

# USER MANUAL

## LMS-Z200P Series

LMSP-Z220P and LMSP-Z230P Models



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## Before Use

### Notice

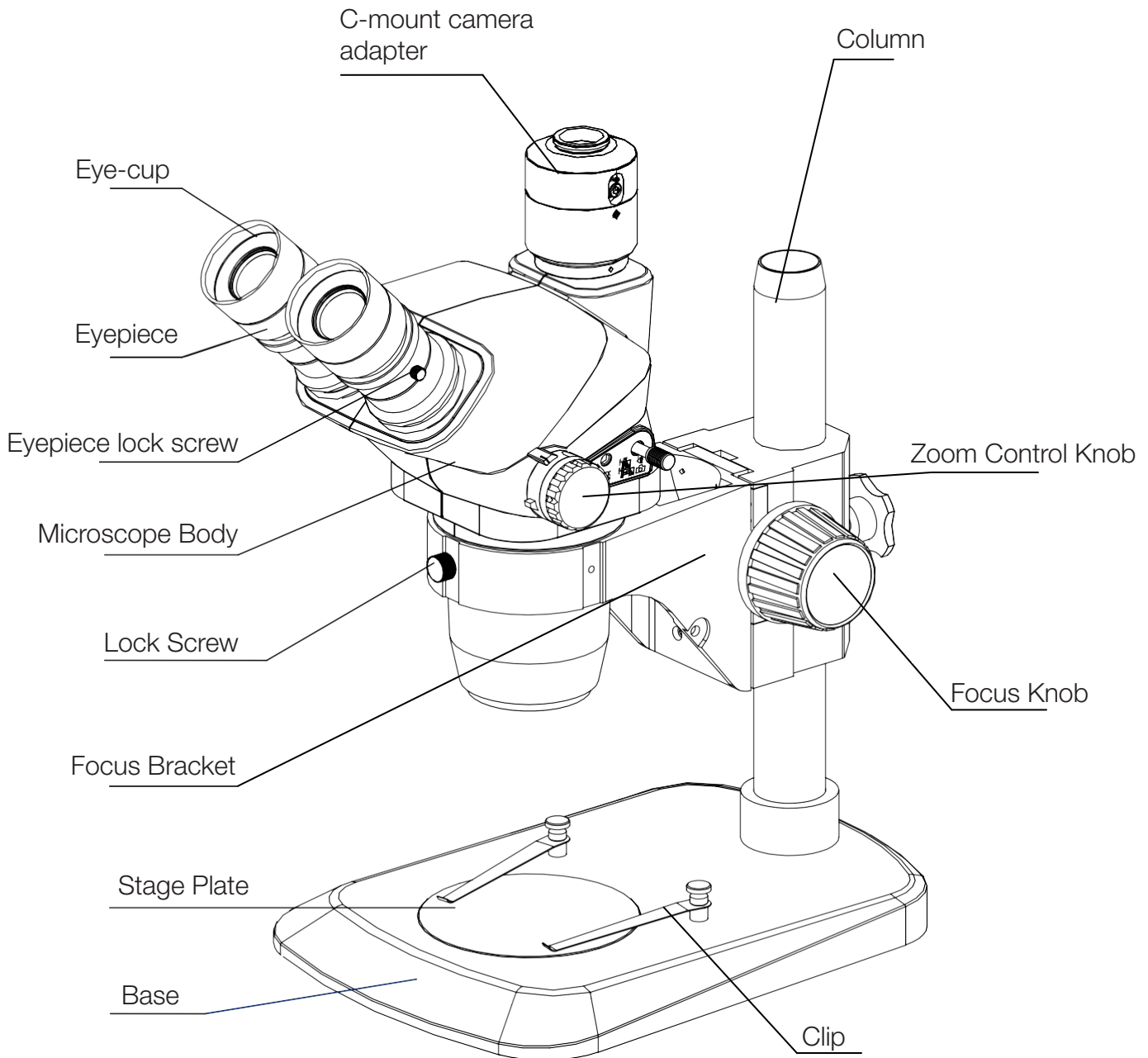
1. Microscope should be placed in a dry and clean place. Do not expose the microscope in the sun directly. Avoid high temperature and violent vibration.
2. As microscope is a precision instrument, handle with care, avoiding impact or abrupt movement during transportation.
3. To keep the image clear, do not leave fingerprints or stains on the surfaces of the lens.
4. Never turn the left and right focusing knob in the adverse direction at the same time, otherwise the microscope will be damaged.

