euromex Delphi-X Observer Microscope Holland User Manual

Contents

euromex

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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: medical device class I
This microscope is intended for observation and diagnostics of cells and tissues at hospitals or by physicians and veterinaries 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 and veterinaries use microscopes to identify the different types of cells and spot abnormal cells. This product helps in identifying and treating diseases
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

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

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 organization
    - Microscope operators could be contaminated by 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 organization. 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

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, damped 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/ihr/publications/biosafety-video-series/en/

Robert Koch Institut:

springer.com/

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

Handling the LED

Note: Always disconnect the power cord from your microscope before handling the LED bulb and power unit and allow the system to cool down for approximately 35 minutes to avoid burns

- Never touch the LED with your bare hands
- Dirt or fingerprints will reduce the life span and can result in uneven illumination, lowering the optical performance
- Use only original Euromex replacement LEDs
- The use of other products may cause malfunctions and will void the warranty
- During the use of the microscope the power unit will get hot; never touch it while in operation and allow the system to cool down for approximately 35 minutes to avoid burns

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

A model with rechargeable batteries

- Always disconnect the power cord from the microscope before you replace the rechargeable batteries
- The rechargeable batteries must not be thrown away as regular trash but should be taken to special waste collection sites, according your local or national regulations
- Risk of explosion: when removing the rechargeable batteries, do not throw the batteries into fire or any other heat source
- Do not replace the rechargeable batteries with non-rechargeable batteries
- Avoid extreme environmental conditions and temperatures which could affect the rechargeable batteries and lead to fire, explosion or leakage of hazardous substances
- If the rechargeable batteries have leaked, avoid contact of the chemicals with skin, eyes and mucous membranes
- When in contact with the chemicals, flush the affected areas immediately with plenty of fresh water and seek medical attention

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, fabrick, etc. well out of the way

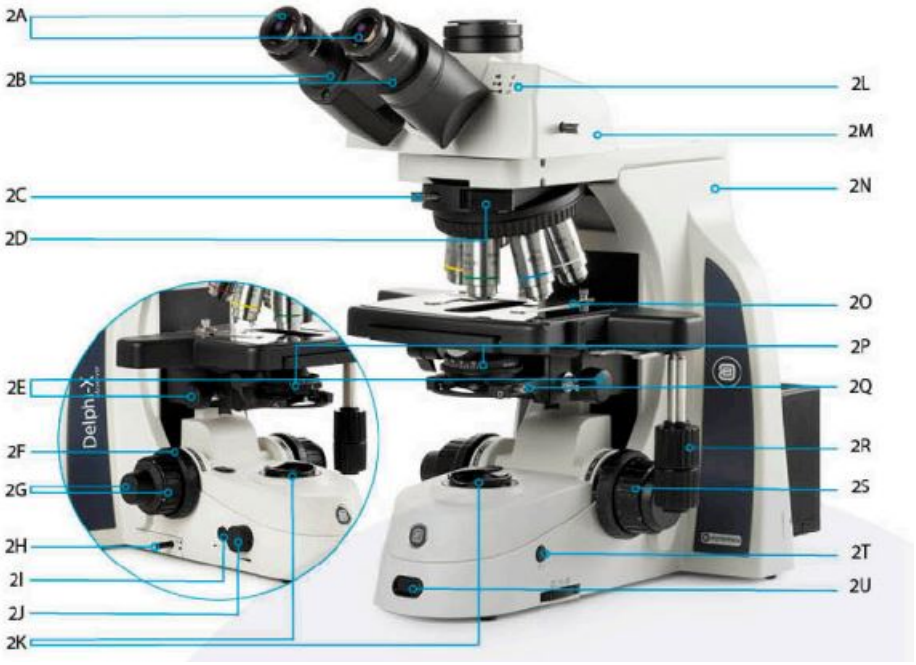
Disconnect power
Always disconnect your microscope from power before doing any maintenance, cleaning, assembling or replacing LEDs to prevent electric shocks
Prevent contact with water and other fluids
Never allow water or other fluids to come in contact with your microscope, this can cause short circuiting 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

