

User Manual

Inverted Trinocular Compound Microscope

Model V83INV Series



MicroscopeNet.com

Table of Contents

i. Caution.....	1
ii. Care and Maintenance.....	2
1. Components Illustration.....	3
2. Installation.....	4
3. Operation.....	6
4. Specifications.....	8
5. Troubleshooting Guide.....	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 items (i.e. objectives, eyepieces, etc.) 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 light, light 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.
9. **Important** Since equipped with 12V/50W halogen bulbs, it is important to protect your eyes from hurt by the super bright light. Make sure the intensity is adjusted to the comfortable level before you look into the eyepiece.

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. Oil immersion objectives should be cleaned immediately after use by removing the oil with lens tissue or a clean, soft cloth.
4. Store the instrument in a cool, dry environment. Cover the microscope with the dust cover when not in use.

1. Components Illustration



- | | | |
|-------------------------|----------------------------|------------------------|
| 1. Light Housing | 10. Stage | 19. Thumb Screw |
| 2. Thumb Screw | 11. Nosepiece | 20. Thumb Screw |
| 3. Condenser Adj. Ring | 12. Power Output Socket | 21. Microscope Frame |
| 4. Thumb Screw | 13. Power Input Socket | 22. Coarse Focus Knob |
| 5. Light Housing Holder | 14. Photo Tube | 23. Fine Focus Knob |
| 6. Yellow Color Filters | 15. Eyepiece | 24. Focus Tension Ring |
| 7. Green Color Filter | 16. Eyepiece tube | 25. Power Switch knob |
| 8. Light Power Cord | 17. Viewing Head | 26. Microscope Base |
| 9. Specimen Holder | 18. Rack for Light Housing | |

2. Installation

2.1 Installation of the rack of light housing

- 1) Turn the thumb screw 20 counter clockwise until the screw tip retracts into the thread hole and will not obstruct the installation.
- 2) Slide the dovetail pin at the bottom of the rack into the dovetail socket on the top of the microscope frame. Ensure the two surfaces of rack and frame meet flush.
- 3) Tighten the thumb screw 20.



2.2 Installation of the light housing

- 1) Turn the thumb screw 4 counter clockwise until the screw tip retracts into the thread hole and will not obstruct the installation.
- 2) Insert the light housing into the light holder.
- 3) Tighten the thumb screw 4.

2.3 Installation of the trinocular viewing head

- 1) Loosen the set screw 19 on the top of the microscope frame and remove the plastic cover.
- 2) Insert the dovetail pin of trinocular viewing head into the socket on the top of the microscope frame; ensure that the dovetail pin is completely seated into the socket.
- 3) Tighten the set screw 19.

Caution: Do not release the head from your hand grip until you are sure that the head is installed securely.

2.4 Installation of the eyepieces

- 1) Remove the protective caps from the eyepiece tubes.
- 2) Insert the eyepieces into the eyepiece tubes.



2.5 Installation of the objectives

- 1) Adjust the coarse focus knob until the mechanical stage is at its highest position.
- 2) Remove black plastic lids from the nosepiece.
- 3) Install the lowest magnification objective into the nosepiece. Then in a clock-wise direction, rotate the nosepiece and install each succeeding higher magnification objective into the openings of the nosepiece.)

Note:

- Use the 10x objective to initially focus the image of your specimen.
- When changing the objective magnification, rotate the objective nosepiece until you hear a “click” sound. This ensures the objective is centered in the optical light path.

2.6 Light bulb replacement

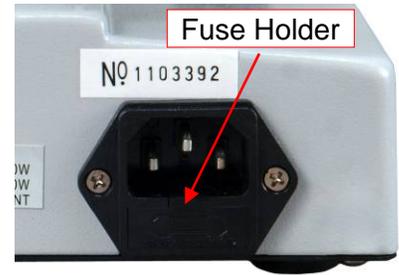
- 1) Unplug the power cord from the wall outlet.
- 2) Make sure the bulb is cooled down before you star to work.
- 3) Screw off the cap of the light bulb.
- 4) Loosen the thumb screw 2 and pull out the bulb holder.



