ACCU-SCOPE®

MANUAL

EXC-120

MICROSCOPE SERIES

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CONTENTS

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 require 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. All electrical connectors (power cord) should be inserted into an electrical surge suppressor to prevent damage due to voltage fluctuations.
6. For safety when replacing the LED bulb or fuse, be sure the main switch is off (“O”), remove the power cord, and replace the LED bulb after the bulb and the lamp house has completely cooled.
7. Confirm that the input voltage indicated on your microscope corresponds to your line voltage. The use of a different input voltage other 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 such as cotton swabs or Q-tips, 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 preventative maintenance to maintain proper performance and to compensate for normal wear. An annual schedule of preventative maintenance by qualified personnel is highly recommended. Your authorized ACCU-SCOPE® distributor can arrange for this service.

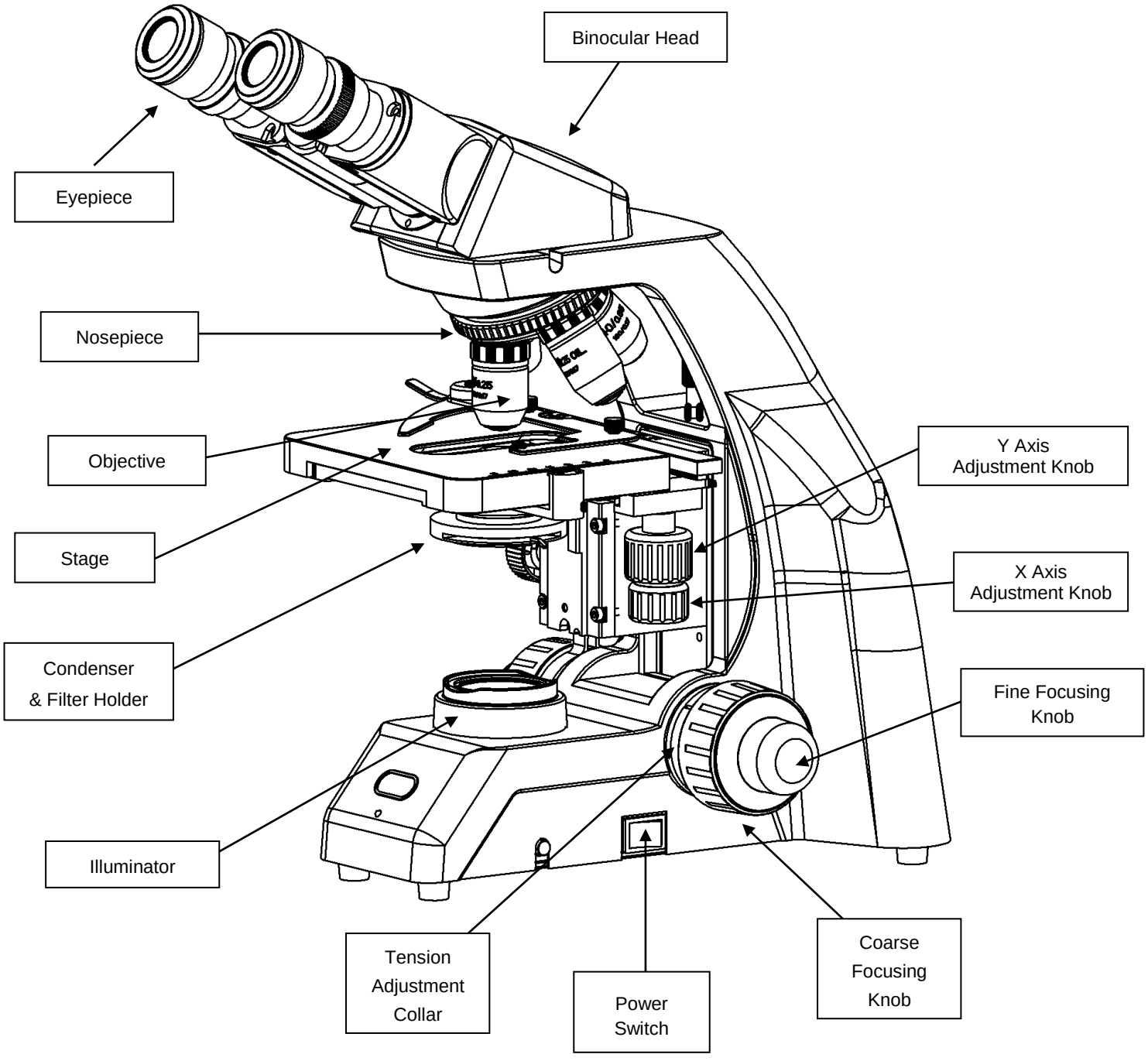
INTRODUCTION

Congratulations on the purchase of your new ACCU-SCOPE ® microscope. ACCU-SCOPE ® microscopes are engineered and manufactured to the highest quality standards. Your microscope will last a lifetime if used and maintained properly. ACCU-SCOPE ® microscopes are carefully assembled, inspected and tested by our staff of trained technicians in our New York facility. Careful quality control procedures ensure each microscope is of the highest quality prior to shipment.

