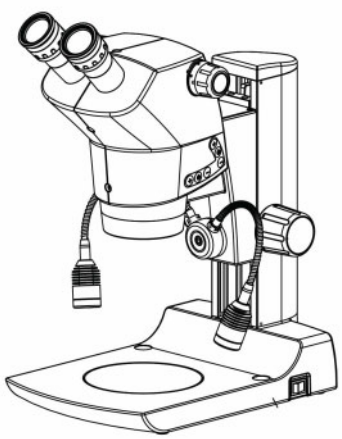
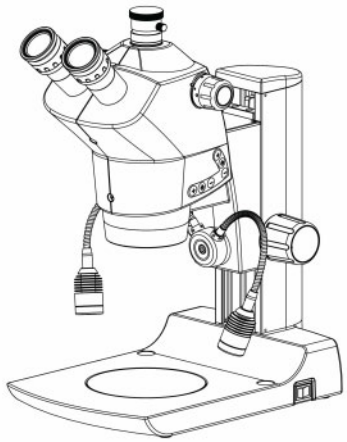
LABOMED®

Luxeo 6z
User Manual

Stereo Zoom Microscopy





To ensure proper use of this instrument as well as to avoid injury while operating instrument, understanding this manual completely before use is highly recommended.

4146000-796

Issue 1.0
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CONGRATULATIONS

Congratulations on purchasing LABOMED Luxeo 6z - an excellent choice!

The outstanding features of this stereomicroscope are its flexible design, its ease of use and absolutely maintenance-free performance. Sturdy and reliable, it is exceptionally well suited to manufacturing tasks, materials testing, quality control and other industrial applications.

In developing the LABOMED Luxeo 6z, we have placed great emphasis on simple, self-explanatory operation. However, please take the time to read the user manual and the notes on operating safety to learn about all the features and capabilities of your stereomicroscope so that you can use it to its best advantage.

Should you have any questions, please consult your local LABOMED representative. We are gladly at your service!

CONTENTS

1. INTRODUCTION 1

2. SAFETY INFORMATION 2 - 6

2.1. Symbols....2 - 3
2.2. Important notes....4
2.3. Care & maintenance instructions....5 - 6

3. INITIAL SETUP 7

3.1. Unpacking your microscope....7

4. LUXEO 6z BINOCULAR MICROSCOPE 8

5. LUXEO 6z TRINOCULAR MICROSCOPE 9

6. DARKFIELD/BRIGHTFIELD (DF/BF) BASE (if supplied) 10

7. MIRROR BASE LUXEO 6z BINOCULAR MICROSCOPE 11

8. MIRROR BASE LUXEO 6z TRINOCULAR MICROSCOPE 12

9. INSTALLATION 13 - 14

9.1. Microscope setup....13
9.2. Mounting of the Goose Neck LED assembly....13
9.3. Setting up the Dark field/Bright field attachment (if supplied)....14

10. OBSERVATION & USE OF MICROSCOPE 15 - 17

10.1. Power on the microscope....15
10.2. Diopter setting of eyepiece....15
10.3. IPD adjustment....16
10.4. Focusing of microscope....16
10.5. Focusing torque adjustment....16
10.6. Use of auxillary objectives....17

11. OBSERVING EXTRA HEIGHT SPECIMEN 18

11.1. PL stand....18
11.2. Assembling PL stand luxeo 6z....18

CONTENTS *(continued)*

12. MAGNIFICATION CHART 19

13. SPECIFICATIONS 20

14. ELECTRICALS 21

15. SYSTEM DIAGRAM 22

16. SUMMARY OF OBSERVATION PROCEDURE 23

17. TROUBLESHOOTING GUIDE 24

1 INTRODUCTION

The Luxeo 6z is a stereoscopic zoom microscope reflecting a modern design as well as the latest in optical and mechanical advancements.

Designed for professionals as well as students, this microscope offers many features and functions for a diverse set of applications.

Extra clarity and contrast is provided through a Binocular body inclined at 45°.

The pressure die cast stand consists of Ball bearing ‘friction less’ sideways focusing to avoid any loss in motion.

The sturdy new stylish design provides comfort as well as stability.

The lateral magnification changer allows comfortable and friction less movement for zoom magnification.

Extra excursion range provides oppurtunity to inspect larger & high objects.

The LED Ring Light configuration is a cluster of 2 3 LED’s, switchable between arc illumination or full circular illumination. The Luxeo is used with direct input power supply of 110V-240V AC 50Hz/60Hz. This ensures continuous operation even under fluctuating voltages.

Our LED on this instrument has an average life span of up to 50,000 hours.

2 SAFETY INFORMATION

2.1 SYMBOLS

Warning / Caution Symbols Used in this Manual

Though Labomed Products are designed to provide you with the utmost safety during use, incorrect usage or disregard of the instructions may cause personal injury or property damage. For your own safety, read the instruction manual carefully and thoroughly before using the product. Do not discard this manual. Always keep it near the product for easy reference. Inside this instruction manual, safety instructions are indicated with the symbols shown below. Be sure to follow the instructions marked with these symbols for your safety.

Symbol	Meaning
⚠ **WARNING**	Disregarding instructions marked with this symbol may lead to death or serious injury.
⚠ **CAUTION**	Disregarding instructions marked with this symbol may lead to injury or instrument damage.

⚠ **WARNING**

1. Intended use of this product

This product is intended only for microscopy. Do not use it for any other purpose.

2. Do not disassemble

Disassembly may result in damage to the instrument. Never disassemble any part except as described in this operation manual. Contact your LABOMED representative if you notice any malfunction of this instrument.

3. Check the input voltage

When using an illuminator, check that the input voltage displayed on the power supply (supplied) matches the operating voltage. Contact your LABOMED representative if the displayed voltage does not match the operating voltage. Use of an improperly matched illuminator may result in damage to equipment.

4. Power Cord

Always turn the power switch off and unplug the power cord when replacing the lamp of an illuminator as failure to do so may result in electric shock or equipment damage.

SAFETY INFORMATION *(Continued)*

5. Heat from the light source

When using an illuminator, do not place cloth or paper or highly flammable materials, such as gasoline, benzene, thinner or alcohol, near the lamp as there is danger of fire.

! CAUTION

1. Place of use

Use the stereomicroscope in closed, dust free rooms at +10°C to +40°C. Protect it from oil, chemicals and extreme humidity. Install electrical devices at least 10 cm from the wall and away from flammable substances.

In warm and warm-damp climatic zones, the individual components require special care in order to prevent the build-up of fungus.

2. Transport

If at all possible, use the original packaging for shipping or transporting individual modules.

In order to prevent damage from vibrations, the customer should disassemble all moving parts according to the user manual and pack them separately.

