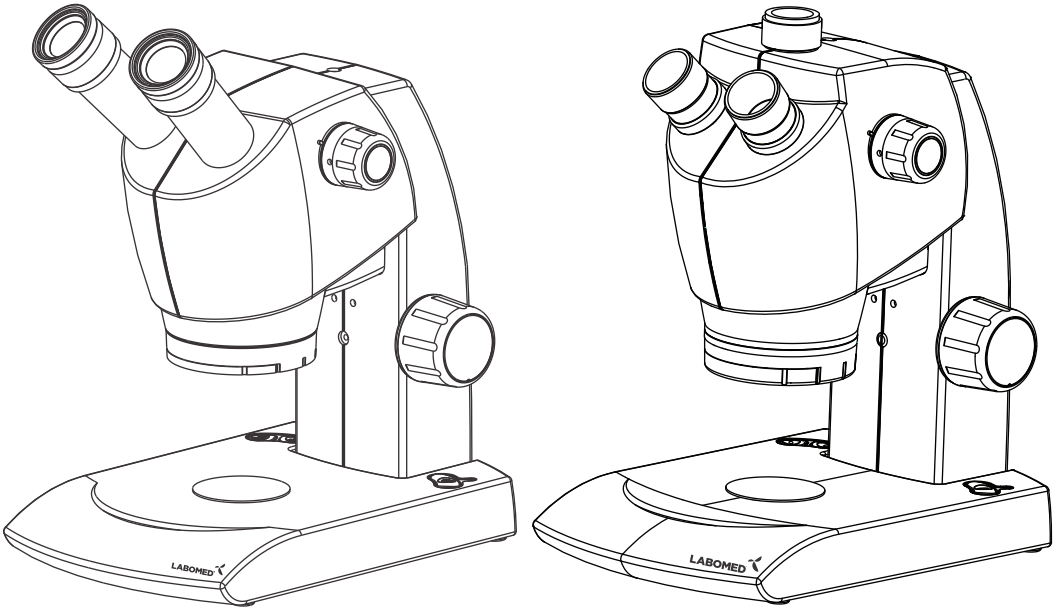
LABOMED
ideas for vision

Luxeo
Stereo / Zoom Stereo Microscopes

User Manual



To ensure correct use of this instrument and to avoid injury during operation, read this manual completely before use.

Part No. 4140000-795
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1 INTRODUCTION

The Luxeo is a stereo zoom microscope that combines a modern design with the latest optical and mechanical advances.

Designed for professionals and students alike, this microscope offers many features and functions for a wide range of applications.

A binocular body inclined at 45° provides extra clarity and contrast.

The pressure die-cast stand has frictionless ball-bearing side focusing to avoid any loss of motion.

The sturdy, modern design provides both comfort and stability.

The lateral magnification changer allows smooth, comfortable switching between magnifications.

The LED illuminator is a cluster of 10 LEDs that can be switched between arc illumination and full circular illumination. The Luxeo runs on a direct-input power supply of 100–240 V AC, 50/60 Hz. This ensures continuous operation even when the line voltage fluctuates.

The LEDs in this instrument have an average service life of up to 50,000 hours.

2 SAFETY INFORMATION

1. After the microscope has been used to observe a specimen containing bacteria, clean all parts that came into contact with the specimen to prevent infection.
- Always remove the specimen before moving this product.
- If the specimen is damaged through incorrect operation, clean all surfaces that may have come into contact with the specimen.

2. To avoid electrical hazards when replacing either LED, turn the main switch of the microscope OFF and disconnect the power cord from the wall outlet first.
Whenever you replace a microscope LED, allow the lamp socket and the LED to cool before touching them (Fig. 1).

Applicable LED cluster replacement for incident illumination Applicable LED cluster replacement for transmitted illumination

3. Install the microscope on a sturdy, level table or bench and do not obstruct the air vents in the base of the unit. Do not place the microscope on a soft surface, as this could block the air vents and cause overheating.
4. Always use the power cord supplied by LABOMED. If a different power cord is used, product safety cannot be guaranteed.
5. When installing the microscope, route the power cord away from the microscope frame. If the power cord touches the base of the microscope, it could melt from overexposure to heat.
6. Always make sure that the grounding terminal of the microscope and that of the wall outlet are properly connected. If the unit is not grounded, LABOMED cannot guarantee electrical safety.
7. Never allow metal objects to enter the air vents of the microscope frame, as this could cause injury to the user and damage to the microscope.
8. After using the microscope, always disconnect the power cord from the connector socket of the microscope or from the wall outlet.

SAFETY SYMBOLS

The following symbols appear on the microscope. For optimal use, make sure you understand these symbols and always use the equipment as prescribed.

Symbol	Explanation
	This surface can become hot. Do not touch it until the system has cooled down completely.
	Before use, read the instruction manual carefully. Improper use could result in injury to the user and/or damage to the equipment.
	Warning: risk of electric shock.
I	Main switch is ON.
○	Main switch is OFF.

WARNING LABEL

A warning label is attached wherever special care is required when handling and using the microscope. Always read the warnings.

Warning label position	Bottom of microscope frame	[Warning: high temperature in the bulb/LED compartment]	
		[Warning: risk of electric shock]	
		[Warning: risk of damage if the instruction manual is not followed]	

If a warning label is stained or peels off, contact your LABOMED distributor.