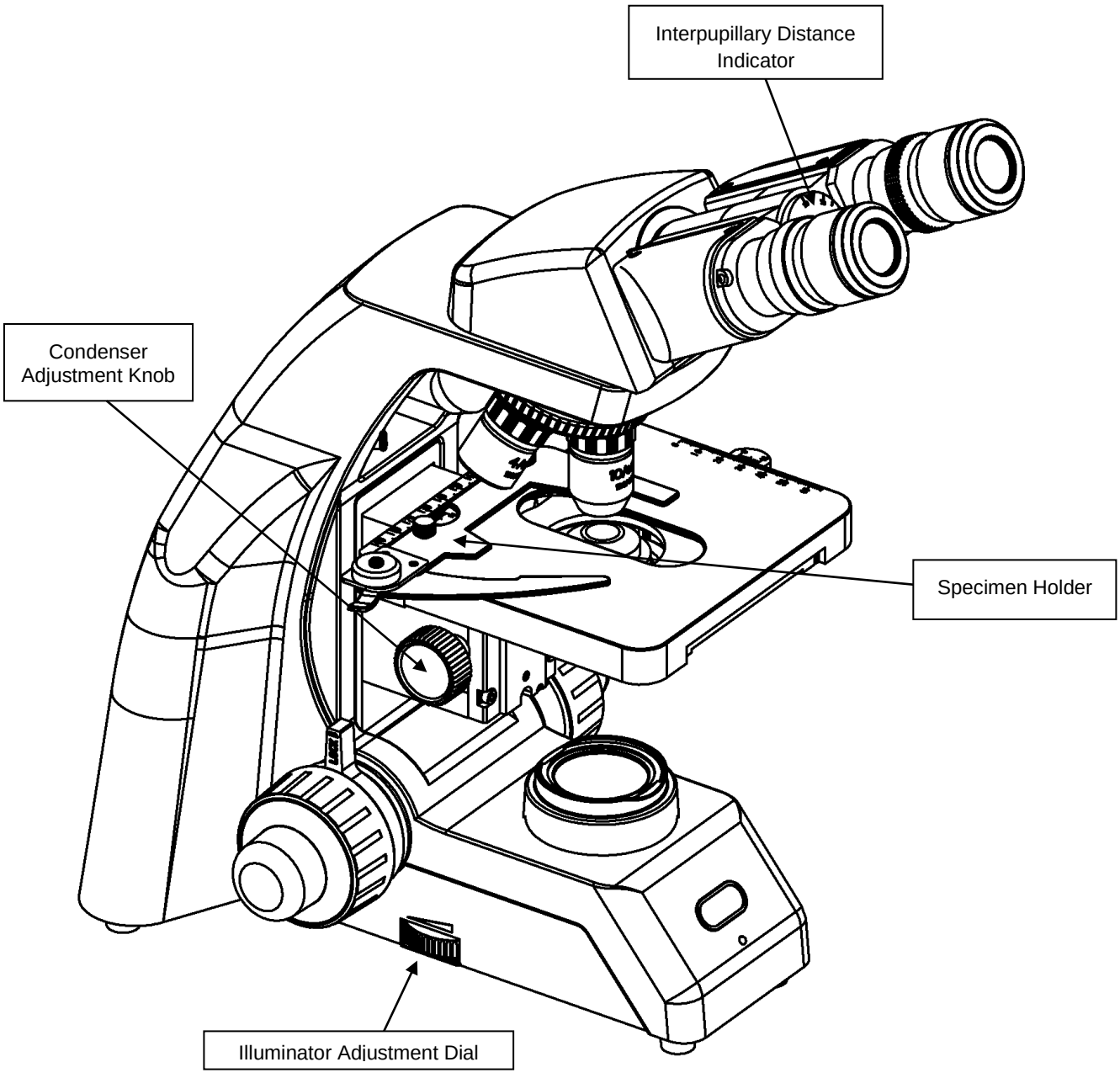
UNPACKING AND COMPONENTS

Your microscope arrived packed in a molded Styrofoam container. ***Do not discard the container*:** the Styrofoam container should be retained for reshipment of your microscope if needed. Avoid placing the microscope in dusty surroundings or in high temperature or humid areas as mold and mildew will form. Carefully remove the microscope from the Styrofoam container by its arm and base and place the microscope on a flat, vibration-free surface.