3. Integration in third-party products

When installing Labomed products into third-party products, the manufacturer of the complete system or its dealer is responsible for following all applicable safety instructions, laws and guidelines.

4. Disposal

Disposal must comply with locally applicable laws and regulations.

If the warning label is stained or peeled off, contact your LABOMED distributor.

SAFETY INFORMATION *(Continued)*

2.2 IMPORTANT NOTES

⚠ Before installing, operating or using the instrument, it is mandatory to read this user manual. In particular, please observe all safety instructions.

User Manual
This User manual includes important instructions related to operating safety, maintenance and accessories.

• It is prohibited to reproduce or transmit this manual in part or whole without Labomed's expressed permission.

• The contents of this manual are subject to change without notice.

• Although every effort has been made to ensure the accuracy of this manual, if you note any points that are unclear or incorrect, contact your nearest Labomed representative.

• Some of the products described in this manual may not be included in the set you have purchased.

• If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Legal Requirements
Adhere to general and local regulations relating to accident prevention and environmental protection.

EC Declaration of Conformity
Electrically operated accessories are constructed based on the state of the art of technology and are provided with an EC Declaration of Conformity.

SAFETY INFORMATION *(Continued)*

2.3 CARE & MAINTENANCE INSTRUCTIONS

1. General Instructions

- Protect the stereomicroscope from moisture, fumes and acids and from alkaline, caustic and corrosive materials.
- Protect the stereomicroscope from oil and grease. Never grease or oil mechanical parts or sliding surfaces.
- Follow the instructions of the disinfectant manufacturer.
- We recommend concluding a service contract with Labomed.

2. Cleaning the lenses:

To clean the lens surfaces, remove dust using a soft brush or gauze (compressed air dust cans are ideal). For removing finger marks or grease, soft cotton cloth/ lens tissue or gauze lightly moistened with cleaning solution (85% petroleum ether and 15% isopropanol) should be used. For cleaning the optics, use xylene. Observe sufficient caution in handling xylene.

Cleaning procedure:

Place the eyepieces on a dust-free surface (e.g. fresh aluminum foil).AII other optical components to be cleaned should be as accessible as possible.

a. Blow all loose dust particles away with a dust blower.
b. Remove all water-soluble dirt with distilled water. If this is unsuccessful repeat using a solution of diluted hand soap liquid. Remove any remaining residue with a dry cotton swab.
c. To remove oil, use a solution of diluted hand-soap liquid initially. If this does not produce a satisfactory result, repeat the cleaning using a solvent (Optical Cleaning Solution 85% petroleum ether and 15%isopropanol).
d. Grease must always be removed using a solvent.
e. Cleaning is achieved by using a spiral motion from the center to the rim. Never wipe using zig-zag movements as this will only spread the dirt. With larger optical surfaces (e.g. tube lenses) the spiral motion starts initially at the rim before moving to the middle and is only then followed by a center to rim cleaning motion. Normally several spiral wipes are recommended. We recommend pure, volatile petroleum ether or Optical Cleaning Solution as explained in point 3 above.

zig-zag motion (X)

spiral motion (✓)

Wipe using a spiral movement. Do not use a zig-zag motion!

3. Cleaning of painted surfaces:

Avoid the use of any organic solvent (e.g. thinner, xylene, ether, alcohol etc.) for cleaning of painted surfaces of the instrument. Painted surfaces can be cleaned with a very lightly moistened micro fiber

SAFETY INFORMATION *(Continued)*

cloth. Loose dust and other dirt can be removed using a brush of soft hair used exclusively for this purpose.

4. Cleaning coated parts and plastic parts

- Dust and dirt particles should be removed with a soft brush or lint-free cotton cloth.
- Remove coarse debris with a moistened disposable cloth.
- Acetone, xylene or nitro-containing thinners must not be used.
- Never use chemicals to clean colored surfaces or accessories with rubberized parts. This could damage the surfaces, and specimens could be contaminated by abraded particles.

Caution:
Do not use aggressive organic solvent such as acetone for cleaning painted surfaces and plastic parts of the microscope.

5. Accessories, maintenance and repair

Accessories
Only the following accessories may be used with the stereomicroscope:

- The Labomed accessories described in this user manual.
- Other accessories, provided that these have been expressly approved by Labomed as being technically safe in this context.

Maintenance

- The labomed Luxeo 6z stereomicroscope is basically maintenance-free. To ensure that it always operates safely and reliably, we recommend that you take the precaution of contracting the responsible service organization.

You can arrange for periodic inspections or, if appropriate, conclude a maintenance contract with them.

- We recommend concluding a service contract with Labomed.
- For maintenance and repair, only OEM spare parts may be used.

Repairs and service work

- Only original Labomed spare parts may be used.
- Before opening the instruments, switch off the power and unplug the power cable.
- Touching the live circuit can cause injury.

6. Never attempt to dismantle:
Never attempt to dismantle the instrument so as to avoid the possibility of impairing its operational efficiency and accuracy.

