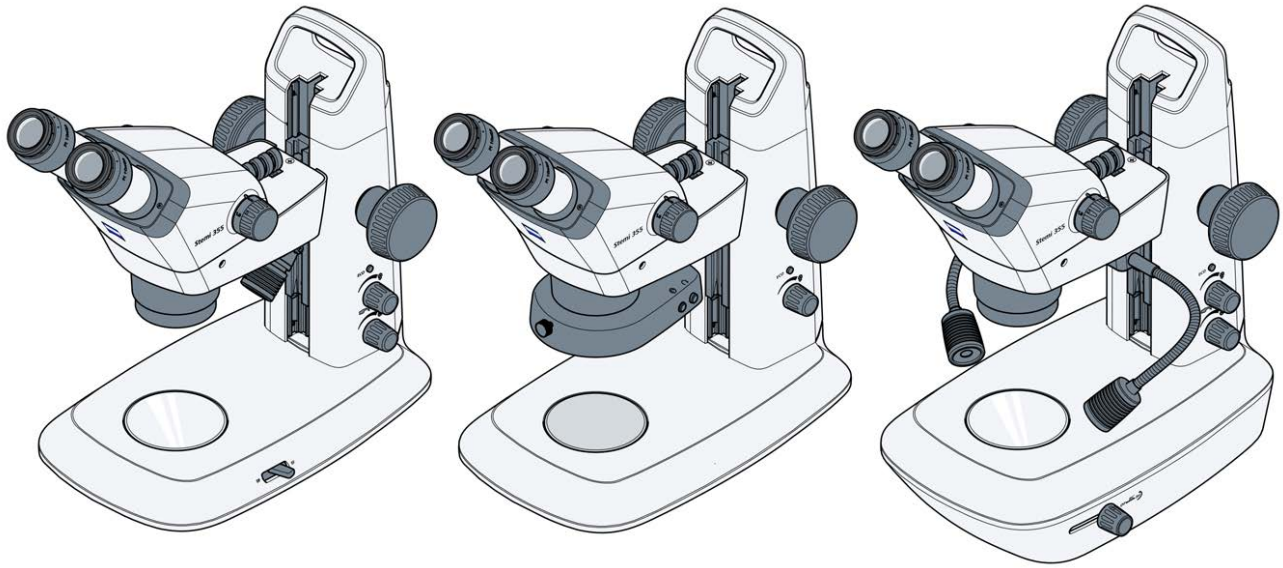

Instruction Manual

ZEISS Stemi 355

Greenough Stereo Microscope for Education and Routine

ZEISS Stemi 355

Original Manual

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1 About this Instruction Manual

This Instruction Manual (further called "document") is considered to be part of the Stemi 355, herein after referred to as "microscope".

This document contains basic steps and safety information that must be observed during operation and maintenance. Therefore, the document must be read by the operator prior to commissioning and must always be available at the place of use of the microscope.

This document is an essential part of the microscope and, if the microscope is resold, the document must remain with the microscope or be handed over to the new owner.

1.1 Text Conventions and Link Types

Explanation	Example
Software controls and GUI elements.	Click **Start**.
Hardware controls and elements.	Press the **Standby** button.
Key on the keyboard.	Press **Enter** on the keyboard.
Press several keys on the keyboard simultaneously.	Press **Ctrl + Alt + Del**.
Follow a path in the software.	Select **Tools > Goto Control Panel > Airlock**.
Text to be entered by the user.	Enter *example.pdf* in this field.
Anything typed in literally during programming, for example macro codes and keywords.	Enter `Integer` in the console.
Link to further information within this document.	See: *Text Conventions and Link Types [▸ 6]*.
Link to a website.	https://www.zeiss.com

1.2 Explanation of Warning Messages and Additional Information

DANGER, WARNING, CAUTION, and NOTICE are standard signal words used to determine the levels of hazards and risks of personal injury and property damage.

Always observe the safety and warning messages in **all** chapters of this document. Failure to comply with these instructions and warnings may result in personal injury, property damage, and the loss of any claims for damages.

The following warning messages indicating dangerous situations and hazards are used in this document.

⚠ DANGER

Type and source of danger

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING

Type and source of danger

WARNING indicates a potentially hazardous situation which, if not avoided, may result in death or serious injury.

⚠ CAUTION

Type and source of danger

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

NOTICE

Type and source of danger

NOTICE indicates a potentially harmful situation which, if not avoided, may result in property damage.

Info

Provides additional information or explanations to help the user better understand the contents of this document.

1.3 Explanation of Symbols

	CE marking (Conformité Européene)
	CSA label: product tested by CSA to meet U.S. and Canadian standards. CSA approval master number optionally given adjacent to this symbol
	UKCA marking (UK conformity assessed)
	KC mark accompanied with KC code
	Manufacturer
	Country of manufacture. "CC" is the country code, e.g. "DE" for Germany, "CN" for China. Date of manufacture optionally given adjacent to this symbol
	Importer
	Intended for use in educational establishments by pupil operators at least 11 years old under supervision of the responsible body. The number 11 is an example age. Other numbers can be marked for other ages.

	Direct current
	Alternating current
	Rated power input, a.c.
	Serial number
	Catalogue number
	WEEE label: Do not discard as unsorted waste. Send to separate collection facilities for recovery and recycling

1.4 Further Applicable Documents

Brochures and Certificates For brochures, declarations of conformity, and other approval certificates ask your ZEISS Sales & Service Partner.

Installation Requirements For more details on technical data, refer to the corresponding Installation Requirements.

Local and National Health and Safety Regulations Observe local and national health and safety regulations for the location of installation and during the use of the microscope.

Consult with your ZEISS Sales & Service Partner if these regulations are in conflict with the installation requirements of the microscope.

Safety Data Sheets Observe the enclosed safety data sheets. The instructions and guidelines given in the respective safety data sheets must be complied with.

Software For detailed information on how to use software, refer to its manual (e.g. Online Help, Software Manual) or ask your ZEISS Sales & Service Partner.

System and Third-Party Components, Accessories Information about the individual components, enhancements, and accessories can be obtained from your ZEISS Sales & Service Partner. Also refer to the documentation of third-party manufacturers.

Instruction Manuals Also observe the following instruction manuals:

- External illuminators (e.g. for fiberoptic cold light sources, LED spot or ring illuminators)
- Alternative stands (stand U, stand B, stand SDA, floor stand S)

Many of these instruction manuals can be found at the ZEISS Portal.

1.5 Contact

If you have any questions or problems, contact your local ZEISS Sales & Service Partner or www.zeiss.com/microscopy/en/service-support/support/contact.html.

Microscopy Courses, Training, and Education

For information on microscopy courses, training, and education visit the ZEISS Academy Microscopy (https://www.zeiss.com/microscopy/en/service-support/training-education/academy-microscopy.html).

ZEISS Portal

The ZEISS Portal (https://portal.zeiss.com/) offers various services that simplify the daily work with your ZEISS systems (machines and software).

2 Safety

This chapter contains general requirements for safe working practices. Any person using the microscope or commissioned with installation or maintenance must read and observe these general safety instructions. Knowledge of basic safety instructions and requirements is a precondition for safe and fault-free operation. Operational safety of the supplied microscope is only ensured if it is operated according to its intended use.

If any work is associated with residual risks, this is mentioned in the relevant parts of this document in a specific note. When components must be handled with special caution, they are marked with a warning label. These warnings must always be observed.

Improper use of the microscope and its components can easily lead to impairment of their function or even damage them. Damage caused by incorrect operation, negligence, or unauthorized intervention, in particular by removing, modifying, or replacing parts of the microscope or its components, cannot be held liable by the device manufacturer. Third-party devices or components that are not expressly approved by ZEISS may not be used.

Any serious incident that has occurred in relation to the microscope and its components shall be reported to these institutions:

- the competent authority of the Member State in which the user is established
- Carl Zeiss Suzhou Co., Ltd., Suzhou, China

2.1 Intended Purpose

The stereo microscopes Stemi 355 are instruments for the general magnification and spatial imaging of small objects. The microscope is designed and built for use in biological laboratories, industrial manufacturing and quality assurance and is used for observing, preparing and sorting objects and specimens of various types and conditions. The product is intended for use in education and routine applications. It is not intended to either directly or indirectly generate medical diagnostic results.

The microscopes are also suitable for use in educational establishments by students at least 14 years old when supervised by trained professionals.

2.2 General Safety Information

This document must be read before commissioning in order to ensure safe and uninterrupted operation. Pay particular attention to all listed safety notes. Make sure, that

- the operating personnel has read and understood this manual, associated documents and particularly all safety regulations and instructions, and applies them.
- the local and national safety and accident prevention regulations must be observed, as well as the applicable laws and regulations in your country.
- this document is always available at the place of use of the microscope.
- the microscope is always in perfect condition.
- in case of defect or damage, the affected parts and the microscope are taken out of operation immediately and are secured against unintentional use.
- maintenance and repair work, retrofitting, removal or replacement of components, as well as any other intervention in the microscope not described in this document, may only be carried out by the manufacturer ZEISS or persons expressly authorized by ZEISS to do so.

2.2.1 Requirements for Operators

The microscope, components, and accessories may only be operated and maintained by authorized and trained personnel. The microscope may only be used in accordance with this document. If the microscope is not used as described, the safety of the user may be impaired and/or the microscope may be damaged.

Any unauthorized intervention or use other than within the scope of the intended use shall void all rights to warranty claims. The regional regulations on health protection and accident prevention must be observed at all times and during all work on and with the microscope.

Any operations by students in educational establishments shall be under the supervision of authorized and trained personnel.

Training Authorized ZEISS personnel will provide basic training in operating the microscope, as well as information on equipment safety and maintenance work that can be conducted by the operator. The training will be documented by ZEISS and its completion is to be confirmed by the operator.

Special application training is offered for a fee. Current training dates, additional information and the registration form can be found at www.zeiss.com or at the ZEISS Portal.

2.2.2 Safe Operating Condition

If circumstances occur which impair safety and cause changes in operating behavior, the microscope and its components must be shut down immediately and a ZEISS service representative should be informed.

The microscope may only be operated if the operating conditions are adhered to.

- Do not operate the microscope and its components until you have completely read and understood the entire documentation.
- Make sure that all protective cover panels are installed and all warning labels are available and legible.
- Ensure conditions and take measures to prevent the build up of electrostatic charge on the workplace.

2.2.3 Order and Use of Spare Parts

Using spare parts that are not provided by ZEISS can be hazardous or can lead to property damage.

- Unless authorized by ZEISS, all spare parts should be installed by a ZEISS service representative.
- Contact your ZEISS service representative for information on spare parts order.
- Only genuine parts supplied by ZEISS are to be used in servicing the microscope and its components.

2.2.4 EMC Information

The microscope is intended to be used in an industrial electromagnetic environment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The microscope complies with the emission and immunity requirements as a CISPR 11 / EN 55011 / class B group 1 system according to IEC 61326-1. Emissions, which exceed the levels required by CISPR 11 / EN 55011, can occur when the microscope is connected to other devices.

The following EMC user notice is for Korea only:

기종별	사용자안내문
B급기기 (가정용 방송통신기자재)	이 기기는 가정용(B급) 전자파적합기기로서 주로 가정에서 사용하는 것을 목적으로 하며, 모든 지역에서 사용할 수 있습니다.

The following EMC user notice is for Canada only:

This device complies with CAN ICES-001 (B) / NMB-001 (B).

2.2.5 Optical Risk Grouping

According to IEC 62471 sources of optical radiation are classified into risk groups subject to their potential photobiological hazard. Sources are classified into the following four groups according to hazard, based on the emission limit as well as permissible exposure time before hazard exceeded.

Risk group	Description
Exempt	No photobiological hazard.
1 (low risk)	No hazard due to normal behavioral limitations on exposure.
2 (moderate risk)	No hazard due to the aversion response to very bright light sources or thermal discomfort.
3 (high risk)	Hazardous even for momentary exposure.

The following table lists the risk grouping of the available light sources/illumination units according to the mentioned standard:

Light source/Illumination unit	Risk group
Overall device	2
Integrated vertical illumination	2
Spot illuminator C LED (reflected illumination)	2
Double spot illuminator C LED (reflected illumination)	2
Transmitted-light unit in stand C Lab	1
Transmitted-light unit in stand C Edu	1
Ring illuminator C LED, segmentable	1
Transillumination unit L LED	1
Transilluminator L LED, low-height	1

Apertures for LED Radiation

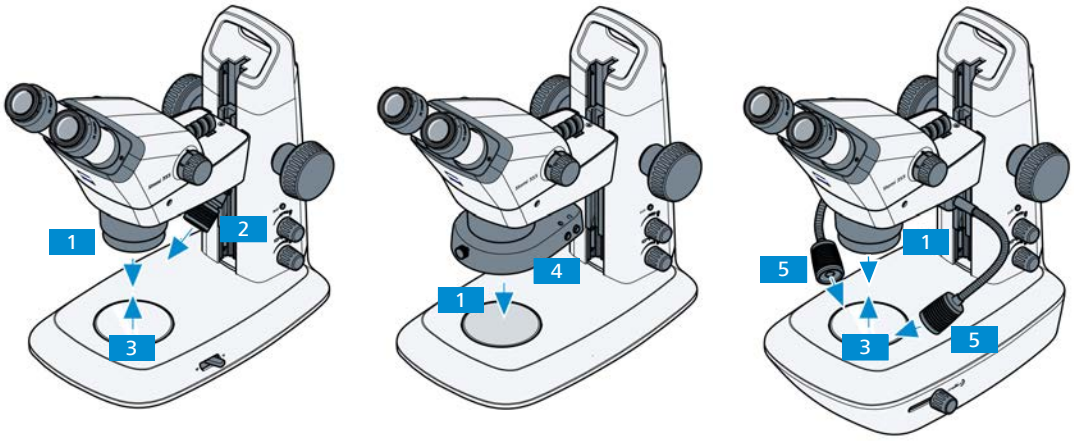


Fig. 1: Apertures for LED radiation in Stemi 355 Edu, Stemi 355 Mat and Stemi 355 Lab

1	Integrated vertical illuminator	2	Spot illuminator C LED
3	Transmitted-light illuminator	4	Ring illuminator C LED, segmentable
5	Double spot illuminator C LED		

2.3 Prevention of Hazards

This section summarizes potential hazards and recommended safety precautions. Failure to follow the safety instructions and instructions may result in personal injury and property damage.

2.3.1 Mechanical Hazards

Property Damage due to Transport

There is a risk of injury and property damage if the microscope is improperly handled and transported.

- Only use the handle, if applicable, for transport of the microscope. Otherwise hold the microscope with one hand and the base plate with the other hand.

Personal Injury and Property Damage due to Instability

There is a risk of injury and property damage which caused by the potential overbalance.

Besides the standard stands given in chapter *Stands [▸ 21]*, the microscope bodies could also be used together with other mechanical stands, such as stand U, stand B, etc. and even other customized ones.

- Always ensure the stability of the system before use.

Personal Injury due to Rigid Guides

There is a risk of personal injury when the guide rail rose beyond the column by adjusting the focusing drive on stand C.

- Pay attention to the extended guide.
- Roll it back when it is not used.

2.3.2 Electrical Hazards

Voltage Hazards

Risk of electric injury (shock or burn) in case of contact with live parts.

- Only connect electrical components that are authorized by ZEISS.
- Always use the power cords supplied by ZEISS. When an unsuitable power cord is used, ZEISS can no longer guarantee the electrical safety and functionality of the microscope.
- Detachable mains supply cords must not be replaced with inadequately rated cords.
- Set up and operate the microscope and its components so that the power cable and all connectors can be easily disconnected at any time.
- Disconnect all power supply units and power cords before cleaning.
- Safe disconnection of the microscope from the mains supply is ensure exclusively by pulling the power plug.
- Shut down the microscope whenever it is not used.
- If there were any cracks or deterioration on the power adapter, the microscope must be shut down immediately and a ZEISS service representative should be informed.

2.3.3 Thermal Hazards

Heat Accumulation

Covering the ventilation openings can lead to heat accumulation that may damage the microscope and its components and, in extreme cases, can cause a fire.

- Keep ventilation openings unobstructed at all times.
- Do not cover devices or openings emitting heat.
- Comply with minimum distance from walls.

2.3.4 Hazards Generated by Radiation

Optical Radiation Hazards

Gas discharge lights, LED lights and other sources of white light emit strong optical radiation (e.g. UV, VIS, IR). Optical radiation may cause damage to the skin and eyes. The extent of the damage depends on the parameters such as wavelength, exposure time, mode of operation (continuous or pulsed), etc.

- Avoid exposure of eyes and skin to radiation.
- Do not introduce reflective objects into the beam path.
- Never remove covers or cover panels during operation.
- Do not disable any interlock system elements.
- Use suitable protective equipment / protective clothing if required.

Electromagnetic Radiation Hazards

The microscope may cause radio interference, which may be mitigated by relocating or re-orienting the equipment. The use of non-specified accessories, cables, or other auxiliary parts from the field of information technology may lead to increased electromagnetic emissions and reduced immunity to interference. Any integration into the system may result in a degradation of the EMC performance.

2.3.5 Hazards Generated by Materials and Substances

Consumable Hazards

Incorrect handling of consumables and cleaning agents can lead to property damage or health issues.

- Consult your ZEISS service representative to find out which consumables can be ordered and how to obtain them.
- Use only consumables recommended by ZEISS.
- Always read the relevant safety data sheets first.

Biological Hazard

Biological substances/agents may pose a risk to the health of humans and other living organisms.

- Keep a logbook of the known biological substances/agents used when working with the microscope and show it to the ZEISS service representative before they perform any work on the microscope.

Chemical Hazard

Chemical substances/agents may pose a risk to the health of humans and other living organisms.

- If normal use involves handling of hazardous chemical substances, refer to the relevant instructions on correct use and indicate whether training or personal protection measures are required.

Hazardous Substances

The microscope and other components can come into contact with various samples and substances that can be hazardous to humans and the environment. The microscope is not equipped with special user protection against substances that are corrosive, potentially infectious, toxic, radioactive or otherwise hazardous to health. When handling such substances, make sure to observe all legal regulations, particularly the relevant national accident prevention regulations.

- Make sure that the microscope and its components was not in contact with hazardous substances (check the laboratory logbook); otherwise, the microscope and its components must be cleaned/decontaminated/disinfected.
- Label contaminated/infected components that cannot be properly cleaned.
- Direct contact with the eyepieces (if applicable) can be a potential way of passing on bacterial and viral infections. The risk can be lowered by using personal eyepieces or eyecups. If eyepieces need to be disinfected frequently, ZEISS recommends to use the eyepieces without eyecups.
- Contaminated parts shall not be returned to any ZEISS department. Decontaminated parts can be sent to ZEISS accompanied by a signed „Customer Declaration of Decontamination".
- Wear personal protective equipment if necessary.

2.3.6 Hazards Generated with the Operating Environment

Dirt, Dust, and Moisture

Dirt, dust, and moisture can impair the microscope's functionality.

- Shut down the microscope whenever it is not used and cover it with a dust protection cover (if available).
- Always cover unused openings/ports with the corresponding system component or with blind caps.
- Perform regular maintenance and cleaning according to the instructions in this manual.
- Make sure that no cleaning liquid or moisture gets inside the microscope.
- Make sure that the electrical parts never come into contact with moisture.
- Never expose the microscope to inadmissible climate conditions (high humidity and temperature).

2.4 Labels and Lights

This chapter shows labels and, where applicable, indicator lights.

All parts that may pose specific hazards are marked with warning labels.

Always observe **all** warning labels!

- Check all warning labels for availability and legibility.
- Immediately replace damaged or illegible warning labels.

In case a label is missing, contact your ZEISS service representative for free of charge replacement.

