

# User Manual

## Binocular Zoom Stereo Microscope with Boom Stand

Model W42C1 Series



[MicroscopeNet.com](http://MicroscopeNet.com)

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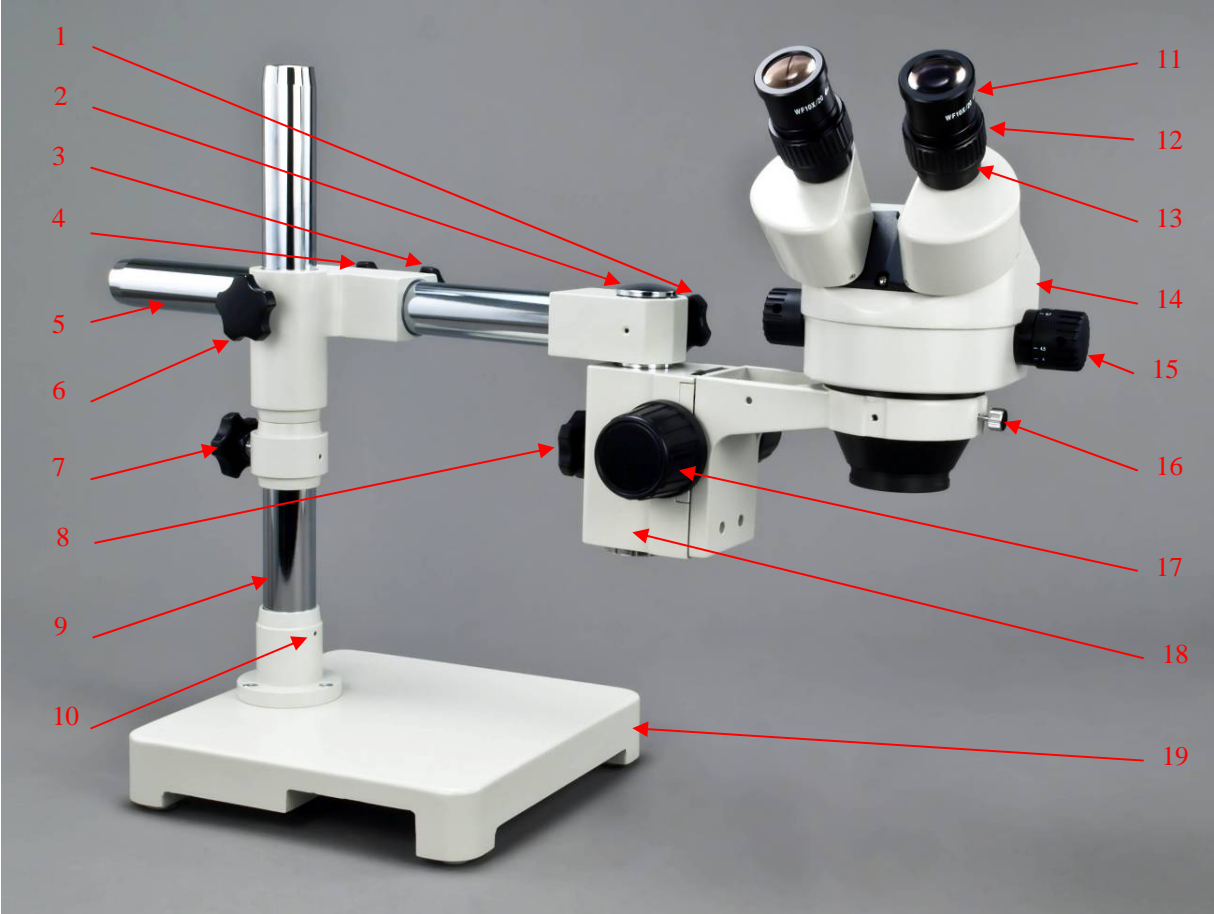
## i. Caution