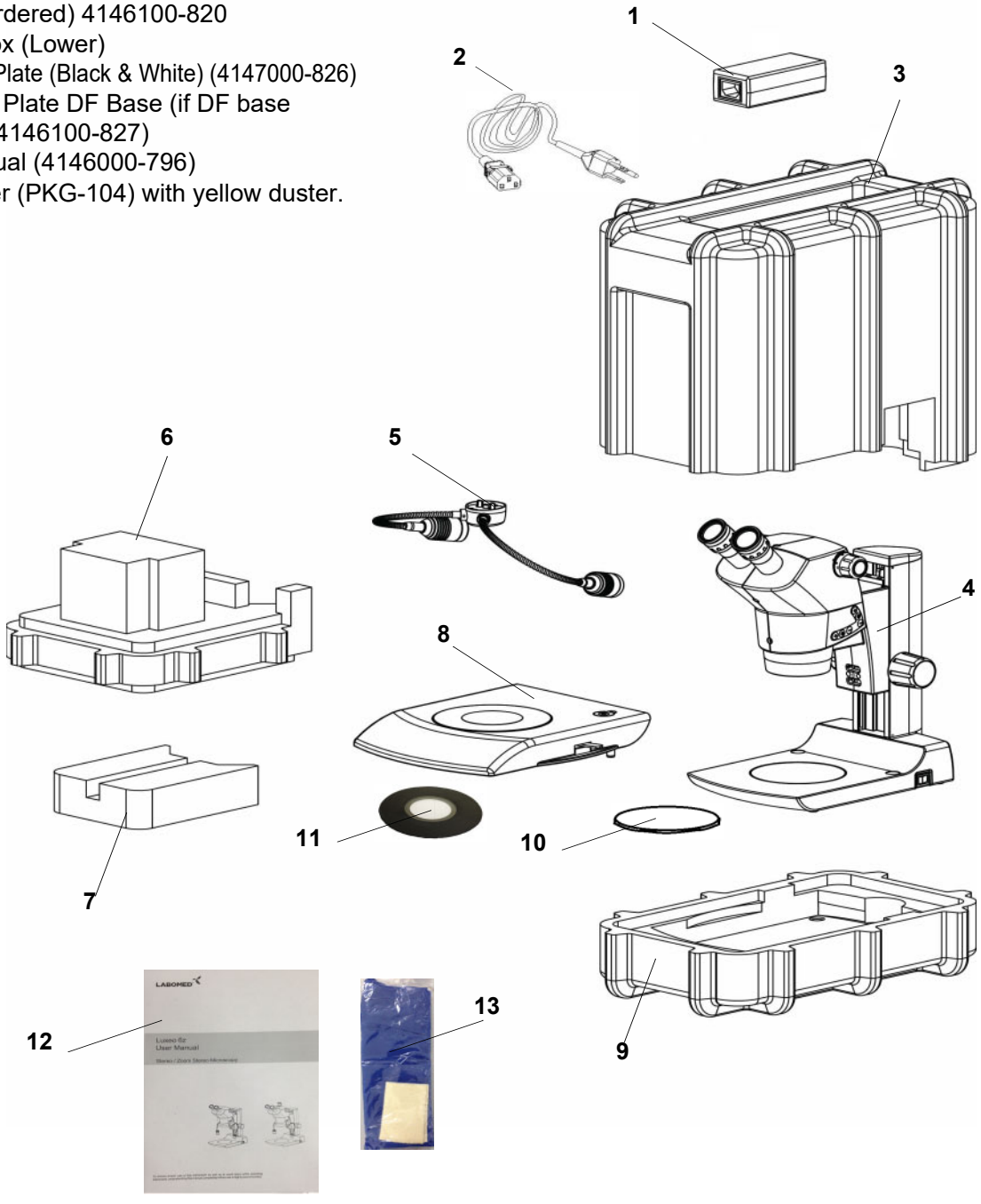
7. Periodical checking :
To maintain the performance of the instrument, we recommend customers have their microscopes serviced periodically by a factory authorized dealer/rep. For details, contact your nearest dealer or LABOMED.

3 INITIAL SETUP

3.1 UNPACKING YOUR MICROSCOPE

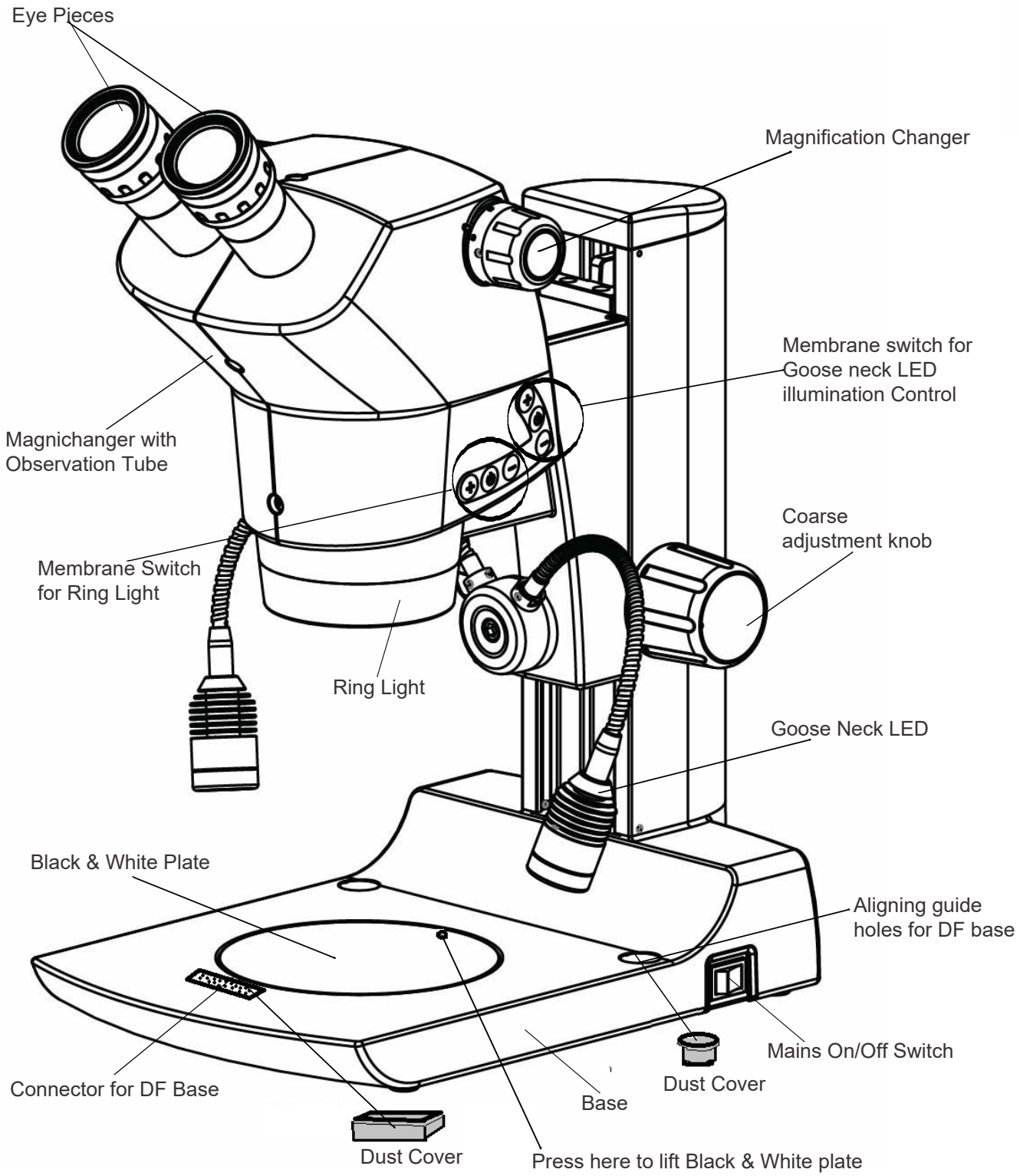
List Of Parts:

1. Power Adapter (SD 165-24V-P5)
2. Power Cable
3. Thermocol box (Upper)
4. Luxeo 6z Microscope (Bino / Trino)
5. Goose Neck LED Assembly (4147000-835)
6. Front Support
7. DF Base compensator
8. DF Base (if ordered) 4146100-820
9. Thermocol box (Lower)
10. Specimen Plate (Black & White) (4147000-826)
11. Specimen Plate DF Base (if DF base provided (4146100-827)
12. User manual (4146000-796)
13. Dust Cover (PKG-104) with yellow duster.