2.4.1 Labels on the Stemi 355

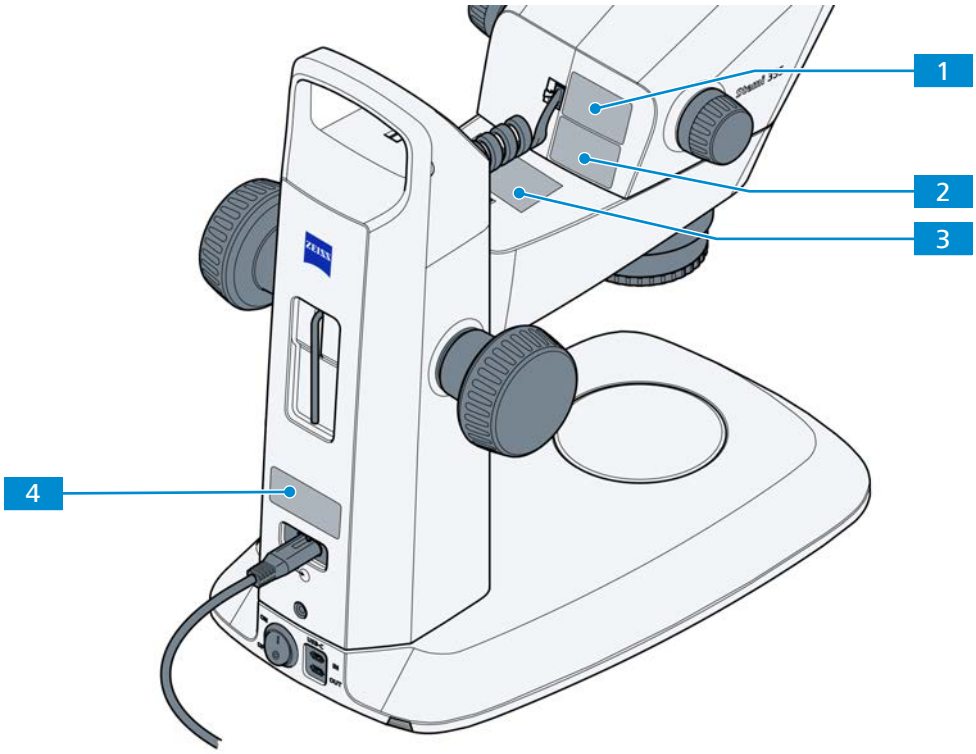
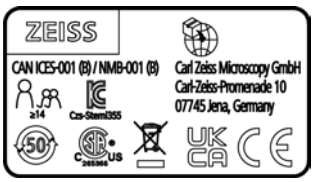


Fig. 2: Warning labels on the microscope

Pos.	Label	Explanation
1		Type label Stemi 355 body Position: rear side of the microscope body
		Refer to the instruction manual!
2		Type label Stemi 355 body Position: rear side of the microscope body

Pos.	Label	Explanation
3		Caution LED radiation Do not stare at operating lamp. May be harmful to the eyes.
4		Type label Stemi 355 stand Position: rear side of the microscope stand

2.4.2 Labels on the Controller C

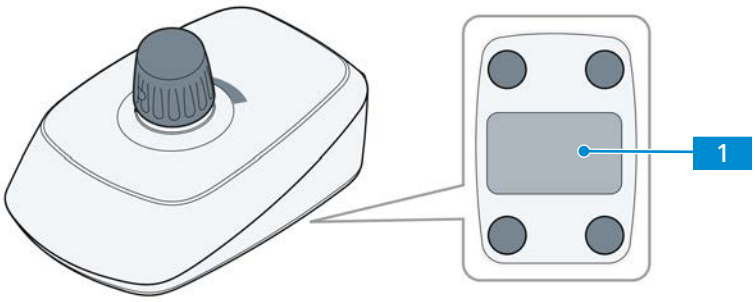


Fig. 3: Warning labels on the controller

Pos.	Label	Explanation
1		Type label controller C Position: bottom side of the controller

2.4.3 Labels on the Transmitted-Light Illuminators

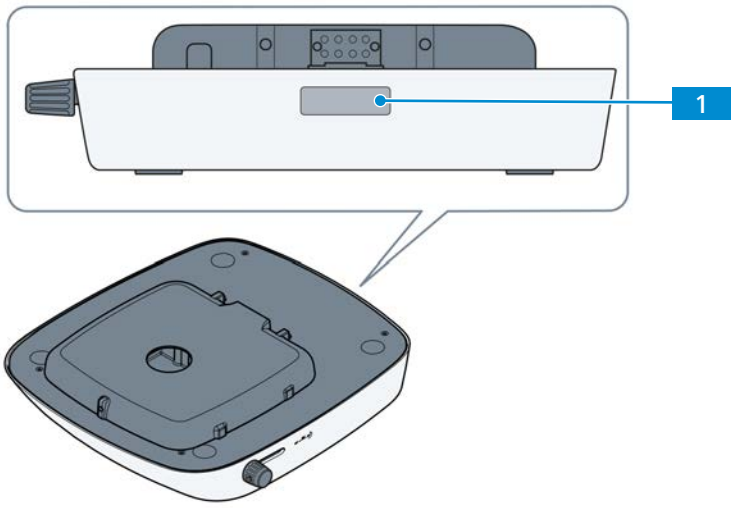


Fig. 4: Warning labels on the transillumination unit L LED

Pos.	Label	Explanation
1		Type label transillumination unit L LED Position: rear side of the transillumination unit

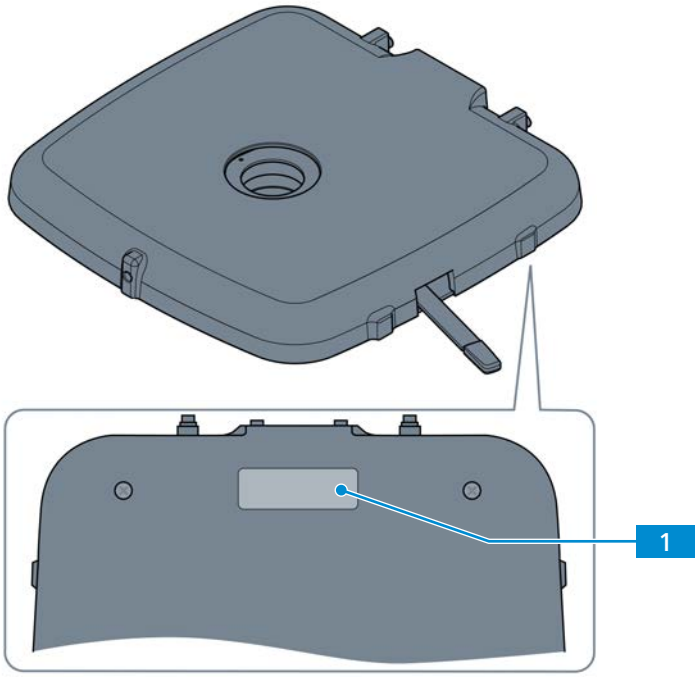


Fig. 5: Warning labels on the transilluminator L LED, low-height

Pos.	Label	Explanation
1		Type label transilluminator L LED, low-height Position: bottom side of the transilluminator

3 Product and Functional Description

The Stemi 355 is a Greenough Stereo microscope with compact design. The microscope provides 5.5x zoom factor. With different stands and illuminators, the Stemi 355 can offer brightfield, darkfield, relief contrast, and simple polarization. The Stemi 355 has three configurations as followed:

435066-9000-000	Stemi 355	Greenough stereo microscope with 5.5:1 zoom
435066-9010-000	Stemi 355 trino	Greenough stereo microscope with 5.5:1 zoom with integrated C-mount camera port
435066-9030-000	Stemi 355 ESD	Greenough stereo microscope with 5.5:1 zoom with antistatic coating

Typical Applications

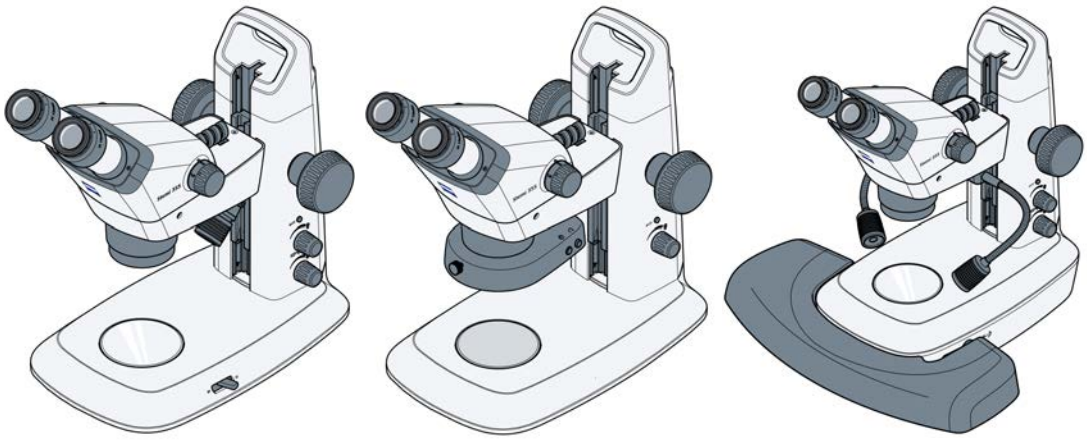
Typical applications include:

- sample preparation in biological or material laboratories
- academic lessons and practical lab course in education
- quality assurance and manufacture, visual inspection and repairing of 3D shaped workpieces in industrial applications
- unprepared specimens investigation in biology and material science

Info

For additional information and detailed descriptions, refer to further applicable documents or ask your ZEISS Sales & Service Partner.

Microscope Sets



Stemi 355 Edu

- Stemi 355 body in stand C Edu
- Integrated controllable vertical illuminator
- with height and angle adjustment, zoomable
- Transmitted-Light Unit for bright- and darkfield
- For training in tutorial rooms and training institutes

Stemi 355 Mat

- Stemi 355 ESD body in stand C Mat
- Integrated controllable vertical illuminator
- (reflected illumination)
- ESD-capable thanks to its antistatic surface and socket
- For industrial quality assurance and manufacture

Stemi 355 Lab

- Stemi 355 body in stand C Lab
- Integrated controllable vertical illuminator
- Double spot illuminator C LED with height and angle adjustment
- Transmitted-light unit for bright- and darkfield and relief contrast
- Hand rest (optional)
- For separation and documentation in the laboratory

3.1 Main Components

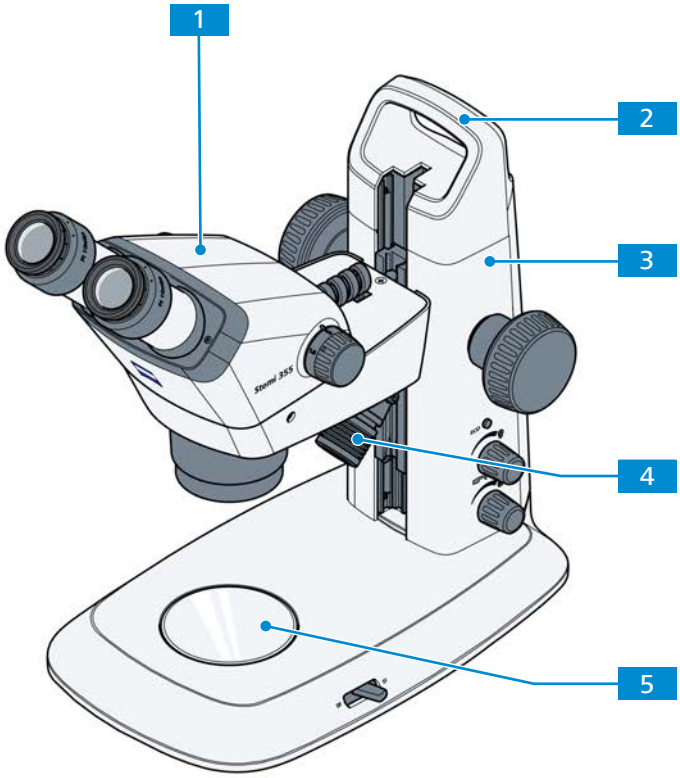


Fig. 6: Main components

1	Microscope body (bino)	2	Carrying handle (only for stand C)
3	Stand (model C Edu)	4	Reflected-light illumination (spot illuminator C LED)
5	Insert plate		

3.2 Controls, Functional Elements and Interfaces

3.2.1 Stands

3.2.1.1 Stand C Mat

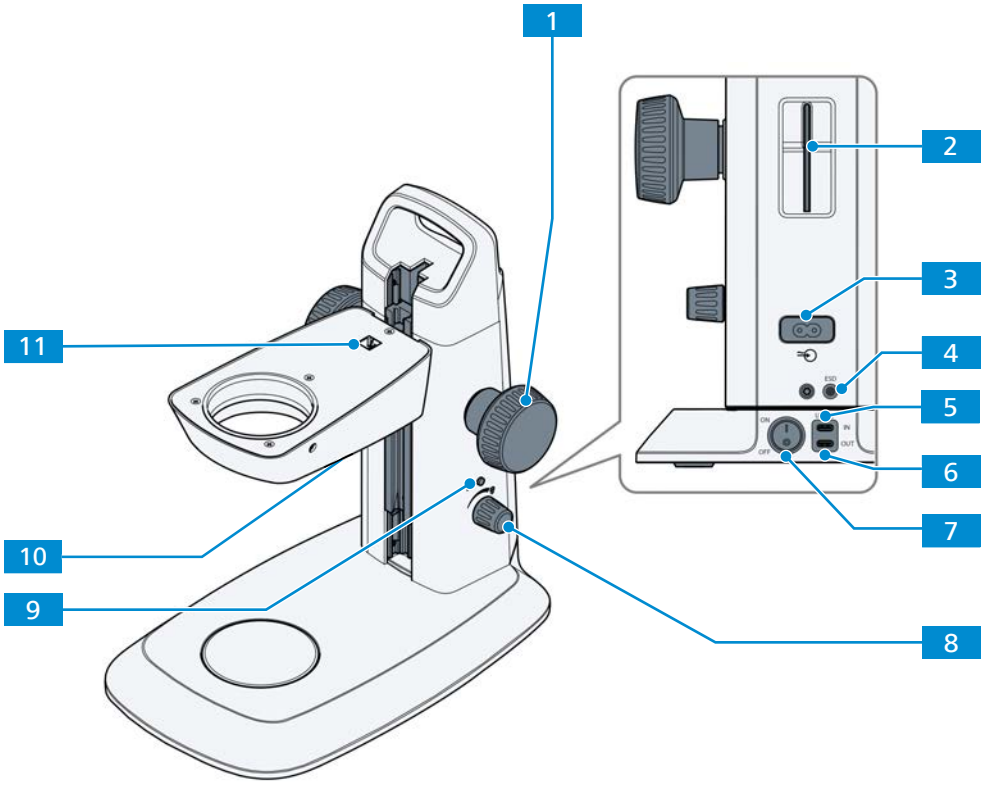


Fig. 7: Stand C Mat

1	Focusing drive	2	Hex key, 3.0 mm
3	Mains supply port	4	**ESD** grounding port to enable the electro-static discharge with an anti-static grounding cord (4mm snap stud)
5	USB-C **IN** port (power input of 12 V DC for the whole system power supply)	6	USB-C **OUT** port (power output of 5 V DC for external devices)
7	Power switch	8	Rotary/push knob for the reflected-light illumination
9	**ECO** button	10	Lower port of the stand carrier for reflected-light illumination connecting cable
11	Upper port of the stand carrier for microscope body connecting cable		

3.2.1.2 Stand C Edu

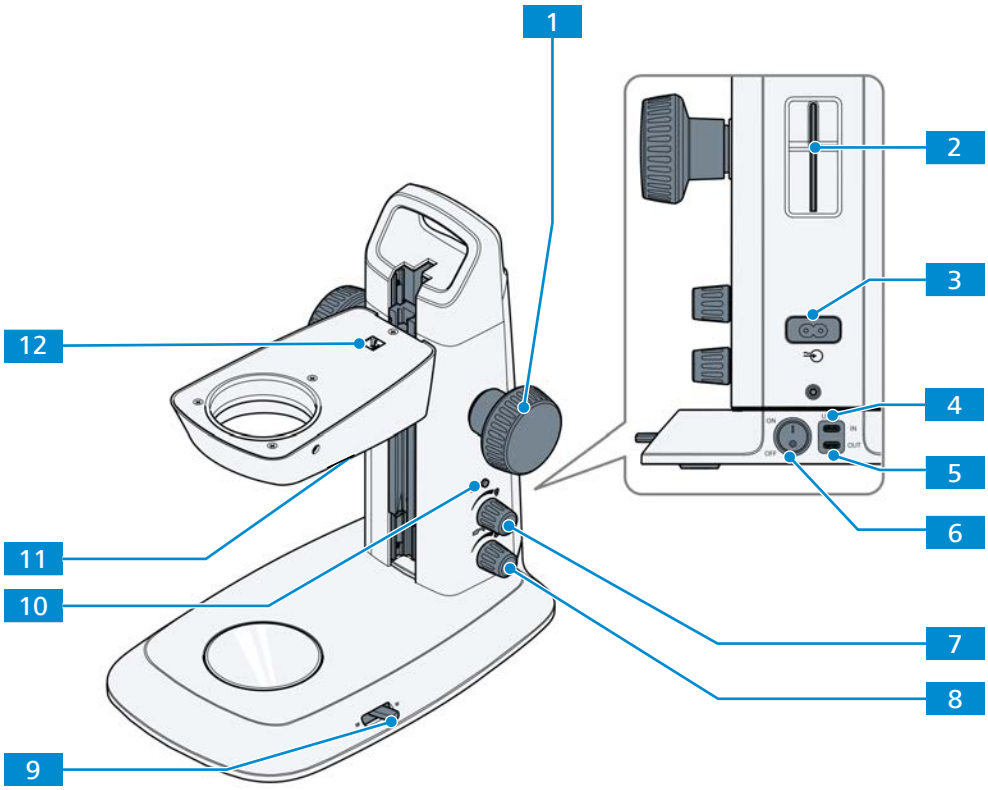


Fig. 8: Stand C Edu

1	Focusing drive	**2**	Hex key, 3.0 mm
3	Mains supply port	**4**	USB-C **IN** port (power input of 12 V DC for the whole system power supply)
5	USB-C **OUT** port (power output of 5 V DC for external devices)	**6**	Power switch
7	Rotary/push knob for additional reflected-light illumination	**8**	Rotary/push knob for the transmitted-light illumination
9	Switching lever for brightfield and darkfield	**10**	**ECO** button
11	Lower port of the stand carrier for reflected-light illumination connecting cable	**12**	Upper port of the stand carrier for microscope body connecting cable

3.2.1.3 Stand C Lab

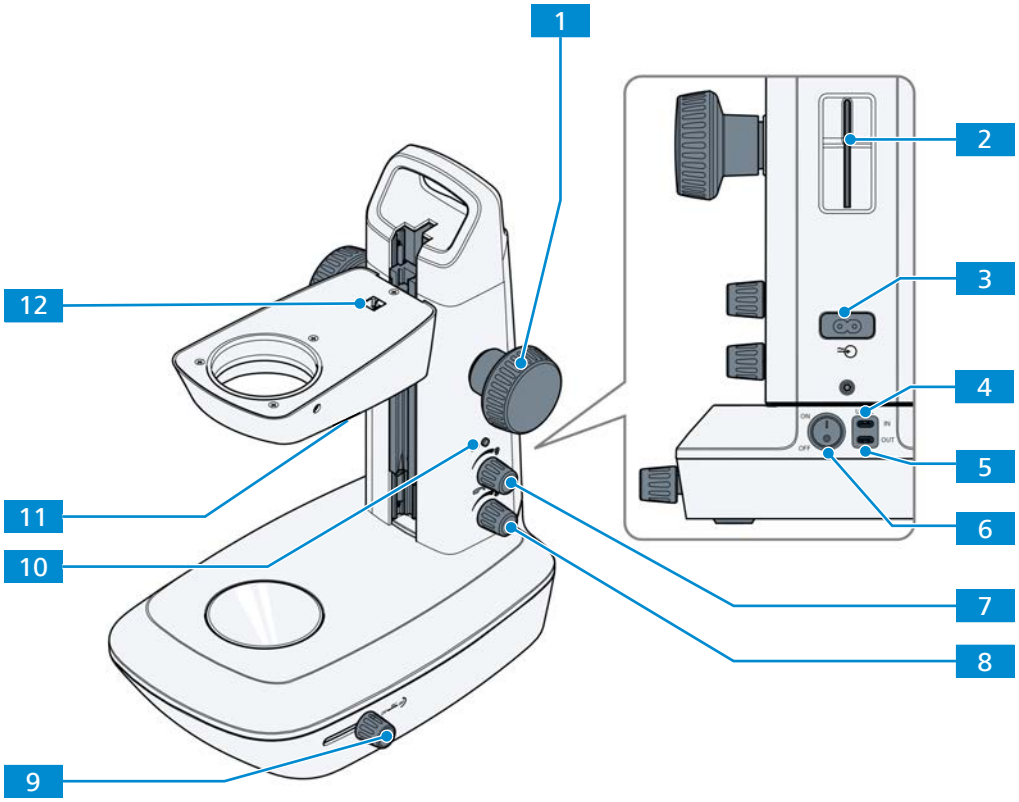


Fig. 9: Stand C Lab

1	Focusing drive	2	Hex key, 3.0 mm
3	Mains supply port	4	USB-C **IN** port (power input of 12 V DC for the whole system power supply)
5	USB-C **OUT** port (power output of 5 V DC for external devices)	6	Power switch
7	Rotary/push knob for the reflected-light illumination	8	Rotary/push knob for the transmitted-light illumination
9	Sliding/rotary knob for brightfield, darkfield and relief contrast	10	**ECO** button
11	Lower port of the stand carrier for reflected-light illumination connecting cable	12	Upper port of the stand carrier for microscope body connecting cable

