



**MANUAL**

**3002**  
**MICROSCOPE SERIES**



Distributed By:

**NEW YORK MICROSCOPE COMPANY INC.**  
AKA **MEL SOBEL MICROSCOPES**

100A Lauman Ln., Hicksville, N.Y. 11801 Toll Free: (877) 877-7274 • Fax: (516) 801-2046  
Web Site: [www.microscopeinternational.com](http://www.microscopeinternational.com) • [www.nyscopes.com](http://www.nyscopes.com) • E-mail: [Info@nyscopes.com](mailto:Info@nyscopes.com)



## Table of Contents

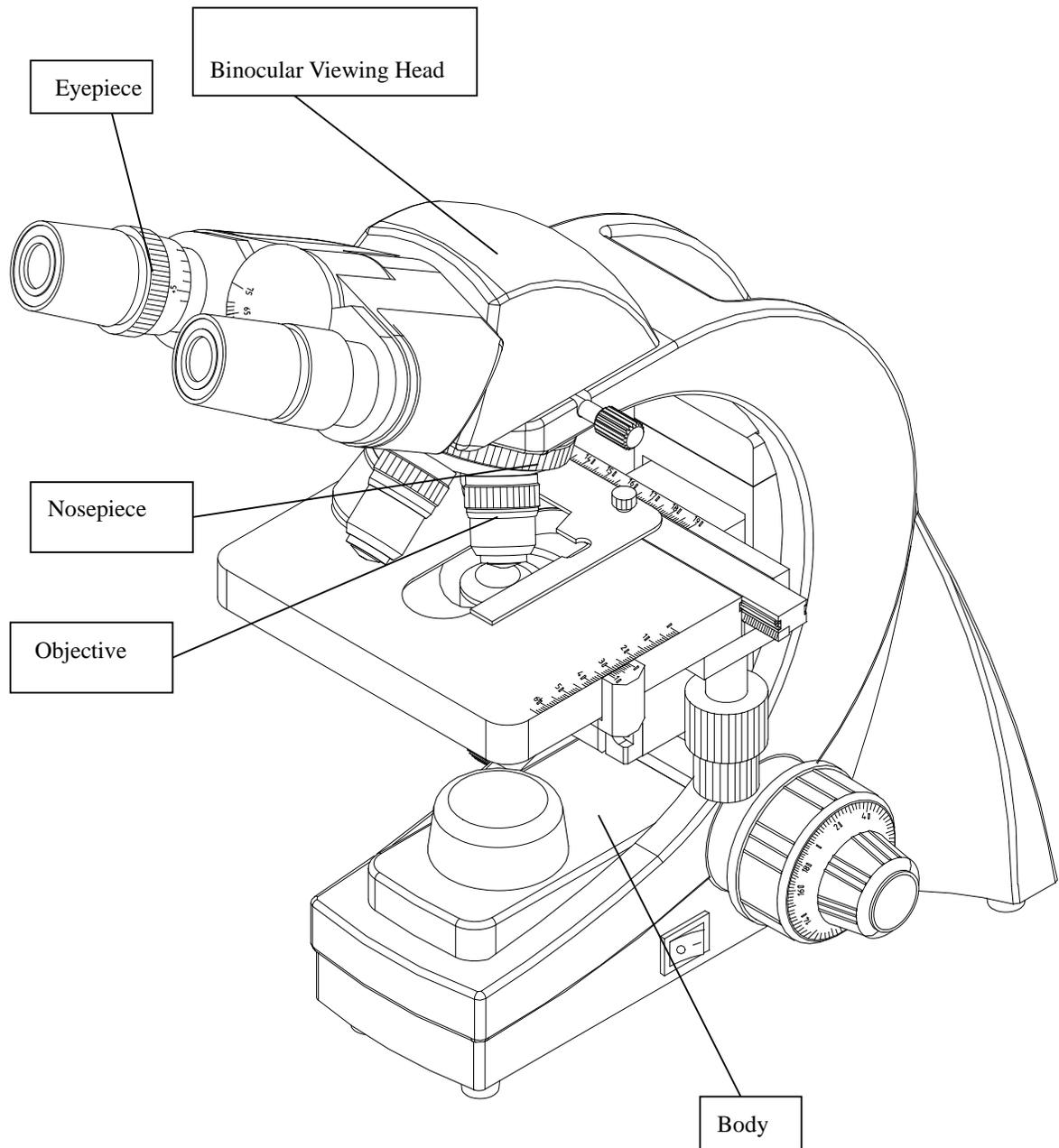
<b>Safety Notes.....</b>	<b><i>i</i></b>
<b>Care and Maintenance.....</b>	<b><i>ii</i></b>
<b>1. Component Illustration .....</b>	<b>1</b>
<b>2. Installation of Components .....</b>	<b>2</b>
<b>3. Adjusting Components.....</b>	<b>7</b>
<b>4. Operation.....</b>	<b>9</b>
<b>5. Technical Specifications .....</b>	<b>12</b>
<b>6. Component List .....</b>	<b>13</b>
<b>7. Trouble Shooting Guide .....</b>	<b>14</b>

## **SAFETY NOTES**

1. Open the shipping carton carefully 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. 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. **CAUTION:** 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 ("O"), remove the power cord, and 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 than indicated will cause severe damage to the microscope.