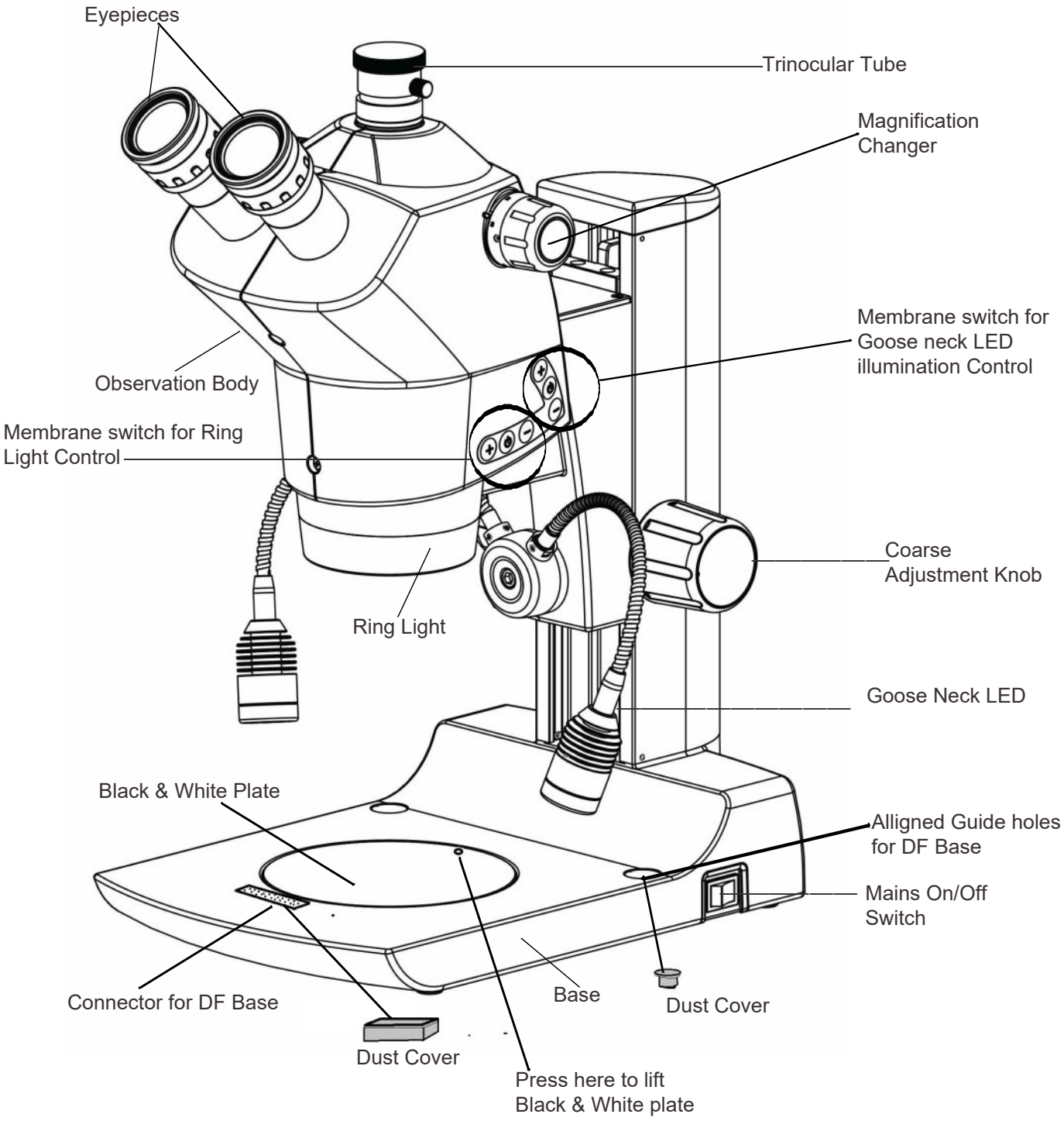
4 LUXEO 6z BINOCULAR MICROSCOPE

Part No. - 4146101 - 800



5 LUXEO 6z TRINOCULAR MICROSCOPE

Part No. - 4146102 - 800



6 DARK FIELD/BRIGHTFIELD (DF/BF) BASE

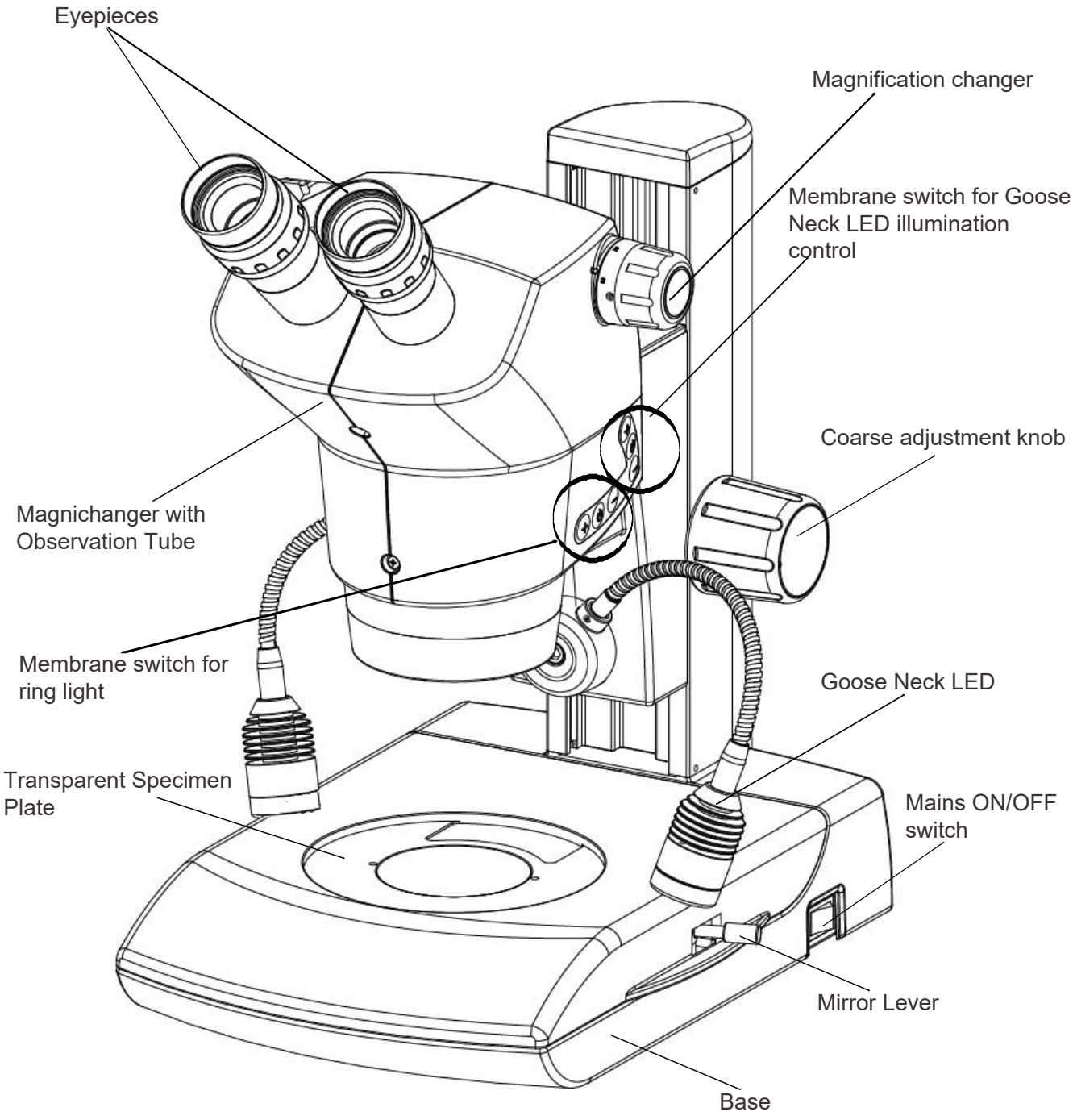
Part No. - 4146100-826

Note: DF/BF base is not a standard configuration part of Luxeo 6z. It is supplied on order. For use of DF / BF base refer page no. 14.

7 MIRROR BASE LUXEO 6z BINOCULAR MICROSCOPE

Pre-Configured Mirror Base for Dark Field Illumination:

Darkfield observation in Luxeo 6z is provided through a specialized stand controlling reflection mirror & light shielding plate to direct on inverted hollow cone of illumination towards specimen at obligue angles. It has the same function as DF / BF base but advantage is that it is factory configured dedicated to DF applications only.



8 MIRROR BASE LUXEO 6z TRINOCULAR MICROSCOPE