3.2.1.4 Stand L LED

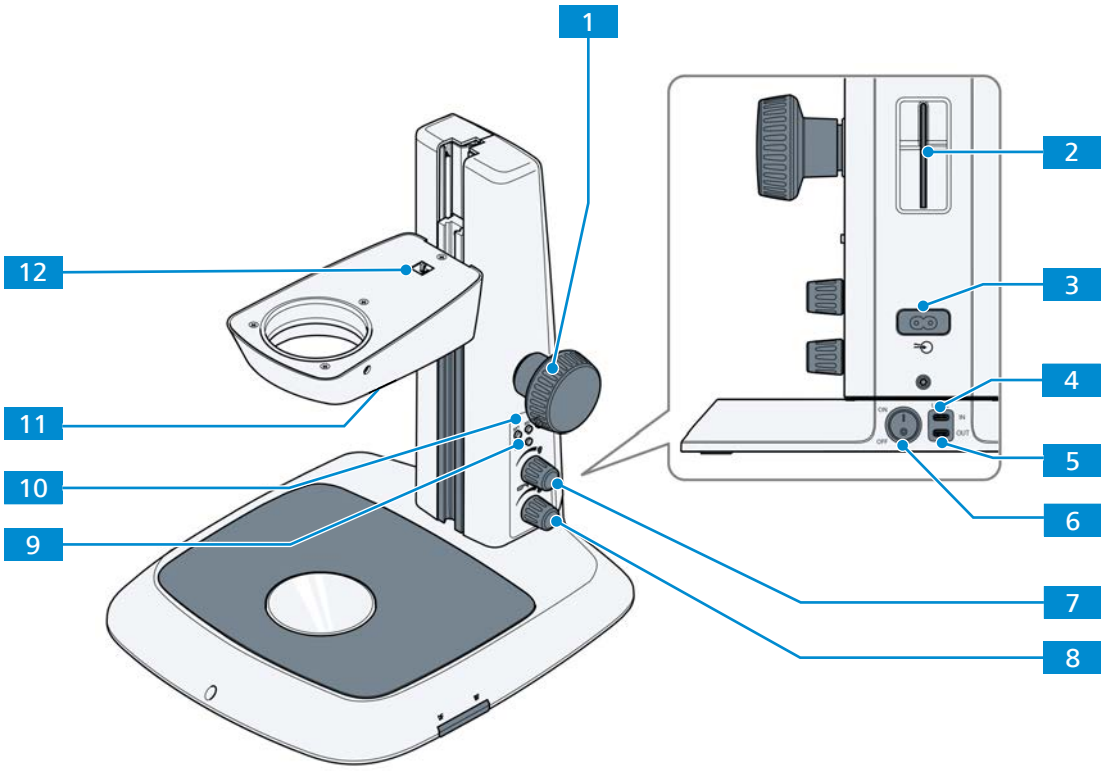


Fig. 10: Stand L LED

1	Focusing drive	2	Hex key, 3.0 mm
3	Mains supply port	4	USB-C **IN** port (power input of 12 V DC for the whole system power supply)
5	USB-C **OUT** port (power output of 5 V DC for external devices)	6	Power switch
7	Rotary/push knob for the illuminators or the additional reflected-light illumination	8	Rotary/push knob for the transmitted-light illumination and for adjusting the illumination intensity
9	**ECO** button	10	Memory buttons
11	Lower port of the stand carrier for reflected-light illumination connecting cable	12	Upper port of the stand carrier for microscope body connecting cable

3.2.2 Microscope Bodies

There are three different bodies that can be installed on the stands:

- Microscope body Stemi 355
- Microscope body Stemi 355 trino
- Microscope body Stemi 355 ESD

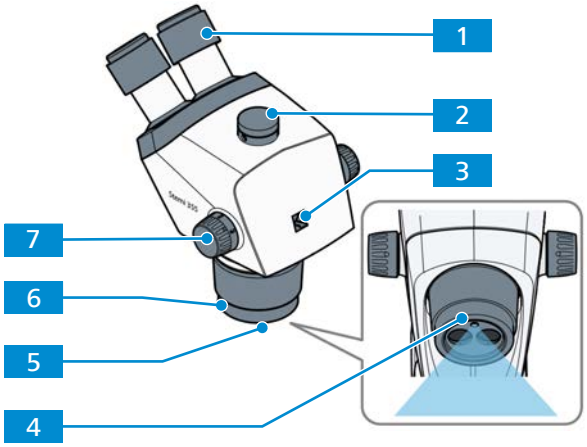


Fig. 11: Microscope body Stemi 355 trino

1	Eyepiece in tube (PL 10x/23)	2	C-mount interface for camera (only for Stemi 355 trino)
3	Left latch offset RJ12 socket for power input	4	Integrated vertical illuminator
5	Internal thread M52x1.0 for front optics and other accessories	6	Mount ⌀ 66 mm for ring illuminator
7	Zoom knob		

3.2.3 Eyepieces

Purpose The eyepieces serve to observe the microscopic image.

Position The eyepieces are inserted into the eyepiece sockets of the zoombody.

Function Both eyepieces are suitable for spectacle wearers. Additionally, they contain a focusing ring for compensation of defective vision. The provided diopter scale helps to find the correct setting. The eyepieces feature rubber protection rings for spectacles to avoid the spectacles being scratched. When using the microscope to avoid ambient light impact, the special eyecups with light protection can be used. They can be folded over and are suitable for spectacle wearers, see section *Placing the Eyecup with Light Protection, Foldable onto the Eyepiece [▸ 38]*.

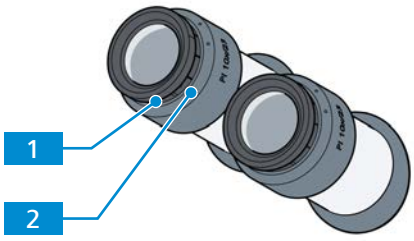


Fig. 12: Eyepieces

1	Focusing ring	2	Diopter scale

3.2.4 Reflected-Light Illumination

Beyond the integrated vertical illuminator there are three reflected-light illuminations that can also be installed on the microscope.

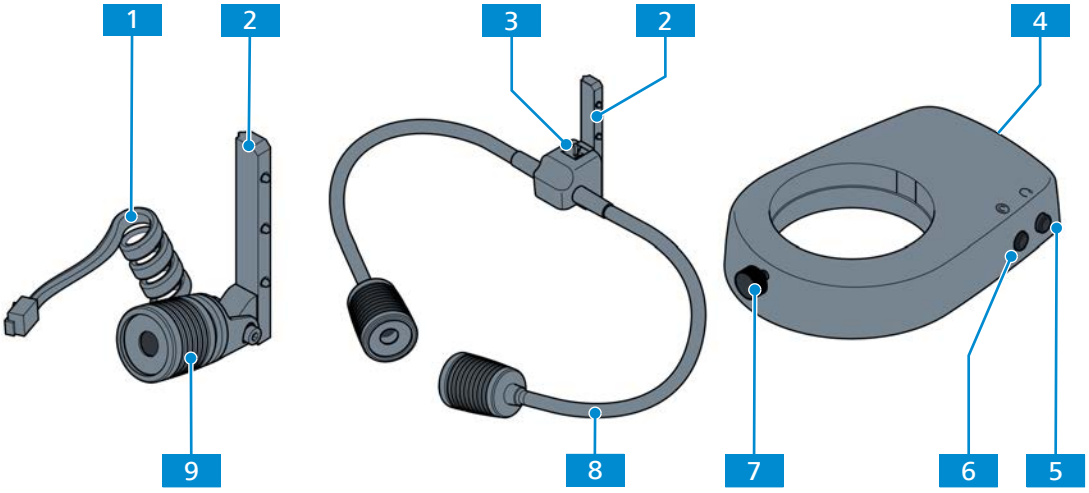


Fig. 13: Spot illuminator C LED, double spot illuminator C LED and ring illuminator C LED, segmentable

1	Connecting cable	2	Illuminator holder to adjust the height of the spot
3	Port for connecting cable	4	Port for connecting cable on the backside
5	Pattern rotation button	6	Pattern switching button
7	Fixing screw	8	Goose necks
9	Focusing unit (illumination zoom) to adjust the size and brightness of the spot		

3.2.5 Transmitted-Light Illuminators for Stand L LED

There are two transmitted-light illuminators that can be installed on the microscope.

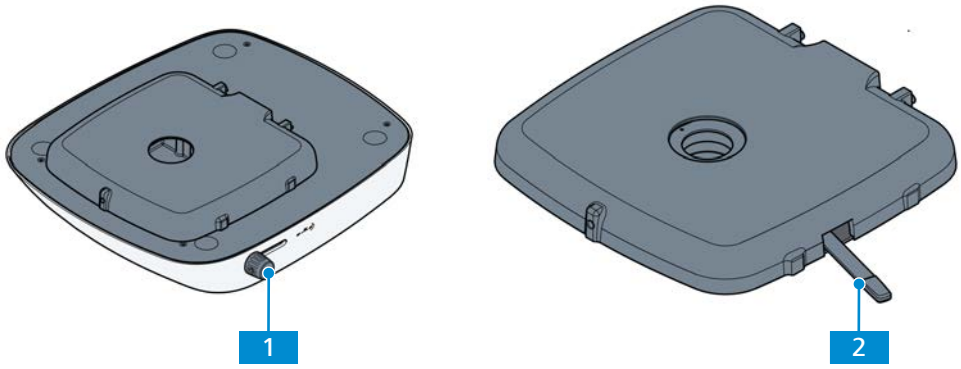


Fig. 14: Transillumination unit L LED and transilluminator L LED, low-height

1	Sliding/rotary knob for brightfield, darkfield, and relief contrast	2	Switching lever for brightfield and darkfield

3.2.6 Controller C

Function The controller C is used to operate the integrated vertical illuminator of the Stemi 355 microscope body and the ring illuminator only, when stands without LED electronics are used (such as boom stands B or SDA, floor stand S, tilting arm stand U or desktop stands C, L and N).

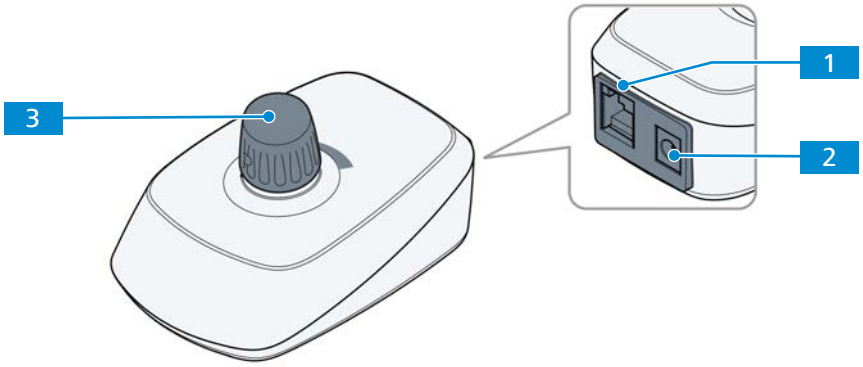


Fig. 15: Controller C

1 Port for the power cord to connect with the illumination or microscope body

2 DC port for the power adapter

3 Rotary/push knob to on/off the connected zoom body or illuminator and to adjust the illumination intensity

4 Installation

Perform only the installation work described in this document. All other installation work not described may only be carried out by an authorized ZEISS service representative.

4.1 Unpacking and Setting up the Microscope

Procedure

1. Open the packaging.
2. Take the microscope, all assemblies, and accessories out of the packaging.
3. Check them for completeness as per delivery note.
4. Check all parts for damaging.
5. Remove the transport securing device (adhesive tapes, etc).
6. Place the microscope on a vibration-free, level, and non-inflammable surface.

It is recommended to keep the original packing and store it away for later use, e.g. for stowing the microscope during periods of non-use or for returning the microscope to the manufacturer for repair.

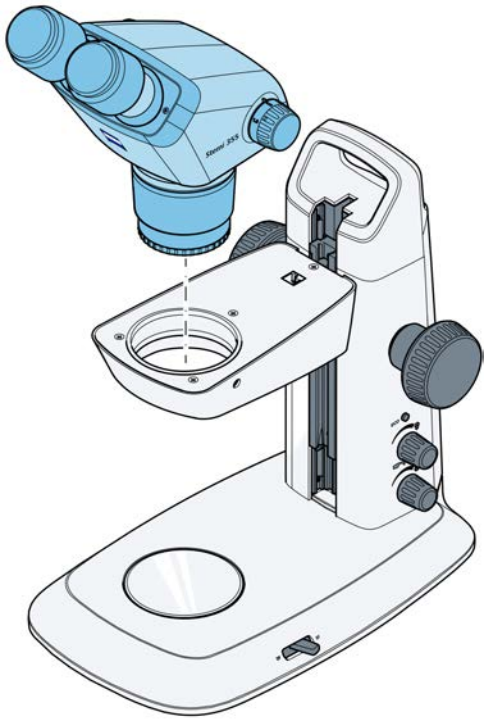
4.2 Installing the Microscope Body

Parts and Tools

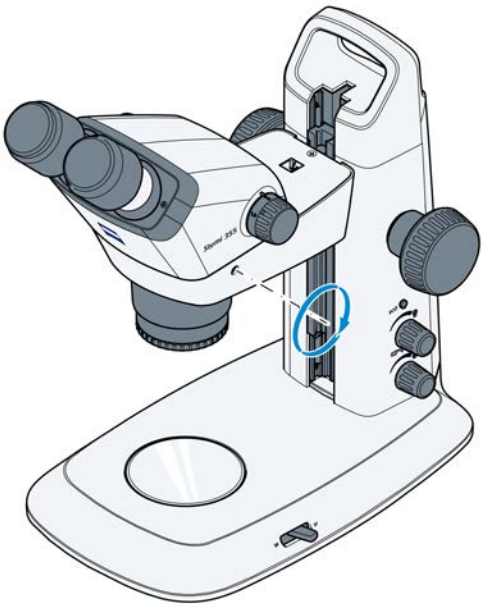
- Hex key, 3.0 mm

Procedure

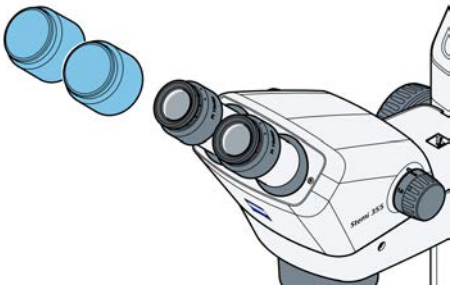
1. If the Stemi 355 body has not yet been mounted, insert it into the stand carrier.



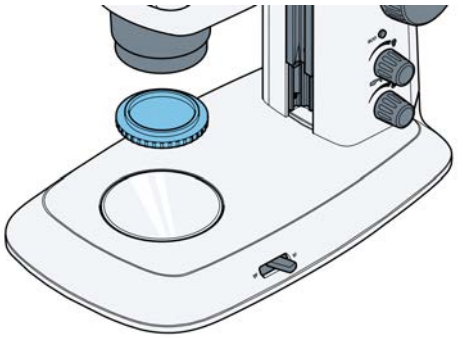
2. Align the body and secure it using the clamping screw. **Info** **The appropriate hex key is located in the support on the back of the stand column.**



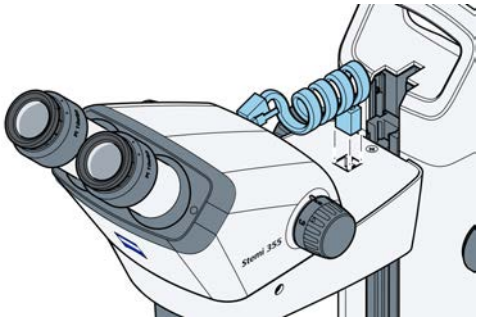
3. Remove the two protective caps from the eyepieces.



4. Remove the protective cap from the objective by turning.



5. Insert the connecting cable supplied with the device into the port on the Stemi 355 body and into the upper port on the stand carrier.



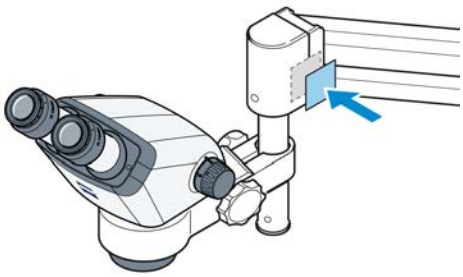
6. If necessary, install an additional reflected-light illumination, it has been described in section *Additional Reflected-Light Illumination [▸ 31]*.

4.3 Installing the Controller C

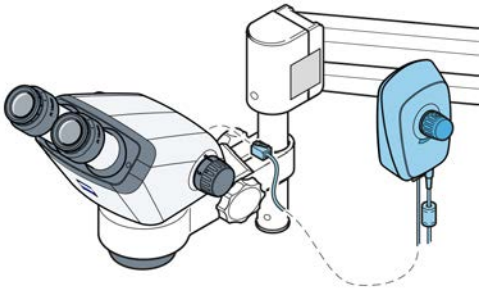
Prerequisite ✓ The boom stands including stand B, stand U, stand SDA and floor stand S including the fastening of the microscope body are installed to the stand carrier as described in the operating instructions for the boom stands.

Procedure

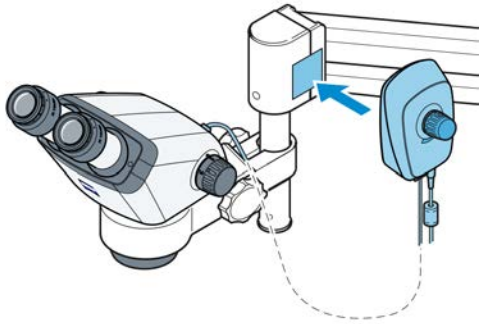
1. Secure the adhesive side of the magnetic plate to the swivel arm stand.



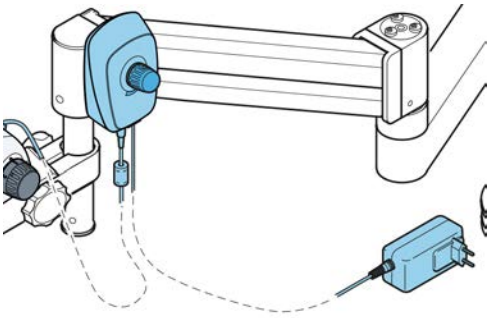
2. Plug the connecting cable supplied with the device (2 m long) into the port on the microscope body or the ring illuminator and into the port on the back of the controller C.



3. Place the controller C next to the magnetic plate.



4. Connect the controller C to the power supply using the power supply unit.

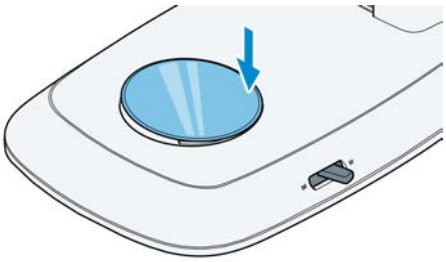


5. Set the controller C, see section *Setting the Controller C [▸ 62]*

4.4 Exchanging the Insert Plate

Procedure

1. Press on the rear part of the insert plate to lift it up and take it out of the mount.



2. Insert the glass plate or the B/W plastic plate in the mount in the base of the stand.
   a To this effect, press the glass plate or the B/W plastic plate against the spring and make it lock in.

