

# User Manual

## Binocular Stereo Microscope

Model  $\begin{matrix} V421 \\ XV421 \end{matrix}$  Series



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

# Table of Contents

i. Caution.....	1
ii. Care and Maintenance.....	2
1. Component Illustration.....	3
2. Installation.....	4
3. Operation .....	6
4. Specifications.....	7
5. Troubleshooting Guide.....	8
6. Optional Parts.....	9

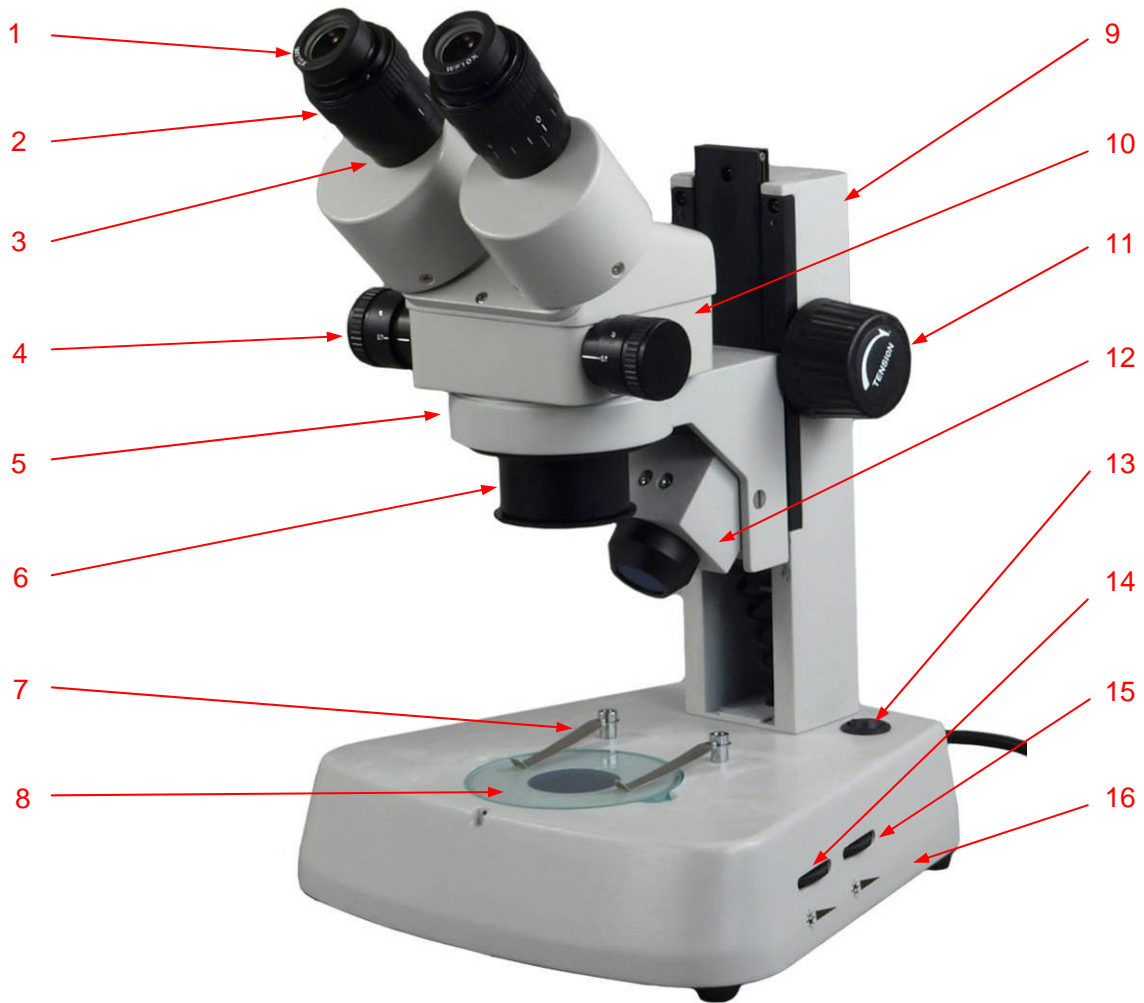
## i. Caution

1. Find the “UP” sign and place the Styrofoam container on your table or bench so that the arrow is pointing upward. Open the shipping carton carefully to prevent any accessory, like 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 that the microscope is located on a smooth, level and firm surface.
4. If any specimen solutions or other liquids splash onto the stage, objective or any other component, disconnect the power cord immediately and wipe up the spillage. Otherwise, the instrument may be damaged.
5. **Important:** the lamp, lamp housing and adjacent parts will become very hot. Do not touch these parts until they have completely cooled. Never attempt to handle a hot halogen bulb.
6. All electrical connectors (power cord) should be inserted into an electrical surge suppressor to prevent damage due to voltage fluctuations.
7. For safety when replacing the halogen lamp or fuse, be sure the main switch is off, unplug the power cord, and only replace the halogen bulb after the bulb and the lamp house has completely cooled.
8. Confirm that the input voltage indicated on your microscope corresponds to your line voltage. The use of a different input voltage other than that as indicated will cause severe damage to the microscope.