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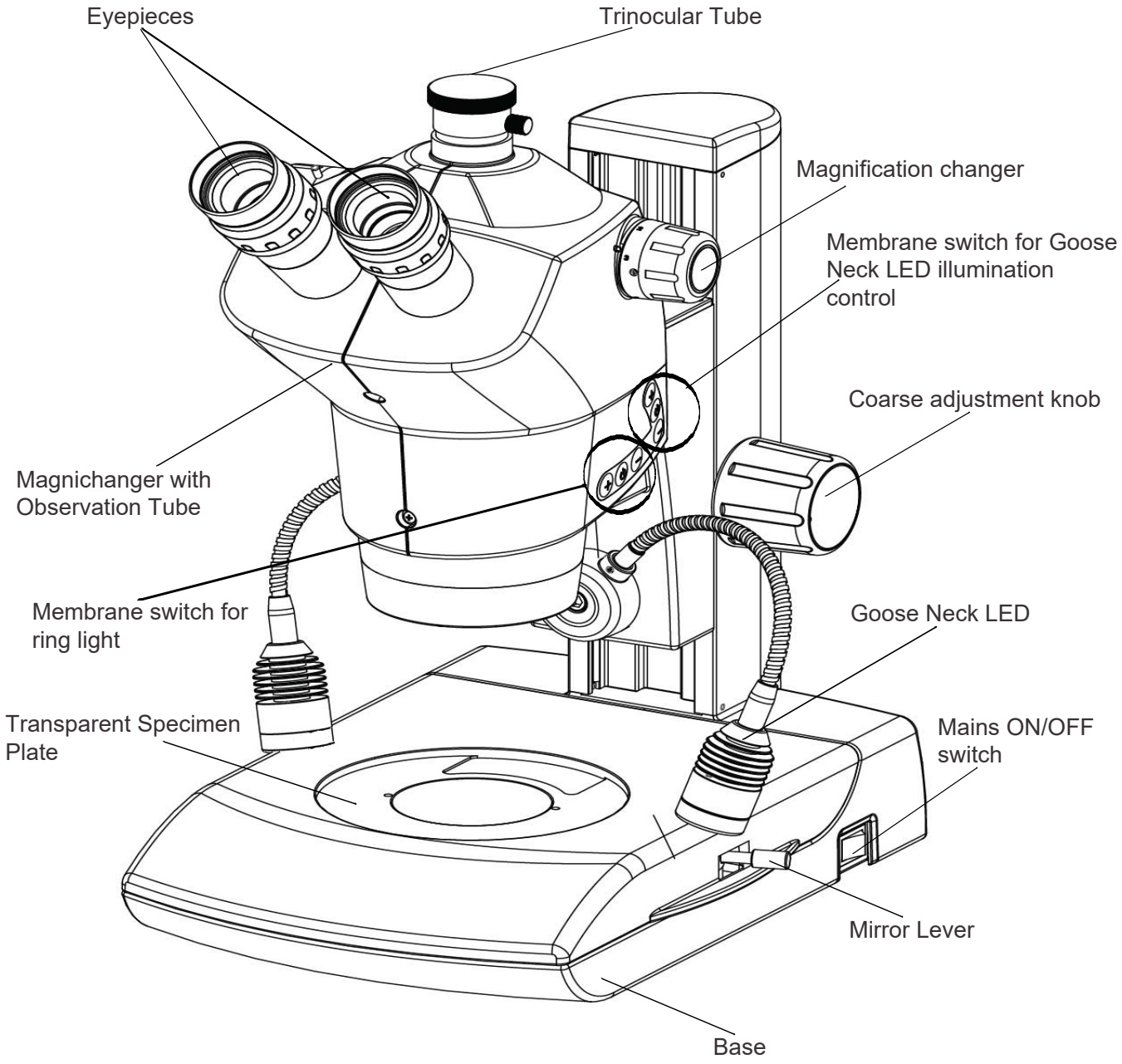

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9 INSTALLATION

9.1 Microscope Setup

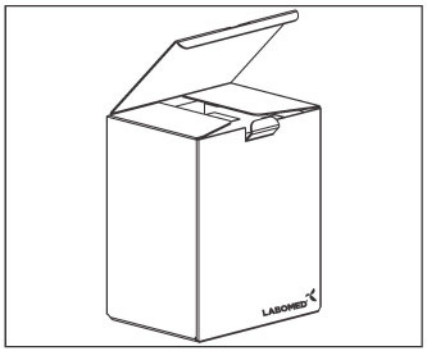


Fig. 1

1. Open Card board box from top.
2. Take out User manual, Power Cord and Power adapter.
3. Take out thermocol box out of card box and remove top of thermocol box.
4. Take out the Goose neck Assembly.
5. Raise up the bracket of microscope using Coaxial knobs.
6. Remove front support packing.
7. Remove dummy foam block if DF/BF base not provided.
8. Recover the microscope from packing and place on a sturdy table. The occular tubes are equipped with eyepieces installed. Occular tab prevents the eyepieces from falling, rotating freely or easily pulled out.
9. Refix the Goose Neck Assembly as per instructions below.