4.5 Additional Reflected-Light Illumination

Various reflected-light illuminations can be used, depending on the case of application:

- *Installing the Spot Illuminator C LED or Double Spot Illuminator C LED [▸ 31]*
- *Ring Illuminator C LED, Segmentable [▸ 32]*

Defined interfaces are provided on the microscope for attachment.

4.5.1 Installing the Spot Illuminator C LED or Double Spot Illuminator C LED

⚠ CAUTION

Eye damage due to hazardous light emission

The light source belongs to Risk Group 1 as specified in IEC 62471 and emits LED radiation. Eye damage may result from exposure.

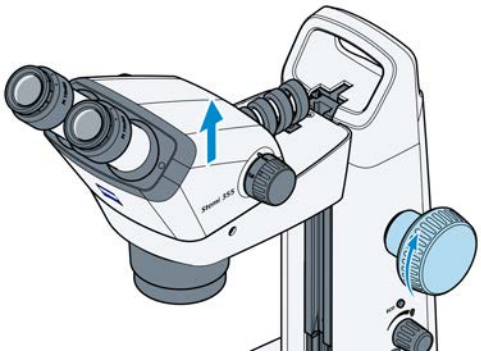
- ▸ Never look directly into the light-emitting aperture of the light source.
- ▸ Before installing or removing the light source always make sure it is switched off.

Info

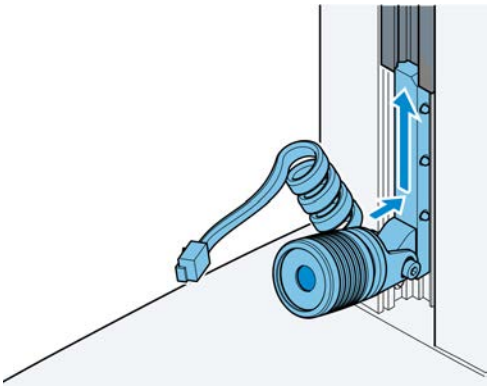
The double spot illuminator is mounted in an analogical manner.

Procedure

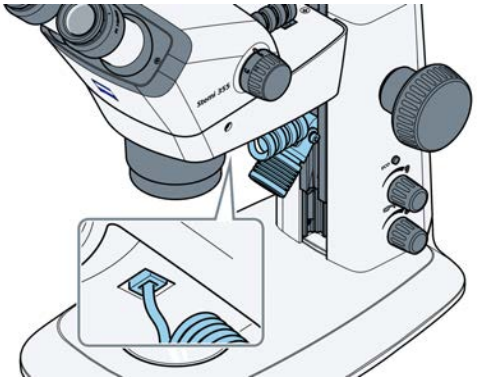
1. Move the microscope body into its uppermost position via the focusing drive.



2. Insert the spot illuminator in the stand by sliding the holder into the stand guide from below and push it upwards into the required position.



3. Plug the connecting cable of the spot illuminator into the lower port of the stand carrier.
   Info **Use the individual cable to connect the port of the double spot illuminator with the lower port of the stand carrier.**



4.5.2 Ring Illuminator C LED, Segmentable

⚠ CAUTION

Eye damage due to hazardous light emission

The light source belongs to Risk Group 2 as specified in IEC 62471 and emits LED radiation. Eye damage may result from exposure.

- Never look directly into the light-emitting aperture of the light source.
- Before installing or removing the light source always make sure it is switched off.

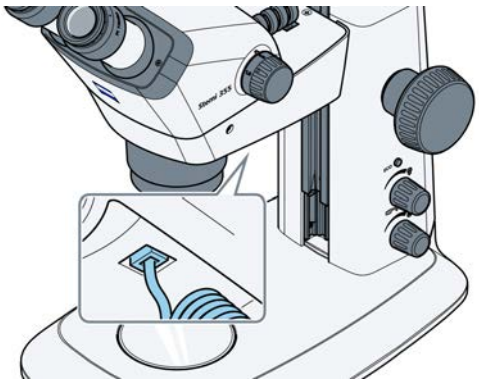
Depending on the mounted front optics, there are two ways of installation:

- *Installing the Ring Illuminator C LED, Segmentable to the Microscope Body [▸ 33]*
- *Installing the Ring Illuminator C LED, Segmentable to the Front Optics 3 [▸ 33]*

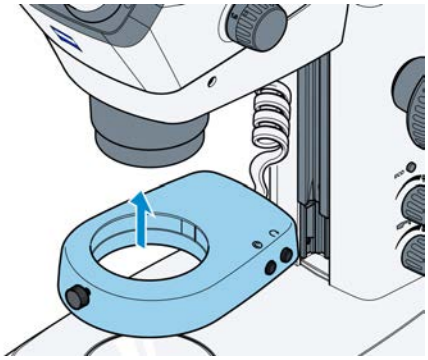
4.5.2.1 Installing the Ring Illuminator C LED, Segmentable to the Microscope Body

Procedure

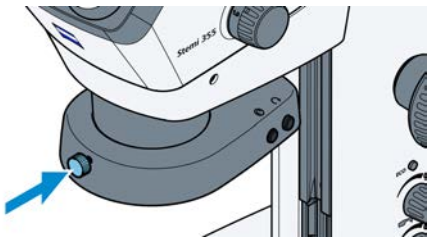
1. Insert one side of the connecting cable into the lower port of the stand carrier and the other side into the port of the ring illuminator.



2. Push the ring illuminator onto the microscope body mount from below.



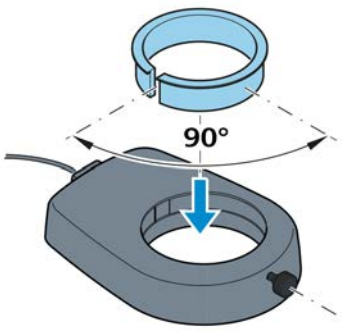
3. Secure the ring illuminator using the knurled screw.



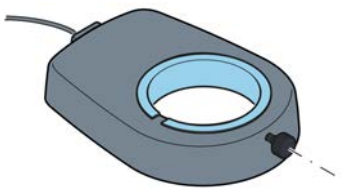
4.5.2.2 Installing the Ring Illuminator C LED, Segmentable to the Front Optics 3

Procedure

1. Screw the front optics 3 into the microscope body (bottom).
2. Insert the slotted adapter ring (supplied with front optics) into the ring illuminator from above.
   → The optimum clamping action is achieved if the slit of the adapter is placed at approximately 90° relative to the clamping screw of the ring illuminator.



3. Push the ring illuminator including the adapter up on the front optics and fix it with the clamping screw.



4.6 Transilluminators for Stand L LED

⚠ CAUTION

Eye damage due to hazardous light emission

The light source belongs to Risk Group 1 as specified in IEC 62471 and emits LED radiation. Eye damage may result from exposure.

- Never look directly into the light-emitting aperture of the light source.
- Before installing or removing the light source always make sure it is switched off.

Various transmitted-light illuminations can be used, depending on the case of application:

- *Installing the Transilluminator L LED, Low-Height [▸ 34]*
- *Installing the Transillumination Unit L LED [▸ 36]*

For fastening, defined interfaces have been provided on the microscope.

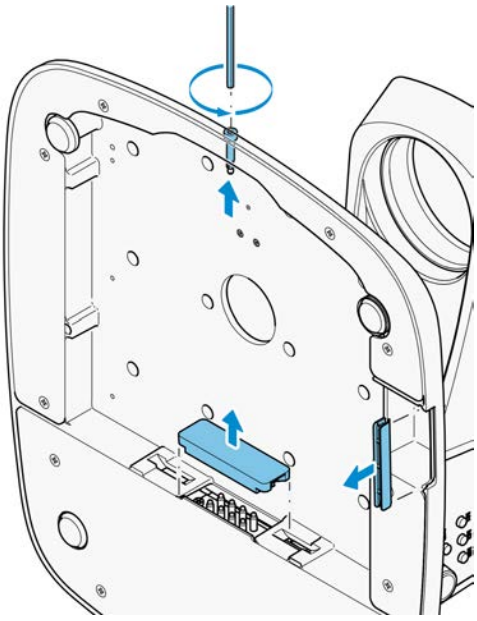
4.6.1 Installing the Transilluminator L LED, Low-Height

Parts and Tools Hex key, 3.0 mm

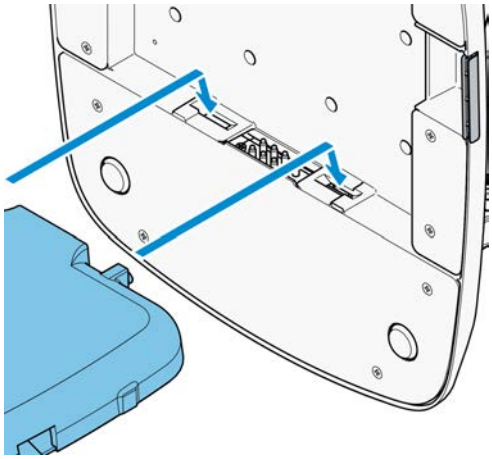
Prerequisite ✓ Microscope is switched off and disconnected from power supply.

Procedure

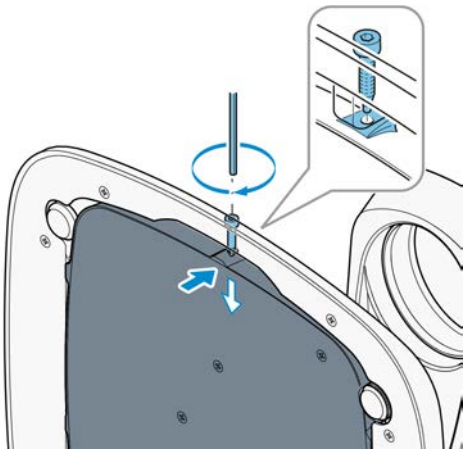
1. Gently tilt the stand backwards and put it down.
2. Unscrew the allen screw.
3. Remove the cover flaps.



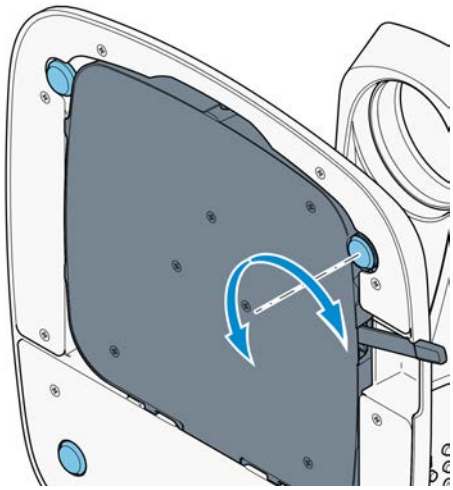
4. Insert the transilluminator so that the two pins click into the recesses on the bottom of the stand.



5. Press the transilluminator against the stand base.
6. Screw the allen screw into the tapped hole of the stand until the tip of the screw engages in the hole of the transilluminator.



7. Tighten the allen screw hand-tight.
8. Return the stand to upright and, if necessary, prevent wobbling by adjusting the height-adjustable foot of the stand base.



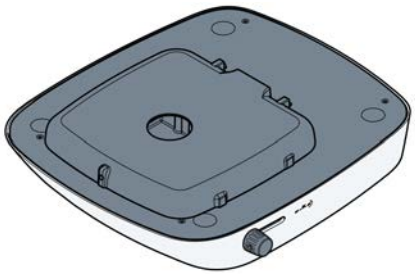
4.6.2 Installing the Transillumination Unit L LED

Parts and Tools Hex key, 3.0 mm

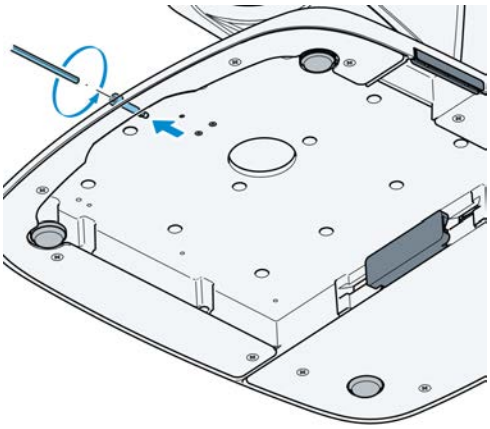
Prerequisite ✓ Microscope is switched off and disconnected from power supply.

Procedure

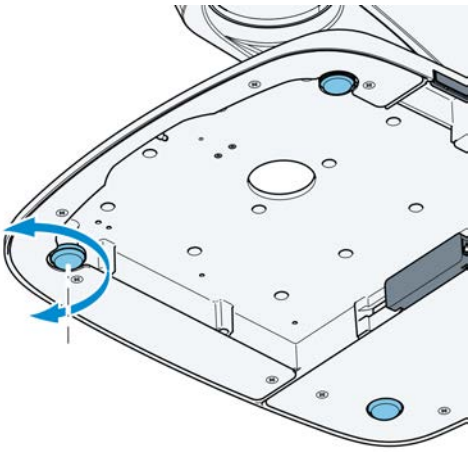
1. Place the transillumination unit on a stable surface.



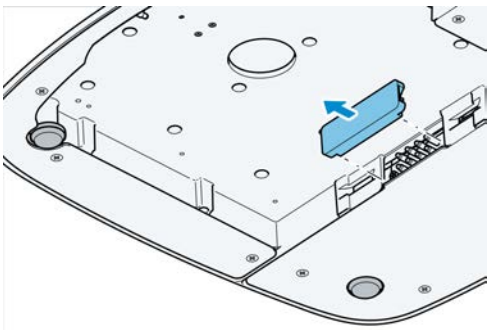
2. Unscrew the allen screw on the front of the stand.



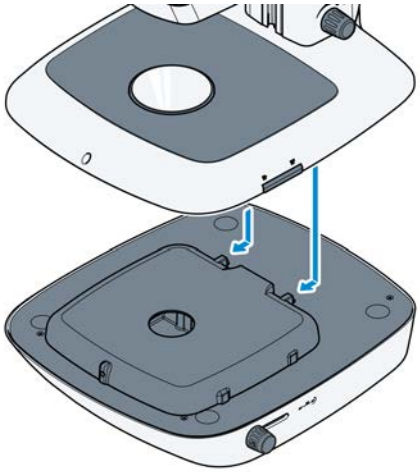
3. Screw the height-adjustable stand foot in completely.



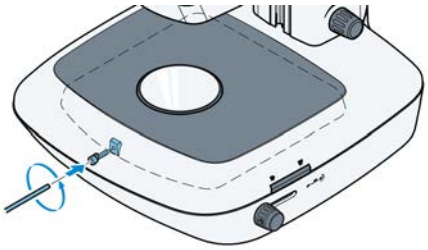
4. Remove the cover flap.



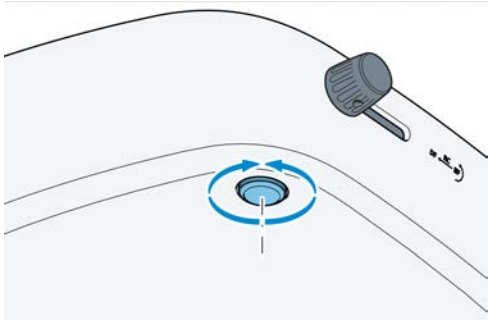
5. Carefully mount the stand onto the transillumination unit from the rear. Push it forwards until the stand plate and transmitted-light housing are flush. The two lugs must lost into the recesses.



6. Screw the allen screw into the tapped hole of the transillumination unit and tighten by hand.



7. If necessary, prevent wobbling by adjusting the height-adjustable foot of the transillumination unit.



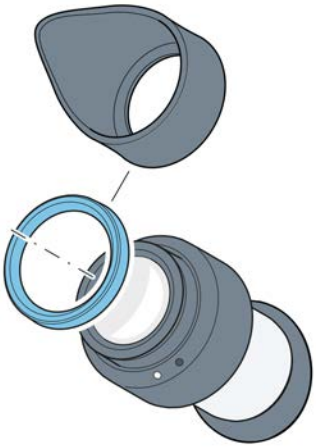
Info

To disassemble the transillumination unit L LED, unscrew the allen screw, carefully push the stand backwards and remove it.

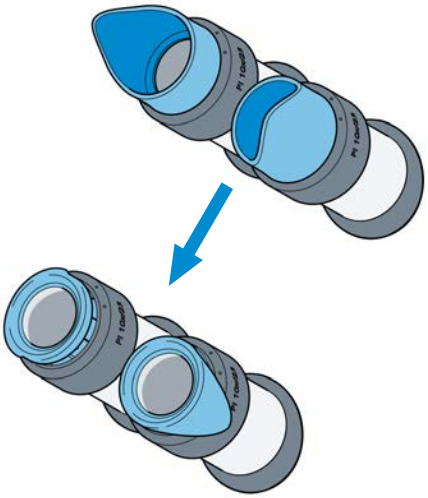
4.7 Placing the Eyecup with Light Protection, Foldable onto the Eyepiece

Procedure

1. Remove the protection rings for spectacles from the eyepieces. Position the foldable eyecups on the eyepieces.



2. For spectacle wearers the eyecups can be folded over.



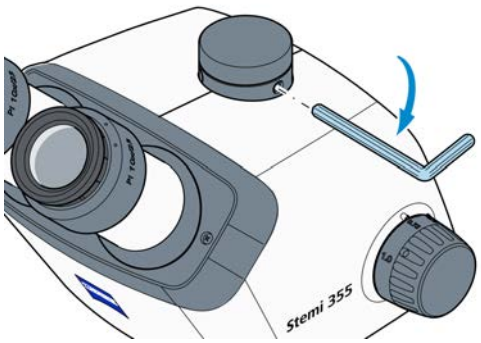
4.8 Attaching a Camera to the C-Mount Interface

Parts and Tools

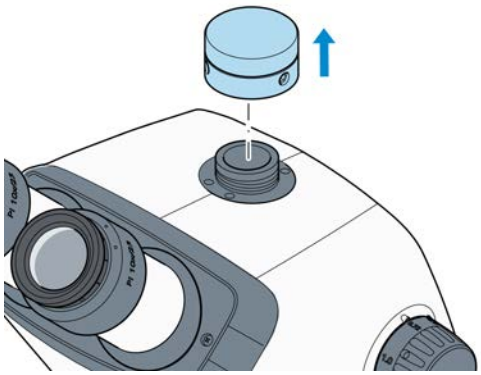
- Hex key, 3.0 mm
- Educam 105

Procedure

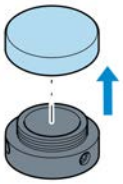
1. Release the three screws from the C-mount port of the microscope.



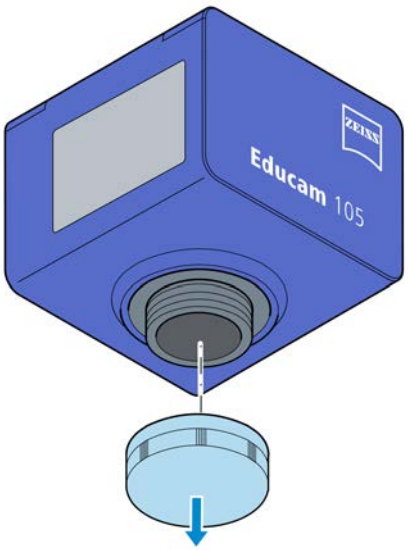
2. Remove the C-mount camera adapter from the C-mount port of the microscope.



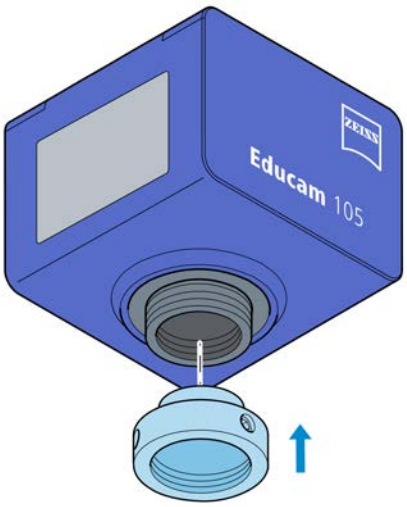
3. Unscrew the dust cap from the C-mount camera adapter.