## **CARE AND MAINTENANCE**

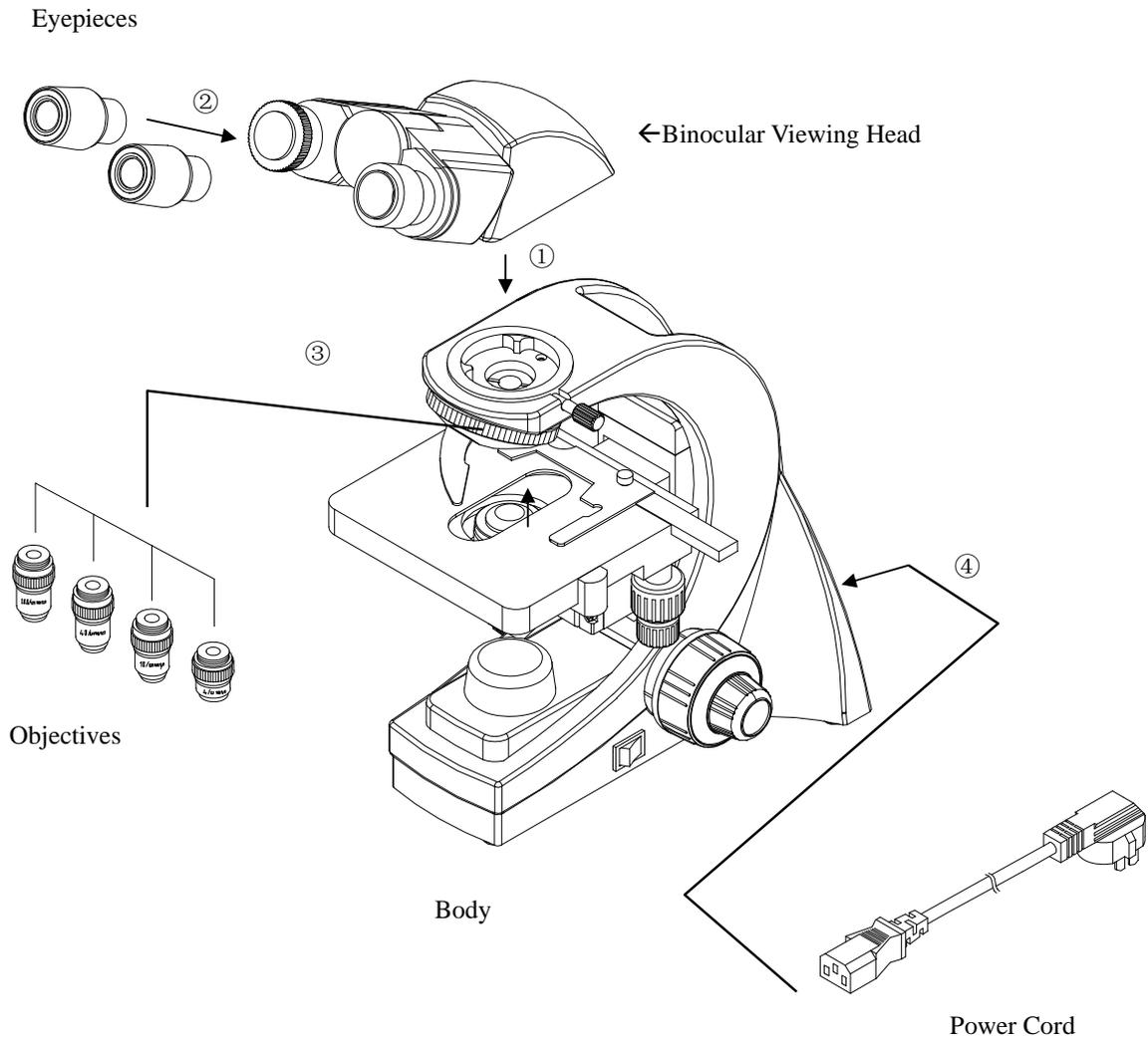
1. Do not attempt to disassemble any component including eyepieces, objectives or focusing assembly.
2. Keep the instrument clean; remove dirt and debris regularly. Accumulated dirt on metal surfaces should be cleaned with a damp cloth. More persistent dirt should be removed using a mild soap solution. 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.
5. ACCU-SCOPE microscopes are precision instruments which require periodic servicing to maintain proper performance and to compensate for normal wear. A regular schedule of preventative maintenance by qualified personnel is highly recommended. Your authorized ACCU-SCOPE distributor can arrange for this service.