9.2 Mounting of the Goose Neck LED Assembly

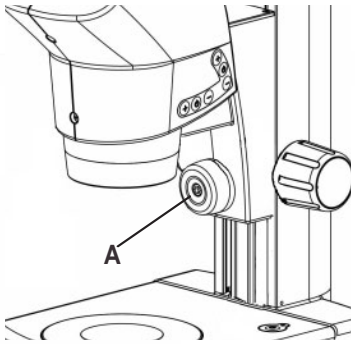


Fig. 2

1. Open the dummy Goose neck mount using 4.0mm Allen wrench and secure the coupling connectors carefully (A) refer fig. 2.

Note: The coupling connectors should be outside the bracket to connect the Goose neck LED connectors easily.

2. Take Goose neck LED assembly (B) and connect the goose neck connectors. refer fig. 3.
3. Refix the Goose neck LED assembly on bracket (D) using same 4.0mm Allen wrench. refer fig. 4.

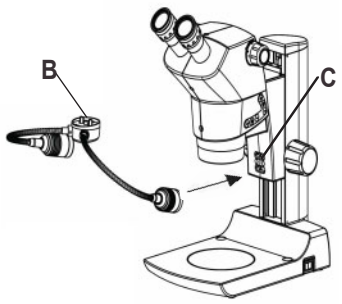


Fig. 3

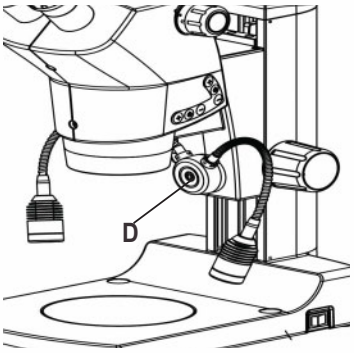


Fig. 4

INSTALLATION *(continued)*

9.3 Setting up the Darkfield attachment (if supplied)

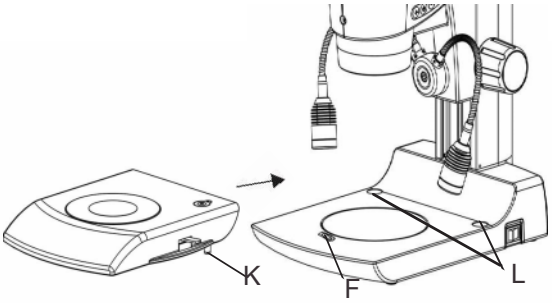


Fig. 5

1. Remove Black & White specimen plate from base pressing the plate as shown in fig. 5.
2. Place the Dark Field Base gently on to the Luxeo 6z base by matching the Guide pins of Dark field base (K) with the Guide holes (L). Refer fig. 5.
3. The 9 pin male connector below dark field base will automatically connect to the female 9 pin inlet (F) while pressing it gently on the Luxeo 6z base. Refer fig. 5 and 6.

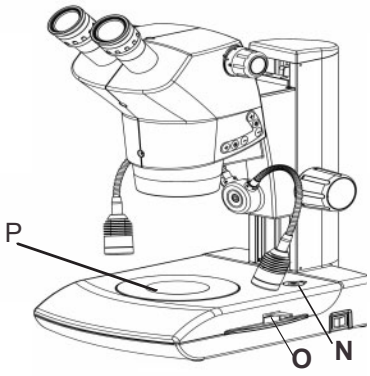


Fig. 6

4. For illumination press On/Off button (N) on Dark field base. Refer figure. 6.
5. Place the transparent specimen plate (P) on DF/BF base. Refer fig. 6.
6. Achieve Dark Field Illumination by push back the Lever (O). Pull the same lever (O) to front to achieve Brightfield Illumination.

10 OBSERVATION & USE OF MICROSCOPE

10.1 Power on the microscope

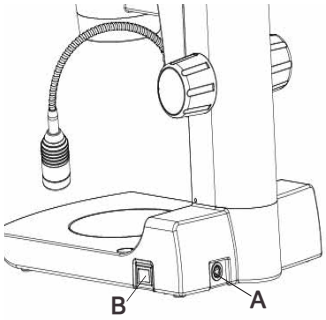


Fig. 7

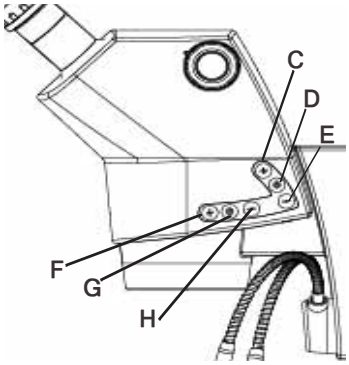


Fig. 8

Plug in the output of power adapter and connect the power adapter to the AC
socket .

Press the power on switch (B).

The incident illumination (Ring Light) is controlled by the switch (G) to glow all the 23 LED's, Eleven front LED's and Twelve rear LED's. Press the button in the following sequence to illuminate the LED's.

- First press of button (G) to illuminate all the LED's in the ring.
- Second press of button (G) to illuminate the rear twelve LED's in arc.
- Third press of button (G) to illuminate front eleven LED's in arc.
- Fourth press of button (G) to switch off all the LED's.

Intensity control:
Press button (F) and (H) to increase or decrease the Ring light intensity in six steps.

The incident illumination (Goose Neck LED) is controlled by the switch (D) to glow both sided Goose Neck LED's. Press the button in the following sequence to illuminate the Goose Neck LED.

- Press button (D) to illuminate both Goose Neck LED.
- Second press of button (D) to switch off Goose Neck LED.

Intensity Control:
Press button (C) and (E) to increase or decrease the Goose Neck LED intensity in six steps.

10.2 Diopter setting of eyepieces

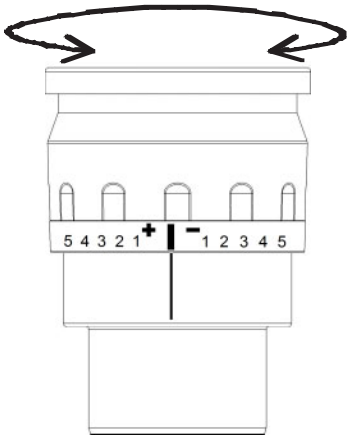


Fig. 9

This adjustment should be performed every time the observer is changed since the eyesight differs between individuals.