1. Open the carton carefully with a knife or paper cutter. Find the “UP” sign and place the Styrofoam container on the side that makes the arrow upward. If the “UP” sign is missing, please open the Styrofoam container gently to prevent any accessory, i.e. objectives or eyepieces, from dropping and being damaged.
2. Do not discard the molded Styrofoam container; the container should be retained should the microscope ever requires reshipment.
3. Keep the instrument out of direct sunlight, high temperature or humidity, and dusty environments. Ensure the microscope is located on a smooth, level and firm surface.
4. **Important:** when move the boom stand to another place, remove the microscope body first, then hold the base with both hands firmly to move it. **DO NOT** hold the post with one hand, and the base with another hand.

## ii. Care and Maintenance

1. Do not attempt to disassemble any component including eyepieces, objectives or focusing assembly.
2. Keep the instrument clean; remove dirt and debris regularly. Accumulated dirt on metal surfaces should be cleaned with a damp cloth. More persistent dirt should be removed using a mild soap solution. **Do not use organic solvents for cleansing.**
3. The outer surface of the optics should be inspected and cleaned periodically using an air stream from an air bulb. If dirt remains on the optical surface, use a soft cloth or cotton swab dampened with a lens cleaning solution (available at camera stores). All optical lenses should be swabbed using a circular motion. A small amount of absorbent cotton wound on the end of a tapered stick makes a useful tool for cleaning recessed optical surfaces. Avoid using an excessive amount of solvents as this may cause problems with optical coatings or cemented optics or the flowing solvent may pick up grease making cleaning more difficult.
4. Store the instrument in a cool, dry environment. Cover the microscope with the dust cover when not in use.

# 1 Components Illustration



- 1. Knob 5
- 2. Vertical Arm
- 3. Knob 4
- 4. Knob 3
- 5. Horizontal Bar
- 6. Knob 2
- 7. Knob 1
- 8. Knob 6
- 9. Stand Post
- 10. Set Screw 1
- 11. Eyepieces
- 12. Diopter Adjusting Ring
- 13. Eyepiece Tube
- 14. Binocular Head
- 15. Zoom Adjusting Knob
- 16. Body Lock Thumb Screw
- 17. Focus Knob
- 18. Focusing Block
- 19. Microscope Base

## 2 Installation

### 2.1 Installing the boom stand

Please refer to the **Boom Stand Assembly Instruction** at **Page 9**.

### 2.2 Installing the microscope body

- 1) Loosen the body lock thumb screw on the focus block ring holder.
- 2) Insert the binocular head into the ring holder, tighten the lock screw.

### 2.3 Installing the eyepieces

- 1) Take off the caps on both eyepiece tubes.
- 2) Insert the eyepieces you want to use into the eyepiece tubes.

### 2.4 Mounting the 0.3X or 0.5X auxiliary objective lenses (optional, may not included in your package)

- 1) Loosen and take off the objective cover (the black piece on the bottom of objective housing).
- 2) Screw on the 0.3X or 0.5X thread auxiliary objective lenses (see **Fig. 1**).



**Fig. 1**

### 2.5 Mounting the ring light (optional, may not included in your package)

- 1) Screw on the 48mm thread ring light adapter (see **Fig. 1**).
- 2) Attach the ring light on the ring light adapter with tube-side facing down.
- 3) Tighten the 3 screws to lock the ring light on the adapter (see **Fig. 2**).
- 4) Connect the power adapter (some models have the adapter built-in the light unit) to the ring light and power outlet.



**Fig. 2**

## 3 Operation

### 3.1 Adjusting the position of the microscope body

- 1) Adjust the collar on the stand post to the desired height then tighten the knob 1 on it. The height is proper when the distance between the objectives and specimen is around 100mm(4") if no auxiliary lens, 165mm(6.5") if 0.5X auxiliary lens added, or 230mm (9") if 0.3X auxiliary lens added.
- 2) Adjust the bar to the desired angle in the horizontal plan, then tighten the knob 2 on the bar block.
- 3) Adjust the cantilever length by sliding the bar, then tighten the two knobs (3, 4) on the bar block.
- 4) Move the microscope body to the desired direction that is convenient for you to observe by turning it in the ring holder and then tighten the body lock thumb screw on the ring holder.