### Maintenance

1. All lenses must be kept clean. Fine dust on the surface of the lens should be blown off with hand blower or wiped off gently with a soft lens tissue; Fingerprints or oil marked on it should be wiped off with a tissue moistened with a small amount of xylene or a 3:7 mixture of alcohol and ether.
2. Never use the organic solution to clean the other surface (especially the plastic surfaces). If necessary, please choose the neutral detergent.
3. Do not take the microscope apart for fearing that it is damaged. After using, cover the microscope with the dust-cover provided and store it in a dry and clean place free from moisture to prevent rust.
4. To keep the performance of the microscope, please check it periodically.

# System Diagram

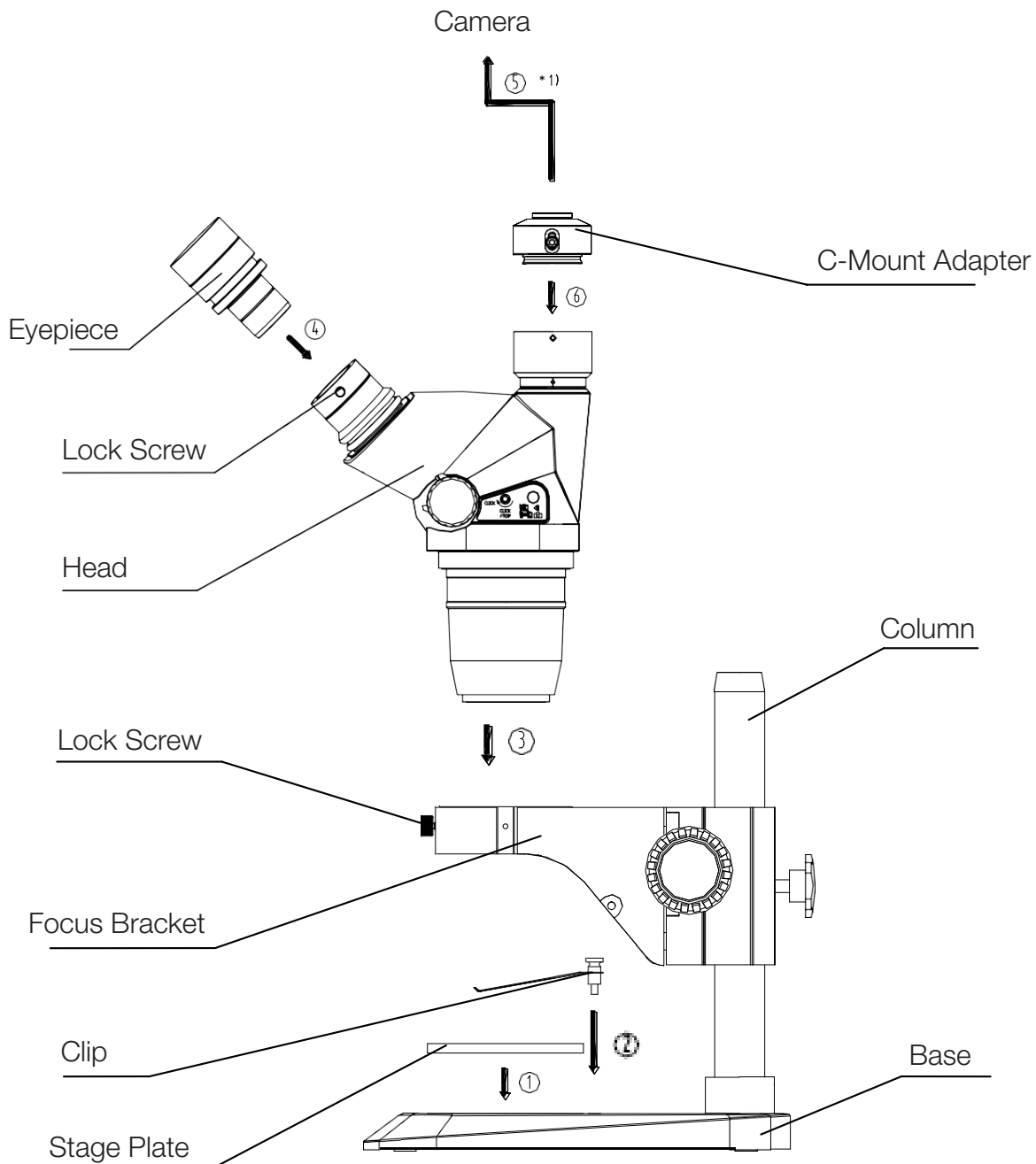
(configuration may vary)