1. Turn the diopter rings on both eyepieces to set them at the 0 position (match the 0 line with the index line.

2. Turn the zooming knob to the highest magnification. Focus on the sample using the focus knob.

3. Turn the zooming knob to the lowest magnification. Peering through the left eyepiece with the left eye, focus on the sample using the diopter ring on the left eyepiece. Then, peer through the right eyepiece with your right eye and focus on the sample using the diopter ring on the right eyepiece.

4. Repeat steps 2 and 3 until the image is kept focused even though the zooming magnification is changed. This adjustment ensures sharp image throughout the zooming range.

OBSERVATION & USE OF MICROSCOPE (continued)

10.3 IPD Adjustment

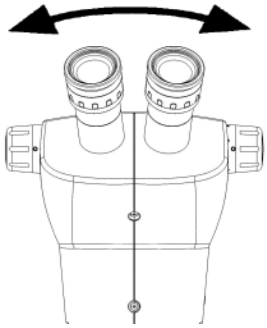


Fig. 10

This sdjustment should be performedevery time the observer is changed since theinterpupillary distance differs between individuals. Adjust the interpupillary distance so that the view field for each eye is merged into one. Move while holding each sleeve with both hands.

10.4 Focusing of microscope

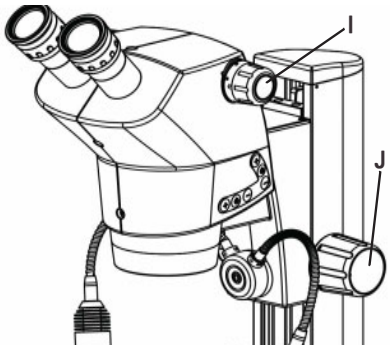


Fig. 11

1. Switch on the desired illumination as per specimen selected.
2. Adjust both eye pieces at 0 diopter reading.
3. Adjust IPD to user convinience.
4. Place any specimen on Black & White plate or on DF/BF base as per configuration provided.
5. Setup the magnification factor at highest magnification of Zoom pod using knob (I).
6. Looking through the eyepieces, adjust the focusing of microscope head using coarse knob (J) to focus the specimen.
7. Bring the image into critical focus.
8. Change magnification factor from highest to lowest.
9. At this stage image should remain in focus. This setting is called as par-focal of microscope.

10.5 Focusing torque adjustment

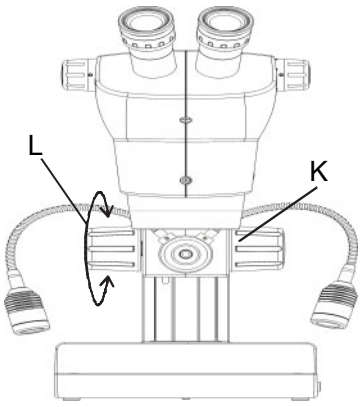


Fig. 12

Luxeo 6z Microscope is pre-adjusted to a focusing torque of 20 kg with standard Binocular or Trinocular. Still some user may feel uncomfortable while using additional accessories.

Torque of focusing mechanism can be adjusted as per following procedure per user's convenience:

1. Hold firmly the right knob shown as (K). Refer Fig. 12.
2. Rotate left knob (L) to adjust torque of the focusing mechanism of microscope.
3. By rotating knob (L) to clock wise will increase torque and by rotating anticlockwise will decrease torque.

OBSERVATION & USE OF MICROSCOPE (continued)

10.6 Use of Auxillary objectives

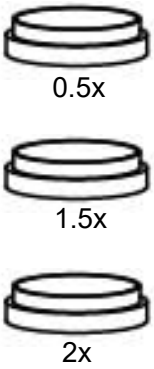


Fig. 13

Following Ausillary objectives can be threaded in through Ring Light.

1. 0.5x - To be used with PL stand only as working distance is high.
2. 1.5x & 2x - To be used with all Luxeo 6z stands.

11 OBSERVING EXTRA HEIGHT SPECIMEN

11.1 PL Stand

PL Stand application is useful in:

1. Observation of extra height objects.
2. For lower magnification using 0.5x Auxillary objectives

11.2 Assembling PL Stand Luxeo 6z

Fig. 14

Place the Stand on the level surface.

Fit the zoom pod with bracket to the pillar as shown and tighten it with clamping knob provided on the bracket. Refer figure 15 and 16.

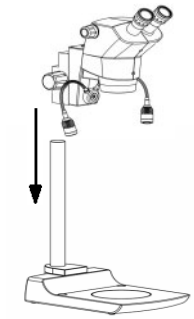


Fig. 15

Connect Power Supply output (B) to the Inlet socket (A) on the top of Zoom bracket. Refer figure 17.

Connect Power Supply to the microscope (C). Refer figure 17

Follow procedure and refer steps as mentioned on page no. 15 & 17 to setup the microscope.

Fig. 16

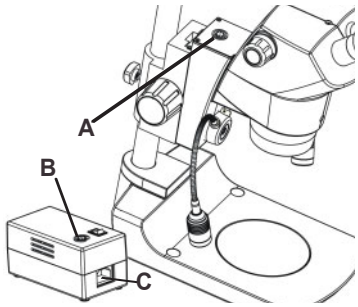


Fig. 17

12 MAGNIFICATION CHART

Luxeo 6Z Greenough Zoom 6:1							
Objectives		Eyepieces					
		W.F. 10x/22		W.F. 16x/16		W.F. 20x/12	
	WD (mm)	Field Φ mm	Magnification x	Field Φ mm	Magnification x	Field Φ mm	Magnification x
None	110	4.40 to 27.50	50 to 8	3.2 to 20	80 to 12.8	2.4 to 15	100 to 16
0.5x	220	8.8 to 55	25 to 4	6.4 to 40	40 to 6.4	4.8 to 30	50 to 8
1.5x	50	2.93 to 18.30	75 to 12	2.13 to 13.33	120 to 19.2	1.6 to 10	150 to 24
2.0x	45	2.20 to 13.75	100 to 16	1.60 to 10	160 to 25.6	1.2 to 7.5	200 to 32