COMPONENTS DIAGRAM



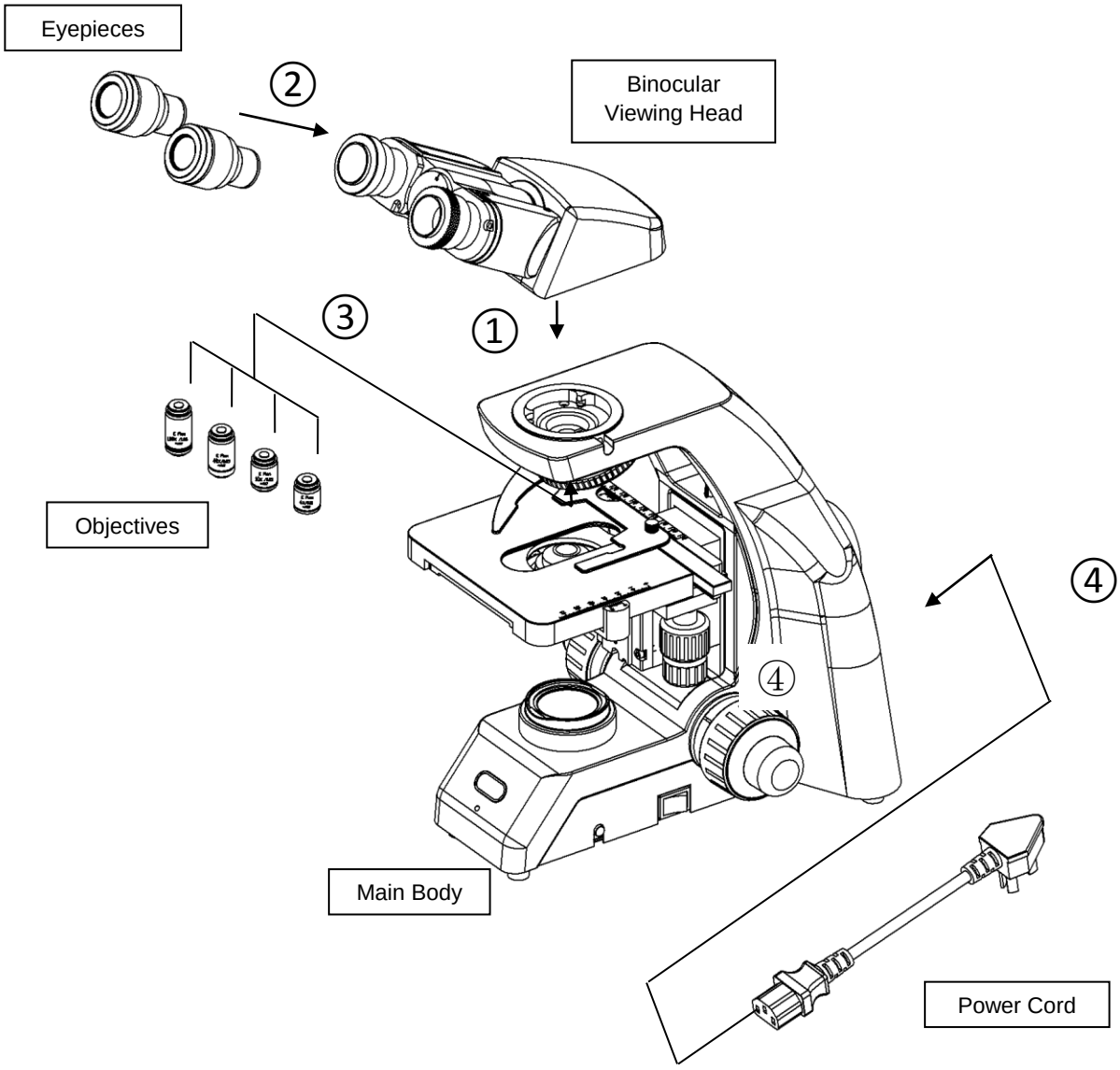
COMPONENTS DIAGRAM



ASSEMBLY DIAGRAM

The diagram below shows how to assemble the various modules. The numbers indicate the order of assembly. Your microscope was preassembled by our factory technicians at our New York facility prior to shipment. Should you need to disassemble/assemble your microscope in the future, please follow the instructions outlined below.

When assembling the microscope, make sure that all parts are free of dust and dirt, and avoid scratching any parts or touching glass surfaces.



DETAILED ASSEMBLY

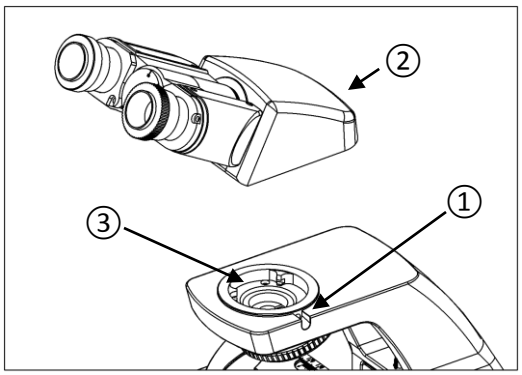


Fig. 1

