Table of Contents

i. Caution.....................................................................................................................1

ii. Care and Maintenance............................................................................................2

1. Component Illustration..........................................................................................3

2. Installation..............................................................................................................4

3. Operation ...............................................................................................................6

4. Specifications........................................................................................................8

5. Troubleshooting Guide..........................................................................................9

6. Optional Parts.......................................................................................................10
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 Photo Tube  8 Stage Clip  15 Focus Block
2 Eye Shield  9 Stage Plate  16 Incident Light
3 Eyepiece 10 Set Screw  17 Power Switch
4 Diopter Ring 11 Stand  18 Incident Light Intensity Dial
5 Eyepiece Tube 12 Microscope Body  19 Transmitted Light Intensity Dial
6 Zoom Knob 13 Holding Ring  20 Base
7 Objective Housing 14 Focus Knob
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.

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.

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.

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 plastic cover on the phototube.
2.7.2 Insert the camera into the phototube, and then connect the camera to a computer by a USB cable.
2.7.3 Refer to the manual in the Camera CD to installation the driver and software on to the computer.
Note: The camera is optional and may have different color and shape from the one in the figure, depends on the model purchased.

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.
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 dioptr
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 ring 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 Pull out the switch bar.
3.8.4 Open the software of the camera and launch the live view window.
3.8.5 If the live view image is not in focus, loosen the thumb screw showed in the right figure, turn the plastic part of the photo tube to adjust the photo tube height till the image is in focus, then tighten the thumb screw.
3.8.6 You can observe image, snap picture, and capture video in the software.

Note1: Please refer to the User Manual in the Camera CD for the software operation.

Note2: The camera is optional and may have different color and shape from the one in the picture, depends on the model purchased.
### 4 Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>V431/XV431 Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microscope body</td>
<td>Trinocular, 45° inclined, 360° swiveling. Adjustable Interpupillary distance 55 ~ 75mm (2-3/16” ~ 2-15/16”) Adjustable diopter on both eyepiece tube ±5dp</td>
</tr>
<tr>
<td>Eyepieces</td>
<td>1 pair of WF10X 1 pair of WF20X (optional)</td>
</tr>
<tr>
<td>Objectives</td>
<td>Zoom 0.7x ~ 4.5x, ratio 6.5:1 Auxiliary lens 0.5X (optional)</td>
</tr>
<tr>
<td>Focusing Mechanism</td>
<td>Rack and pinion, focusing knobs on both sides</td>
</tr>
<tr>
<td>Working Distance</td>
<td>95 mm (3-3/4”) 152 mm (6”) with 0.5X auxiliary lens on</td>
</tr>
<tr>
<td>Stage Plate</td>
<td>Frosted glass plate: 95mm (3-3/4”) in diameter White/black plastic plate: 95mm (3-3/4”) in diameter</td>
</tr>
<tr>
<td>Illumination</td>
<td>Incident (upper): 12V/10W halogen light Transmitted (lower): 12V/10W halogen light With switch and intensity dials separately</td>
</tr>
<tr>
<td>Power Supply</td>
<td>Microscope: AC 110V – 240V, 50/60Hz</td>
</tr>
<tr>
<td>Dimension</td>
<td>25.4cm x 25.4cm x 46cm (10” x 10” x 18”)</td>
</tr>
<tr>
<td>Net weight</td>
<td>6 kg (13 lb)</td>
</tr>
</tbody>
</table>
## 5 Troubleshooting Guide

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Totally dark in the view field</td>
<td>The cover of objectives is still on</td>
<td>Take off the cover of objectives</td>
</tr>
<tr>
<td>Stains or dust on the field of view</td>
<td>Stains or dust on the eyepieces or objectives</td>
<td>Clean the lens with a camera cleaning kit</td>
</tr>
<tr>
<td></td>
<td>Stains or dust on the specimen</td>
<td>Clean the specimen</td>
</tr>
<tr>
<td>Image moves while focusing</td>
<td>Specimen rises from stage surface</td>
<td>Secure the specimen</td>
</tr>
<tr>
<td>Lamp does not light when switched on</td>
<td>No electrical power</td>
<td>Check power cord connection</td>
</tr>
<tr>
<td></td>
<td>Lamp bulb burnt out</td>
<td>Replace bulb</td>
</tr>
<tr>
<td></td>
<td>Fuse blown out</td>
<td>Replace fuse</td>
</tr>
</tbody>
</table>
## 6 Optional Parts
(The optional parts may be included in some models or sold separately.)

### 6.1.1 Camera

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

### 6.1.2 Illuminator

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

### 6.1.3 Auxiliary Objective Lens

<table>
<thead>
<tr>
<th>Model</th>
<th>Magnification</th>
</tr>
</thead>
<tbody>
<tr>
<td>AJ5D3AUX</td>
<td>0.3X</td>
</tr>
<tr>
<td>AJ5D5AUX</td>
<td>0.5X</td>
</tr>
<tr>
<td>AJ5D75AUX</td>
<td>0.75X</td>
</tr>
<tr>
<td>AJ5X2</td>
<td>0.2X</td>
</tr>
</tbody>
</table>