## ii. Care and Maintenance

1. Do not attempt to disassemble any component including eyepieces, objectives or focusing mechanism.
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 | Eyepiece          | 7  | Stage Clip      | 13 | Power Switch                     |
| 2 | Diopter Ring      | 8  | Stage Plate     | 14 | Incident Light Intensity Dial    |
| 3 | Eyepiece Tube     | 9  | Stand           | 15 | Transmitted Light Intensity Dial |
| 4 | Zoom Knob         | 10 | Microscope Body | 16 | Base                             |
| 5 | Holding Ring      | 11 | Focus Knob      |    |                                  |
| 6 | Objective Housing | 12 | Incident Light  |    |                                  |

## 2 Installation

### 2.1 Install the microscope body

- 2.1.1 Loosen the thumb screw on the body holding ring.
- 2.1.2 Sit the body into the holding ring firmly.
- 2.1.3 Tighten the thumb screw.



Thumb Screw

### 2.2 Install the eyepieces

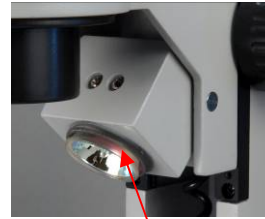
- 2.2.1 Take off the plastic covers on the eyepiece tubes.
- 2.2.2 Insert the eyepieces into the eyepiece tubes.

### 2.3 Replace the incident light bulb

- 2.3.1 Turn the power off and disconnect the power cord.
- 2.3.2 Allow some time to cool down the lamp.
- 2.3.3 Take off the black light housing by turning it counterclockwise.
- 2.3.4 Pull the bulb (with reflector) out gently.
- 2.3.5 Align the two pins of the bulb with the sockets then press the light bulb gently in.
- 2.3.6 Put the light housing on and tighten by turning it clockwise.



Light Housing



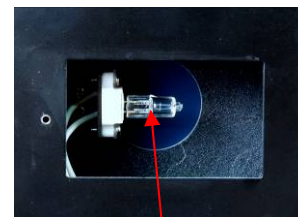
Light Bulb

### 2.4 Replace the transmitted light bulb

- 2.4.1 Turn the power off and disconnect the power cord.
- 2.4.2 Allow some time to cool down the lamp.
- 2.4.3 Turn over the microscope on its side; find the light compartment at the bottom.
- 2.4.4 Open the cover of the compartment by loosening the screw.
- 2.4.5 Take out the dead bulb and insert the new bulb. Be sure the pins on the bulb are completely inserted into the lamp socket.
- 2.4.6 Put the cover back and tighten the screw.



Light Compartment



Light Bulb

### 2.5 Replace the fuse

- 2.5.1 Pry out the fuse holder with a screw driver.
- 2.5.2 Install / replace the fuse.



## 2.6 Install the auxiliary lens (optional)

2.6.1 Screw off the plastic cover on the bottom of objective housing.

2.6.2 Screw on the auxiliary lens onto the objective housing.

Note: The auxiliary lens is optional and may have different color and shape from the one in the picture, depends on the model purchased.



## 2.7 Install the camera (optional)

2.7.1 Take off the eyepiece from the eyepiece tube.

2.7.2 Insert the 30.0mm adapter into the eyepiece tube.

2.7.3 Insert the camera into the eyepiece tube which with 30.0mm adapter on, and then connect the camera to a computer by a USB cable.

2.7.4 Refer to the manual in the Camera CD to installation the driver and software.

Note: The camera is optional and may have different color and shape from the one in the picture, depends on the model purchased.



Eyepiece Tube

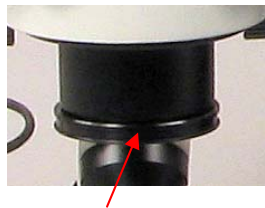
## 2.8 Install the ring light (optional)

2.8.1 Screw off the plastic cover on the bottom of objective housing.

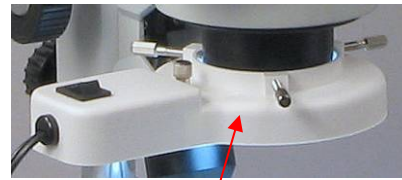
2.8.2 Screw on the ring light adapter onto the objective housing.

2.8.3 Put the ring light on to the ring light adapter. Tighten the 3 screws. Make sure the end of the screws stick into the groove of the adapter.

Note: The ring light is optional and may have different color and shape from the one in the picture, depends on the model purchased.



Ring Light Adapter



Ring Light

### 3 Operation

#### 3.1 Change the stage plate

- 3.1.1 Loosen the stage set screw at the front of base.
- 3.1.2 Take off the glass plate and put on the white/black plate (or vice versa).
- 3.1.3 Tighten the set screw.

#### 3.2 Place the specimen

- 3.2.1 Put the specimen in the center of the stage plate.
- 3.2.2 Hold the specimen with the stage clips if necessary.