Installing the Binocular Viewing Head
(Fig. 1 & 2)

Loosen the thumb screw ①.

Position the viewing head ② above the dovetail opening ③ as shown and set it into place with the two eyepiece tubes facing forward as shown (Fig. 2).

Retighten the thumb screw ①.

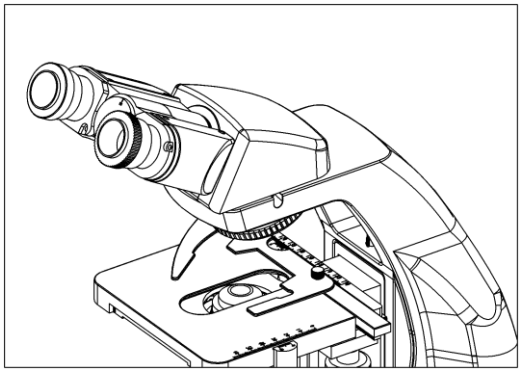


Fig. 2

Installing the Eyepieces
(Fig. 3 & 4)

Carefully remove the eyepieces ① from the protective packaging – be sure not to touch any optical (glass) surfaces. Remove the dust caps from the ends of the eyepiece tubes ②.

Insert an eyepiece ① into one of the eyepiece tubes ② and gently twist and push the eyepiece in until it is flush with the top surface of the eyepiece tube.