### 3.2 Focusing

- 1) Put the specimen under the microscope.
- 2) Set the lower edge of diopter adjustment ring to their original positions as shown in **Fig. 3**. This is important for par-focal when you zoom in or out. The only case you need to turn the diopter off the white line is that you have different eye sights between your two eyes.



Fig. 3

- 3) Turn the focus knob until the specimen is in focus. If you couldn't get the specimen focused, you may need to adjust the height of the horizontal bar by moving it along the stand post. Refer to the notes in red below if you still have problems.
- 4) Turn the zoom adjusting knob to get the desired magnification.
- 5) If auxiliary objective lens is applied, the working distance change significantly and the horizontal bar has to be moved up or down accordingly.

#### Note:

**If you have a thin specimen, the microscope may not focus even at its lowest position since the distance is larger than 100mm. In this case, you need to put a small piece with the thickness no less than 10mm (half inch) under the specimen to raise its height so that you can reach the 100mm working distance as shown in Fig. 4.**

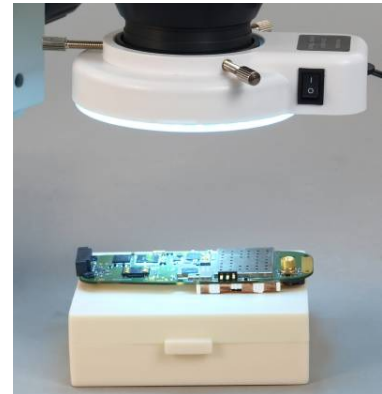


Fig. 4

### 3.3 Adjusting interpupillary distance

While observing with both eyes, hold the left and right eye tubes, swing inwards or outwards as shown in **Fig. 5**. The interpupillary distance is correct when the left and right fields of view converge completely into one image.



Fig. 5

### 3.4 Adjusting eyepiece diopter

- 1) Using your right eye only, observe your specimen through the eyepiece and bring it into focus by adjusting the focus knob.
- 2) Then observe the specimen with your left eye only through the left eyepiece. If the specimen is not in focus, rotate the diopter ring until a sharp image is obtained.
- 3) Since both sides are adjustable, you may also do the above in the opposite way, in other words, left eye first and right eye second.
- 4) Make sure that the lower edge of diopter adjustment ring to be as close to the white ring mark as possible so that you can get better par-focal when you zoom in or out.

## 4 Specifications

<b>General</b>	
Model	W42C1 series
Total Magnification	7X ~ 45X, expandable to 2.1X-180X by adding lenses
Viewing Head	Binocular, inclined 45°, swiveling 360° Adjustable interpupillary distance 47 ~ 73mm (1-3/4" ~ 2-3/4") Adjustable diopter on both eyepiece tubes
Eyepieces	1 pair of high eye point wide field WF10X/20 1 pair of high eye point wide field WF20X/10 ( <b>optional</b> )
Objectives	Zoom 0.7X ~ 4.5X, expandable to 0.21X-9X Zoom ratio: 6.5:1
Auxiliary Objective Lenses ( <b>optional</b> )	0.3X , 0.5X, or 2X
Focus Mechanism	Rack and pinion, focusing knobs on both sides Focusing adjustment range 50mm (2")
Working Distance	100mm (3-15/16") without auxiliary objective lens If auxiliary objective lens is added, see <b>working distance and field of view of add-on auxiliary lenses</b>
Objective Field of View	Max 30mm (1-3/16") with WF10X eyepieces but no aux lens If auxiliary objective lens is applied, see <b>working distance and field of view of add-on auxiliary lenses</b>
Illumination ( <b>optional</b> )	Refer to the illuminators specifications
Boom Stand	Length: 580mm (22-7/8") Height: 425mm (16-3/4") Travel stroke: 190mm (7-1/2") in vertical direction 234mm (9-1/4") in horizontal direction 360° horizontal rotating Microscope body ring holder inner diameter: 76mm
Microscope Base	230mm x 230mm x 45mm (9" x 9" x 1-3/4")
Dimension	64cm x 23cm x max 52.5cm (25-1/4" x 9" x 20-5/8")
Shipping Package	42 lbs (19 kg)