- 5) Replace the light bulb.
- 6) Put back the bulb holder and thread on the cap.
- 7) Adjust the position of the light holder and tighten the thumb screw 2.

2.7 Fuses replacement

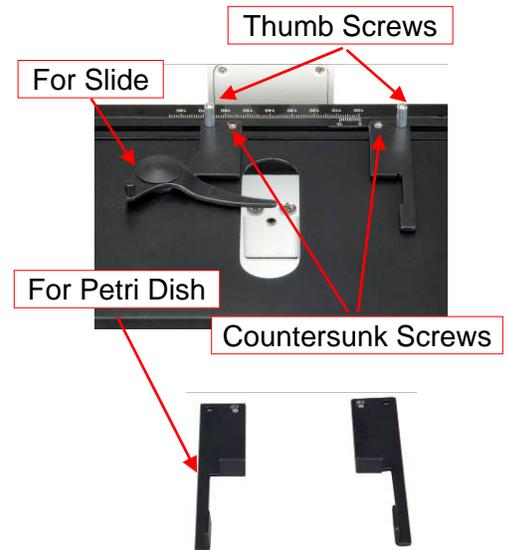
- 1) Turn off the power and disconnect the power cord.
- 2) Find the fuse holder at the back bottom of the stand.
- 3) Pry out the fuse holder gently with a flat head screwdriver.
- 4) Replace the old fuse with a new one, and then insert it back.



2.8 Slide/Specimen holder replacement

There are two pairs of specimen holders. One is for slide; another is for Petri dish, beaker or other containers.

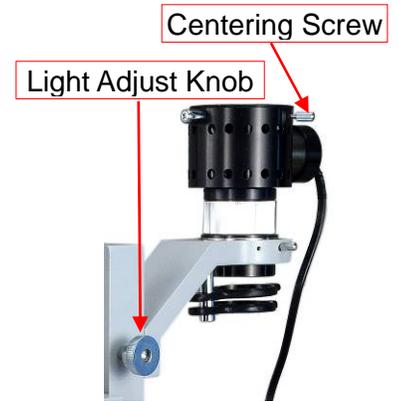
- 1) Turn the thumb screws to the left to take them out.
- 2) Turn the countersunk screws to the left with a screwdriver to take them out.
- 3) Remove the slide holders and slide the two sliding blocks beneath the holders out of the dovetail socket.
- 4) Align the holes on the sliding block with the holes on the specimen holder. Insert the countersunk screw into the countersunk hole on the specimen holder and turn it to the right with a screwdriver.
- 5) Slide the sliding blocks into the dovetail socket. Loosen the countersunk screw if necessary to ensure the specimen holder slides in the dovetail freely.
- 6) Adjust the two specimen holders to the desired distance; insert the thumb screws and tighten them.



3. Operation

3.1 Adjusting illumination

- 1) Install the light housing and connect the light power cord to the microscope power output socket.
- 2) Connect the power cord of microscope to a wall outlet, and the other end to the microscope power input socket.
- 3) Turn the power knob left the turn the light on.
- 4) Turn the power knob to adjust the light intensity.
- 5) Turn the light centering screws to move the light bulb to the light path center.
- 6) Turn the condenser adjustment ring to adjust the position of the condenser.
- 7) Turn the light adjust knob to adjust the position of the light source.



3.2 Placing specimen

- 1) Place the slide or a specimen on the mechanical stage, securing it with the slide holder or specimen holder.
- 2) Turn the X and Y translational control knobs to position the specimen for viewing.

Caution: Be sure not to allow an objective to touch a specimen when changing objectives.