Lock the eyepiece into place by tightening the lock screw (small hex screw) on the eyetube.

Repeat above for the other eyepiece.

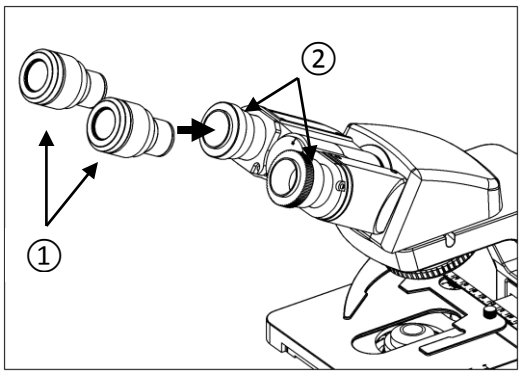


Fig. 3

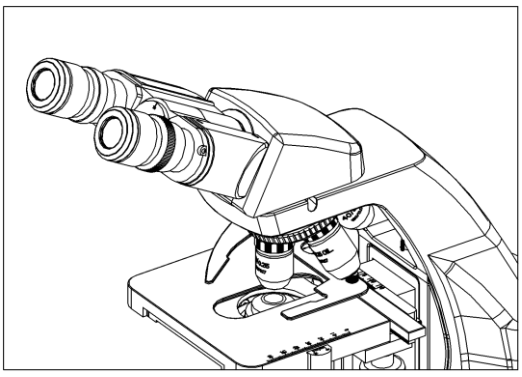


Fig. 4

DETAILED ASSEMBLY *(continued)*

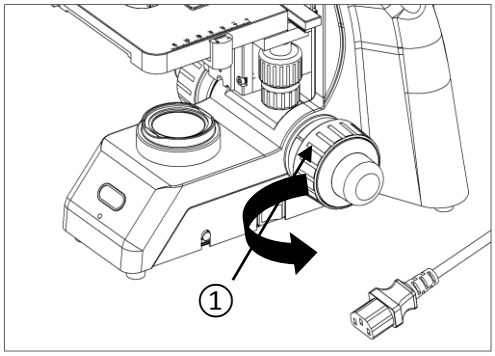


Fig. 5

Installing the Objectives
(Fig. 5 & 6)

Rotate the coarse focusing knob ① counterclockwise to lower the stage to its lowest position.

Install each objective ② into the nosepiece ③ from the lowest magnification to the highest in a clockwise direction beginning with the first empty objective receptacle in front. Install each objective by using two hands to position and gently screw in the objective in a clockwise direction into the threads of the nosepiece receptacle.

NOTE: Never force any objectives onto the threads of the nosepiece, and do not over-tighten.

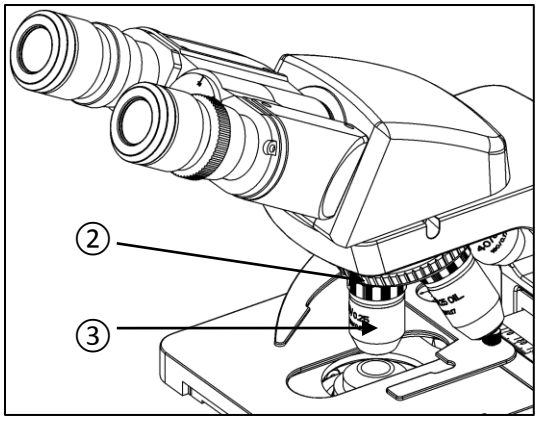


Fig. 6

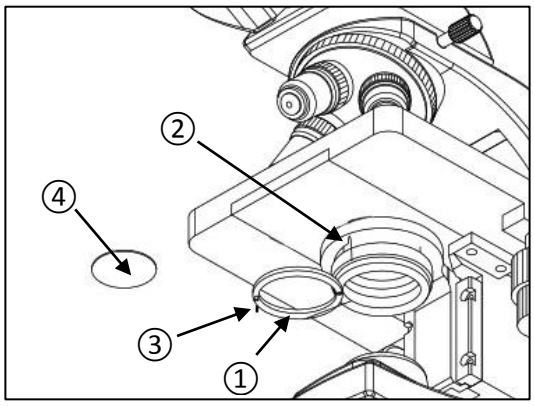


Fig. 7

Installing the Filters
(Fig. 7)

To install a filter, swing out the filter holder ① located below the condenser ② by sliding it to the left using the vertical handle ③ on the filter holder.