1 GETTING STARTED

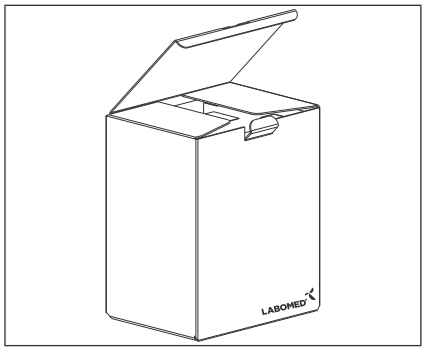


Fig. 1

1. **A microscope is a precision instrument with delicate glass components. Handle it with care.**
2. **Do not use the microscope where it is exposed to direct sunlight, high temperature, humidity, dust or vibration.**
3. **The microscope is cooled by natural convection. Leave enough space (10 cm or more) around the body when installing the unit.**
4. **Use the arm handle to carry the microscope.**
   To prevent damage, do not hold the microscope by the stage or the observation tube.
   Remove the specimen from the stage clip before transporting the unit to avoid damaging the specimen slide.

2 MAINTENANCE AND STORAGE

1. Clean all glass components by wiping gently with the cleaning cloth provided. To remove fingerprints or oil smudges, wipe with the cleaning cloth slightly moistened with a mixture of petroleum ether (85%) and isopropanol (15%).

Solvents such as petroleum ether and isopropanol are highly flammable and must be handled with care. Keep these chemicals away from open flames and potential sources of electrical sparks, for example electrical equipment that is being switched “ON” or “OFF”. Always use these chemicals only in a well-ventilated room.

2. Do not use organic solvents to clean microscope components other than the glass components. To clean non-glass components, use a soft, lint-free cloth slightly moistened with a diluted neutral detergent.

3. Do not disassemble any part of the microscope, as this could cause malfunction or reduced performance.

4. When the microscope is not in use, make sure the frame has cooled down completely before storing the unit in a dry cabinet or covering it with the dust cover (provided).

5. Observe your local rules and regulations for product disposal.

3 CAUTION

If the microscope is used in a manner not specified in this manual, the safety of the user cannot be guaranteed, and the equipment may be damaged. Always use the equipment as described in this instruction manual.

4 CARE & MAINTENANCE

Your microscope has been engineered for a long and safe service life with minimal maintenance. In general, routine maintenance is limited to keeping the working parts of the microscope lubricated and the optics clean. Always cover the microscope with the dust cover provided when it is not in use.

1. Cleaning the lenses:
   To clean the lens surfaces, remove dust with a soft brush or gauze (cans of compressed air are ideal). To remove fingerprints or grease, use a soft cotton cloth or lens tissue lightly moistened with cleaning solution (85% petroleum ether and 15% isopropanol). For cleaning the optics, use xylene. Handle xylene with great care.
   Cleaning procedure:
   Place the objective and/or eyepieces on a dust-free surface (e.g. aluminum foil). Make all other optical components to be cleaned as accessible as possible.

a. Blow away all loose dust particles with a dust blower.
b. Remove all water-soluble dirt with distilled water. If this is unsuccessful, repeat with a solution of diluted liquid hand soap. Remove any remaining residue with a dry cotton swab.
c. To remove oil, first use a solution of diluted liquid hand soap. If this does not give a satisfactory result, repeat the cleaning with a solvent (Optical Cleaning Solution: 85% petroleum ether and 15% isopropanol).
d. Always remove grease with a solvent.
e. Clean with a spiral motion from the center to the rim. Never wipe with zigzag movements, as this only spreads the dirt. On larger optical surfaces (e.g. tube lenses), start the spiral motion at the rim, work toward the center, and then follow with a center-to-rim cleaning motion. Several spiral wipes are normally recommended.

We recommend pure, volatile petroleum ether or the Optical Cleaning Solution described above.



Zigzag motion (X)



Spiral motion (✓)

Wipe with a spiral movement. Do not use a zigzag motion!

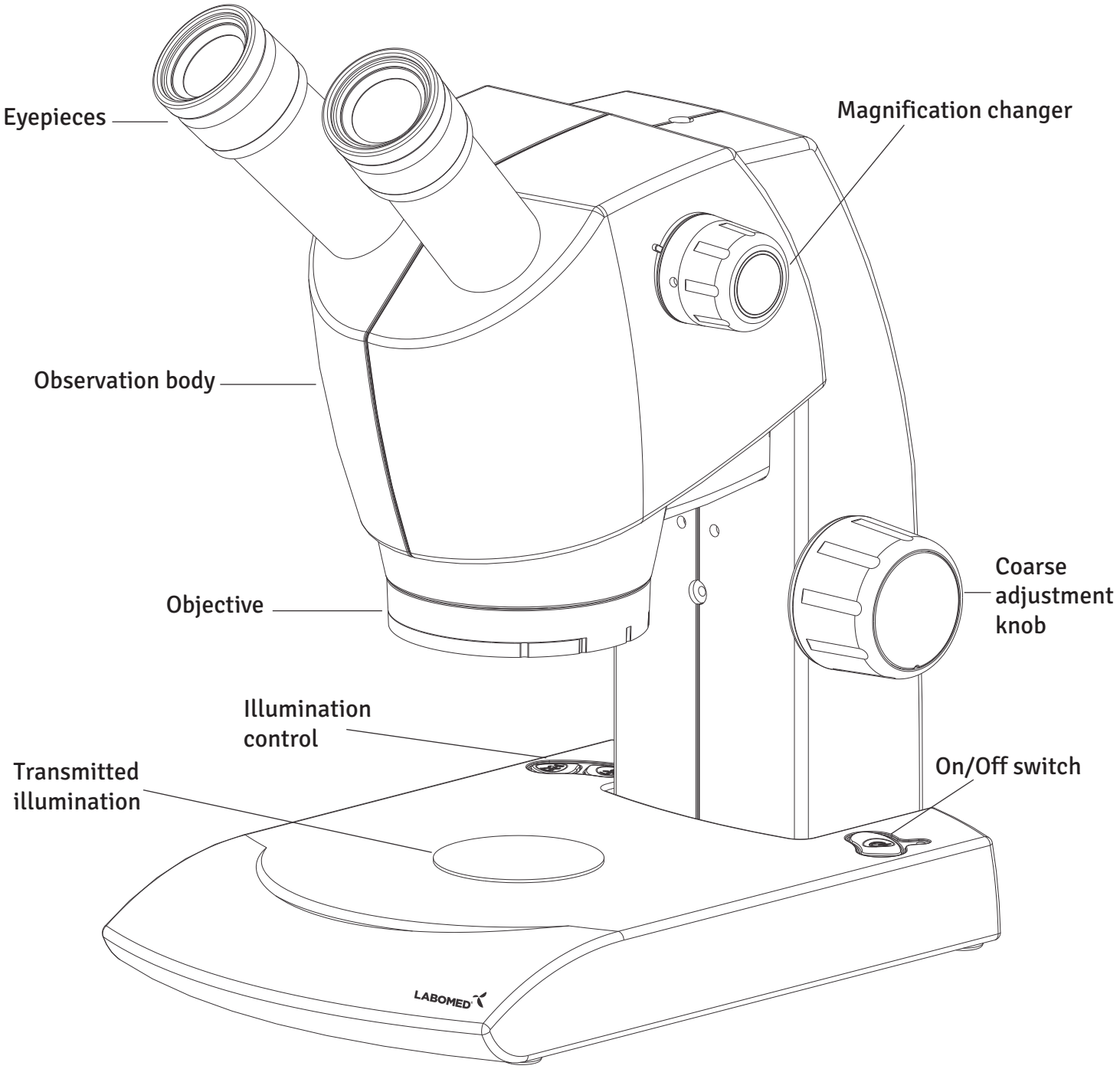
2. Cleaning painted surfaces:
   Do not use any organic solvent (e.g. thinner, xylene, ether or alcohol) to clean the painted surfaces of the instrument. Clean painted surfaces with a very lightly moistened microfiber cloth. Remove loose dust and dirt with a soft-hair brush used only for this purpose.