3.3 Focusing

- 1) With the 4X objective in position.
- 2) Lower the mechanical stage using the coarse focus knob until the specimen is in focus. Then use the fine focus knob to obtain a sharp image. You may now switch to another magnification objective.

Tips: To prevent your specimen from making contact with an objective, lower the stage to its lowest position without contacting the 40x objective, then turn the focus stop ring counter-clock-wise to tighten it.



3.4 Adjusting interpupillary distance

While observing with both eyes, hold the left and right eyepiece tubes then slowly slide the tubes in and out. The interpupillary distance is correct when the left and right fields of view converge completely into one image.

3.5 Adjusting eyepiece diopter

- 1) Rotate the 10x objective into position.
- 2) Rotate the diopter ring on the right eyepiece tube until its numerical value is the same as your interpupillary distance, for example, 65 in the right figure.
- 3) Close your left eye and bring the specimen into.
- 4) Close your right eye and bring the same specimen into clear sharp focus by adjusting only the diopter ring on left eyepiece tube. Doesn't use focus knobs at this step.
- 5) 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.



3.6 Adjusting tension

The tension of the focus mechanism has been pre-set at the factory. If the mechanical stage drops by itself, rotate the focus tension adjustment ring until the tension is in maintained.

3.7 Photo/video observing, capturing and recording

- 1) Insert the microscope camera (electronic eyepiece) into the photo tube and connect the USB cable from camera to computer.
- 2) Launch image observing software to examine the specimen on the screen. You also can capture images or record live videos through the software, depending on the functions provided by the software.
- 3) If a conventional camera used, you may need an adapter to connect your camera to the phototube.

Note: Camera is not included. Electronic eyepieces are sold separately.

4. Specifications

Magnification	50X, 80X, 125X, 200X, 312X, 500X, 800X (for V83INV) 50X, 100X, 125X, 250X, 312X, 624X, 500X, 1000X (for V83SINV)
Eyepiece	WF10X, Φ 18mm field of view WF16X, Φ 11mm field of view (for V83INV) WF20X, Φ 10mm field of view (for V83SINV)
Objective	- Plan 4X/0.10, 160/--, working distance 17.4mm - Plan 10X/0.25, 160/1.5, working distance 8.0mm - Plan 25X/0.40, 160/1.5, working distance 5.0mm - Plan 40X/0.65, 160/1.5, working distance 3.0mm - Built-in auxiliary objective 1.25X
Viewing Head	Trinocular, inclined 45°, swiveling, Interpupillary distance 55 – 75 mm, sliding adjustment Diopter ring on both eyepiece tubes
Nosepiece	Revolving, quadruple
Focus system	Coaxial coarse and fine focusing knobs on both side, Focus stop Focus tension adjustable
Condenser	Built in, adjustable
Stage	Double layer mechanical Slide holder/specimen holder adjustable and changeable Dimension 190mm X145mm Translational range 75mm X 50mm
Illumination	Halogen lamp 12V/50W, center adjustable Intensity adjustable
Others	Color filters: green and yellow
Power	AC120V

5. Troubleshooting Guide

Problem	Cause	Solution
Darkness at the periphery or uneven brightness in the field of view	Revolving nosepiece not in click stop position	Revolve the nosepiece to click-stop position by swinging the objective correctly into the optical path
	The bulb of light source is not at the center	Adjust the position of the bulb
Dirt or dust on the view	Dirt or dust on the lens eyepiece, condenser, objective, collector lens or specimen	Clean the lens with a camera cleaning kit
Poor image quality	Slide may be upside down	Turn slide over so the cover-glass faces up
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
Insufficient brightness	Lamp intensity is too low	Adjust the light intensity by rotating the intensity control dial
	Condenser is not at the right position	Adjust the height of the light housing and the position of the condenser till get the best brightness
Slippage of focus when using the coarse focusing knob	Tension adjustment is set too low	Increase the tension on the focusing knobs
Fine focus is ineffective	Tension adjustment is set too high	Loosen the tension on the focusing knobs