Configuration, construction and controls

This chapter describes the main parts and functions of the Delphi-X Observer

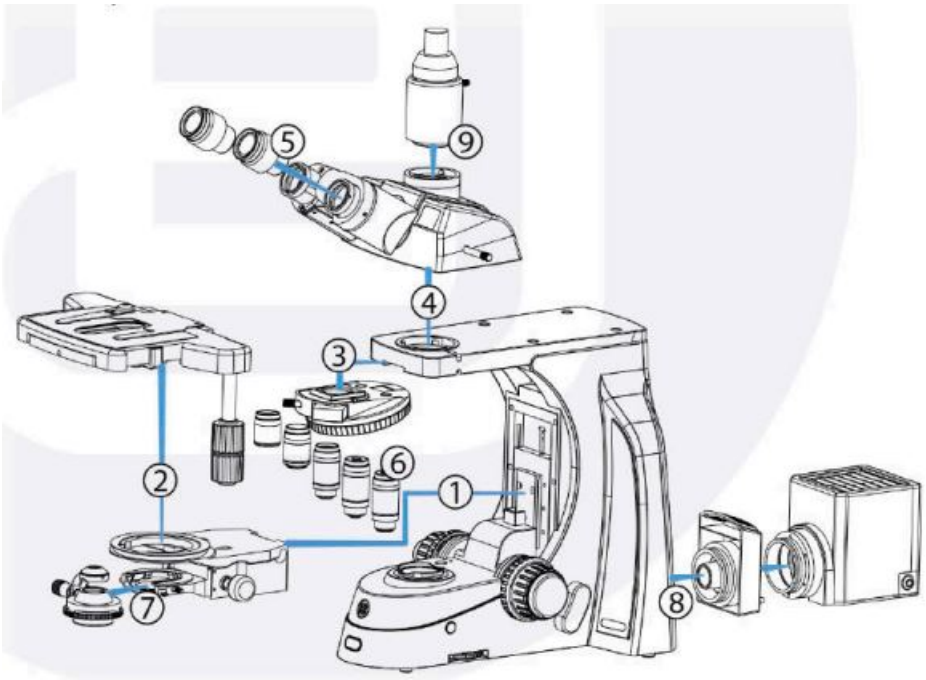
1A	Photoport	1J	lamphousingunitfastening screw
1B	Optical lightpathselector	1K	Excess cable storage
IC	Nosepiece	I I	Allen wrench tool
1D	Objectives	1M	lamphousingunit
IE	Stage	1N	On/off switch
IF	Coaxial control X-Y stage movement	10	Power socket and fuseholder
1G	Coarse and fine focusing controlknobs	1P	lamphousingunit plug
1H	Tension controlknobs	IQ	Power connector (not used)
11	Fielddiaphragm adjustment wheel	IR	External grounding rod



2A	Eyepieces	2L	labelforselecting light pathof photo tube
2B	Eyepiece tubes	2M	Head
2C	Screw for fixingextensoi n slot	2N	Mainbody
2D	DICextension slot	20	Sli de holder
2E	Condenser height controlknob	2P	Condenser
2F	Focusinglock	2Q	Condenser centering screw
2G	Coarse and finefocusing control knobs	2R	Coaxialcontrol X-Y stagemovement
2H	Filter selector	25	Coarse and fine focusing controlknobs
21	li ght selector	2T	iCare on/offbutton
2J	li ght intensity control knob	2U	iCare sensor
2K	Collector lens		

Assembling Delphi-X Observer

This chapter describes the steps that need to be taken to assemble the Delphi-X Observer microscope. Euromex Microscopes will always try to keep the number of assembly steps for their customers as low as possible but there are some steps that need to be taken. The steps mentioned on the following pages are not always necessary but described for your convenience nonetheless:



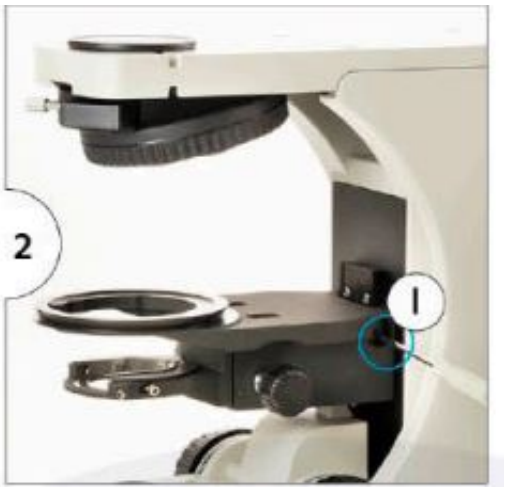
The diagram shows the order of each component's installation