Caution:
Do not use aggressive organic solvents such as acetone to clean the painted surfaces and plastic parts of the microscope.

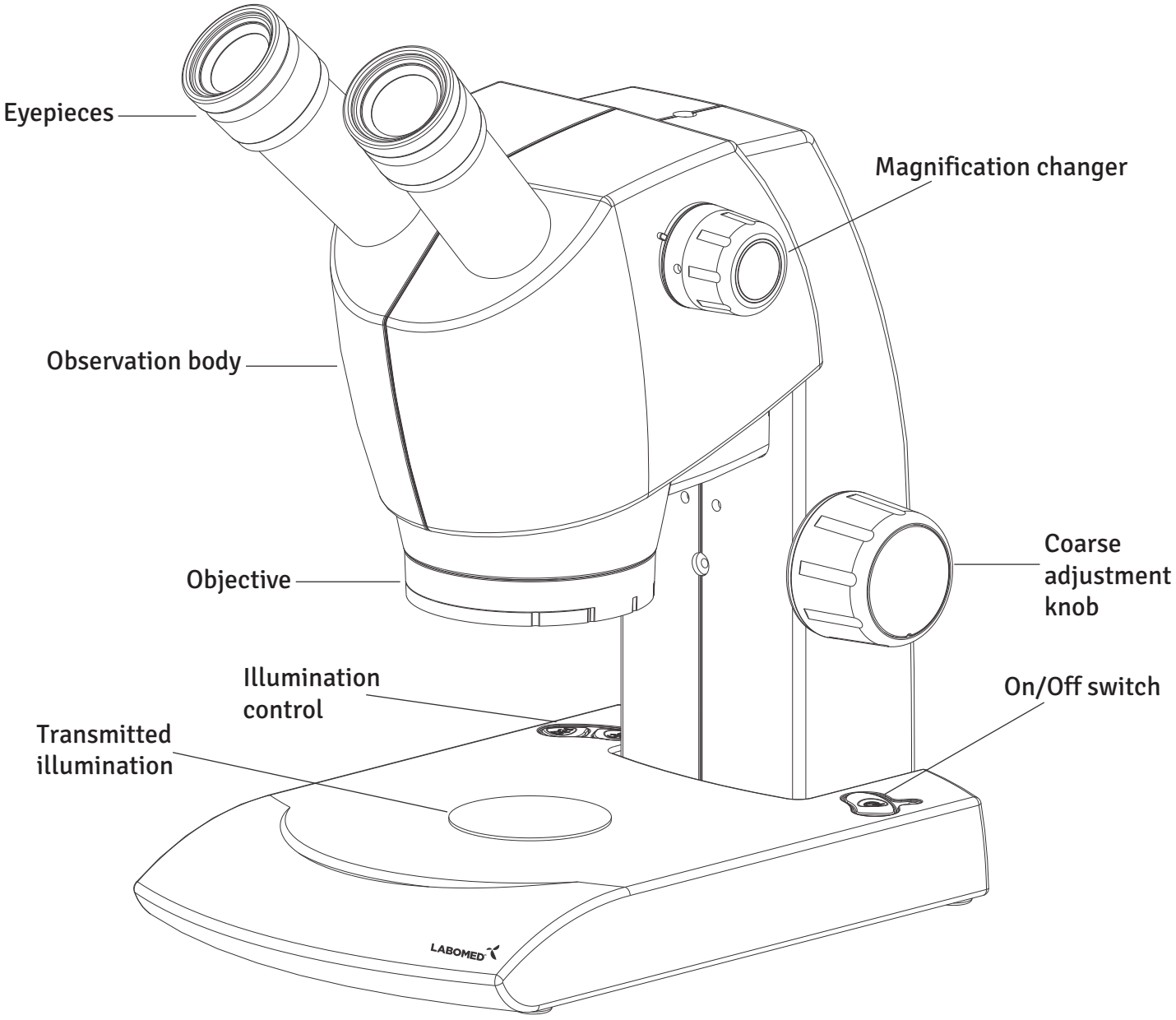
3. Never attempt to dismantle the instrument:
   Never attempt to dismantle the instrument, as this could impair its operating efficiency and accuracy.