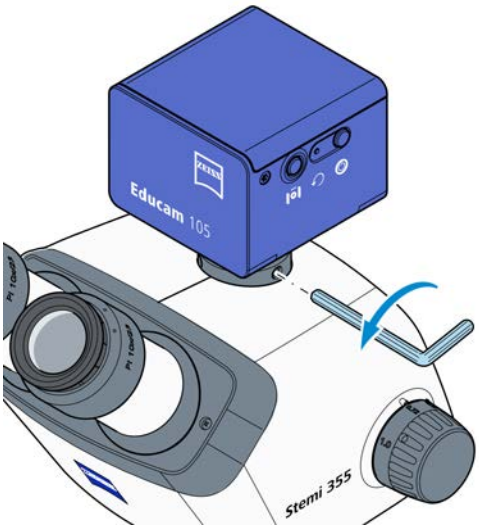
4. Unscrew the dust cap from the camera's C-mount port.



5. Screw the C-mount camera adapter on the camera.



6. Attach the camera with the adapter to the C-mount port of the microscope.
7. Orient the camera to the stand and secure its position by means of the three screws.

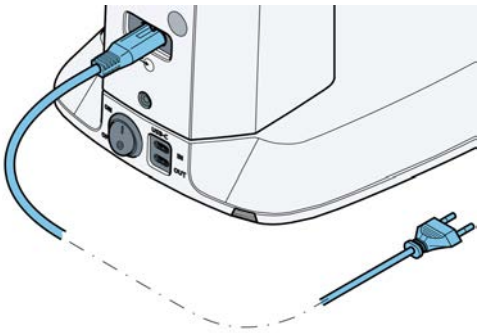


4.9 Connecting the Microscope to the Power Supply

4.9.1 Connecting the Microscope to the Mains Power Supply

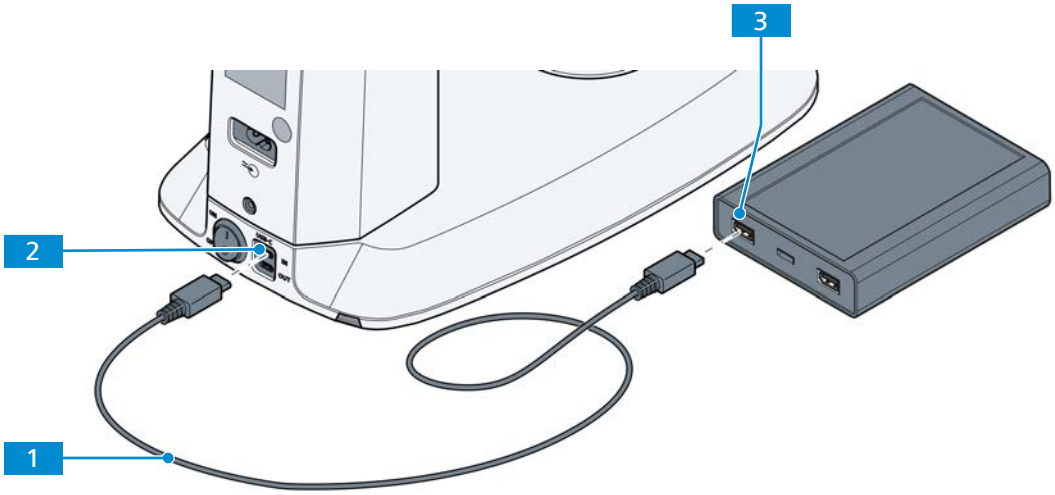
Procedure

1. Insert the power cord in the mains supply port of the stand.



2. Connect the power cord to a mains supply socket outlet.

4.9.2 Connecting the Microscope to a Power Bank



Prerequisite

✓ The microscope is installed completely with all components to be used.

✓ The mobile power bank is charged.

Procedure

1. Plug the cable 1 with USB-C interface into the 12V USB-C **IN** port 2 of the microscope.
2. Plug the other side of the cable 1 into the appropriate port 3 of the power bank.

4.10 Installing the Mounting Adapter for EasyLED Double Spot Plus

Info

The described installation of the mounting adapter for EasyLED Double Spot Plus is proper for the stand C and stand L series.

Parts and Tools

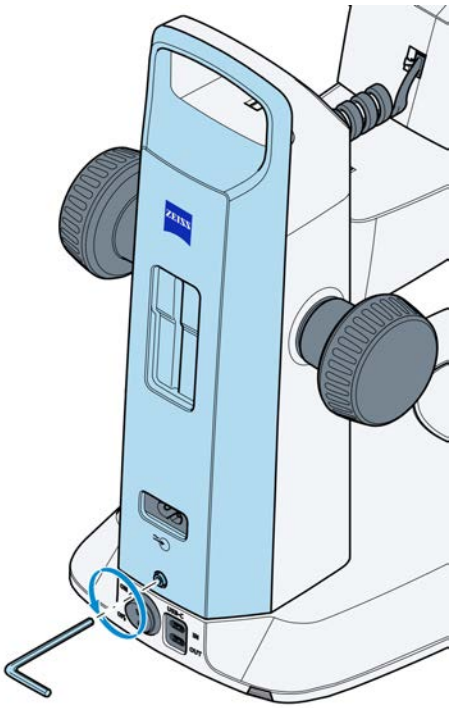
- Hex key, 3.0 mm
- Phillips screwdriver

Prerequisite

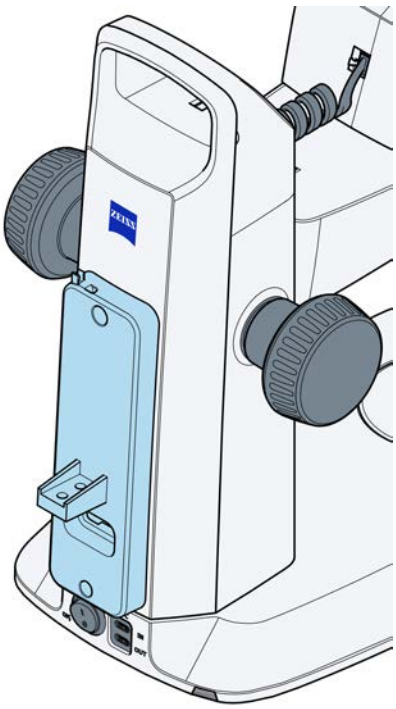
✓ Microscope is switched off and disconnected from power supply.

Procedure

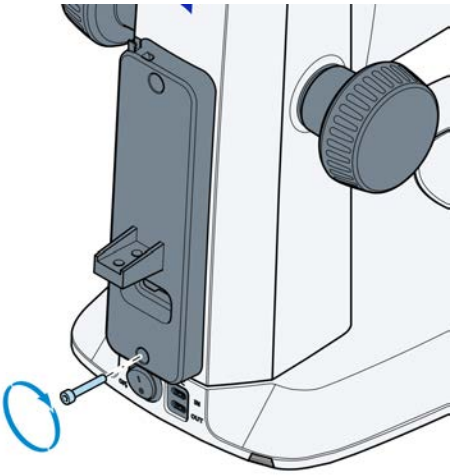
1. Use a hex key to release the screw on the underside of the housing cover.



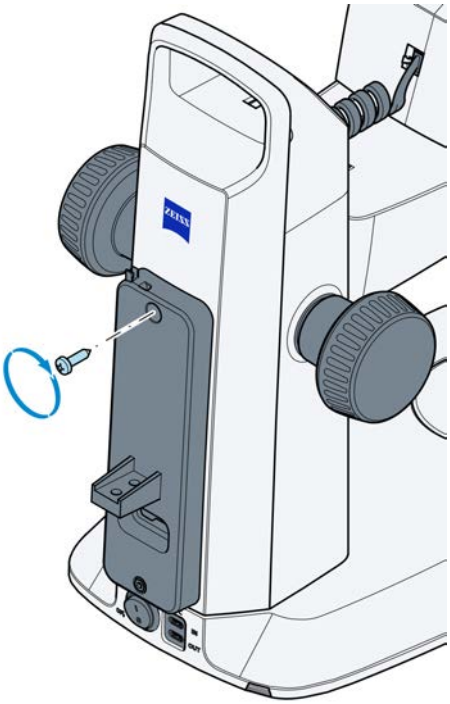
2. Attach the mounting adapter to the housing cover.



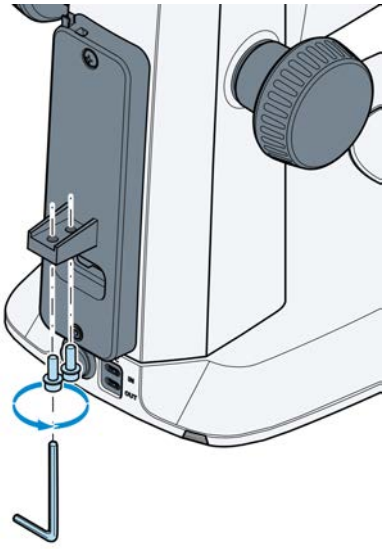
3. Secure the mounting adapter on the underside of the housing cover by means of the screw.



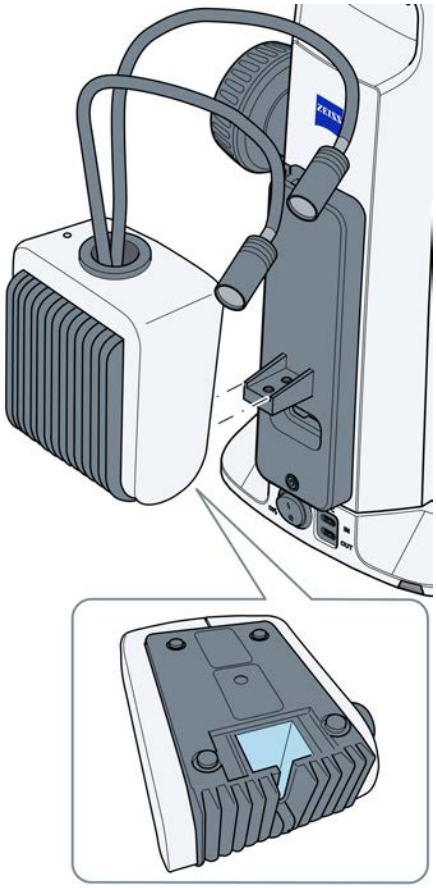
4. Secure the mounting adapter on the upside of the housing cover by means of the screw.



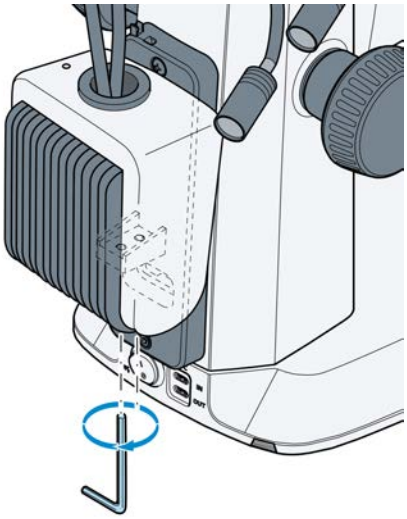
5. Insert the two screws into the adapter.



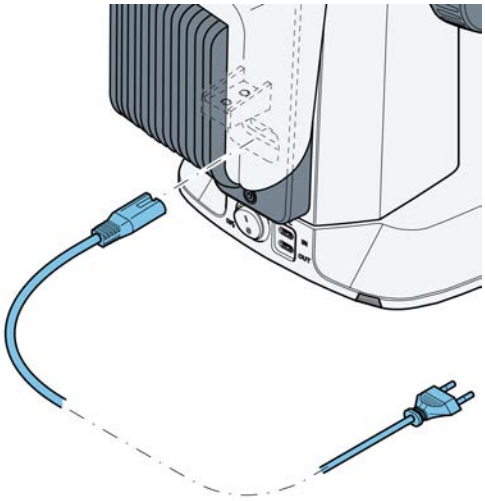
6. Attach the EasyLED Double Spot Plus to the adapter.



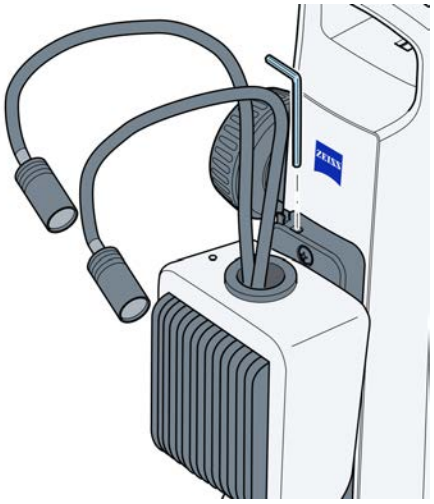
7. Secure the EasyLED Double Spot Plus on the mounting adapter by means of the two screws.



8. Insert the power cord on the back of the device throughout the adapter.



9. Store the hex key in the adapter.



5 Operation

This chapter describes switching on/off the microscope as well as the operating steps with the microscope.

Info

For additional information and detailed descriptions, refer to further applicable documents or ask your ZEISS Sales & Service Partner.

5.1 Prerequisites for Commissioning and Operation

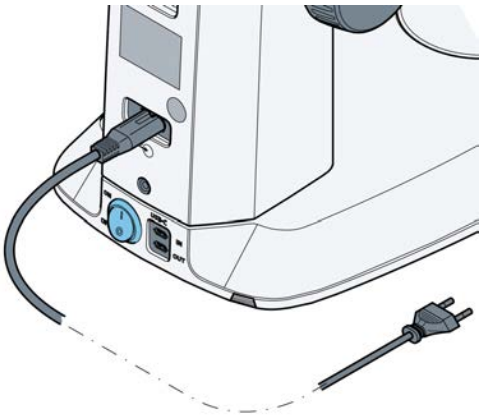
The following basic prerequisites are necessary for commissioning and operation:

- This document was read prior to commissioning or operation and kept for further use.
- The chapter **Safety** was read and understood.
- If required: Basic training and safety briefing were successfully completed.

5.2 Switching On the Microscope

Procedure

1. Switch the power switch to **ON**.



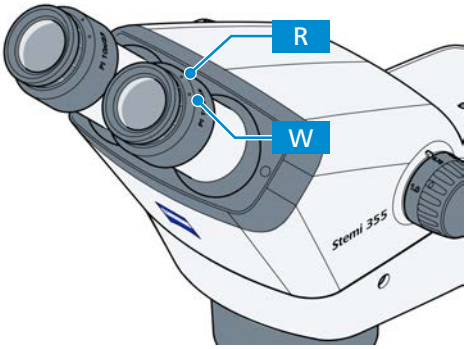
5.3 Adjusting the Microscope

Prerequisite ✓ The microscope has been installed completely and switched on.

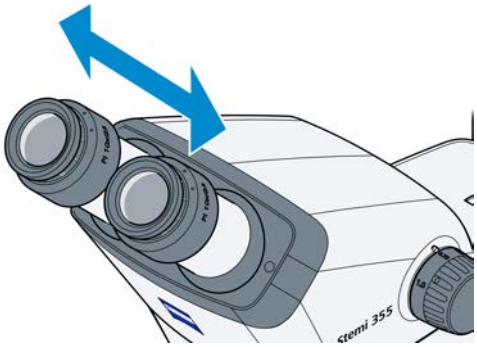
Procedure

1. Place the sample centrally on the glass or B/W plastic plate.

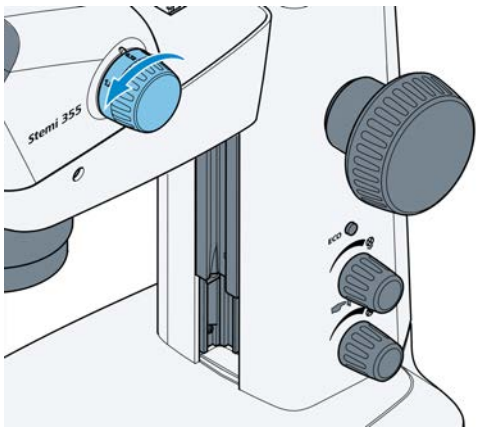
2. Illuminate the sample.
   a See functionality of the knob for the reflected-light illumination in section *Reflected-Light Illuminations [▸ 49]*.
3. Set the diopter compensation on the adjustable eyepieces to "0".
   → "0" on white dot W (without eyepiece plate).
   "0" on red dot R (with eyepiece plate).



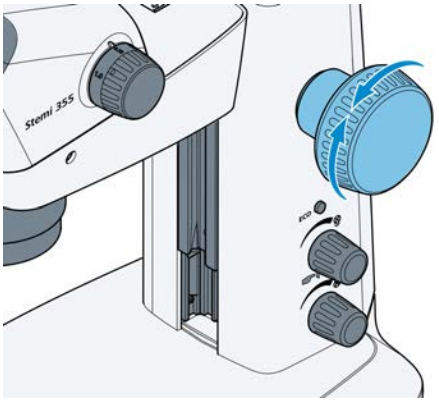
4. Set individual eye distance by shifting the eyepiece tube laterally, until only **one** complete light circle (sample field) is visible when looking into the eyepieces with both eyes.
   a To this effect, a distance of approx. 2 cm must be maintained between the eye and the eyepiece.



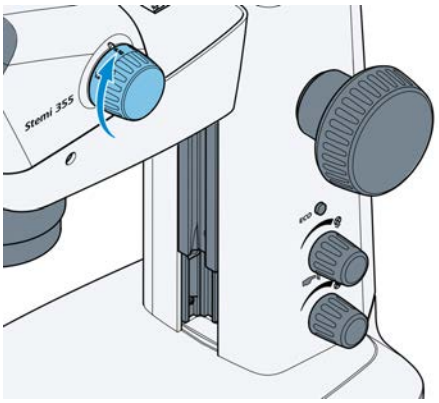
5. Initially, set the zoom to the smallest magnification.



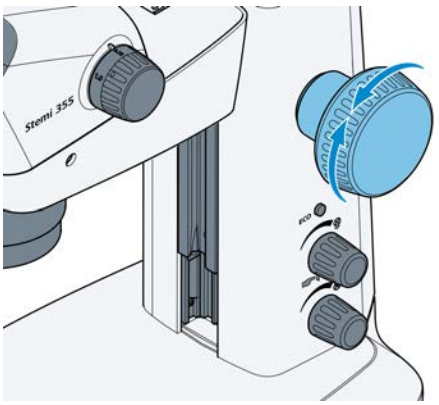
6. Focus on a small distinct detail in the center of the sample.



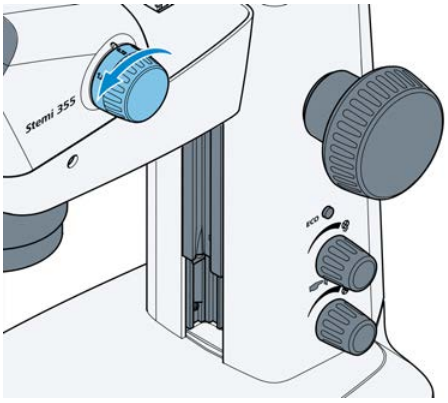
7. Adjust maximum zoom value.
   → Magnification will probably make the distinct detail appear blurred and no longer in the image center.



8. Refocus the observed "distinct object detail" using the **focus** knob until it is observed "sharply" in the object field center again.



9. Reset to the lowest zoom value and correct any image blurring by adjusting the diopter compensationspace on the adjustable eyepieces
   NOTICE **Correct it for each eye separately (compensation of visual defect)**.
   For this final step, do not use the focusing knob.



↳ Once the stereo microscope has been adjusted in this way, the image focus remains unchanged over the entire zoom range. This can be verified by increasing or reducing the zoom value.