Step1	Attaching the focus cassette	Steps	Placing the eyep ieces
Step 2	Attaching the mechanical X/Y stage	Step6	Mounting the objectives
Step3	Attaching Nosepiece	Step7	Placing the condenser
Step 4	Placing the microscope head, (-mounts and photo ports	Step8	Attaching the LED lamp chamber
		Step9	Attaching the phototube

Step 1 Attaching the focus cassette

1. Attach the focus cassette according to the path shown in figure 1

2. The dovetail slot needs to be aligned with the slot of focusing cassette
3. Slide it down until it reaches the locking pin
4. Then use the hex wrench tool to tighten the screw shown as I (in figure 2)



Step 2 Attaching the mechanical X/Y stage

- Turn the coarse focus knob until the elevating section is brought to the lowest position
- Attach the mechanical object stage according figure 3 by aligning the stage above the ring of the focus cassette
- Fix the mechanical stage into place with screw (figure 4)

Step 3 Attaching Nose piece (figure 5)

1. Slide the nose piece into the slot
2. Fix into place with screw (II)

Step 4Placing the microscope head (figure 6)

- Place the head by loosening the screw (III)
- Mount the head in its position inside the microscope arm
- Secure it by tightening the screw again

Step 5 Placing the C-mount or photo port, onto the microscope head (figure 7)

- loosen the screw (IV)
- Place either the (-mount or photo port and tighten the screw

Step 6 Placing and mounting the eyepieces (figure 8)

- First remove the dustcover of eyepiece tubes
- Insert the eyepieces into the eyepiece tubes

Step 7 Placing the condenser (figure 9)

- Use the condenser height control knob (VJ to lower the condenser holder to the lowest position
- insert the condenser into the holder as shown in figure 9
- Then secure the condenser by fixing the screw indicated
- Centering the condenser is described later in this manual

Step 8 Attaching the LED Lamp HOUSING UNIT (figure 10A)

- Slide the lampunit (Halogen or LED) into position at back of the microscope base

- Use the wrench screw tool to secure bolt (VI)

Step 9 Connecting the power cord

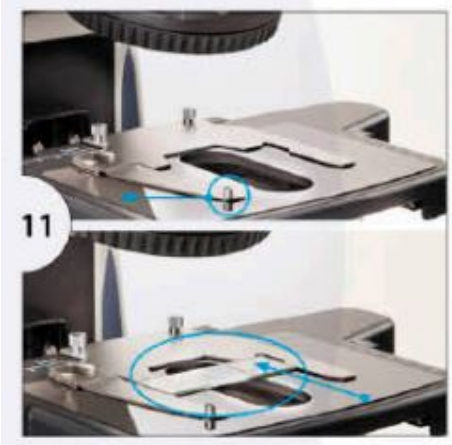
The Delphi-X Observer microscopes support a wide range of operating voltages: 100 to 240 V. Please use a grounded power connection

- Make sure the power switch is off before connecting.
- Insert the connector of the power cord into the Delphi-X Observer power socket (figure 10B), and make sure it connects well
- Insert the other connector into the mains socket, and make sure it connects well
- Put the power switch to ON

Do not bend or twist the power cord, it will get damaged. Use the special cord supplied by Euromex. If it is lost or damaged, choose one with the same specifications

Operation

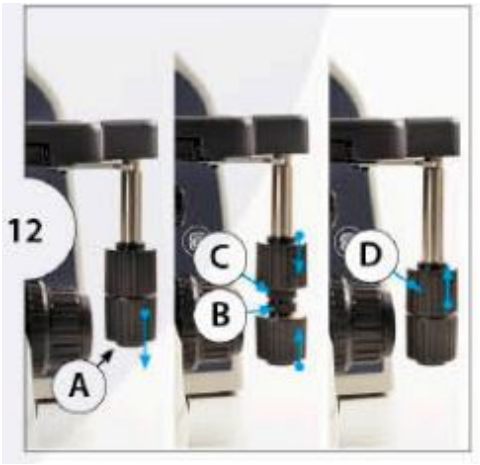
Placing the slide (figure 11)