Place the filter ④ into the top of the holder.

Swing the filter holder ③ back into place under the condenser.

DETAILED ASSEMBLY *(continued)*

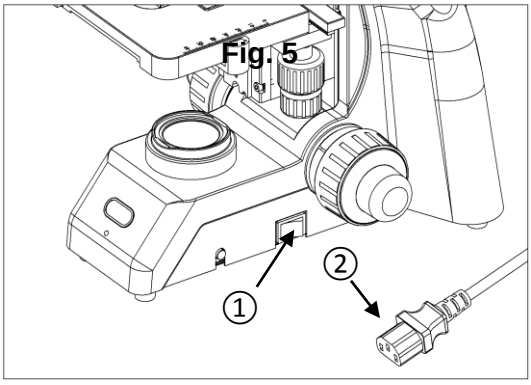


Fig. 8

Installing the Power Cord - (Fig. 8-9)

Make sure the power switch ① is off (O).

Align and plug the female end ② of the power cord into the power cord socket ③ on the back of the microscope.

Plug the other end into a grounded (3-prong) outlet.

NOTE: Always use the power cord that is provided with your microscope; using a different power cord may damage your microscope. Should you need a replacement, contact your authorized ACCU-SCOPE dealer or call ACCU-SCOPE at 1-631-864-1000 for a dealer nearest you.