#### 3.3 Focusing

- 3.3.1 Turn the zoom knob at 0.7.
- 3.3.2 Turn the focus knob until the specimen is in focus.
- 3.3.3 Move the interesting spot of specimen into the center of field of view.
- 3.3.4 Turn the zoom knob for the desired magnification.
- 3.3.5 Adjust the focus knob slightly to get clear image.



#### 3.4 Adjusting interpupillary distance

While observing with both eyes, hold the left and right eyepiece tubes and swing inwards or outwards. The interpupillary distance is correct when the left and right fields of view converge completely into one image.



#### 3.5 Adjusting eyepiece diopter

- 3.5.1 Turn the diopter rings on both eyepiece tubes at 0 positions.
- 3.5.2 Using your right eye only, observe your specimen through the right eyepiece and bring it into focus by adjusting the focus knob.
- 3.5.3 Then observe the specimen with your left eye only through the left eyepiece. If the specimen is not in focus, rotate the diopter until a sharp image is obtained.



#### 3.6 Adjust the light

- 3.6.1 Plug in the power cord to a power outlet.
- 3.6.2 Turn the switch to the "I" position to turn on the power.
- 3.6.3 Turn the switch to the "O" position to turn off the power.
- 3.6.4 Turn the incident light intensity dial to turn the incident light on and adjust the intensity.
- 3.6.5 Turn the transmitted light intensity dial to turn the transmitted light on and adjust the intensity.



#### 3.7 Adjust the ring light (optional)

- 3.7.1 Install the ring light, and connect the AC adapter to the power outlet.
- 3.7.2 Turn on the power button on the ring light.
- 3.7.3 Adjust the intensity dial.

#### 3.8 Camera (optional)

- 3.8.1 Install the camera following the procedures in 2.7.
- 3.8.2 Focus the microscope following the procedures in 3.3.
- 3.8.3 Open the software of the camera and launch the live view window.
- 3.8.4 If the live view image is not in focus, adjust the focus knob slightly till the image displayed on the screen is in focus.
- 3.8.5 You can observe image, snap picture, and capture video in the software.

Note: Please refer to the User Manual in the Camera CD for the software operation.



## 4 Specifications

Model	V421/XV421 Series
Microscope body	Binocular, 45° inclined, 360° swiveling. Adjustable Interpupillary distance 55 ~ 75mm (2-3/16" ~ 2-15/16") Adjustable diopter on both eyepiece tube ±5dp
Eyepieces	1 pair of WF10X/20 1 pair of WF20X (optional)
Objectives	Zoom 0.7x ~ 4.5x, ratio 6.5:1 Auxiliary lens 0.5X (optional)
Focusing Mechanism	Rack and pinion, focusing knobs on both sides
Working Distance	95 mm (3-3/4") with no auxiliary lens 152 mm (6") with 0.5X auxiliary lens on
Stage Plate	Frosted glass plate: 95mm (3-3/4") in diameter White/black plastic plate: 95mm (3-3/4") in diameter
Illumination	Incident (upper): 12V/10W halogen light Transmitted (lower): 12V/10W halogen light With switch and intensity dials separately
Power Supply	Microscope: AC 100V – 240V, 50/60Hz
Dimension	25.4cm x 25.4cm x 46cm (10" x 10" x 18")
Net weight	14.4 kg (32 lb)

## 5 Troubleshooting Guide

Symptom	Cause	Remedy
Totally dark in the view field	The cover of objectives is still on	Take off the cover of objectives
Stains or dust on the field of view	Stains or dust on the eyepieces or objectives	Clean the lens with a camera cleaning kit
	Stains or dust on the specimen	Clean the specimen
Image moves while focusing	Specimen rises from stage surface	Secure the specimen
Lamp does not light when switched on	No electrical power	Check power cord connection
	Lamp bulb burnt out	Replace bulb
	Fuse blown out	Replace fuse

## 6 Optional Parts

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

### 6.1.1 Camera

	Model	Resolution	Operating System	Software
	A1502	640 x 480 (0.3MP)	MS Windows (32/64bit)	Included
	A1510	1280 x 1024 (1.3MP)		
	A1520C	1600 x 1200 (2.0MP)		
	A1530	2048 x 1536 (3.0MP)	MS Windows (32bit)	
	A1550	2592 x 1944 (5.0MP)	MS Windows (32/64bit)	
	A1590	3488 x 2616 (9.0MP)		

### 6.1.2 Illuminator

	Model	Lamp
	A12CR	Halogen 21V/150W Fiber Cold Ring Light
	A12CY	Halogen 21V/150W Fiber Cold Y Light
	A9208	8W Fluorescent Ring Light
	A9212	128W Fluorescent Ring Light
	A9239	39 LEDs Macro Ring Light
	A9254 A9254P	54 LEDs Macro Ring Light
	A9264S	64 LEDs Macro Ring Light
	A92144B	144 LEDs Macro Ring Light
	A92144L	144 LEDs Macro Ring Light
	A92144S	144 LEDs Macro Ring Light

### 6.1.3 Auxiliary Objective Lens

	Model	Magnification
	AJ5D3AUX	0.3X
	AJ5D5AUX	0.5X
	AJ5D75AUX	0.75X
	AJ5X2	0.2X