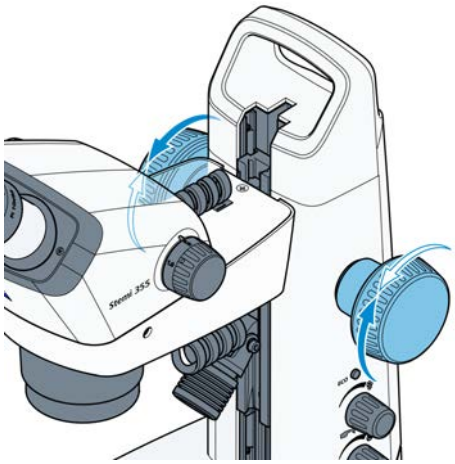
Info

After change of the user, repeat steps **3.** to **9.**

5.4 Setting the Ease of Motion

Procedure

1. If necessary, the ease of motion of the focusing drive can be set as required on a case-by-case basis by adjusting the two focusing buttons in opposite directions. **NOTICE** **The ease of motion must not be set so loosely that the drive moves downwards by itself. This might damage the microscope or the sample.**



5.5 Reflected-Light Illuminations

- *Integrated Vertical Illuminator [▸ 49]*
- *Setting the Spot Illuminator C LED [▸ 52]*
- *Setting the Double Spot Illuminator C LED [▸ 52]*
- *Setting the Ring Illuminator C LED, Segmentable [▸ 54]*

5.5.1 Integrated Vertical Illuminator

Each Stemi 355 body features a vertical illuminator of its own.

⚠ CAUTION

Eye damage due to hazardous light emission

The light source belongs to Risk Group 2 as specified in IEC 62471 and emits LED radiation. Eye damage may result from exposure.

- Never look directly into the light-emitting aperture of the light source.
- Before installing or removing the light source always make sure it is switched off.

Info

When mixing the integrated and additional reflected-light illuminations, the intensity of the additionally installed reflected-light illumination (spot illuminator, double spot illuminator, ring illuminator, etc.) is adopted. In this case, only the integrated vertical illumination is adjusted by turning the knob.
Now, the required intensity of the vertical light is mixed up with the additional reflected-light illumination.

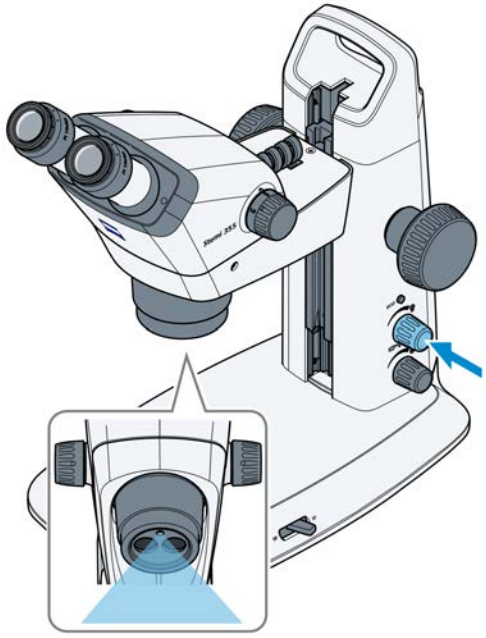
Depending on the number of used reflected-light illuminations, use one of the following settings:

- *Setting the Integrated Vertical Illuminator without Additional Reflected-Light Illumination [▸ 50]*
- *Setting the Integrated Vertical Illuminator with Additional Reflected-Light Illumination [▸ 51]*

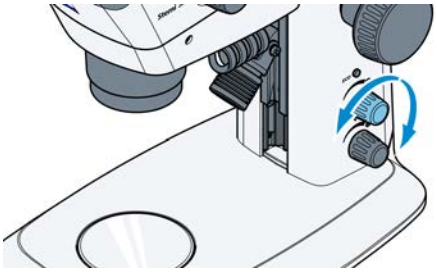
5.5.1.1 Setting the Integrated Vertical Illuminator without Additional Reflected-Light Illumination

Procedure

1. Press the knob once to switch the vertical illuminator alternately on or off.



2. Turn the knob to adjust the illumination intensity of the switched-on vertical illuminator.



5.5.1.2 Setting the Integrated Vertical Illuminator with Additional Reflected-Light Illumination

Procedure

1. Press the knob successively to set four illumination states:

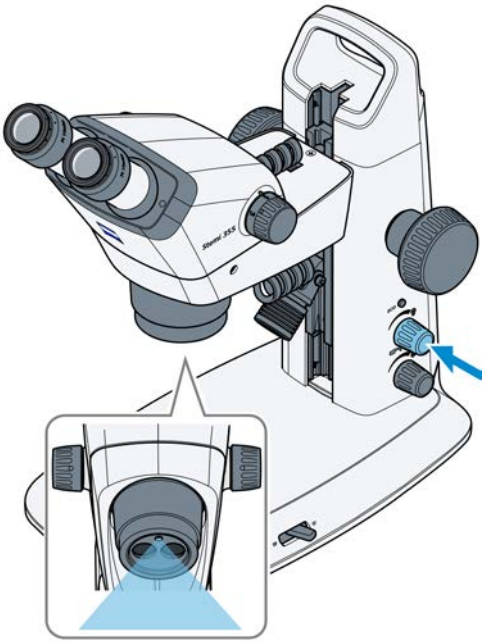


Fig. 16: Setting the vertical illuminator

   a Switch the vertical illumination on.
   b Switch the second reflected-light illumination on.
   → The vertical illumination switches off.
   c Switch both reflected-light illuminations on.
   d Switch both reflected-light illuminations off.
2. Turn the knob to adjust the illumination intensity of the switched-on reflected-light illumination.

Info

When mixing the integrated and additional reflected-light illuminations, the intensity of the additionally installed reflected-light illumination (spot illuminator, double spot illuminator, ring illuminator, etc.) is adopted. In this case, only the integrated vertical illumination is adjusted by turning the knob.
Now, the required intensity of the vertical light is mixed up with the additional reflected-light illumination.

5.5.2 Setting the Spot Illuminator C LED

⚠ CAUTION

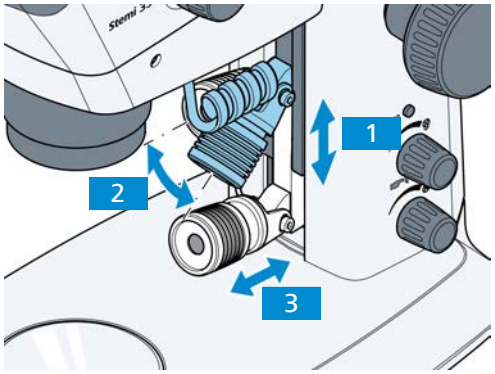
Eye damage due to hazardous light emission

The light source belongs to Risk Group 2 as specified in IEC 62471 and emits LED radiation. Eye damage may result from exposure.

- Never look directly into the light-emitting aperture of the light source.
- Before installing or removing the light source always make sure it is switched off.

Info

For switching the illumination intensity on and off and adjusting the illumination intensity refer to section *Integrated Vertical Illuminator [▸ 49]*



Procedure

1. Push the spot illuminator in the guide to the required height 1. **Info Low positions lead to cast shadows and thus enhance surface structures.**
2. Set the angle 2 via the pivot of the spot illuminator so that the object is optimally illuminated.
3. Set the size and the brightness of the spot by axially shifting the focusing unit 3 (illumination zoom).

5.5.3 Setting the Double Spot Illuminator C LED

⚠ CAUTION

Eye damage due to hazardous light emission

The light source belongs to Risk Group 2 as specified in IEC 62471 and emits LED radiation. Eye damage may result from exposure.

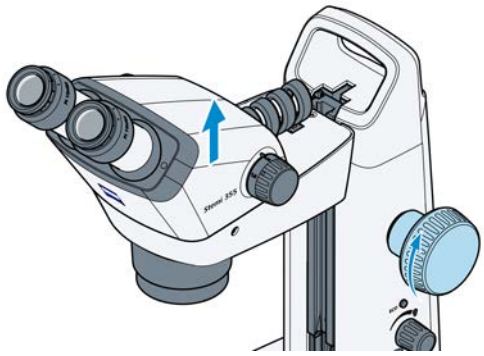
- Never look directly into the light-emitting aperture of the light source.
- Before installing or removing the light source always make sure it is switched off.

Info

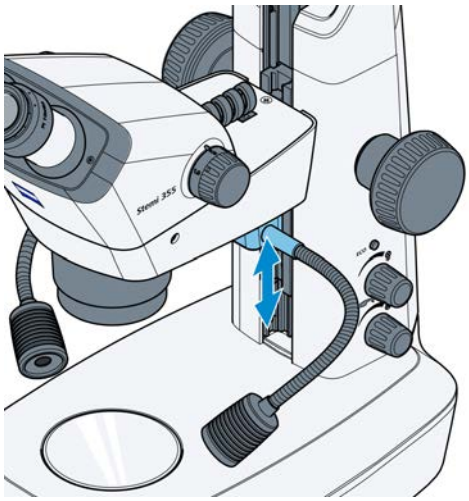
For switching the illumination intensity on and off and adjusting the illumination intensity refer to section *Integrated Vertical Illuminator [▸ 49]*

Procedure

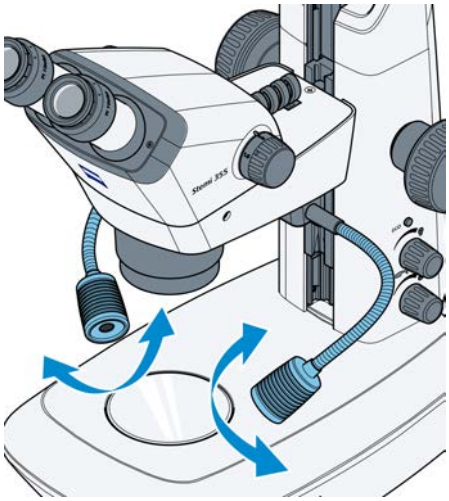
1. Move the microscope body to its uppermost position via the focusing drive.



2. Push the double spot illuminator to the required level within the guide.



3. Bend the two goose necks to adjust the spots so that the sample is optimally illuminated.
   Info **Low positions lead to cast shadows and thus enhance surface structures.**



5.5.4 Setting the Ring Illuminator C LED, Segmentable

⚠ CAUTION

Eye damage due to hazardous light emission

The light source belongs to Risk Group 1 as specified in IEC 62471 and emits LED radiation. Eye damage may result from exposure.

- Never look directly into the light-emitting aperture of the light source.
- Before installing or removing the light source always make sure it is switched off.

Info

For switching the illumination intensity on and off and adjusting the illumination intensity refer to section *Integrated Vertical Illuminator* [▸ 49]

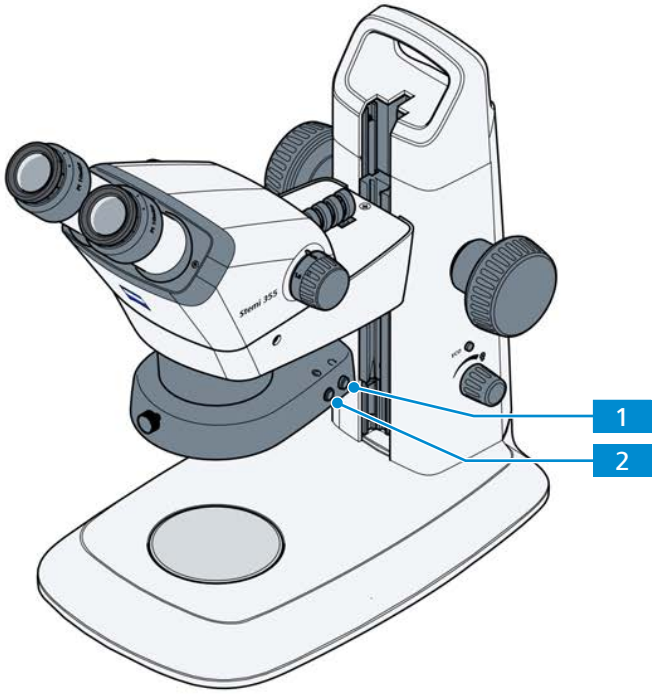


Fig. 17: Ring illuminator C LED, segmentable

1	Pattern rotation button	2	Pattern switching button

Procedure

1. Press the pattern switching button successively to change over between the four illumination patterns of the ring illuminator:
   a full circle
   b semi-circle
   c quadrant
   d two quadrants (opposite each other)
   → When switching the semi-circle or quadrant illumination on, the sample is first illuminated from the rear (from the direction of the stand column).
2. Press the pattern rotation button once briefly to turn the adjusted segment forward clockwise by one quarter turn.
3. Press the pattern rotation button for more than 2 seconds to start continuous rotation of the active segment (rotation steps of 1/8 circle, 1 second per turn).
4. Press the pattern rotation button briefly to stop the rotation.

5.6 Transmitted-Light Illuminators

⚠ CAUTION

Eye damage due to hazardous light emission

The light source belongs to Risk Group 1 as specified in IEC 62471 and emits LED radiation. Eye damage may result from exposure.

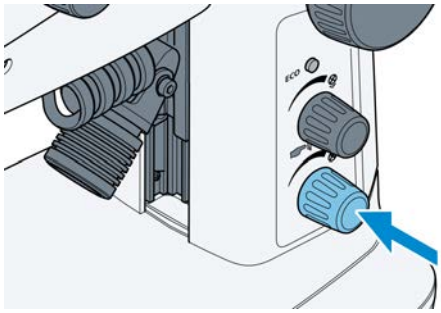
- Never look directly into the light-emitting aperture of the light source.
- Before installing or removing the light source always make sure it is switched off.

- *Setting the Transmitted-Light Unit in Stand C Edu [▸ 55]*
- *Setting the Transilluminator L LED, Low-Height in Stand L LED [▸ 56]*
- *Setting the Transmitted-Light Unit in Stand C Lab [▸ 57]*
- *Setting the Transillumination Unit L LED in Stand L LED [▸ 58]*

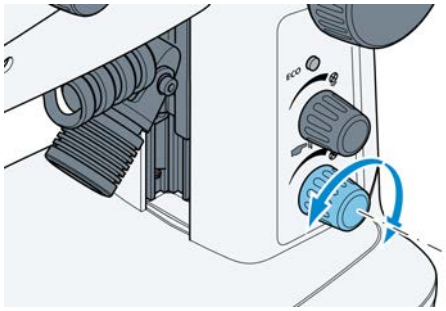
5.6.1 Setting the Transmitted-Light Unit in Stand C Edu

Procedure

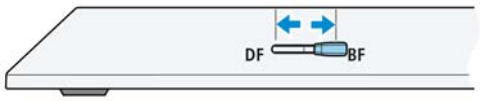
1. Press the lower knob to switch transmitted-light illumination on.



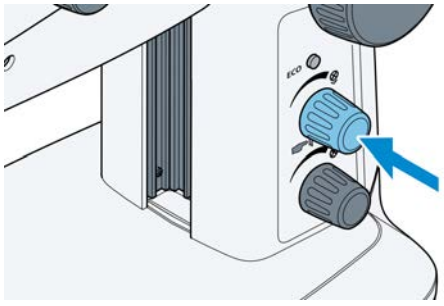
2. With the transmitted light on, turn this knob to adjust the illumination intensity.



3. Switch by adjusting the lever between the brightfield and the darkfield illumination.
   a Front position: Darkfield (**DF**)
   b Rear position: Brightfield (**BF**)



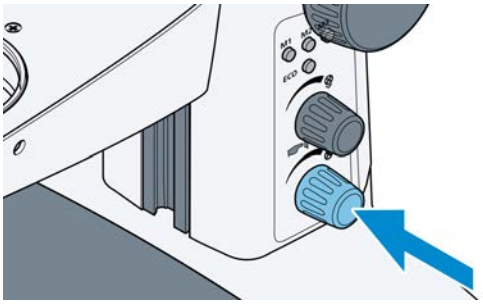
4. Press the upper knob to combine with reflected light, see chapter *Reflected-Light Illuminations [▸ 49]*.



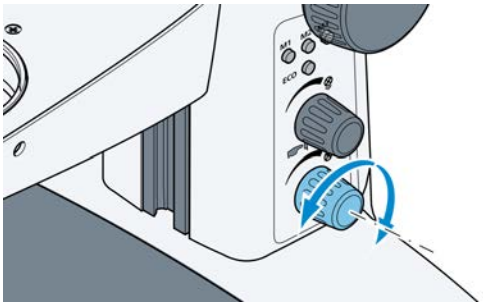
5.6.2 Setting the Transilluminator L LED, Low-Height in Stand L LED

Procedure

1. Press the lower knob to switch transmitted-light illumination on.

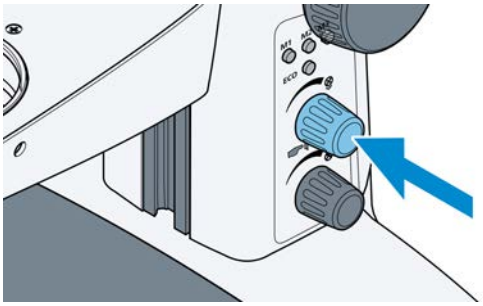


2. With the transmitted light on, turn this knob to adjust the illumination intensity.



3. Change over by adjusting the lever between the brightfield and the darkfield illumination.
   a Front position: Darkfield (**DF)**
   b Rear position: Brightfield (**BF**)

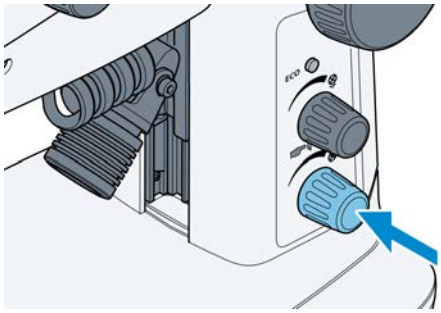
4. Press the upper knob to combine with reflected light, see chapter *Reflected-Light Illuminations [▶ 49]*.



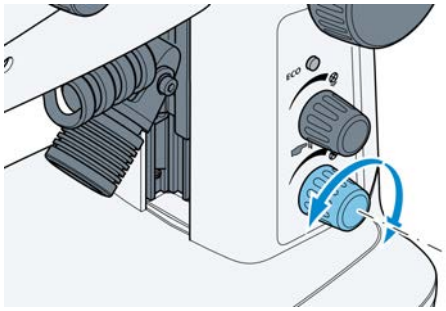
5.6.3 Setting the Transmitted-Light Unit in Stand C Lab

Procedure

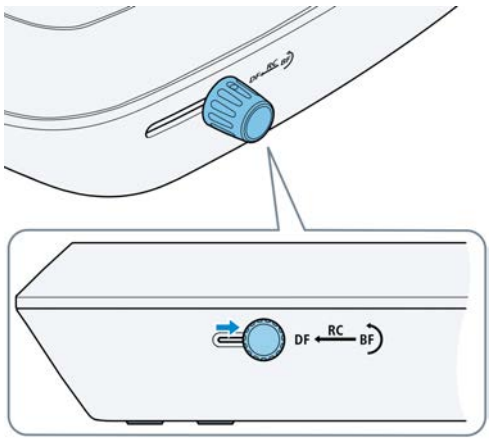
1. Press the lower knob to switch the transmitted-light illumination on.



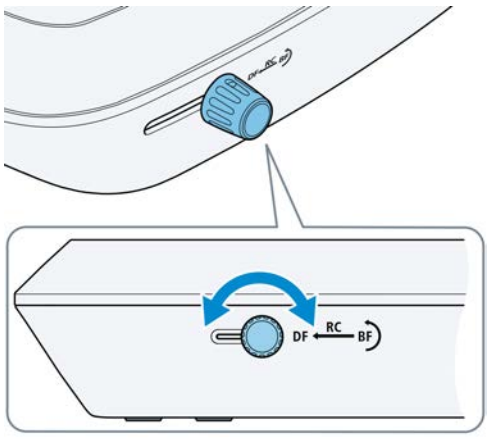
2. With the transmitted light on, turn this knob to adjust the illumination intensity.



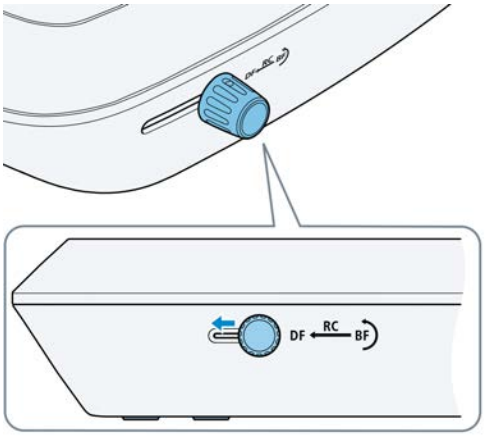
3. Push the sliding knob into its rear position to adjust the brightfield (**BF**) .