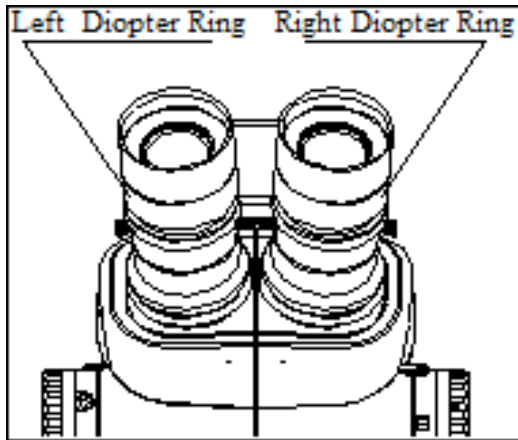
# Assembly

## Notice

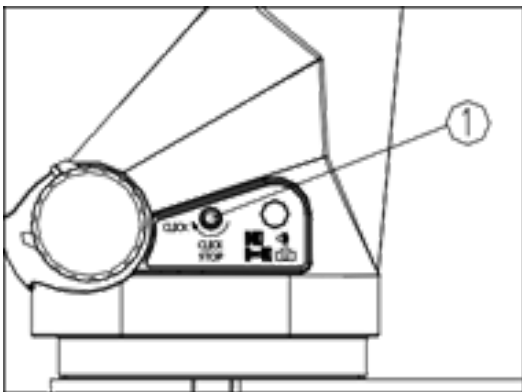
1. The numbered steps below indicate the typical steps required to assemble the LMS-Z200P series stereo microscope systems.



# Operation



**Fig.1**



**Fig.2**

## Diopter Adjustment

- Before operating, make sure the eyepiece lock screw is tight.
1. Maximize the magnification power by turning the zoom control knob.
  2. Turn the diopter adjustment ring to “0” position on both eyepieces.
  3. Look through the right eyepiece, and make the image clear by turning the focusing knobs.
  4. Turn the zoom control knob to the minimum magnification.
  5. Look through the right eyepiece again. If the specimen goes out of focus, readjust the focus by turning the right diopter adjustment ring only. (Fig.1)
  6. Repeat step (1) and look through the right eyepiece. If the image is not clear, Repeat steps (3)-(5) and make the adjustment more precise. (Fig.1).
  7. Repeat step (4) and look through the left eyepiece and make the image clear by turning the left diopter adjustment ring.

## Magnification Click-Stop Function

- Magnification click-stop function provides a click stop position for every zoom magnification indicated on the zoom knob. When the click-stop function is turned to STOP, the zoom magnification can be finely adjusted around the zoom magnification indicated value.
1. To turn on the click-stop function, rotate the screw (1) clockwise(as the arrow shows) until tight with an inner hexagon spanner.(See Fig. 2)
  2. Every magnification value on the zoom knob has a click-stop position.
  3. To turn off the click-stop function, rotate the screw (1) counter-clockwise (in the opposite direction of arrowhead) for two rotations. (See Fig. 2)

Note: Do not over-rotate the screw (1), otherwise it will damage the housing and internal mechanisms of the microscope.

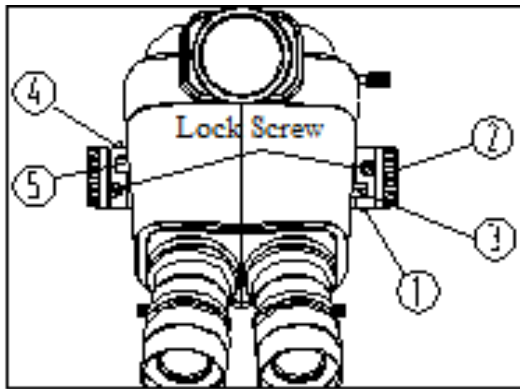


Fig.3

### Min/Max Magnification Limit

1. Use a hex tool to loosen the lock screw of right limit ring (1) and left limit ring (4).
2. Rotate the right zoom knob (2), to align the magnification maximum with the scale on the right limiter (3).
3. Touch the right limit ring (1) with the right limiter (3) gently, and tighten the lock screw with a hex tool.
4. Repeat the steps as above, rotate the right zoom knob (2), to align the magnification minimum with the scale on the right limiter (3).
5. Touch the left limit ring (4) with the left limiter (5) gently, and tighten the lock screw with an inner hexagon spanner. (See Fig. 3)