**3002 BINOCULAR MICROSCOPE SERIES**

## 2.1 Installation of Components

The diagram shows the numerical order to assemble the microscope. Inspect all optical surfaces for dust and debris; clean if necessary. Do not use force to install any component; all components should be installed without strain.



## 2. Installation Procedure

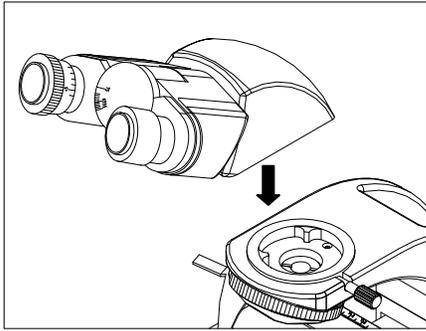


Figure 1

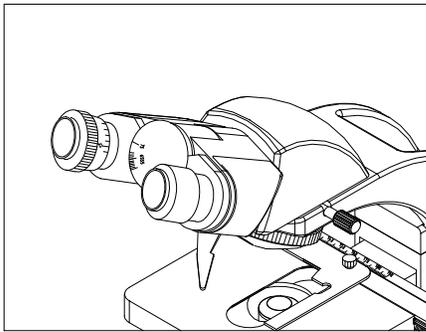


Figure 2

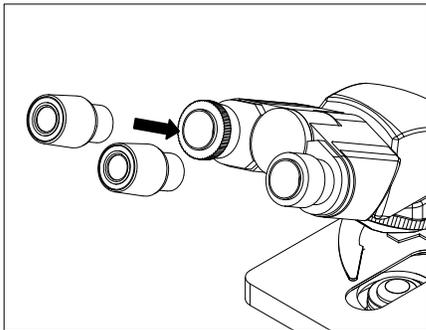


Figure 3

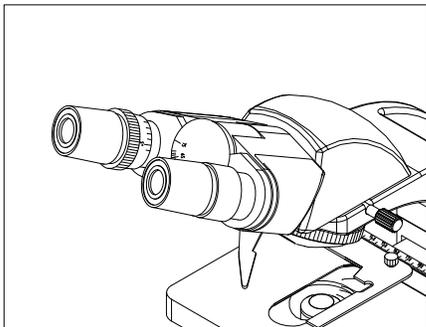


Figure 4

### **Installation of the Binocular Viewing Head (Figures 1 & 2)**

Insert the binocular viewing head into the head of the body; ensure that the dovetail is completely seated into the body; tighten the thumb screw. Do not release the head from your hand grip until you are sure the head is installed securely.

### **Installation of the Eyepieces (Figures 3 & 4)**

Remove the protective caps from the eyepiece tubes. Insert the eyepieces into the eyepiece tubes.

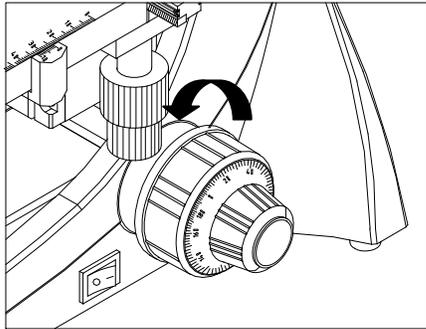


Figure 5

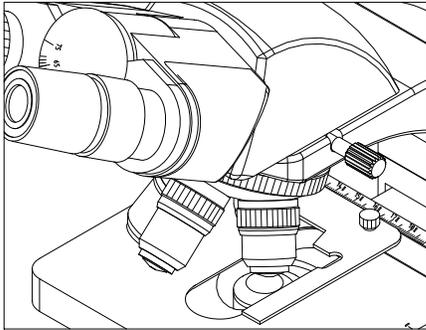


Figure 6

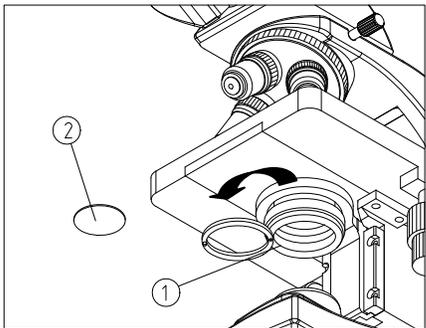


Figure 7

## Installing the Objectives (Figures 5 &6)

- 1: Adjust the coarse focus knob until the mechanical stage is at its lowest position.
2. Install the 4x objective into the nosepiece. Then in a clock-wise direction, rotate the nosepiece and install each succeeding higher magnification objective.

- ★Inspect the objectives frequently for dirt or oil; clean if necessary.
- ★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.