<b>Eyepieces</b>			
Designation	Magnification	Field of View	Mount Size
Wide Field	10X	20mm	30mm
Wide Field	20X ( <b>optional</b> )	10mm	30mm

Magnifications								
Eyepiece	10X				20X <i>(optional)</i>			
Objective	Zoom 0.7X~4.5X				Zoom 0.7X~4.5X			
Auxiliary Lens	-	0.5X <i>(optional)</i>	0.3X <i>(optional)</i>	2X <i>(optional)</i>	-	0.5X <i>(optional)</i>	0.3X <i>(optional)</i>	2X <i>(optional)</i>
Magnification	Zoom 7X~45X	Zoom 3.5X~22.5X	Zoom 2.1X~13.5X	Zoom 14X~90X	Zoom 14X~90X	Zoom 7X~45X	Zoom 4.2X~27X	Zoom 28X~180X




Working Distance and Field of View of Add-on Auxiliary Objective Lenses			
Auxiliary Objective Lens	Eyepiece	Field of View	Working Distance
0.3X <i>(optional)</i>	WF10X/20	85mm ~ 13mm 3-5/16" ~ 1/2"	230mm (9-1/16")
0.5X <i>(optional)</i>	WF10X/20	60mm ~ 9.2mm 2-3/8" ~ 3/8"	165mm (6-1/2")
2X <i>(optional)</i>	WF10X/20	14.5mm ~ 2.5mm 9/16" ~ 3/32"	33mm (1-5/16")
No	WF10X/20	30mm ~ 5mm 1-3/16" ~ 3/16"	100mm (3-15/16")










## 5 Optional Parts

(The optional parts may be included in some models or sold separately.)

### 1) Auxiliary Objective Lenses

	Model	Magnification
	AJ3D3AUX	0.3X
	AJ3D5AUX	0.5X
	AJ3X2	2X

### 2) Illuminators

	Model	Lamp
	A9208	8W fluorescent ring light, 110V
	A9254P	54 LED ring light, input: 100V ~ 240V 50/60HZ
	A9264S	64 LED ring light, input: 100V ~ 240V 50/60HZ
	A92144L	144 LED ring light, input: 90V ~ 265V AC 50/60HZ
	A92144S	144 LED ring light, input: 100V ~ 240V 50/60HZ
	A12CR	Halogen 21V/150W, fiber cold ring light Input: 115V or 230V switchable (internationally)
	A12CY	Halogen 21V/150W, fiber cold Y light Input: 115V or 230V switchable (internationally)

## 6 Troubleshooting Guide

<b>GENERAL PROBLEMS</b>		
<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
Totally dark in the view field	The cover of objectives is still on	Take off the cover of objectives
Incomplete binocular vision	The interpupillary distance is not correct	Adjust the interpupillary distance
	Diopter is not correct	Adjust the diopter
	The right and left eyepiece are not same	Check and mount the same eyepieces
Dirt or dust on the view	Dirt or dust on the eyepiece lens, objective lens	Clean the lens with a camera cleaning kit
	Dirt or dust on specimen	Clean the specimen
Image blur when zoomed	Diopter adjustment of the eyepieces not complete	Complete diopter adjustment
	Focus adjustment not complete	Complete focus adjustment
Cannot bring specimen in focus	The objectives is too far away or too close to the specimen and out of the range of focus stroke	Adjust the height of the horizontal bar so that the distance between the objectives and specimen is about 100mm
		If you have a thin specimen, the microscope may not focus even at its lowest position. see <b>Note 3.2</b>
The focusing knob is stiff	The focusing knob tension is too tight	Loosen the knob tension
Poor focus during observation due to the unintentional lowering of the microscope head	The focusing knob tension is too loose	Tighten the knob tension
Image moves while focusing	Specimen rises from stage surface	Secure the specimen
Image is too bright	Lamp intensity is too high	Adjust the illumination system
Insufficient brightness	Lamp intensity is too low	Adjust the illumination system

