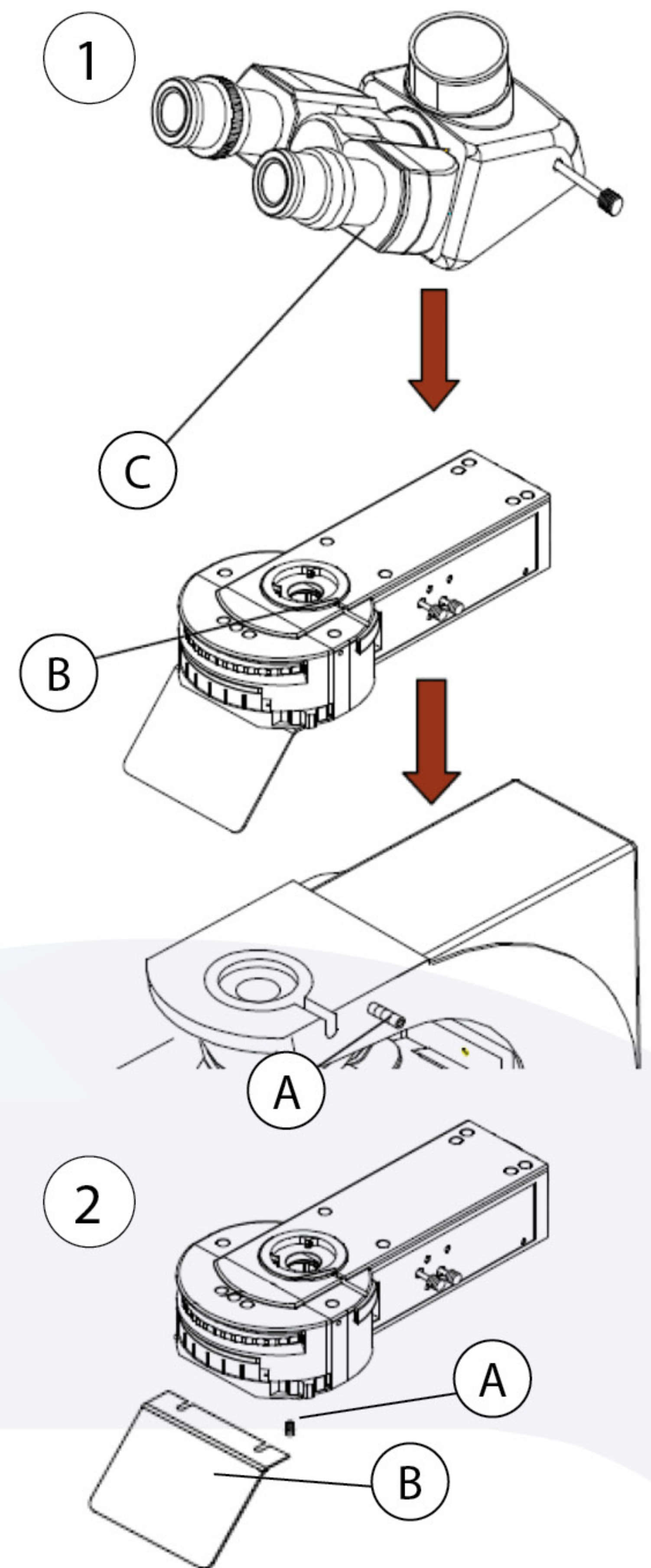
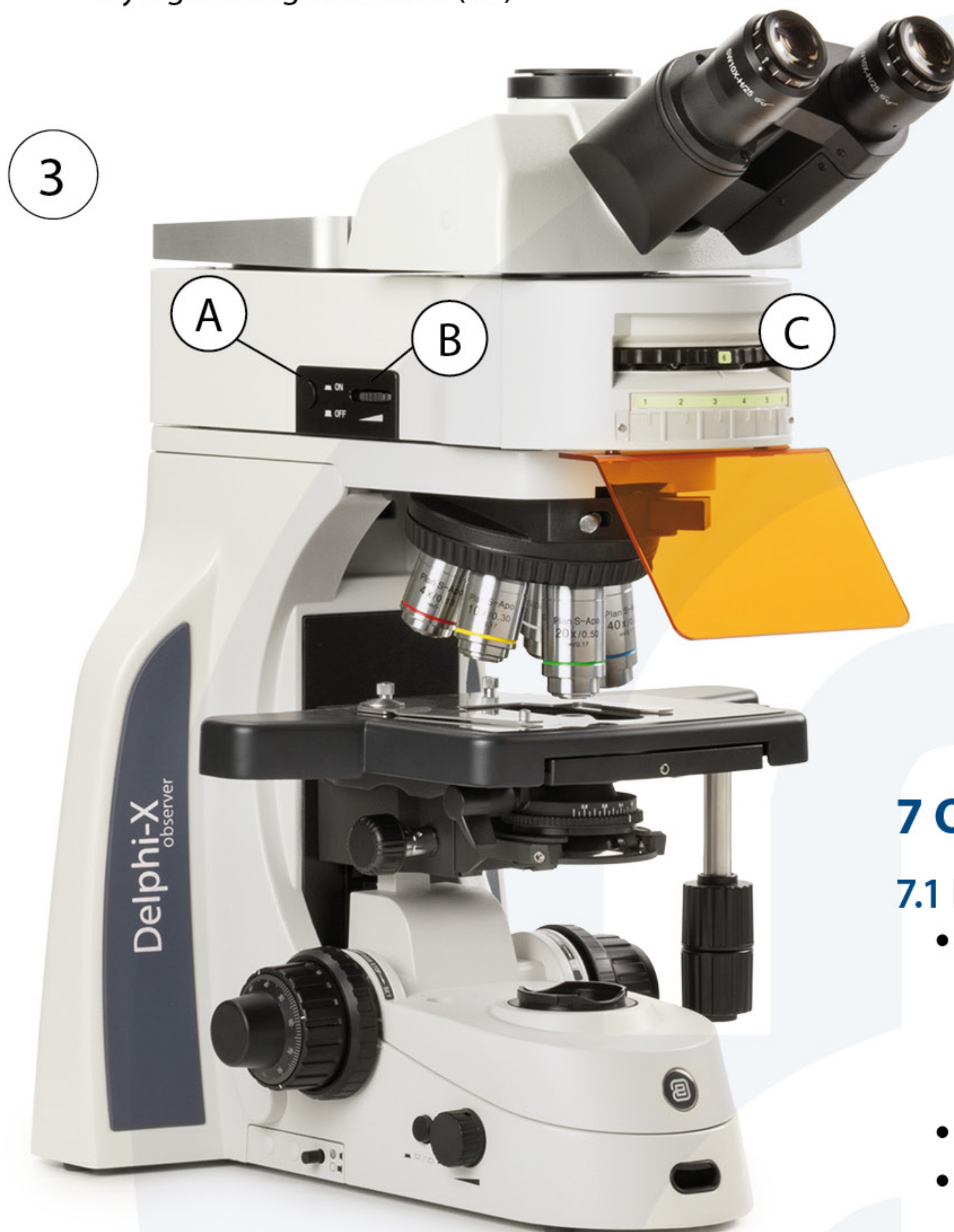
- Main body of the epi-fluorescent attachment
- Power supply unit
- Orange protection window

6. Assembly of the fluorescent microscope

- Loosen the setscrew (1A) and take the bino or trinocular viewing head from the body of the microscope (no numbers indicated on the image)
- Insert the epi-fluorescent attachment into the microscope correctly and tighten the setscrew (1A) until it is installed firmly. (no numbers indicated on the image)
- Insert the viewing head (1C) into the epi-fluorescent attachment correctly and tighten the setscrew (1B) until it is installed firmly. (no numbers indicated on the image)

6.1 Mounting the UV protection shield

- Install the UV protection shield (2B) on the attachment by tightening the screw (2A)



7 Operation

7.1 Preparation

- Verify that the voltage and the frequency of the AC mains outlet match the setting of the voltage switch (3A) and the frequency switch on the rear of the power supply units
- Make sure the cords are connected firmly
- When it is required to interrupt observation for a short period, use the light shutter (3B)

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

7.2 Switch on the unit and control the light intensity

- Turn the fluorescent illumination by pressing the on/off buttons on the left side (3A)
- Adjust the intensity by rotating the wheel that can be found next to the on/off buttons (3B)

7.3 Selecting the filter cubes

By rotating the filter wheel, one can switch between the filter cubes and brightfield (3C)

7.4 Centering the Iris diaphragm

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

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