4. Periodic checks:
   To maintain the performance of the instrument, we recommend that customers have their microscopes serviced periodically by a factory-authorized dealer or representative. For details, contact your nearest dealer or Labo America's main office in California.

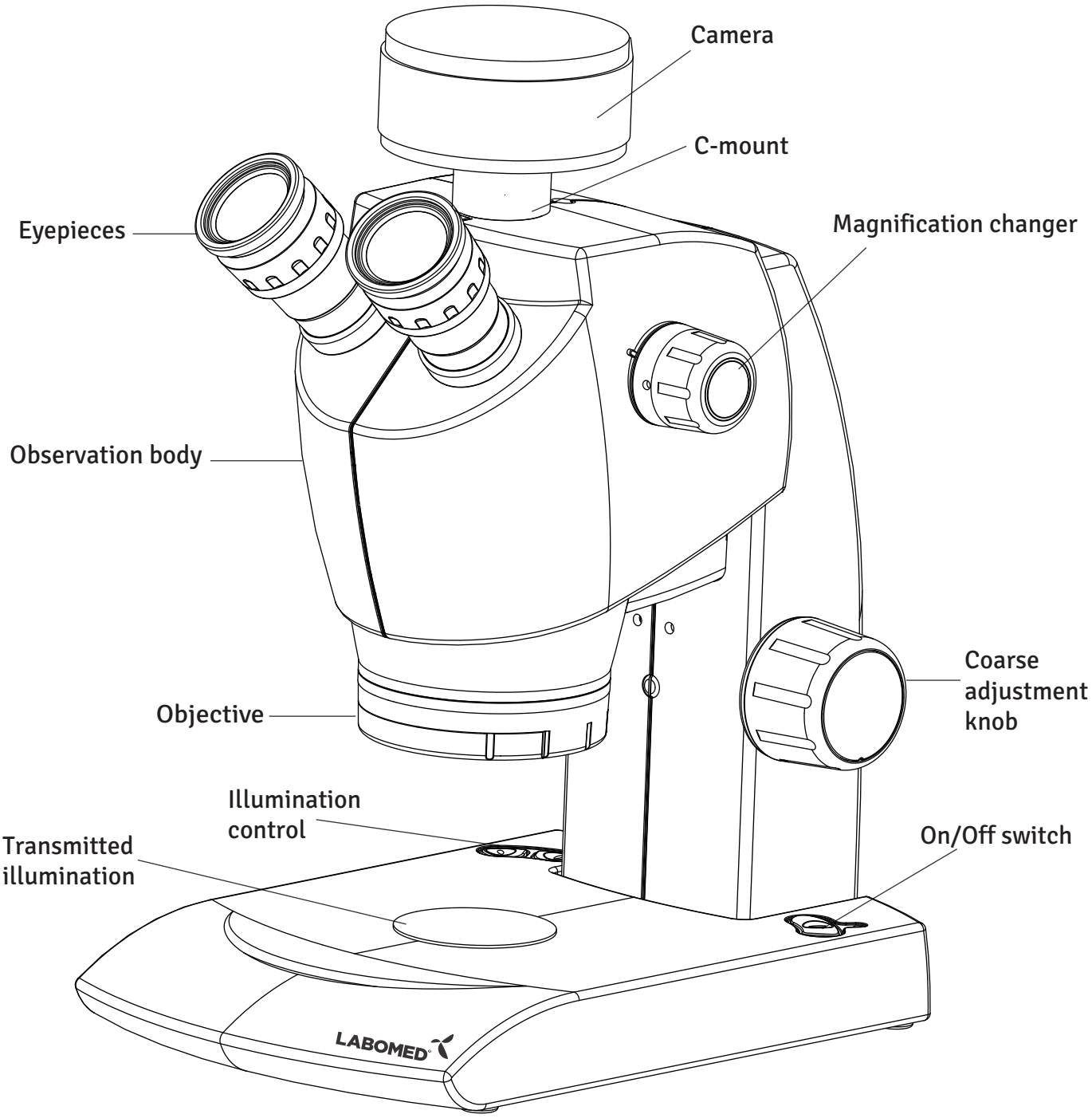
3 LUXEO 2S


Eyepieces
Magnification changer
Observation body
Objective
Coarse adjustment knob
Illumination control
Transmitted illumination
On/Off switch
LABOMED