## Installing the Glass Filter (Figure 7)

1. Swing out the condenser holder①
2. Insert the filter into the holder; swing the holder in.

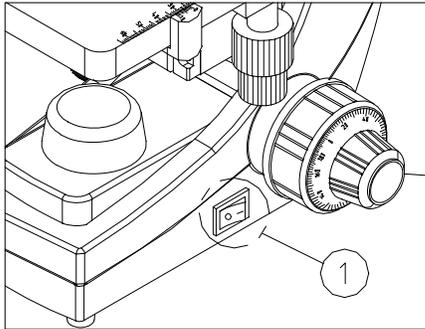


Figure 8

## Installing the Power Cord

### (Figures 8-9-10)

★ Do not bend or crush the power cord. This could cause the cord to become unusable or dangerous.

1. Before connecting the power cord, make sure the switch ① is in the “off” (O) position.

2 Insert the female end of electrical cord plug ② into the socket ③.

3: Insert the male end of the power cord ④ into a surge suppressor receptacle ⑤.

★ The microscope is factory set for either 110volts or 220volts.

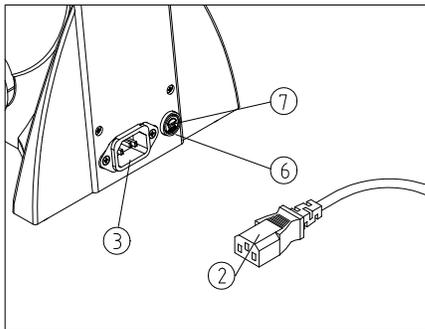


Figure 9

### Replacing the fuse (Figure 9)

Disconnect the power cord; ensure the switch ① is “off”. Using a flat edge screwdriver, remove the fuse holder ⑥, insert new fuse, then insert the fuse holder securely ⑦.

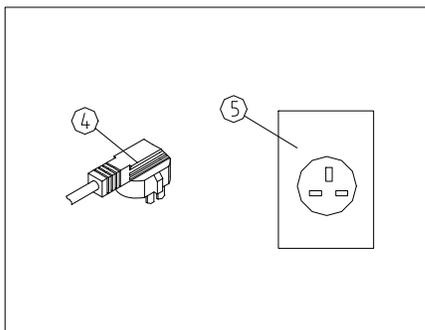


Figure 10

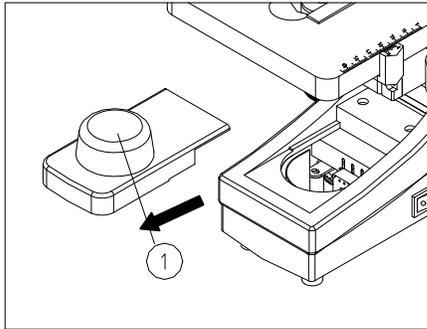


Figure 11

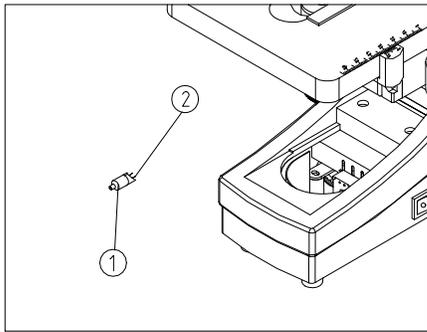


Figure 12

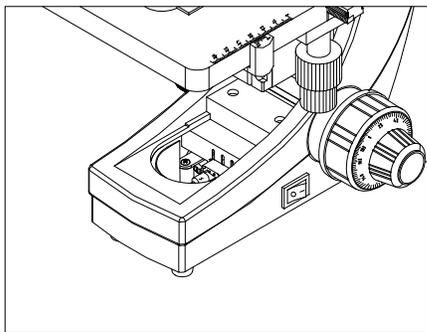


Figure 13

## Installing & Changing the Halogen Bulb (Figures 11, 12 & 13)

✧ **NOTE:** Use only 6volt 20watt halogen lamp.

**1: Pull out & remove the condenser set ①.**

1. Insert halogen lamp ① into the lamp socket. **NOTE:** Do not touch the glass on the bulb with your bare fingers. Handle by using a soft cloth or tissue.

**2. Changing the lamp during usage.**

Ensure the power switch is off. Allow time for all parts and the lamp are cooled before handling.

★ **Insert the lamp carefully; be sure the pins on the bulb are completely inserted into the lamp socket.**