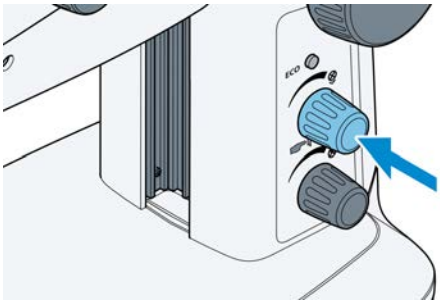
4. Turn the sliding knob to swing the clear or diffuse mirror into position or to adjust the inclination angle.
   a Clear mirror for high-contrast brightfield.
   b Diffuse mirror for homogenous brightfield.



5. Push the sliding knob into its front position to change over to darkfield illumination (**DF**).



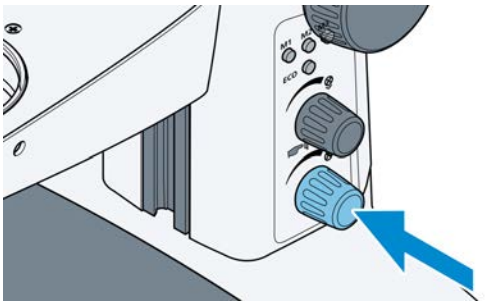
6. Turn the mirror until the sample structures are brightly lit against the dark background.
7. Press the upper knob to combine with reflected light, see chapter *Reflected-Light Illuminations [▸ 49]*.



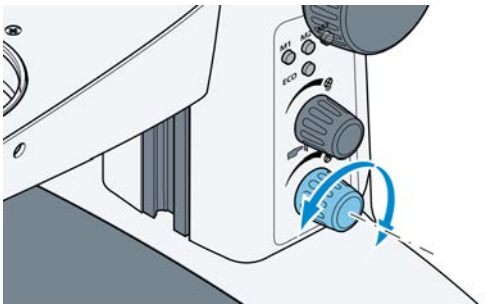
5.6.4 Setting the Transillumination Unit L LED in Stand L LED

Procedure

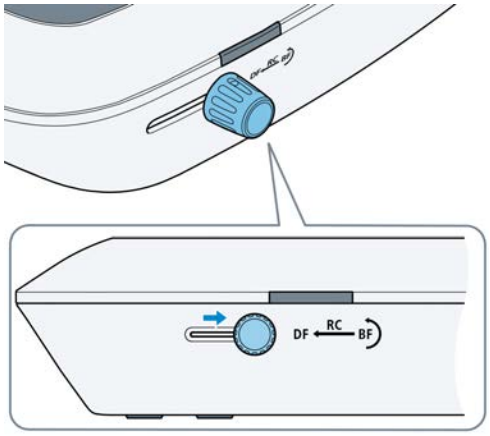
1. Press the lower knob to switch transmitted-light illumination on.



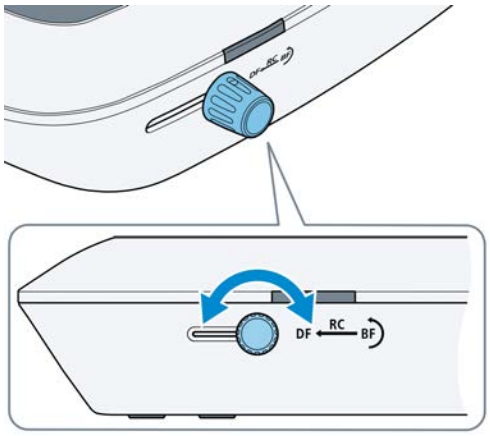
2. With the transmitted light on, turn this knob to adjust the illumination intensity.



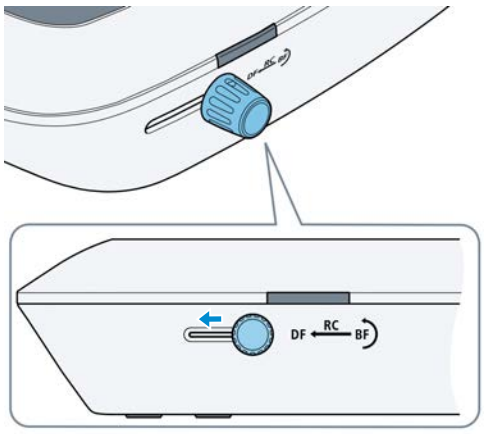
3. Push the sliding knob into its rear position to adjust the brightfield (**BF**).



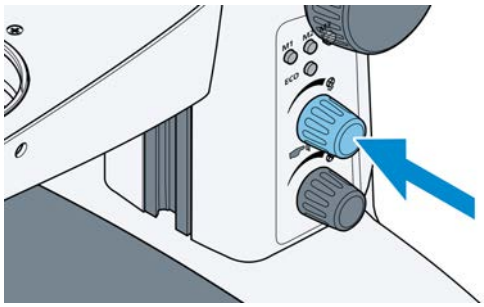
4. Turn the sliding knob to swing the clear or diffuse mirror into position or to adjust the inclination angle.
   a Clear mirror for high-contrast brightfield.
   b Diffuse mirror for homogenous brightfield.



5. Push the sliding knob into its front position to change over to darkfield illumination (**DF**).



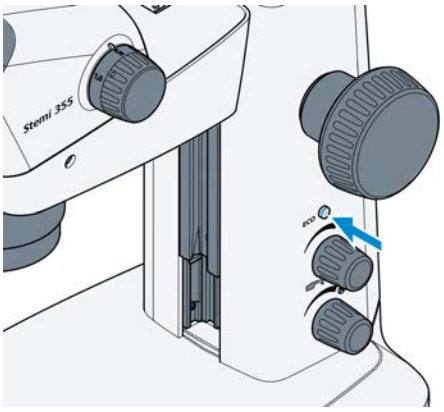
6. Turn the mirror until the sample structures are brightly lit against the dark background.
7. Press the upper knob to combine with reflected light, see chapter *Reflected-Light Illuminations* *[▸ 49]*.



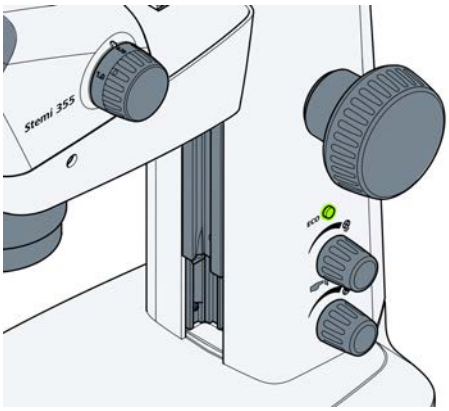
5.7 Setting the Microscope into Standby Mode

Procedure

1. Press the **ECO** button shortly.



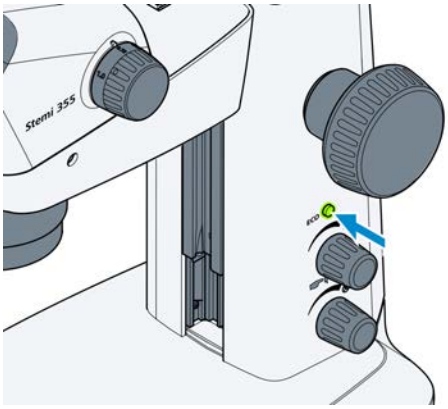
→ The **ECO** button turns to green light.



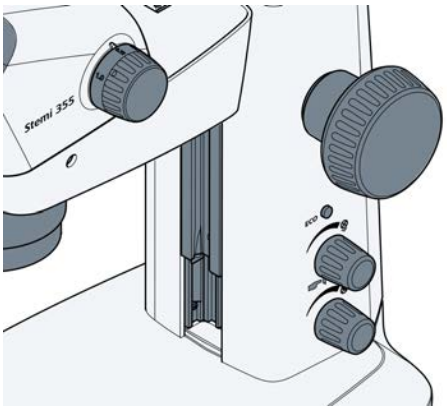
→ All illuminators turn off. **Info** **The illumination mode and light intensity of each lightened illuminator are stored before illuminators are turned off.**

→ The whole microscope system goes into standby mode to save electrical energy.

2. To recover the microscope from the standby mode press the **ECO** button shortly.



→ Green light of the **ECO** button turns off.



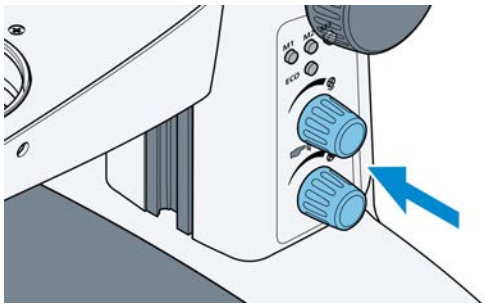
→ The microscope and all illuminators turn back in their stored illumination mode and light intensity.

5.8 Setting the Memory Buttons in Stand L LED

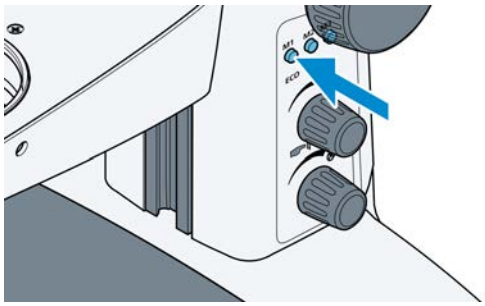
Stand L LED has three memory buttons to save different illumination settings and to permit rapid switching between different reflected, transmitted and mixed illumination types.

Procedure

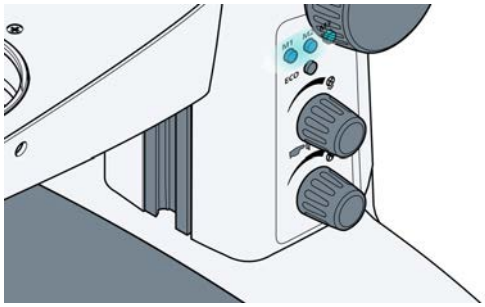
1. Turn on the desired illumination types (reflected and / or transmitted light) by pressing the lower or upper knob.



2. Adjust the desired intensity fo the reflected- and / or transmitted-light illumination by turning the upper or lower knob.
3. Choose one of the three memory buttons (**M1**, **M2**, **M3**) and hold it down for 3 seconds.



→ All three buttons will light up when the settings have been successfully saved.

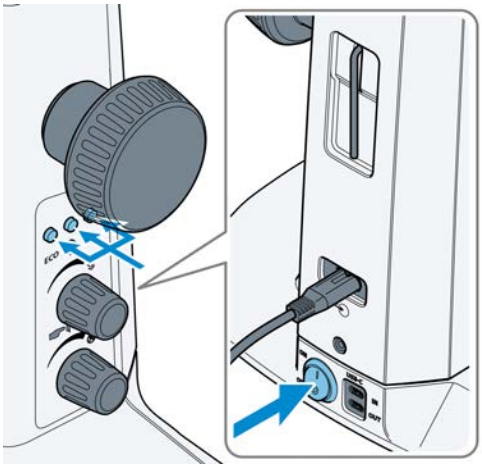


4. Repeat the process to assign the other two memory buttons.
5. To recall an illumination setting, press the relevant memory button shortly.

5.9 Reset of the Memory Buttons in Stand L LED

Procedure

1. Switch off the microscope.
2. Press all three memory buttons simultaneously while switching on the microscope.



→ Memory slots are empty.

→ All connected illuminators switch on at 50 % brightness.

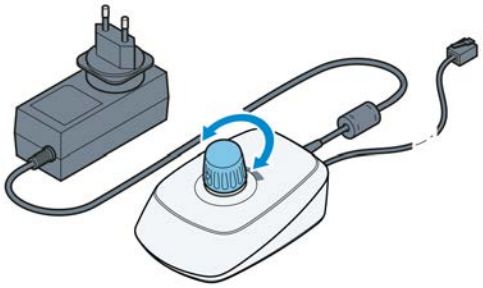
↳ Briefly pressing the buttons now causes no change in the illumination until a new setting is made.

5.10 Setting the Controller C

Prerequisite ✓ The controller C is installed and connected, see section *Installing the Controller C [▸ 30]*.

Procedure

1. Press the knob on the controller C to switch the integrated vertical illuminator (or the ring illuminator) on and adjust illumination intensity by turning the knob.

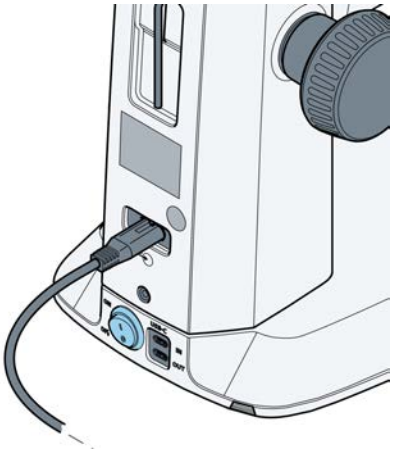


2. Place the sample in the illuminated sample field.
3. Set the stereo microscope to its initial setting, see section *Adjusting the Microscope [▸ 47]*.

5.11 Switching Off the Microscope

Procedure

1. Switch the power switch to **OFF**.



6 Care and Maintenance

To ensure the best possible performance of the microscope and its components, maintenance must be performed on a regular basis. Keep the service logs of the microscope.

To maintain operational safety and reliability of the microscope, we recommend entering into a **ZEISS Protect Service Agreement**.

Info

For additional information and detailed descriptions, refer to further applicable documents or ask your ZEISS Sales & Service Partner.

Info

Contact the ZEISS service representative to learn more about the **ZEISS Predictive Service**.

6.1 Safety during Cleaning and Maintenance

Only conduct preventive measures described here. All tasks of maintenance and cleaning not described may only be performed by an authorized ZEISS service representative.

Any unauthorized intervention or any operation outside the scope of the intended use can lead to injuries and property damage and voids all rights to warranty claims. Only original spare parts from ZEISS may be used.

NOTICE

Functional impairment due to dirt, dust and moisture

Dirt, dust, and moisture can impair the microscope and its components functionality and can cause short-circuits. Blocking or covering ventilation slots can lead to a build-up of heat that can damage the device and, in extreme cases, cause a fire.

- Use the dust protection cover if the microscope is not used.
- The ventilation slots must be unobstructed at all times and the heat sink (if available) must be unobstructed.
- Do not insert any objects or allow them to fall into the ventilation slots.
- Perform regular maintenance and cleaning according to the instructions in this document and according to the instructions in the applicable documents.
- Make sure that no cleaning liquid or moisture gets inside the microscope and its components.
- In case of damage, the affected parts of the microscope must be taken out of operation.

6.2 Maintenance Work

6.2.1 Cleaning an Optical Surface

NOTICE

Damage of optical surfaces due to improper cleaning

- Remove dust from the optical surface slowly and carefully.
- Remove dust on optical surfaces with a natural-hair brush or blow it off with a dust blower.
- Avoid touching optical surfaces with fingers.
- Never use abrasive compounds or cleaners.

Parts and Tools

- Clean cloth
- Cotton swab
- Distilled water
- Optical cleaning solution (70 % ethanol)
- Lint-free cloth

Procedure

1. Moisten a cotton swab or a clean cloth with distilled water or, if necessary, with an optical cleaning solution.
2. Wipe optical surfaces in a circular motion towards the edge of the optics with slight pressure.

3. Dry with a lint-free cloth.

6.2.2 Removing Water-Soluble Contamination

Parts and Tools

- Clean cloth
- Lint-free cloth

Prerequisite

✓ The microscope and its components are switched off and disconnected from the power supply.

Procedure

1. Remove dust and loose dirt particles with a soft brush or clean lint-free cloth.
2. If necessary, moisten a clean cloth with water. **Info** **A mild detergent (no solvent!) may be added to the water for stubborn dirt.**
3. Wipe off the area with the moistened cloth. **Info** **Labels on the device may only be cleaned using a dry cloth.**
4. Dry with a lint-free cloth.

6.2.3 Exchanging the Internal Power Supply Unit

Info

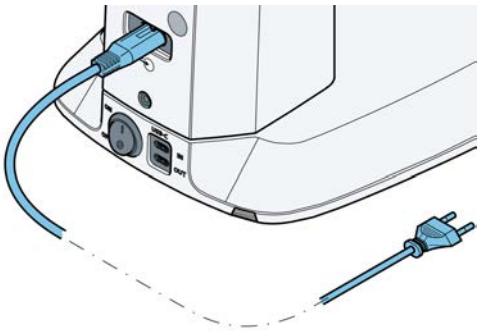
The internal power supply unit in stand L is exchanged in a similar way to that in stand C.

Parts and Tools Hex key, 3.0 mm

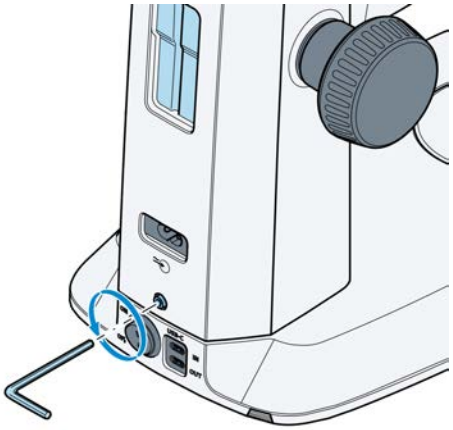
Prerequisite ✓ Microscope is switched off and disconnected from power supply.

Procedure

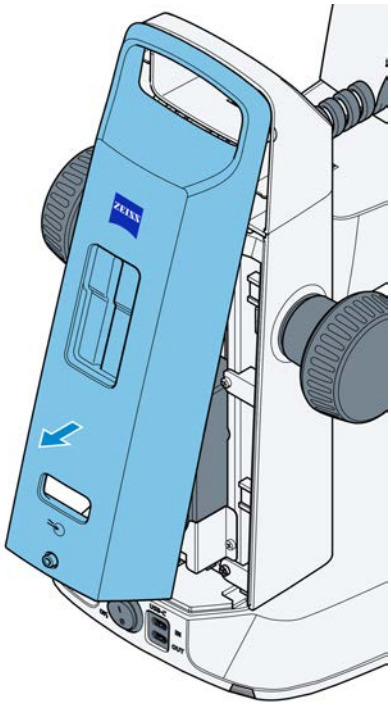
1. Remove the power cord from the back of the device.



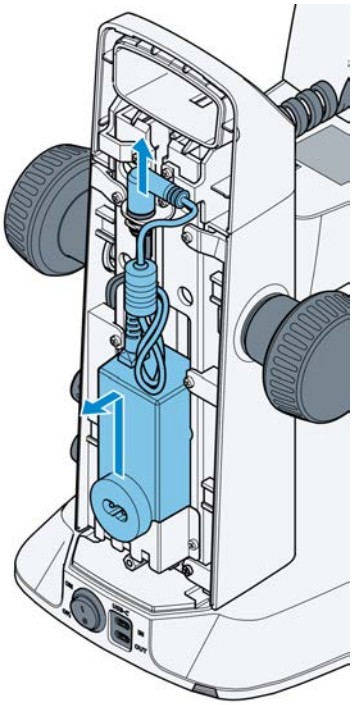
2. Use a hex key to release the screw on the underside of the housing cover.



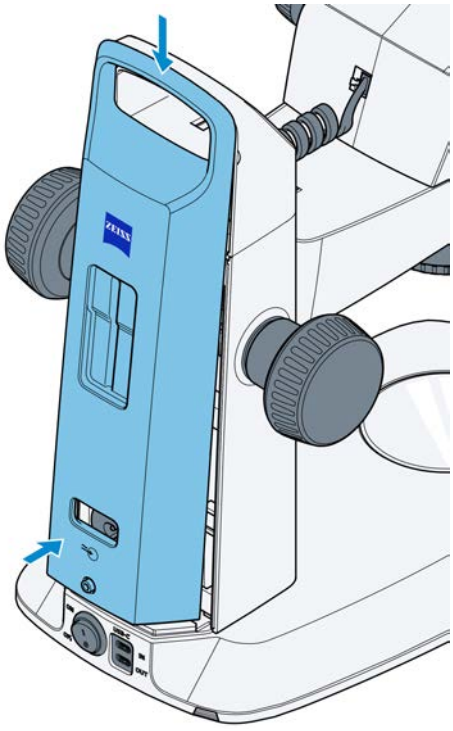
3. Pull off the housing cover slightly at the bottom.