### Interpupillary adjustment

1. Hold the right and left eyepiece tubes, and then push or pull the tubes in the direction of the arrow until observation is comfortable. (Fig.4)

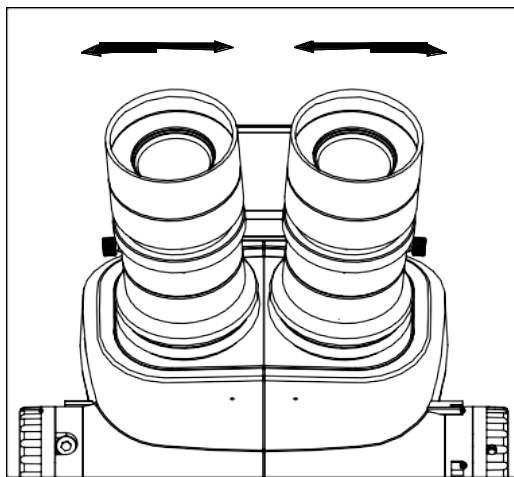


Fig.4

### Use of Eye-Cup

- When wearing glasses, fold the eye cups inward to prevent damage to eyeglasses.
- When not wearing glasses, fold out the eye cups to prevent stray light. (See Fig.5)

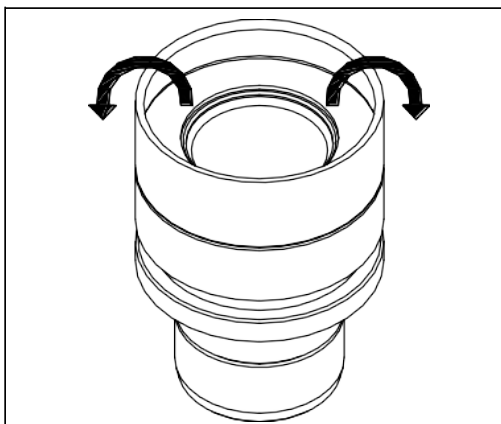


Fig.5

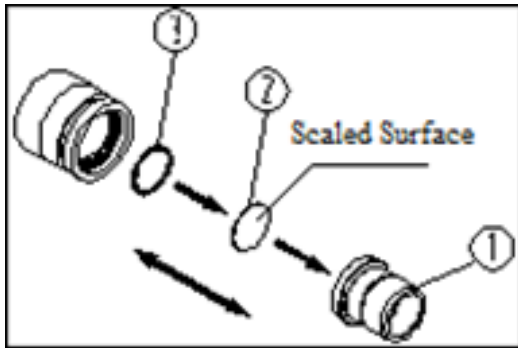


Fig.6

## Reticle Installation

1. Unscrew the pressure ring from eyepiece (see Fig. 6).
2. Clean the reticle, then install it into the pressure ring with the scaled surface upward (see Fig. 6).
3. Screw the pressure ring with reticle into the eyepiece until tight.
4. To remove the reticle, first unscrew the pressure ring from eyepiece, remove the reticle and store it for later use.

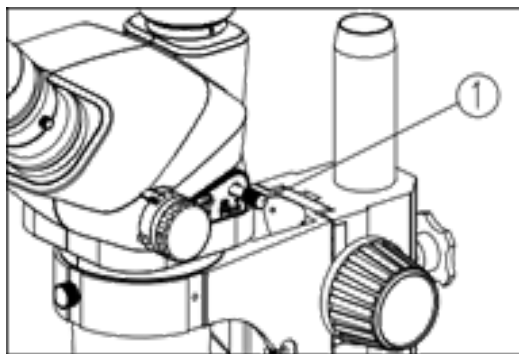


Fig.7

## Selecting the Light Path

5. When the light path selection lever (1) is pushed in, all the light will enter the binocular head, which can be used for binocular observation. (See Fig. 7)
6. When the light path selection lever is pulled out, the light from one eyepiece will be directed to the camera.