★ **Attach the condenser set.**

## Adjustable Components (Figures 14 & 15)

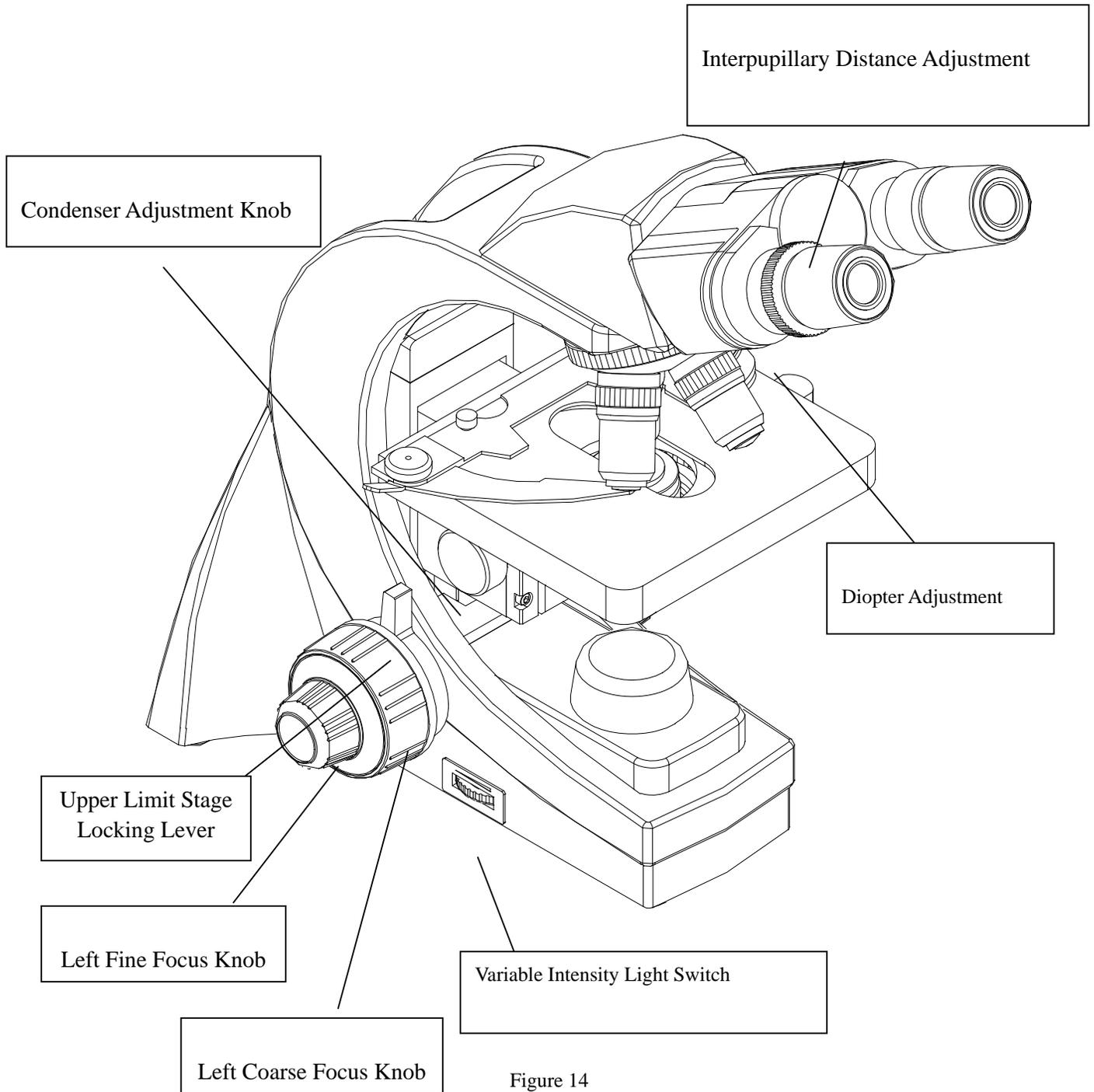


Figure 14

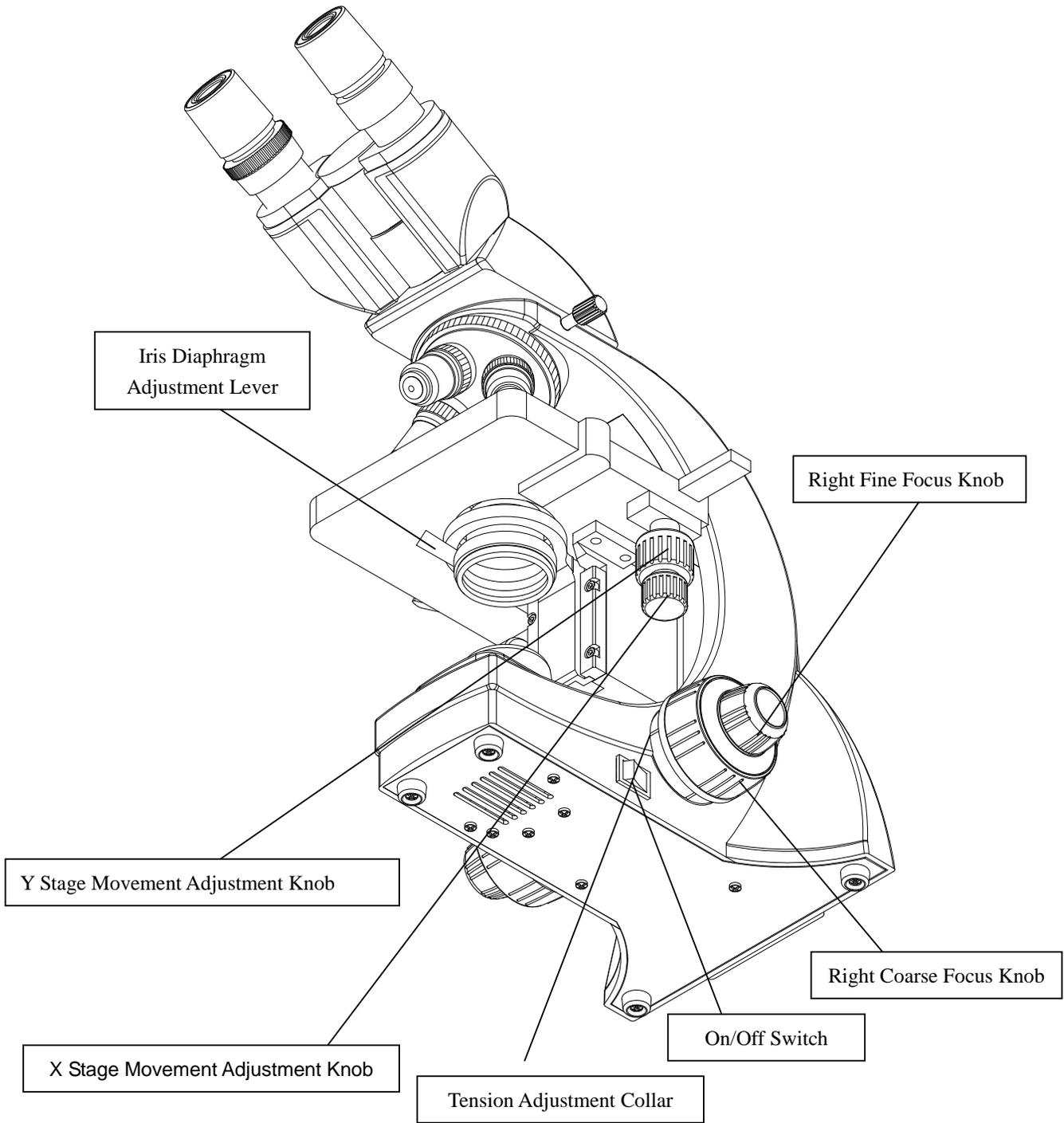


Figure 15

## Operation

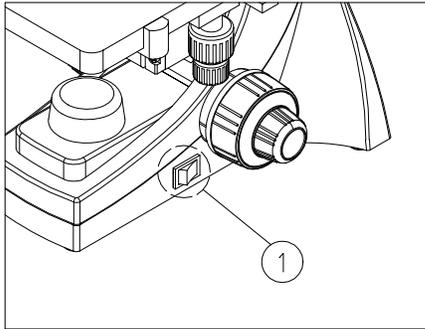


Figure 20

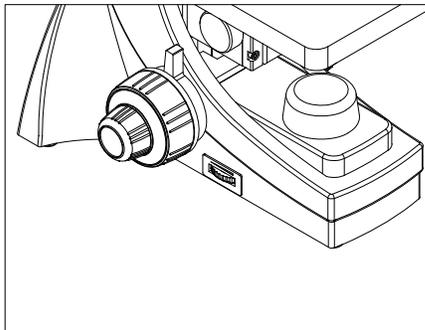


Figure 21

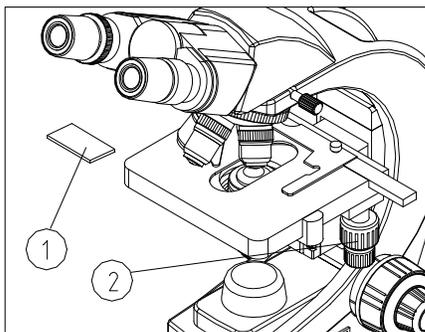


Figure 22

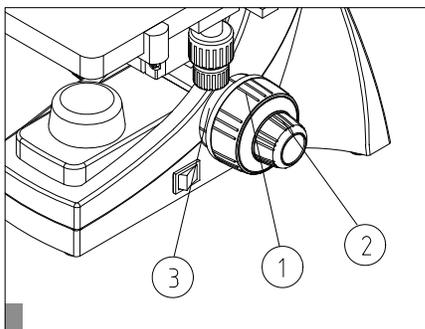


Figure 23

## Adjusting the Illumination (Figures 20 & 21)

1. Connect the power cord; turn on the main switch (Figure 15) to “-” (on).
2. Increase the brightness by rotating the variable intensity knob counterclockwise; turning it clockwise reduces the brightness.

★ Using the lamp in a low intensity will prolong the bulb life.

## Placement of Slide Specimen (Figure 22)

1. Place the slide on the mechanical stage. Use the slide holder to gently secure the slide.
2. Rotate the X and Y adjustment knobs of the mechanical stage to position the specimen for viewing.

★ Use caution when changing objectives. Do not allow an objective to touch a specimen slide.