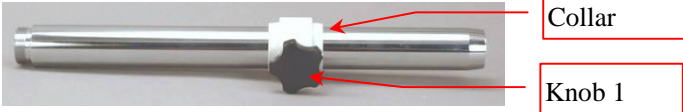
# 7 Boom Stand Assembly Instruction

## 7.1 Parts identification

### Part A – Microscope Base



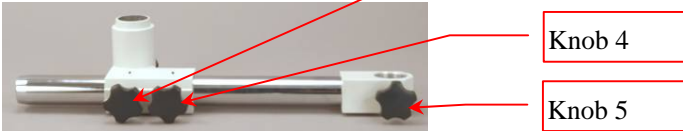
### Part B – Stand Post



### Part C – Horizontal Bar



View A

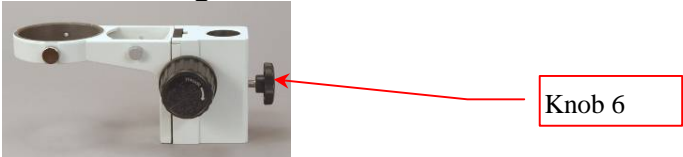


View B

### Part D – Vertical Arm



### Part E – Focusing Block



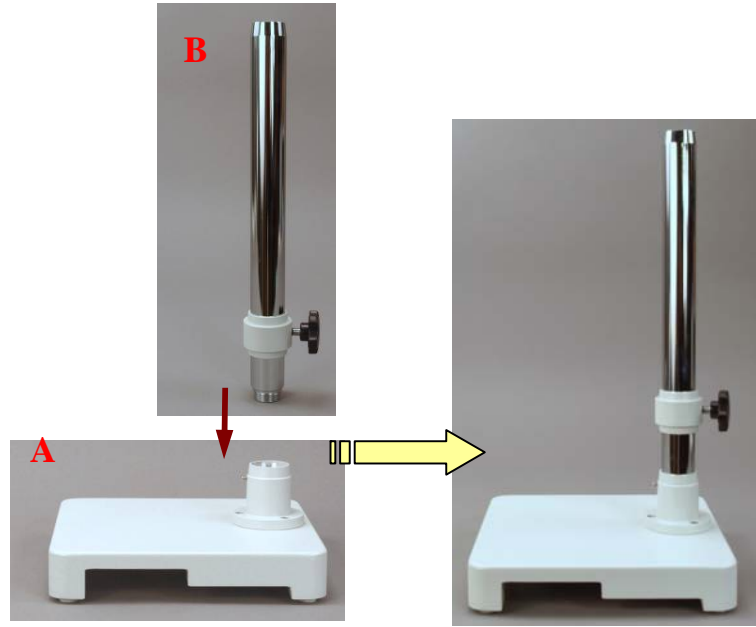
## 7.2 Assembly instructions

- 1) Put the Part A (Microscope Base) on a firm and sturdy table or level surface.