- Lower the condenser slightly from the uppermost position by turning the condenser focus knob
- Open both aperture and field diaphragm entirely
- Bring the 4x objective (or lowest objective in your configuration) into the optical path by rotating the nosepiece until the right objective clicks into position
- Pull back the spring clamp of the specimen holder and gently place the slide into position

- Gently release pressure from the spring clamp so it softly moves back in position securing the slide
- Use the X and Y axis control knobs of the mechanical stage to move to an area of interest of the slide into the light path`

Adjusting tension of X and Y axis control knobs (figure 12)



- The degree of tension on the X and Y axis control knobs can be adjusted
- To do that, drawdown handwheel (A) and find two adjusting rings (B,C)
- By rotating these rings the movement of the knobs can be set lighter and heavier
- Ring Bis used for adjusting the X direction
- Ring C is used for adjusting the Y direction

Switching between light sources (figure 13)

Next to the intensity controller, there is a button for switching between transmitted and reflected illumination. The standard brightfield configuration used for this manual does not have this option

- When the button is pushed in, the light is set to reflected mode
- When the button is pushed out, the light is set to transmitted mode (standard)

Getting the specimen in focus (figure 14)

- Use the coarse control knobs to adjust the focus quickly and roughly
- Get the specimen into sight through the eyepieces
- Then use the fine focus control knob to adjust the focus in detail

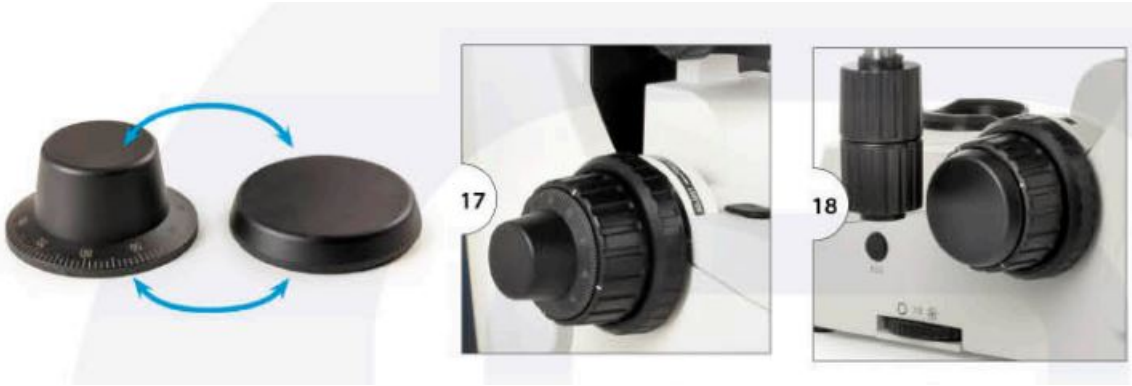
Adjusting the coarse focus tension (figure 15)

Next to the right side coarse focus know there is a ring for adjusting the coarse focus tensions This can be used to make the coarse control move lighter or heavier, according to user preference

Setting the focus lock (figure 16)

Next to the left side coarse focus know there is a ring setting the focus lock. The focus lock can be used to limit the maximum position of the stage at a certain height. This is ideal for preventing objectives to get damaged, slides from breaking or setting the stage at a reference height

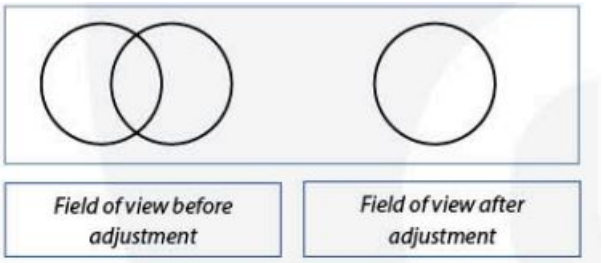
Switching the fine focus knobs (figures 17 and 18)



The fine focus knobs can be switched from left to right to meet user preference

- Pull the knobs with moderate force to release the magnet which is holding the knobs onto the stand
- Attach the magnets onto the holder and let it grab the knobs again to mount them onto the holder