## Focusing (Figure 23)

1. With the 10x objective in position, raise the mechanical stage using the coarse focusing knob until the specimen is close to the objective.
2. Rotate the coarse focus knob① until the specimen is in focus. Then use the fine focus knob② to obtain a sharp image.

You may now switch to another magnification objective.

★ To prevent your specimen slide from making contact with an objective, raise the stage to its highest position without contacting the 100x objective, then tighten the upper limit mechanical stage lever.

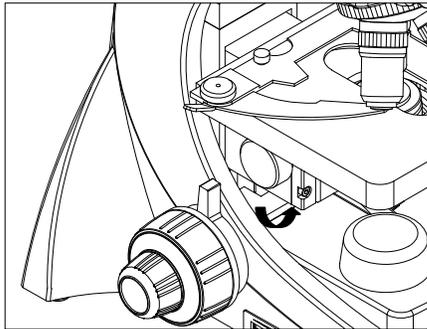


Figure 24

### Adjusting the Condenser (Figure 24)

Turn the condenser focus knob to raise or lower the condenser. The condenser is raised when using high magnification objectives and lowered when using the low magnification objectives.

- ★ The centering of the condenser and the light axes of the objective are factory adjusted. Do not attempt re-adjustment.
- ★ The highest position of the condenser has been factory adjusted. Do not attempt re-adjustment.

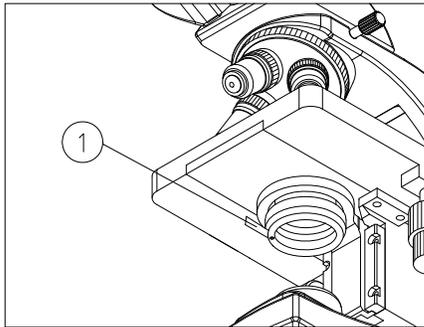


Figure 25

### Adjusting the Iris Diaphragm (Figure 25)

Move the Iris Diaphragm Lever① left or right to adjust the aperture size.

- ★ The iris diaphragm is designed to adjust the aperture size, not to adjust brightness.

Generally, reducing the diaphragm opening to 70- 80% of the N.A. value of the respective objective will provide an image of acceptable quality. If you want to observe the image of the iris diaphragm, remove one eyepiece and look through the tube. You will see a dark circle encroaching on the bottom of the tube.

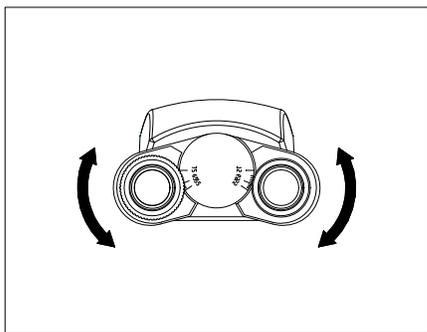


Figure 26

### Adjusting the Interpupillary Distance (Figure 26)

The interpupillary distance range: 55mm~75mm.

While observing with both eyes, hold the left and right prism eye tubes. Rotate the eye tubes around the central axis. The interpupillary distance is correct when the left and right fields of view coincide completely with one image.

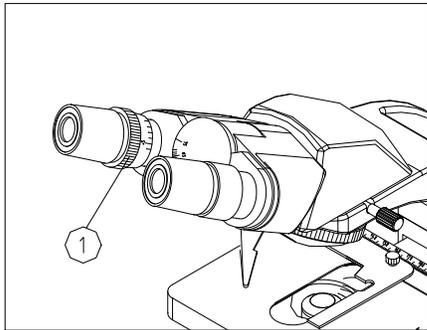


Figure 27

### Adjusting the Eyepiece Diopter (Figure 27)

1. Using the 10x objective and your right eye only, observe your specimen through the right eyepiece and bring it into focus,
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 ① until a sharp image is obtained.

**The diopter adjustment collar is on the left eyetube.**

**The right eyepiece tube is fixed. Do not attempt to rotate the right eyetube.**

★ **The diopter range is  $\pm 5$**

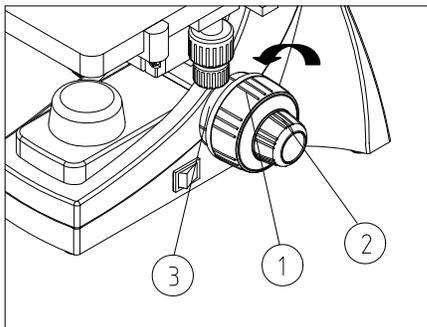


Figure 28

### Adjusting the Tension Adjustment Collar (Figure 28)

The tightness of the tension adjustment collar has been pre-set at the factory. If the mechanical stage drops by itself, rotate the tension adjustment collar ① until the tension is maintained. Rotate the collar in the direction show in the picture. The Coarse Focus Knob ② will become tighter.