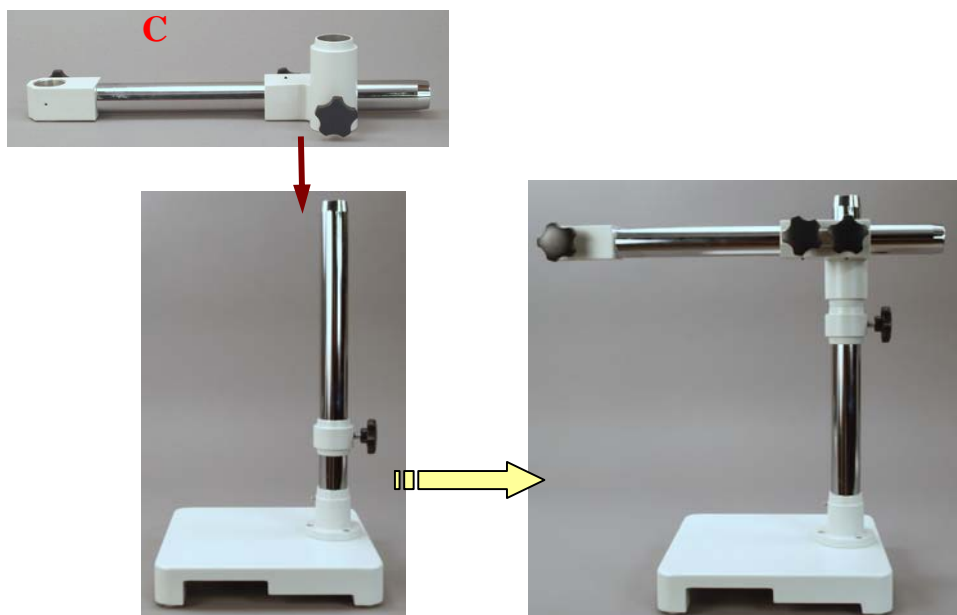
## 2) Mount Part B (Stand Post) onto Part A (Microscope Base)

- (1) Loosen the **set screw 1** so that it won't touch with the installing post.
- (2) Install the **stand post** onto the **Microscope base** at its screw end.
- (3) Secure the **stand post** with **set screw 1**.



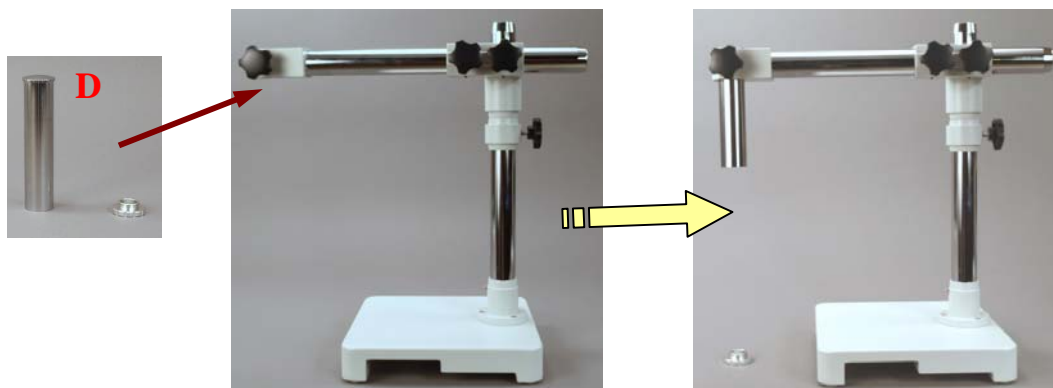
## 3) Mount Part C (Horizontal Bar) onto the assembly

- (1) Loosen the **knob 1** then move the support **collar** to the required mounting height for Part C, and then tighten the **knob 1**.
- (4) Tighten the **knob 3 and 4** to prevent the bars from moving or falling off.
- (2) Slide **horizontal bars** onto the **stand post** from its top as shown.
- (3) Tighten the **knob 2** as required.



4) Mount Part D (Vertical Arm) onto the assembly

- (1) Loosen **knob 5**.
- (2) Take off the **cap** of the **vertical arm**
- (3) Slide **vertical arm** through in the end hole of **horizontal bar** (as shown in the following picture).
- (4) Tighten the **knob 5**.



5) Mount Part E (Focusing Block) onto the assembly

- (1) Slide the **focusing block** on to the **vertical arm**, and then screw the cap back on.
- (2) Tighten the **knob 6**.