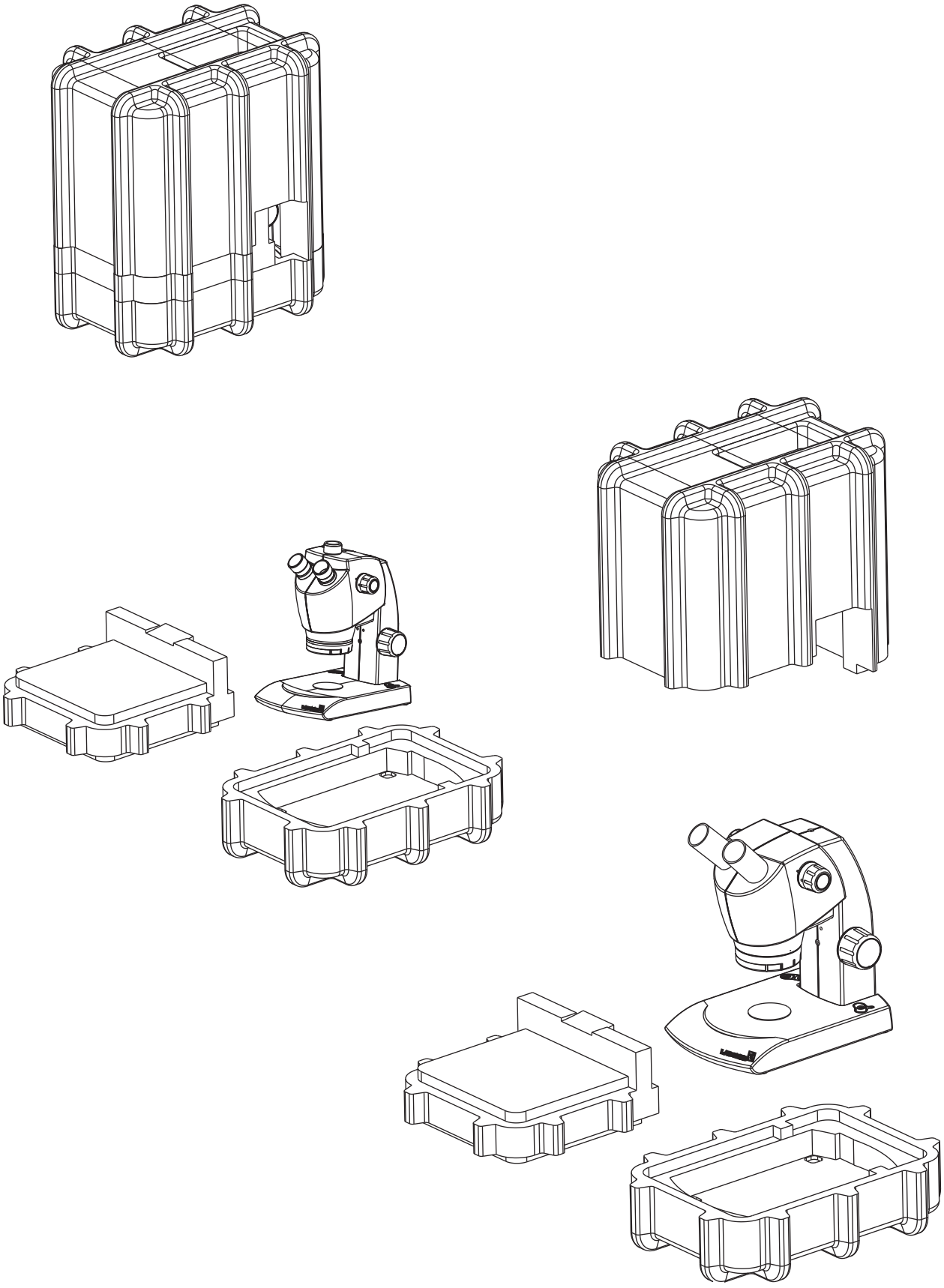
4 LUXEO 4Z


Eyepieces
Magnification changer
Observation body
Objective
Coarse adjustment knob
Illumination control
On/Off switch
Transmitted illumination
LABOMED