## SPECIFICATIONS

Objective Tube Length	160mm
Viewing Head	Monocular, Binocular or Trinocular Head, Inclined 30° Interpupillary distance: 55-75mm
Eyepiece	WF 10x; 18mm field of view
Nosepiece	Forward Facing Quadruple Nosepiece
Objectives	Achromatic :4×, 10×, SP40×、100×oil
Focus System	Coaxial Coarse and Fine Focusing System, Sensitivity and Graduation of Fine Focus: 0.002mm. Coarse & fine focus range:23mm
Condenser	Abbe, NA=1.25
Stage	Double plate mechanical stage, area: 140×140mm, movement range: 75×50mm
Illumination	Halogen lamp 6V20W

### Objectives

Magnification	Numerical Value Aperture Diaphragm(N.A)	Thickness of Cover Slip(mm)	Working Distance (mm)	Working Mode
4×	0.10	0.17	37.5	Dry
10×	0.25	0.17	7.316	Dry
40×	0.65	0.17	0.632	Dry
100×	1.25	0.17	0.198	Oil

### Eyepieces

Type	Magnification	Field of View (mm)
Wide field	10×	18

### Total Magnification of Objective and Eyepieces

Eyepiece	10×	10×	10×	10×
Objective	4×	10×	40×	100×
Total Magnification	40×	100×	400×	1000×

## TROUBLESHOOTING GUIDE

If a problem occurs during the course of use, please refer to the tables below before contacting your ACCU-SCOPE distributor.

<b>OPTICAL</b>		
<b>Problem</b>	<b>Cause</b>	<b>Corrective Measure</b>
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
Dirt or dust on the viewfield	Dirt or dust on the lens - eyepiece, condenser, objective, collector lens or specimen	Clean the lens
Poor image quality	No coverglass attached to the slide	Attach a 0.17mm coverglass
	Coverglass is too thick or thin	Use a coverglass of the appropriate thickness (0.17mm)
	Slide may be upside down	Turn slide over so the coverglass faces up
	Immersion oil is on a dry objective (especially the 40xR)	Check the objectives, clean if necessary
	No immersion oil used with 100xR objective	Use immersion oil
	Air bubbles in immersion oil	Remove bubbles
	Condenser aperture is closed or open too much	Open or close properly
	Condenser is positioned too low	Position the condenser at the upper limit
<b>IMAGE PROBLEMS</b>		
Image moves while focusing	Specimen rises from stage surface	Secure the specimen in the slide holder
	Revolving nosepiece is not in the click-stop position	Revolve the nosepiece to the click-stop position
Image tinged yellow	Blue filter not used	Use daylight blue filter

<b>IMAGE PROBLEMS</b>		
<b>Problem</b>	<b>Cause</b>	<b>Corrective Measure</b>
Image tinged yellow	Lamp intensity is too low	Adjust the light intensity by rotating the intensity control dial
Image is too bright	Lamp intensity is too high	Adjust the light intensity by rotating the intensity control dial
Insufficient brightness	Lamp intensity is too low	Adjust the light intensity by rotating the intensity control dial
	Aperture diaphragm closed too far	Open to the proper setting
	Condenser position too low	Position the condenser at the upper limit
<b>MECHANICAL PROBLEMS</b>		
Image will not focus with high power objectives	Slide upside down	Turn the slide over so the cover glass faces up
	Cover glass is too thick	Use a 0.17mm cover glass
High power objective contacts slide when changed from low power objective	Slide upside down	Turn the slide over so the cover glass faces up
	Cover glass is too thick	Use a 0.17mm cover glass
	Diopter adjustment is not set properly	Readjust the diopter settings
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
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



### LIMITED MICROSCOPE WARRANTY

This microscope is warranted to be free from defects in material, electronic components (excluding bulbs, fuses and sockets) and workmanship for a period of five years from the date of invoice to the original (end user) purchaser. This warranty does not cover damage caused in-transit, misuse, neglect, abuse or damage resulting from improper servicing or modification by other than ACCU-SCOPE approved service personnel. This warranty does not cover any routine maintenance work or any other work, which is reasonably expected to be performed by the purchaser. Normal wear is excluded from this warranty. No responsibility is assumed for unsatisfactory operating performance due to environmental conditions such as humidity, dust, corrosive chemicals, deposition of oil or other foreign matter, spillage or other conditions beyond the control of ACCU-SCOPE INC. This warranty expressly excludes any liability by ACCU-SCOPE INC. for consequential loss or damage on any grounds, such as (but not limited to) the non-availability to the End User of the product(s) under warranty or the need to repair work processes. Should any defect in material, workmanship or electronic component occur under this warranty contact your ACCU-SCOPE distributor. This warranty is limited to the continental United States of America. All items returned for warranty repair must be sent freight prepaid and insured to ACCU-SCOPE INC., 73 Mall Drive, Commack NY 11725 – USA. All warranty repairs will be returned freight prepaid to any destination within the continental United States of America. For all foreign warranty repairs, return freight charges are the responsibility of the individual/company who returned the merchandise for repair.

ACCU-SCOPE is a registered trademark of ACCU-SCOPE INC., Commack, NY 11725