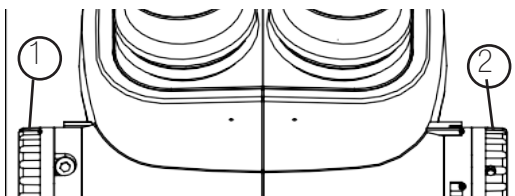


Fig.8

## Adjust Magnification

1. Use the left (1) or right zoom knob (2) to increase or decrease magnification. (See Fig. 8)

## Assembly and Use of C-Mount Adapter

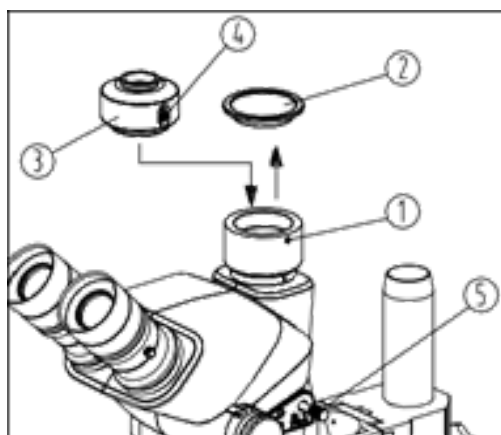


Fig.9

1. Loosen the lock screw (1) of trinocular head, and remove the dust-cover (2) (See Fig. 9).
2. Remove the dust-covers of the c-mount adapter (3). Insert the c-mount adapter into the trinocular head as shown in the figure and tighten the lock screw (1).
3. Connect the CCD or camera to the adapter (3).
4. For binocular observation, after the image is clear, pull the light path selection lever (5) out, to observe the image. If the image is not clear, loosen the lock screw (5), and adjust the focusing screw (4) until the image is clear, then tighten the lock screw.



## Optical Specifications

Eyepiece	Standard Objective WD 110mm		0.5X Auxiliary Objective WD 177mm		1.5X Auxiliary Objective WD 47mm		2X Auxiliary Objective WD 26mm	
	Mag	FOV (mm)	Mag	FOV (mm)	Mag	FOV (mm)	Mag	FOV (mm)
10X/22mm	6.7X	32.8	3.35X	65.6	10.05X	21.9	13.4X	16.4
	45.0X	4.9	22.5X	9.8	67.5X	3.3	90X	2.45
15X/16mm	10.05X	23.9	5.03X	47.8	15.08	15.9	20.1X	11.95
	67.5X	3.6	33.75X	7.2	101.25X	2.4	135X	1.8
20X/12mm	13.4X	17.9	6.7X	32.8	21.1X	11.93	26.8X	8.95
	90.0X	2.7	45.0X	4.9	135.0X	1.8	180X	1.35

## Specifications

Viewing Head	45° inclined binocular head with fixed eyepiece tube, interpupillary range: 52mm - 76mm, with click stop and interlock mechanism
	45° inclined trinocular head with fixed eyepiece tube, interpupillary range: 52mm - 76mm, light split: 100:0 or 0:100 (left eyepiece), w/ click stop and interlock mechanism
Eyepiece	High eye-point wide field plan eyepiece PL10X/22mm, with adjustable diopter
	High eye-point wide field plan eyepiece PL15X/16mm, with adjustable diopter
	High eye-point wide field plan eyepiece PL20X/12mm, with adjustable diopter
Main Objective	Zoom objective 0.67X - 4.5X, working distance: 110mm
Magnification	06.7X - 45X (w/ 10x eyepieces)
Auxiliary Objective	0.5X/177mm, 0.7X/120mm, 1.5X/47mm, 2X
Stand	Multiple stand options available
Camera adapter	0.35X/0.5X/0.65X/1X C-mount adapter
Accessories	Precision measuring stage, gem clip

**Statement of Limited Product Warranty:** This model is warranted to be free of all defects in material and workmanship for a period of 24 months (2 years) from the date of delivery. The warranty does not apply to any instrument which has become worn, defective, damaged or broken due to abuse, misuse, tampering, or unauthorized repairs. Under this warranty, Laxco will repair or replace, without charge to the purchaser, any part which upon our examination, appears to be defective in materials or workmanship. Returned Goods Policy for Repair or Replacement Parts: To return goods for repair or replacement, please contact Laxco Customer Service.

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