5 LUXEO 4Z TRINOCULAR

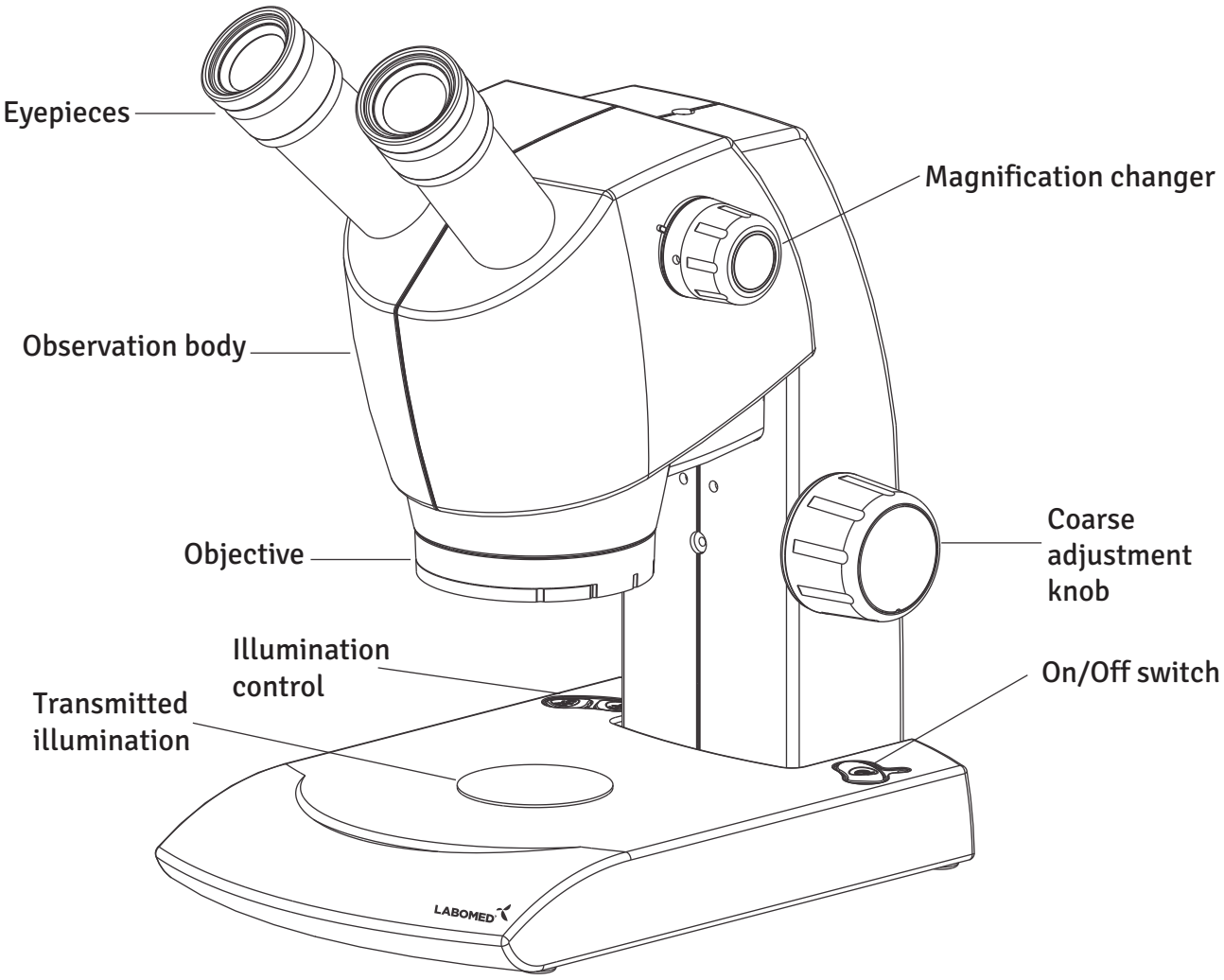


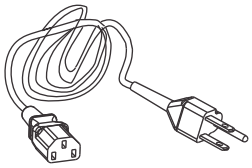
6 UNPACKING YOUR MICROSCOPE



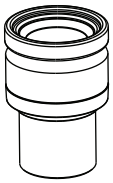
7 STANDARD COMPONENTS: LUXEO 2S/4Z

- After removing the microscope from its packaging, make sure that all of the following items are present.