Adjust interpupillary distance
The Delphi-X Observer has an interpupillary distance range of 47 to 78 mm. The correct interpupillary distance is reached when one round image is seen in the field of view



This distance can be set by either pulling the tubes towards each other or pulling them from each other. This distance is different for each observer and this should be set individually. When more users are working with the microscope it is recommended to remember your interpupillary distance for a quick setup during new microscopy sessions

Adjust diopter of the eyepieces (figure 19)

In order to compensate for human eye differences, distortion, thickness differences in cover glasses and tune for the best parfocality between objectives, one can use the dioptre to do so. Take a good prepared slide for your reference:

- Set (both) the dioptre adjustments of the eyepieces to •o·
- Select the 10x objective, look for a interesting area on the specimen and focus on this area

- Select the 40x objective and focus on the specimen **Warning:** don't change the coarse and fine adjustment anymore
- Select the 10x objective again
- With your dominant eye open (close your other eye), rotate the dioptre adjustment from•+• to•-• untill the selected area get as sharp as possible as with the 40x objective
- If during this operation the image becomes unsharp, take your eyes from the eyepieces and turn the dioptre adjustment, without looking into the eyepieces, a few divisions back from•-• to•+• .
- Look into the eyepieces again and turn the dioptre adjustment from '+' to '-' until I the selected area on your specimen gets the optimal sharpness
- Repeat for your non-dominant eye, and with the second dioptre

Verification

- Take your eyes from the eyepieces and look for 2 seconds to a far point in the room in order to ·reset• your eyes
- Look again into the eyepieces. If the adjustment is not good, repeat the operation till you reach the same sharpness for the 10x and 40x objective without touching the coarse and micrometric adjustments

The correct eye point (figure 20)

The eye point is the distance from the eyepiece to the user's pupil. To obtain the correct eyepoint, move the eyes towards the eyepieces until a sharp image is reached at a full field of view

Select eyepiece and camera light throughput (figure 21)

The Delphi-X Observer gives users the option to select out of three output types, giving large fle xibility when using cameras. The push/pull rod on the side of the microscope head can be set to 3 positions:

- POSITION 1 I The optical light path is sent to the eyepieces only. Ideal for when no camera is used
- POSITION 2 I The optical light path is sent to the eyepieces for 20% only. Ideal standard setting for when a camera is used
- POSITION 3 I The optical light path is sent to the camera only. Ideal for when camera is used at low light imaging

These positions are Indicated on the head as well for user convenience

Icon	Action	Eyepiece / camera
	Pushrod in completely	100 / 0
	Pulled towards the middle	20/80
	Pull the rod out completely	0/ 100

Centering the condenser (figure 22)

- Move the condenser to the top position (1)
- Focus on a specimen using the smallest objective (f.e. 4x or 10x objective)
- Close the field diaphragm (2)
- Use screws (figure 23) to move the field diaphragm into to view center
- Open the field diaphragm carefully to the outside of the field of view to ensure the field diaphragm is in the center and so the condenser has been centered properly

Using the aperture diaphragm

The aperture diaphragm (figure 24/ 3) should be used to adjust the numerical aperture, not to adjust image brightness. When the aperture diaphragm is opened to the 70 ~ 80% of objective aperture the ideal position is reached The simplest way to do this is to use the markings on the condenser

Example: when a 40x objective with N.A. 0.65 is used, one can set the condenser to 70 – 80% of 0.65 which is 0.45 to 0.58

Using LED WITH frosted filter (figure 25)

For LED models there is only 1 push button Push the button in for place the frosted filter into the light path

LED version with frosted filter

Using HALOGEN WITH LBD, ND 6 and ND25 filters (figure 26)

The halogen version has three filter options:

- LSD is a filter for increasing color temperature
- ND25 is a filter with 25% light transmittance
- ND6 is a filter with 6% light transmittance

Halogen version with LBD and two ND filters

iCare sensor (figure 27)

The unique iCare Sensor is developed to avoid unnecessary loss of energy. The illumination of the microscope automatically switches off shortly after the user steps away from his or her position