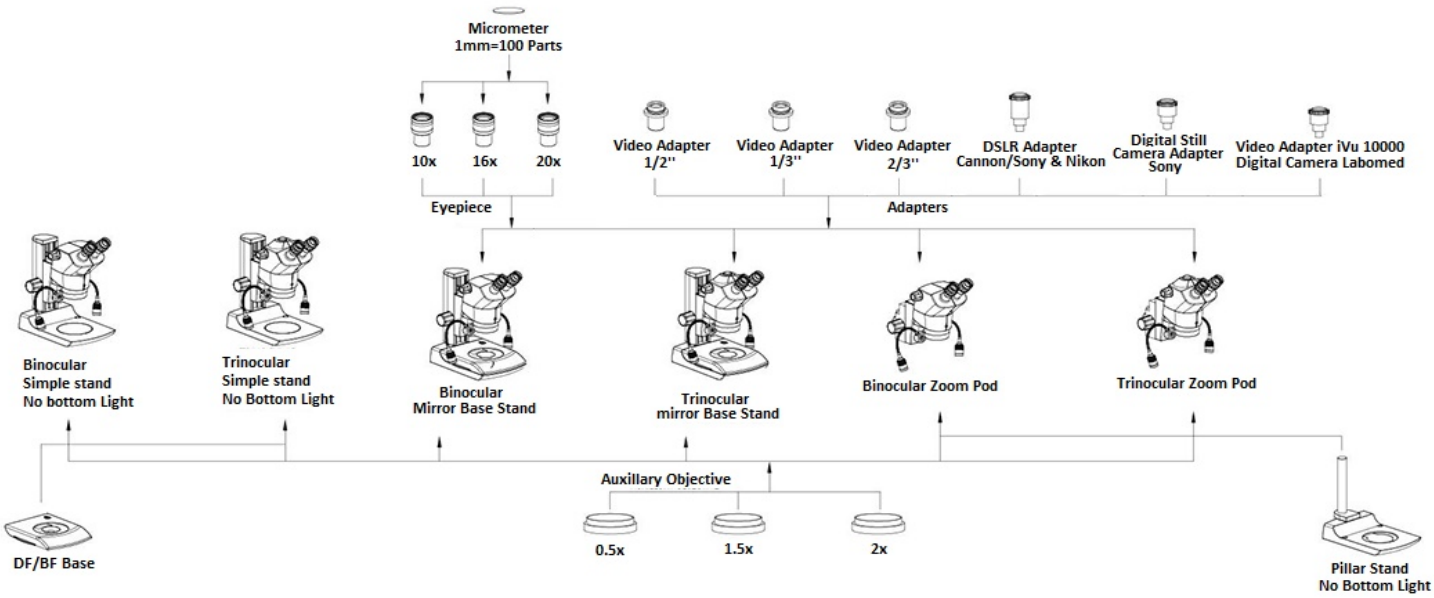
13 SPECIFICATIONS

Optical System	Greenough
Magnification	Zoom 6:1
Eyepieces	WF 10x/22mm
Diopter Correction	±5D
IPD	50-75 mm
Viewing Angle	Binocular, 45°
Working Distance	110 mm
Magnification range	8x to 50x
Object field diameter	4.4 to 27.50 mm
Eyegaurds	Foldable
Illumination control	Incident Light- LED Ring Light with options of ARC and circular Illumination with intensity control. Front Angle Arc illumination with cluster of 11 LEDs Rear Angled Arc illumination with cluster of 12 LEDs Circular Illumination with cluster of 23 LEDs Goose neck for extra illumination Transmitted Light: DF/BF (Dark field/Bright field) base with On Off control

14 ELECTRICALS

Input rating	100 V - 240 V / 50 - 60 Hz
Output rating	24 V - 2.7 A
Fuse rating	250 V / 1.4 A
Voltage fluctuation	+/- 10% (Fluctuations more than +/- 10% may damage to the instrument. In high voltage fluctuating regions voltage stabilizing provisions are recommended for longer life of the instrument.
Internal fuse	1.4 A / 250 V
Fuse rating	250 V / 1.4 A
Operational environment	**Altitude**: 2000 m max. Temperature 0° - 40° C (indoor use only) Relative humidity 85% max. (no condensation) Pollution level Degree 2 Installation C
Storage environment	Temperature -20° - 60° C Relative humidity 90% max. (no condensation)
Protection Class	Class 1.
Power cord	Use only the recommended power supply cord. Using the wrong power cord could result in danger or fire. The protection class 1 equipment should be connected to PE (protective earth) terminal.

15 SYSTEM DIAGRAM



16 SUMMARY OF OBSERVATION PROCEDURE

Flip the main switch to "ON"

↓

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

↓

Place the specimen on the stage.

↓

Bring the specimen in focus.

↓

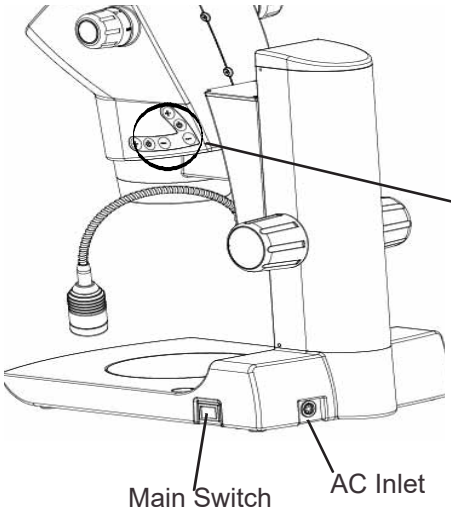
Adjust the observation tube and eyepieces.
Adjust the interpupillary distance.
Adjust the dioptric setting.

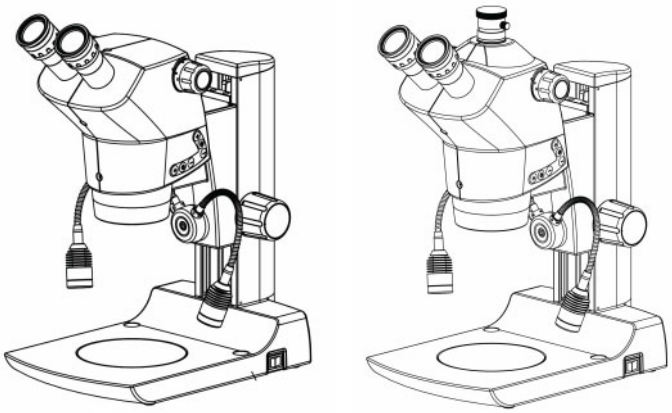
↓

Adjust the brightness for incident light.

↓

Observe Specimen.





17 TROUBLESHOOTING GUIDE

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

Observation	Cause	Remedy
Uneven brightness in observation field	The incident illumination is low. The transmitted illumination is blocked by the specimen.	Increase the incident illumination. Place an opaque specimen or move the specimen. Use incident light.
All LED's are not glowing in incident light.	The LED control is wrongly select.	Press the button to glow all LED's, 11 front LED's or 12 rear LED's.
The LED does not glow.	The power cord is not attached. The LED are not switched on. The power button is not switched on. The fuse is blown.	Check the power cord. Attach is precisely. Switch on the LEDs. Switch on the power button. The green indicator will glow when the power is on. Check the fuse. If blown, replace with a live fuse. Adhere caution!!
The specimen does not focus.	The specimen is not focused properly. The specimen is too small. The specimen is too big.	Focus the specimen first on the lowest magnification. Achieve best focus using the coarse adjustment knob. The specimen is too small. Slides with micro dissection are not visible on stereo microscopes.The specimen is too big to focus. Use smaller specimen.

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