4. Release the plug and remove the faulty internal power supply unit.

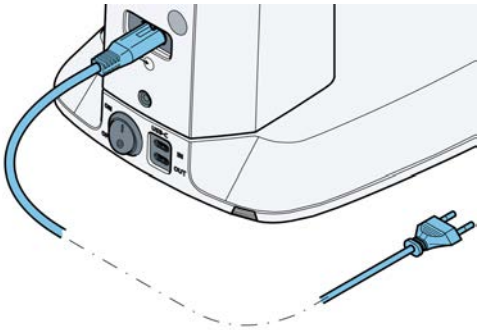


5. Insert the new internal power supply unit and connect the plug.
6. Bring the upper part of the housing cover into place and press in the lower part of the housing cover.



7. Secure the housing cover by means of the screw.

8. Insert the power cord on the back of the device.



9. Insert the mains plug into a mains supply socket.

6.2.4 Opening the Stand Cover Plate (Stand C Edu)

The stand cover plate may be removed for cleaning or to remove any foreign matter which might have fallen in accidentally.

Info

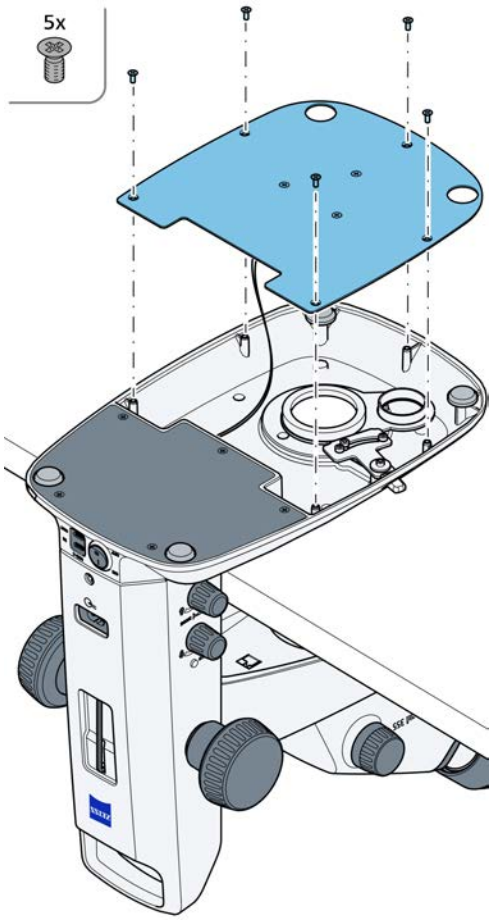
To clean the LED board, use a soft lintfree cloth, a cotton swab or a brush with natural bristles, possibly moistened slightly in distilled water.

Parts and Tools Phillips screwdriver

Prerequisite ✓ Microscope is switched off and disconnected from power supply.

Procedure

1. Release the five recessed head screws.



2. Lift off the stand cover plate carefully and then put it aside. **Info** **Make sure that the cable is not disconnected from the stand cover plate.**

6.2.5 Opening the Stand Cover Plate (Stand C Lab)

The transmitted-light base can be removed from the stand cover plate for cleaning or for removal of any foreign matter which might have fallen in accidentally.

Info

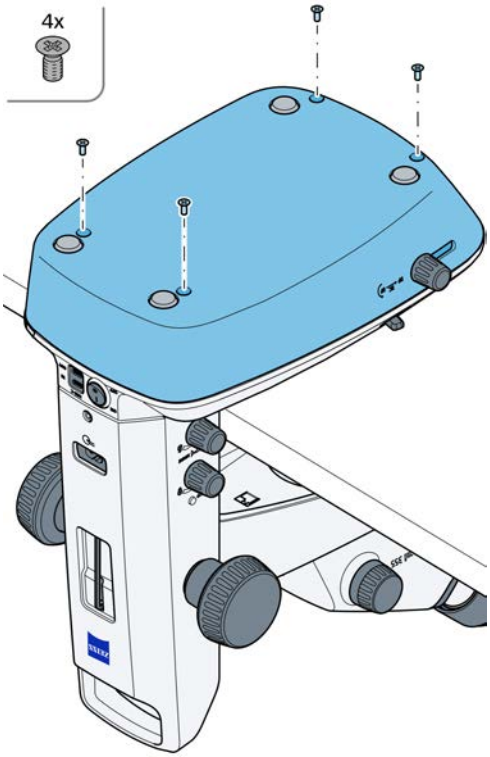
To clean the LED board, the optical elements and the mirror, use a soft lintfree cloth, a cotton swab or a brush with natural bristles, possibly moistened slightly in distilled water.

Parts and Tools Hex key, 3.0 mm

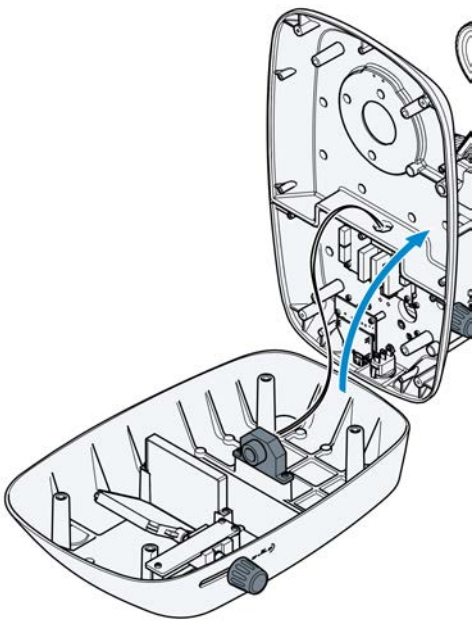
Prerequisite ✓ Microscope is switched off and disconnected from power supply.

Procedure

1. Release the four screws from the stand cover plate.



2. Carefully lift the stand cover plate off the transmitted-light base and put the stand aside. **Info** **Make sure that the cable is not disconnected from the transmitted-light base.**



7 Troubleshooting

The following table provides information about solving common problems.

Info

If you cannot solve the problem or if you are unsure about a certain technical difficulty, contact your local ZEISS service representative.

Symptom	Cause	Measure
Stereo microscope illumination cannot be switched on.	Power supply interrupted.	▪ Check or establish connection to power supply. ▪ Switch the power switch on the back of the stereo microscope to **ON**.
	Power supply unit faulty.	Exchanging the internal power supply unit, see section *Exchanging the Internal Power Supply Unit [▸ 65]*.
Vertical reflected-light illumination is not lit.	Power supply cable RJ-12 not plugged in.	Insert RJ plug correctly, see section *Installing the Microscope Body [▸ 28]* or *Integrated Vertical Illuminator [▸ 49]*.
Additional reflected-light illuminations are not lit.	Power supply cable RJ-12 not plugged in.	Insert RJ plug correctly, see section *Installing the Microscope Body [▸ 28]* or *Additional Reflected-Light Illumination [▸ 31]*.
	Reflected light not switched on or dimmed.	Press and turn the knob several times to switch reflected light on and to increase its intensity; see section *Reflected-Light Illuminations [▸ 49]*.
Transmitted-light illumination does not light up.	Transmitted light not switched on or dimmed.	Press and turn the rotary / push-button to switch illumination on and to increase its intensity; see section *Transmitted-Light Illuminators [▸ 55]*.
	Transmitted light not connected.	Open stand C Edu or C Lab and connect the plug-in connectors of the LED illumination according to section *Opening the Stand Cover Plate (Stand C Edu) [▸ 67]* or *Opening the Stand Cover Plate (Stand C Lab) [▸ 68]*.
Transmitted-light illumination is dirty or control lever cannot be actuated.	Liquids or foreign matter in the transmitted-light unit.	Open and clean stand C Edu or C Lab and eliminate foreign matter according to section *Opening the Stand Cover Plate*

Symptom	Cause	Measure
		(Stand C Edu) [▸ 67] or *Opening the Stand Cover Plate (Stand C Lab) [▸ 68]*.
Microscope mount moves down by itself.	Focusing drive too easy to move.	Set the ease of motion of the focusing drive, see section *Setting the Ease of Motion [▸ 49]*.

8 Decommissioning and Disposal

This chapter contains information on the decommissioning and disposal of the microscope and its expansions/components or accessories.

8.1 Decommissioning

If the microscope and its components are not used for an extended period of time such as several months, they should be shut down completely and secured against unauthorized access.

Procedure

1. Switch off the microscope.
2. Pull the power supply plug.

8.2 Transport and Storage

The following regulations must be observed before and during transport:

- The boxes must be secured during transport.
- Avoid rocking the boxes back and forth.
- Note the weight information on the package and on the shipping document.
- Where possible, the original packaging must be used for shipping or transport.

Allowable environmental conditions

Off-site transportation and storage in shipping packaging:

- Between -40 °C and 70 °C
- Relative humidity less than 95 % at 40 °C

On-site storage without packaging:

- Between 5 °C and 40 °C
- Relative humidity less than 95 % at 40 °C

Info

24 hours before installation of the microscope it is required that the boxes are at recommended room temperature to avoid ingress of humidity, which is harmful to optical paths, and to ensure effective stability of the microscope during installation and testing.

8.3 Disposal

The microscope and its components must not be disposed of as domestic waste or through municipal disposal companies. They must be disposed of in accordance with applicable regulations (WEEE Directive 2012/19/EU). ZEISS has implemented a system for the return and recycling of devices in member states of the European Union that ensures suitable reuse according to the EU Directives mentioned.

ZEISS introduced a procedure for the return and recycling of the instruments within the member states of the European Union which ensures suitable recycling procedures conforming to the EU directives.

For more information on disposal and recycling please consult your ZEISS Sales & Service Partner. The microscope may not be disposed of in the household waste or through municipal waste disposal services. If the microscope is resold, the seller shall be obliged to inform the buyer that the microscope must be disposed of in accordance with the regulations.

The customer is responsible for decontamination.

8.4 Decontamination

A decontamination statement must be submitted before returning any used objects to the ZEISS location.

If reliable decontamination cannot be guaranteed, the hazard must be marked according to applicable regulations. In general, a well-visible warning sign must be affixed to the article itself and to the outside of the packaging, together with detailed information on the type of contamination.

9 Technical Data and Conformity

This chapter contains important technical data as well as information on the conformity.

9.1 Performance Data and Specifications

Due to continuous development, we reserve the right to change specifications without notice.

Info

Your ZEISS Sales & Service Partner will provide you with the detailed installation requirements.

Location requirements

The microscope may only be operated in closed rooms. The microscope should not be installed near radiators or windows with direct sunlight. The microscope must be placed securely on the table surface to prevent slipping and falling.

Compliance with the installation requirements of the microscope is the responsibility of the customer. The requested supplies have to be readily available at the time of installation.

Installation site	Exclusively inside buildings
Altitude	Max. 2000 m above sea level
Atmospheric pressure	Min. 800 hPa

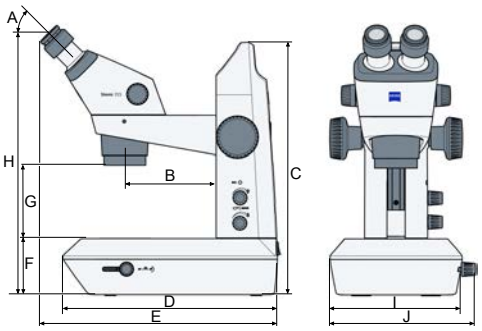
Air Conditioning and Quality

Temperature range for operation	5 to 40 °C
Relative humidity	< 95 % at 40 °C
Atmospheric pressure / altitude	800 to 1060 hPa / ≤ 2000 m above sea level
Pollution degree	2

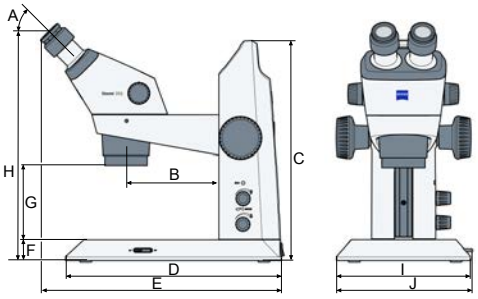
Optical Data

Optical Data Basic System (Eyepieces 10x, No Front Optics)	
Zoom range	5.5:1 (0.72x – 4.0x)
Number of zoom click stops	0.72x / 1x / 2x / 3x / 4x
Interpupillary distance	55 – 75 mm
Magnification range	7.2x – 40x
Maximum object field diameter	32 mm
Free working distance	110 mm

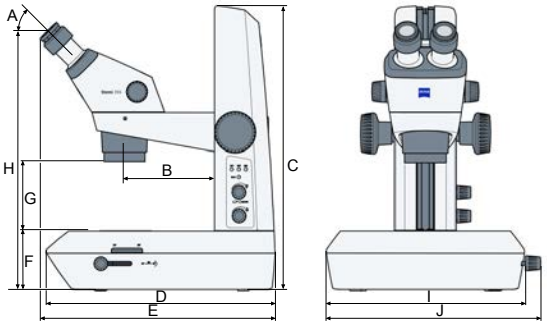
Weight and Sizes



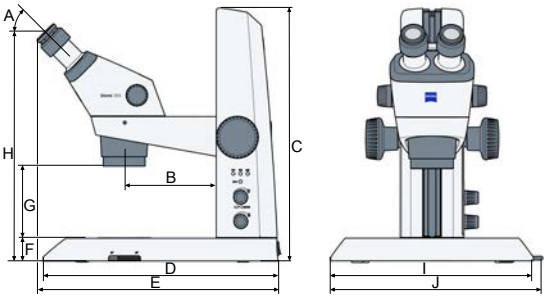
Stemi 355 Lab set



Stemi 355 Edu / Stemi 355 Mat set



Stemi 355 in stand L LED with transillumination unit



Stemi 355 in stand L LED with transilluminator, low-height

	Stemi 355 Lab set	Stemi 355 Edu / Stemi 355 Mat set	Stemi 355 in stand L LED with transil-lumination unit	Stemi 355 in stand L LED with transil-luminator, low-height
A (°)	45	45	45	45
B (mm)	140	140	140	140
C (mm)	392	338	448	390
D (mm)	331	331	360	360
E (mm)	375	375	375	375
F (mm)	89	35	95	37
G (mm)	110	110	110	110
H (mm)	425	371	431	373
I (mm)	204	204	311	312
J (mm)	225	208	332	326
Weight (kg)	6.0	5.7	10.0	7.8

Mains connection

	Value
Nominal AC voltage	L+N 100 to 240 VAC ± 10 % No line voltage conversion required!
Nominal DC voltage	12 V DC
Nominal frequency	50 / 60 Hz
Power consumption	max. 60 VA
Nominal DC current	2 A
Max. current	0.58 A
Protection class	IP20 (IEC 60529)
IEC earth class	Class II of IEC 61140
Overvoltage Category	II

9.2 Applicable Standards and Regulations

The Stemi 355 is a product for research purposes only. It conforms to current international standards (e.g. IEC 61010-1) as well as to harmonized standards of the applied EU directives.

The Stemi 355 complies with the following EU directives:

2011/65/EU and delegated directive (EU) 2015/863	Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS), amended by Commission Delegated Directive (EU) 2015/863 of 31 March 2015
2012/19/EU	WEEE Directive
2014/30/EU	Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonization of the laws of the Member States relating to electromagnetic compatibility
2014/35/EU	Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonization of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits

Not for therapeutic use, treatment, or medical diagnostic evidence. Not all products are available in every country. Observe all general and country-specific safety regulations as well as applicable environmental protection laws and regulations.

ZEISS conforms to the following management system standard: ISO 9001.

10 Accessories and System Expansions

Only the following accessories may be used with the microscope as their safe use has been confirmed by ZEISS. Only original parts from ZEISS may be used. Check in advance whether your microscope can be retrofitted with a system expansion or accessories.

After installation or conversion it must be carefully checked whether the microscope and its system expansions/accessories are in a safe operational state and whether unused ports are closed. For details and safety measures refer to the associated documents.

Info

Further information on the software and its operation is available in the software's online help.

Info

For additional information and detailed descriptions, refer to further applicable documents or ask your ZEISS Sales & Service Partner.

Name	Description/Info
Microscope bodies	The following bodies are available: ▪ Microscope body Stemi 355 ▪ Microscope body Stemi 355 trino ▪ Microscope body Stemi 355 ESD
for stand-alone use of Stemi 355 bodies (optional)	The following objective controller is available: ▪ Controller C
Front optics	The following optics are available: ▪ Front optics 3 0.5x FWD 185 mm ▪ Front optics 3 0.75x FWD 128 mm ▪ Front optics 3 1.5x FWD 56 mm ▪ Front optics 3 2.0x FWD 43 mm
Dust protection glass	The following protection glass is available: ▪ Dust protection glass M52/M49
Pol analyzer	The following analyzer is available: ▪ Analyzer M49/52 rotatable
Eyepieces	The following eyepieces are available: ▪ Eyepiece 16x/14 Br foc ▪ Eyepiece Pl 16x/16 Br foc ▪ Eyepiece W 25x/10 focusing w/ eyecup
Eyepieces with reticles	The following eyepieces with reticles are available: ▪ Eyepiece Pl 10x/23 Br foc w/micrometer ▪ Eyepiece Pl 10x/23 Br foc w/crossline ▪ Pl 16x/14 Br foc w/micrometer
Eyecup	The following eyecup is available: ▪ Eyecup with light protection, foldable

Name	Description/Info
Stage micrometers	The following light stage micrometers are available: ▪ Stage micrometer 25+50/10, f/Stemis ▪ Stage micrometer, 25+50/10, calibrated
Stands	The following stands are available: ▪ Stand C ▪ Stand C Lab ▪ Stand C Mat ▪ Stand C Edu ▪ Stand L ▪ Stand L LED
Reflected-light illuminators	The following illuminators are available: ▪ Spot illuminator C LED ▪ Double spot illuminator C LED ▪ Ring illuminator C LED, segmentable
Polarizer for spot/double spot illuminator C LED (optional)	▪ Polarizer spot illuminator
Polarizer for transmitted light illumination for stand C/L serires	▪ Polarizer transillumination C/L
for stand-alone use of ring light C LED	▪ Controller C
Stages (d=84 mm for stands C/L)	The following stages are available: ▪ Gliding stage f/ Stemis ▪ Stage ball & socket f/ Stemis ▪ Rotating stage Stemi
for rotating stages	▪ Polarizer S ▪ Lambda plate in slider

Revision History

Revision	Date of Issue	Introduced Modifications
1	04/2025	First release

Glossary

BF (Brightfield)

Illumination and imaging system where direct light passes through the objective aperture and provides a bright background against which the image is viewed.

DF (Darkfield)

Illumination and imaging system that prevents direct light from entering the objective aperture.

FWD (Free Working Distance)

A distance in air, or in the specified immersion liquid, between the front of the objective and the surface of the cover glass, or of the object if uncovered, under normal operating conditions.

Insert plate

Part that sits in a mounting frame and holds slides.

LED (Light emitting diode)

Solid state device embodying a p-n junction, emitting optical radiation when excited by an electric current.

PE

Primary Electron

pol (polarization)

An oscillation state of a light wave, characterized by the motion which the light vector describes in the plane perpendicular to the direction of propagation.

reticle

Glass plate, usually disposed in the object focal plane of the eyepiece, with a series of lines or a cross hair applied upon it, or another device carrying an aiming mark used for targeting an object or for measuring angles and distances to an object.

UDI (Unique Device Identifier)

A unique device identifier is a unique numeric or alphanumeric code that generally consists the Device identifier (DI),and the Production identifier (PI).

User

Person examining a sample under the microscope.

UV-VIS-IR

Objective with longitudinal chromatic aberration correction for the visual and near IR wavelength range. It has good transmission properties in the near UV wavelength range.

ZEISS Sales & Service Partner

The Sales & Service Partner is generally in the field for customer support in a regional area and / or a clearly defined customer group.

ZEISS service representative

Specially trained service expert, either ZEISS staff or authorized service partner of ZEISS.

ZEN software

Modular software, that is controlling all ZEISS light microscope sytems and has a wide application field: acquiring images, processing images and analyzing images.

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