- Pushing the iCare button will re-active the light
- The iCare function is turned on by default
- To turn off the iCare function push the iCare button for 4 seconds
- The function will be deactivated and the bright LED will dim to indicate the function has be turned off
- Repeating this step will turn the function back on

Replacing the fuse (figure 28)

The fuse is placed in a drawer

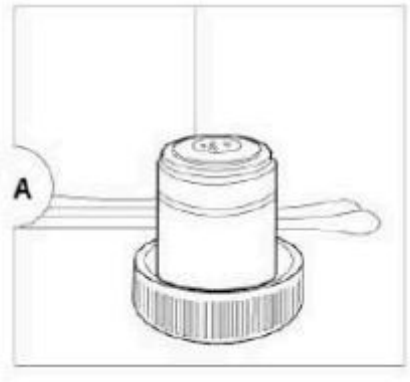
- To open it push the drawer aside with a screwdriver
- Take out the drawer and replace the fuse gently

Cleaning optics

How to keep the optics clean?

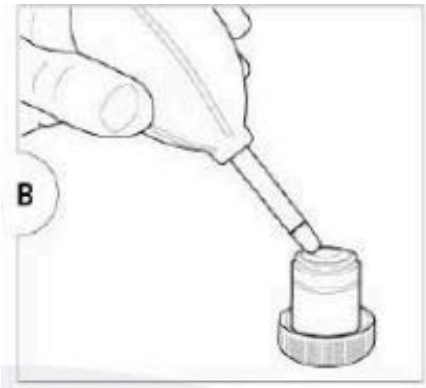
Dust and dirt particles have a negative affect on the image quality. Keeping the optical system of your microscope clean is essential for the best image quality and overall lifetime of your microscope. Dust and dirt on optical elements such as lenses, prisms and filters that are left unattended can become difficult – or even impossible to remove and may cause mold

FIGURE A



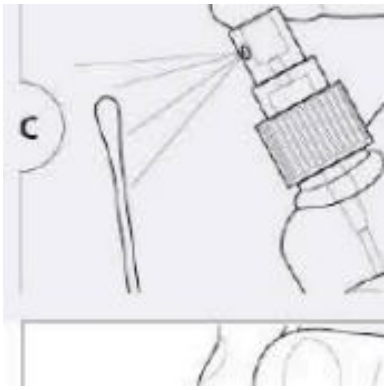
- Place your objective or eyepiece on a secure location
- Objectives can be screwed into the cover of an objective case
- Eyepieces can be placed in the microscope box
- Condensers and collector lenses can remain in place in the microscope

FIGURE B



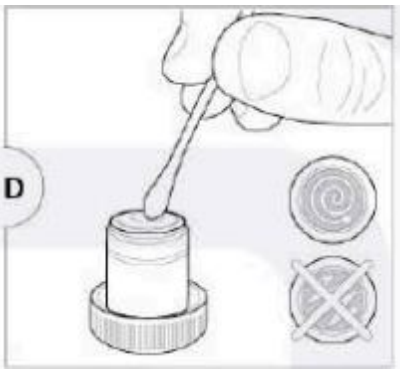
To prevent scratches on coatings and optical glass try to remove dirt and dust that sticks to the optical surface first with an air-blower or with pressurized dry air (oil-free and under moderate pressure version only)

FIGURE C



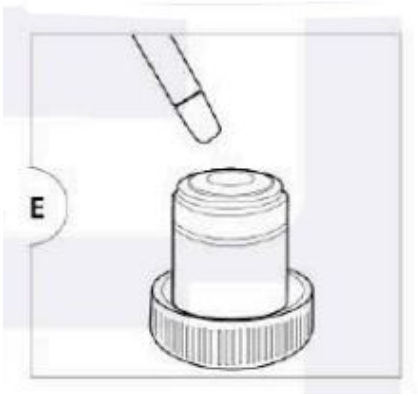
- Use an absorbent lens paper or cotton swap.
- Dampen a swap or towel with a small amount of lens cleaning fluid or cleaning mixture (either pure iso-propanol or a mixture of 7 parts ether and 3 parts alcohol)

FIGURE D



- CLEAN the lens by using the tip of the cotton swap or the lens paper. Use enough lens paper so that solvents do not dissolve oils from your hands which can make their way through the paper on to the coated surface
- When cleaning a large lens surface, wipe with little pressure from the center towards the periphery in a circular motion. Do not use ziq-zaq motion
- Discard each lens paper or cotton swap after a single-use