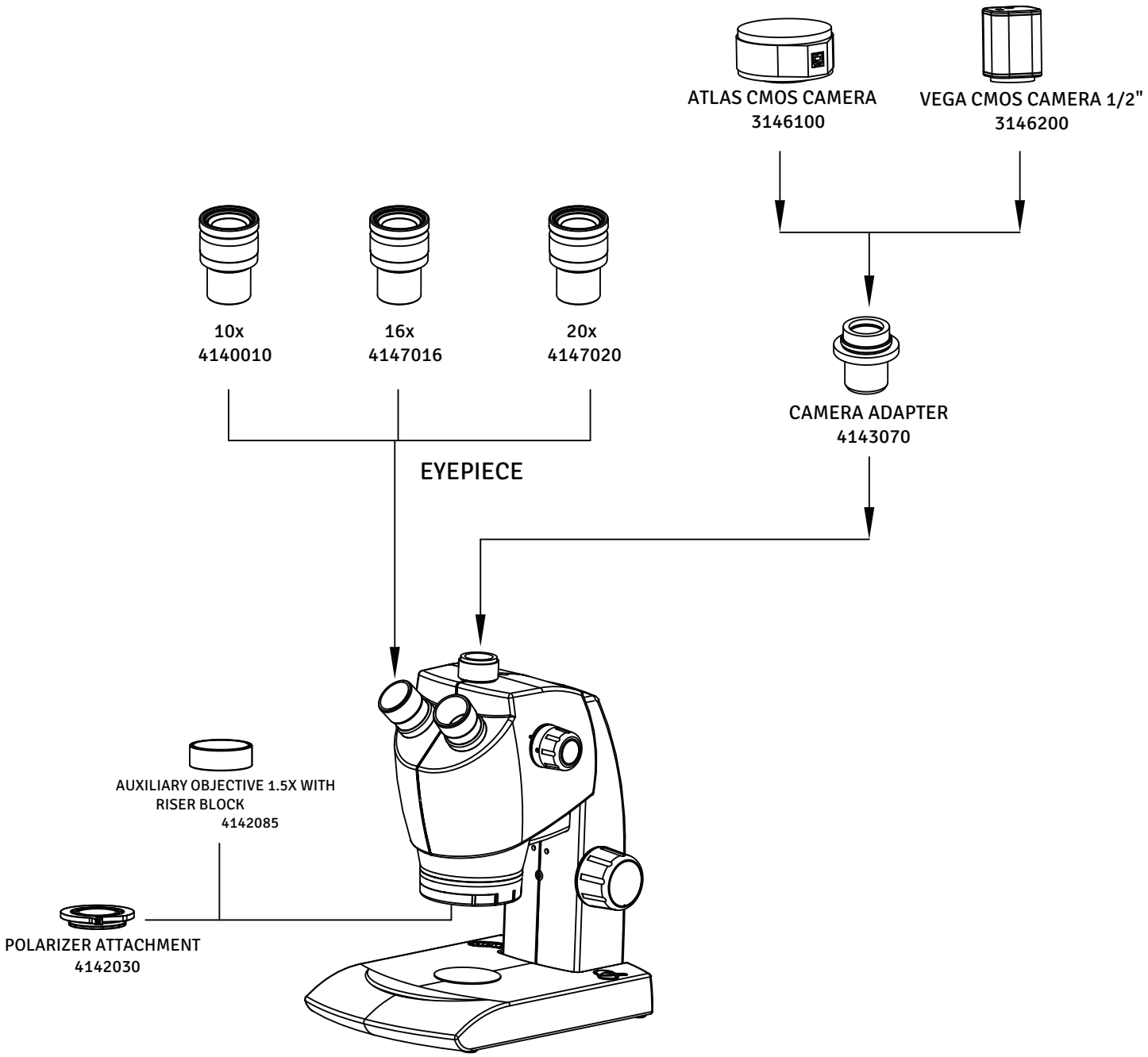


Power cord



Eyepiece

8 SYSTEM DIAGRAM OF OPTIONAL ACCESSORIES



9 INITIAL SETUP

1 INSTALL THE EYEPIECES

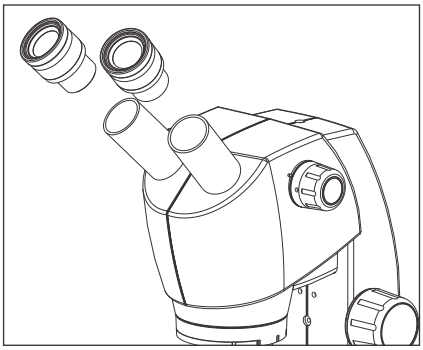


Fig. 2

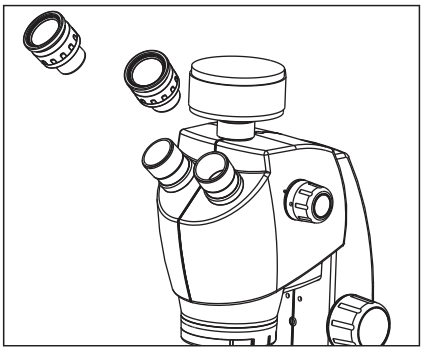


Fig. 3

Take the eyepieces out of the packaging and insert them into the eyepiece tubes one at a time. The eyepiece tubes have a locking system that prevents the eyepieces from falling out, rotating freely or being pulled out easily.

When wearing eyeglasses
Use the eyeguards in the normal, folded-down position. This prevents the eyeglasses from being scratched.

When not wearing eyeglasses
Fold the eyeguards out (in the direction of the arrow) to keep ambient light out of your line of vision.

2 POWER ON THE MICROSCOPE

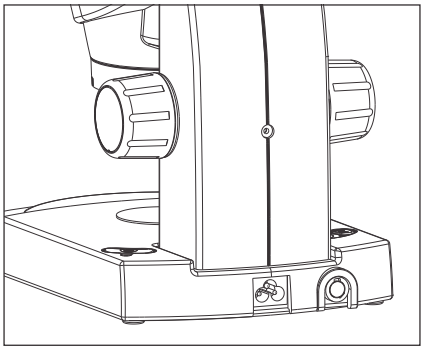


Fig. 4

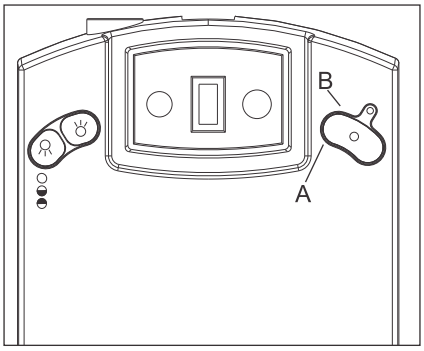


Fig. 5

Connect the power cord and plug it into the AC outlet.
Gently press the power switch (A). The green LED (B) lights up to indicate that the power is on.

Incident and transmitted illumination can be switched on individually with the switches on the base, on the left side of the column.

☼ Gently press this button to switch on transmitted illumination.

☼ Gently press this button to switch on the incident illumination. This switch lights all ten LEDs, the five front LEDs or the five rear LEDs. Press the button in the following sequence to light the LEDs.

○ Press once to light all the LEDs in the ring.

◒ Press twice to light the five front LEDs.

◓ Press three times to light the five rear LEDs.

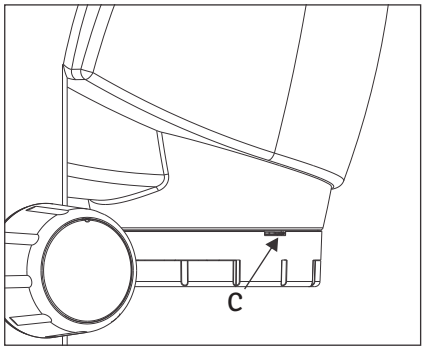


Fig. 6

The intensity of the incident illumination is controlled with the intensity control knob (C).

3 SETTING THE MAGNIFICATION

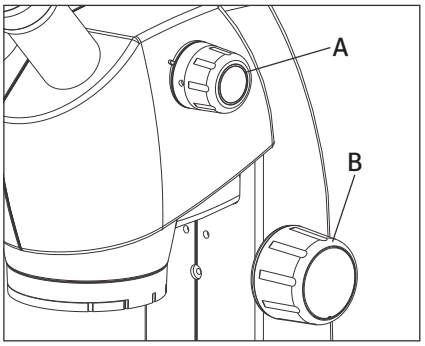


Fig. 7

A. Luxeo 4Z/4Z Trinocular

While looking through the eyepieces, turn the magnification knob clockwise or counterclockwise to obtain the desired magnification.

Use the coarse adjustment knob (B) to focus on the specimen.

B. Luxeo 2S

While looking through the eyepieces, turn the magnification changer clockwise or counterclockwise to obtain the desired magnification of 1x/3x or 2x/4x.

4 FUSE REPLACEMENT

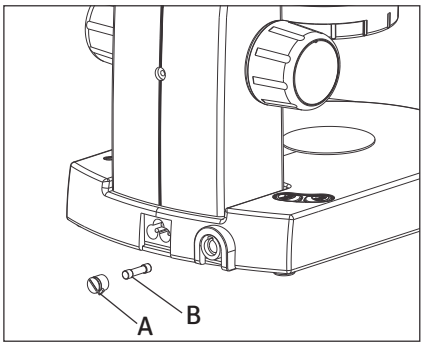


Fig. 8

Open the fuse holder with a flat-head screwdriver: turn the security cap clockwise. Replace the blown fuse with a new fuse. Refit the fuse holder security cap.

CAUTION: Switch off the microscope and unplug the power cord before replacing the fuse.