FIGURE E



- Wait until the cleaning fluid is evaporated, or speed up this process by using pressurized dry air
- Check if the surface is clean by using a magnifying glass
- Place the cleaned item back on the microscope

Please note that cleaning of the optical surfaces indicated in this instruction only applies to external surfaces of objectives, eyepieces, filters and condensers. Internal surfaces must always be done by your Euromex microscopes distributor

Troubleshooting

Proper use and maintenance ensure best performance of your Delphi-X Observer. If problems occur this chapter explains how to resolve most issues. Please make sure this chapter is read and checked before contacting your Euromex distributor for service. If a problem is not described in this list or the suggested solution does not bring the result needed, please contact your Euromex distributor

e **1’1’T.’ll’lr:rnl**	***n:nm***	**a.mm,**

Th e re is no light from the lamp	No power	*Check if the powercableisconnected well,*try *other powercable*
	The bulb is not inserted	*Removethe bulband place*it *back*
	The bulb isdefective	*Removethe bulband placeitback*
	The transmitted -reflected illumination switch is in the wrong position	*Change positionof theswitch*
	The fuse hasblown	*Replace the fuse*
	There is no powerfrom the mains connection	*Replace* it
The lamp burns out suddenly	Poor bulbquality	*Usethespecified lamp* to *replace*it. *If the problem is* not *solved, contact your reseller*
The bul b flicke rs or the brig htness is verti gin ou s	The bulb isat the end of it's lifespan	*Replace thebulb*
	The bulb is not inserted entirely intothe holder	*Removethebulband replace*it
iCare sensor does nott urnoff the illumination ..	There are otherthings in front of microscope (within1 meter)	*Clear allobject*in*a 1 meterradius*
	The iCarefunction is turned off	*Pressand hold theiCarebutton for3 seconds* to *activate the function*

..			
			ltd:m, *Locatethenosepiece properlywhere* it *clicks*
The edge of the fi eld ofv iew is dark orthe brightness i s not unif orm		The nosepiece is not in the located position (objective and light path are notcoaxial)	
		The image of the lampis not centered	*Centerthe lamp*
		The lens(o bjective,condenser, eyepiece or collector) is dirty	*Cleanit thoroughly*
Find dust and sta in in t he fie ld of view		First rotate the eyepieces, if the dust move s:	*Clean theeyepieces*
		Next move the stagewith slide,if the dust **moves:**	*Clean theslideorreplace theslide*
		Nex t movethe condenser up and down, if t he dust moves (using 4 or 10xobjective):	*Clean the topof the condenser*
		Nextchange objective, if the dirt isno longer visible:	*Clean thebottomlensof theobjective*
		If prob le m remains:	*Clean thecollector lens*
		Thereis no coverslipon the specimen	*Addcover slip*
		The cover slipis too thick or too thin	*Use thestandard coverslip(0.17mm)*

Image qua lity is n ot opt imal (reso l utio n o rcontrast)	Thespecimen is placed upsidedown	*Turnslidearound*
	There is oilon a non-oil lens, thisoften happ ens to the 40xobjective	*Clean theobjective*
	There are stainson the lens(including cond enser, objective, eyepiece and collector)	*Clean theopticalelements*
	Nooil is used for the 100xoilobjective	*Use Euromex immersionoil(PB.5255)*
	There are bubbles in the oil	*Tryto remove thebubbles orcreate a newslide*
	Wrong oil is used	*Use Euromeximmersionoil(PB.5255)*
	Thesizeof the aperture diaphragm is too lar ge	*Close thediaphragm*
	The sizeof the aperturediaphragm is too s mall	*Open thediaphragm*

	The position of the condenser is too low	*Adjustthe position*
	For low magnification objectives (4x, 2x) the swing-out condenser was not used correctly	*Swingoutthe toplensof the condenser*
	Diaphragm(s)closed too far	*Openthe diaphragms*

Pe riphery of the image is dark/ un clear (unevenly ill uminated)	Lamp unit is not placed correctly	*Take outlamp unitandre–install*
	Inco rrect position of the light path switching **lever**	*Set to right position*
	The nosepieceis not in the right position	*Turnthenosepiece until it' clicks•* into *positio n*
One side ofthe im age is dark	Thecondenser is not centered correctly	*Center the condenser*
	The condenser is placed inclined in it's hold er	*Install the condenseragain and centerit*
	The nosepieceis not in the right position	***Turn thecondenser until it "clicks"into p osition***
	Diaphragm is not centered	*Centerdiaphragm*
One part of th e i mage is not in fo cu s. Part of th e image becomes o ut of fo cus whi le	The condenser is placed inclined in it's hold er	*Install the condenseragain and center*it
	Thestageis tilted	*Re-install thestagemakingsureit islevelled*
	Thespecimen slideis not placed flaton the st age	*Replace theslide*on *thestage*

moving specimen	The nosepieceis not in the right position	*Turnthenosepiece until* it' *clicks•*into *position*
	Thespecimen slideis not prepared well	*Trya specimenof knownquality and confirm*
Im age ca n n ot be foc used while stage is in highes t pos ition	Focus lock system is secured at the wrong **position**	*Release the focuslock , focusand lock agai n*
	Thestage is not installed correctly	*Re-install thestagemakingsureit islevelled*
The image thro u gh t he eyepieces is shown as a doubl e image or half mo ons appear	lnterpupillarydistance hasnot been set corre ctly	*Perform interpupillaryad justment*
	Dioptre adjustment has not beendonecorrec tly	*Perform diopteradjustment*
Eyesa re gett ing tired	lnterpupillarydistance hasnot been set corre ct ly	*Performinterpupillaryadjustment*
	Dioptre adjustment has not beendonecorrec tly	*Perform diopteradjustment*

	Brightness is not correct	*Adjust brightness using intensitycontrol kno bor filters*
The image is too dark	Too low intensity set on intensity controller	*Increasethe intensity by rotating thecontroll er*
	The sizeof the aperture diaphragm is too s mall	*Adjustagain*
	The position of the conde nser is too low	*Adjustthe position*
	Poor bulbquality	*Usethespecified lamp*
	Diaphragm(s)closed too far	*Open the diaphragms*
	Light path selectorset in wrong position	*Select the 100:0or 20:80 position*
	The bulb is at the end of it’slife span	*Replacethebulb*
	The Kohler incident light is not in the centre	*Adjusttheboltof Kohlerincident light*
The image is too	Toohigh intensityset on intensity controller	*Decrease theintensity byrotating thecontroll er*

bright	Thesizeof the aperture diaphragm istoo larg e	*Adjust again*
	The position of the condenser is too high	*Adjust the position*
Th e image appea rs blue -is h, yellow-ish o r o r a n ge- i sh	Too low or too high intensity set on intensity controller (Halogen illumination only)	*Increaseordecrease theintensitybyrotating t he controller,and usethe ND filters*
	The bu lb is at the end of it's life span	*Replace thebulb*
The image canno t be foc ussed whe n using high mag nification objectives	The cover slipis too thick	*Use thestandard coverslip (0.17mm)*
	Thespecimen is placed upsidedown	*Turnslide around*
	Focus lock system is secured at the wrong **position**	*Release the focuslock, focusand lock again*

The obje cti ve to uches th e specimen when th e **magnification is b eing change d**	The cover slip is too thick	*Use the standard coverslip (0.17 mm)*
	Focus lock system is secured at the wrong position	*Release the focus lock, focus and lock again*
Large focu s devi ation while chang ing objectives	An objective is placed incorrectly, not screw ed in all the way	*Make surethe rightobjectiveis usedand scre wit all the way intothe revolving nosepiece*
	The tension of the X/Y controlsof the stage are set too tight	*Adjust tension to propersetting*
	Diopter adjustment hasnot been donecorrectly	*Performdiopter adjustment*
The s lide does n ot move, or moves too **heavily**	The specimen is not placed between the sp ecimen holder	*Place specimenbetween the holder*
	The tension of the X/Y controls of the stage are set too tight	*Adjust tension to proper setting*

Documents / Resources

	euromex Delphi-X Observer Microscope Holland [pdf] User Manual Delphi-X Observer, Microscope Holland, Delphi-X Observer Microscope Holland