5 INSTALLING THE CAMERA

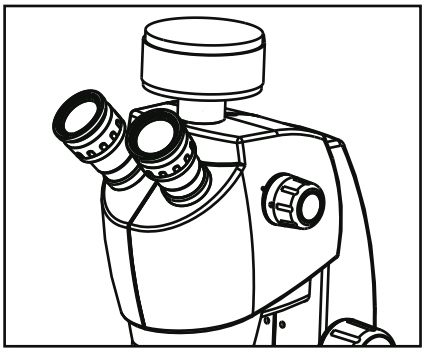


Fig. 9

On the Luxeo 4Z Trinocular, the C-mount adapter comes preassembled for use with the Atlas or Vega camera specified by LABOMED. The camera threads easily onto the C-mount adapter. If the image is inverted, rotate the adapter to make the image upright, then lock the adapter in position. The parfocality of the camera can also be adjusted with the same screw.

Parfocality of the camera with binocular observation

1. Set the magnification knob to the highest magnification.
2. Focus on the specimen with the coarse adjustment knob.
3. Turn the magnification knob to the lowest magnification.
4. Mount the camera on the C-mount adapter and view the image on the screen.
5. Loosen the thumbscrew/Allen screw of the C-mount and move the camera up or down to obtain the best focus.
6. Lock the camera in this position.
7. The system is now parfocal.

6 ATLAS CAMERA

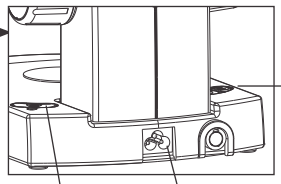
Atlas 16 MP CMOS USB camera: 1/2.33” 16.0 MP color CMOS sensor (active area 5.70 x 4.28 mm), resolution 4608 x 3456 pixels (static) and 2304 x 1728 pixels (dynamic), 25 frames per second, C-mount camera interface, USB 2.0. Includes USB cable and PixelPro software for image capture management; compatible with Microsoft Windows (XP and later), Mac and Linux OS.

7 VEGA CAMERA

Vega 6 MP CMOS camera (HDMI + USB + SD card + mouse control): 1/2.8” 6 MP HD color CMOS sensor (active area 5.70 x 4.28 mm), resolution 3264 x 1836 pixels (static) and 1920 x 1080 pixels (dynamic), 30 frames per second, integrated SD card slot, HDMI streaming, USB 3.0 connectivity, USB port for a mouse, C-mount camera interface. Includes USB 2.0, HDMI and external power cables and PixelPro software for image capture management; compatible with Microsoft Windows (XP and later), Mac and Linux OS.

10 SUMMARY OF THE BRIGHTFIELD OBSERVATION PROCEDURE

Turn the main switch “ON”



Switch on the incident and/or transmitted illumination as required. The incident illumination can be controlled with the membrane switches on the observation head.

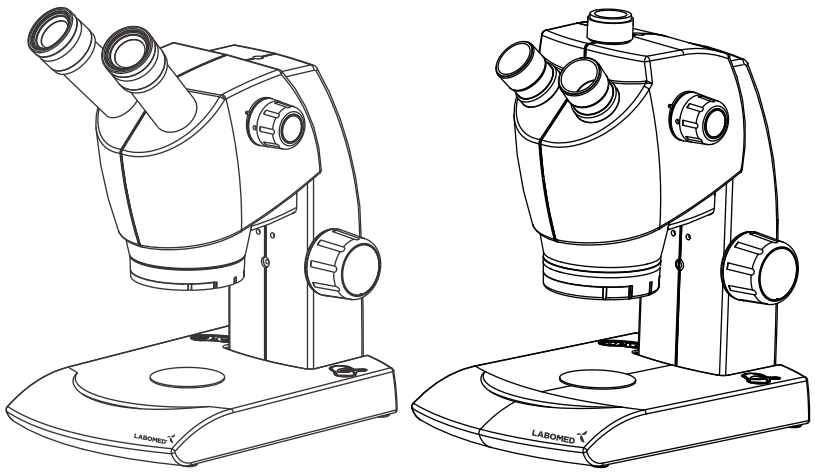
Place the specimen on the stage

Bring the specimen into focus

Adjust the observation tube and eyepieces
Adjust the interpupillary distance
Adjust the diopter setting

Adjust the brightness of the incident light

Observe specimen



11 TROUBLESHOOTING GUIDE

Under certain conditions, the performance of the unit may be affected by factors other than defects. If a problem occurs, review the following list and take remedial action as needed. If you cannot solve the problem after checking the entire list, contact LABOMED for assistance.

OBSERVATION	CAUSE	REMEDY
Uneven brightness in the field of view	The incident illumination is low. The transmitted illumination is blocked by the specimen.	Increase the incident illumination. Use an opaque specimen or move the specimen. Use incident light.
Not all LEDs light up in incident light.	The wrong LED setting is selected.	Press the button to light all LEDs, the five front LEDs or the five rear LEDs.
The LED does not light up.	The power cord is not connected. The LEDs are not switched on. The power switch is not on. The fuse is blown.	Check the power cord and connect it securely. Switch on the LEDs. The switch indicator lights up when the power is on. Check the fuse. If it is blown, replace it with a new fuse. Observe the caution!
The specimen cannot be focused.	The specimen is not properly focused. The specimen is too small. The specimen is too large.	Focus on the specimen at the lowest magnification first. Obtain the best focus with the coarse adjustment knob. The specimen is too small: micro-dissection slides cannot be viewed with a stereo microscope. The specimen is too large to focus: use a smaller specimen.

Revision History

Rev. No.	Date of Release	DCR #	Change	Approved by
1.3	24/1/2020	ECR/10A/19	Luxeo 4Z Trinocular version added	S. Bal

LABOMED®
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Manufacturer: Labotech Microscopes India Pvt. Ltd.
Sales and Distribution:
Labo America Inc.
920 Auburn Court
Fremont, CA
94538
U.S.A.

Phone: 510-445-1257
Email: sales@laboamerica.com
www.laboamerica.com

EU REP.

Labomed Europe b.v.
Essebaan 50
2908 LK Capelle aan den IJssel
The Netherlands
Phone: +31-10-458-4222
Email: info@labomedeurope.com

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