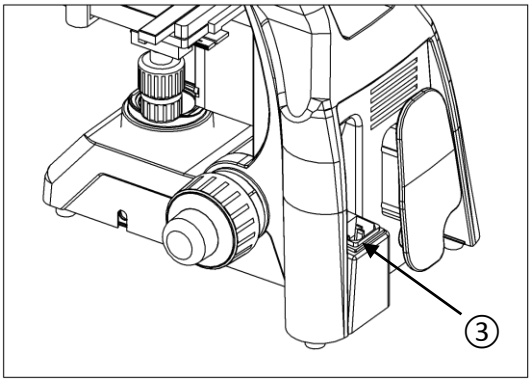


Fig. 9

ADJUSTMENT & OPERATION

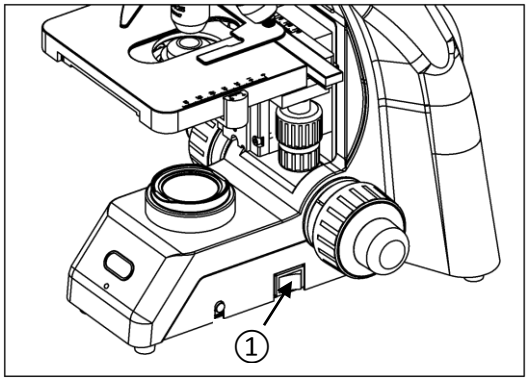


Fig. 10

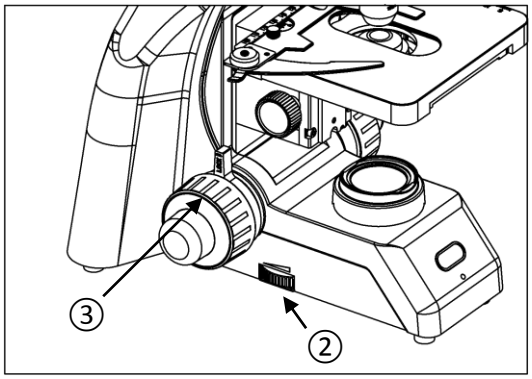


Fig. 11

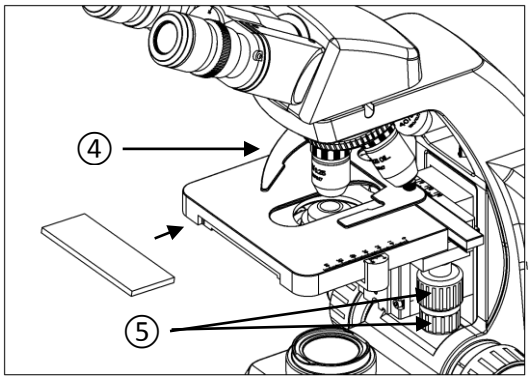


Fig. 12

Illumination - (Fig. 10-11)

Turn the power switch to On (I) to turn on the transmitted light ①.

Adjust the brightness by turning the Illuminator Adjustment Dial ②.

Placing A Specimen - (Fig. 11-12)

To avoid the objective touching the specimen, lower the stage to its lowest position by turning the coarse adjustment knob ③ counter-clockwise.

Push the left side of the specimen holder ④ on the top of the stage plate to open the holder. Place your slide into the specimen holder and release the holder to allow it to close firmly against the slide.

Adjusting the Stage - (Fig. 12)

The stage has a coaxial X-Y Stage Movement Knob ⑤ which allows you to move your specimen in any direction: top knob - forward/back (Y), and bottom knob - left/right (X).

ADJUSTMENT & OPERATION *(continued)*

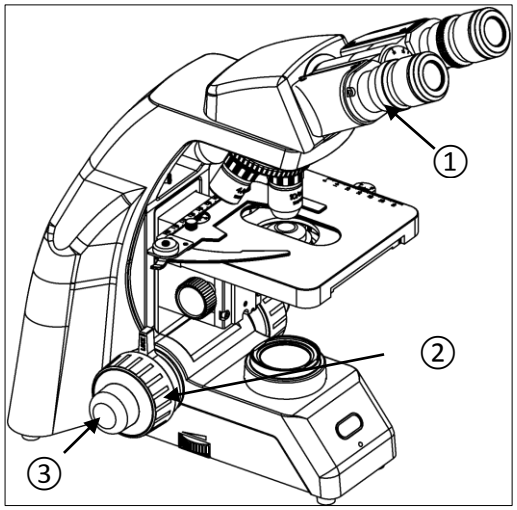


Fig. 13

Focusing - (Fig. 13)

Set the left diopter collar ① to "0".

Using your left eye only and the 10X objective, focus your specimen by adjusting the coarse focusing adjustment knob ②.

When the image is in view, refine the image to its sharpest focus by turning the fine focusing adjustment knob ③.

Rotate the diopter collar ① to obtain the sharpest focus. The diopter range is + or – 5. The number aligned to the white dot on the viewing head is the diopter in use.

NOTE: do not counter rotate the focusing knob as this will damage to the focusing system.

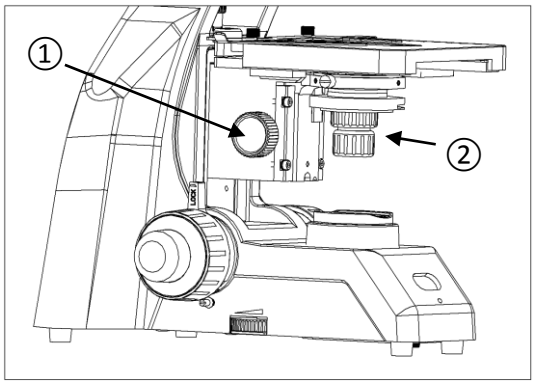


Fig. 14

Adjusting the Condenser - (Fig. 14)

The condenser was installed and centered in our factory by our technicians prior to delivery. If the condenser needs to be re-installed or adjusted in the future, follow the instructions on page 13.

To adjust the condenser, turn the condenser focusing knob ① to raise or lower the condenser ②.

Raise the condenser when using the highest magnification objective, and lower it when using the low magnification objective.

Focus the specimen with the 10x objective.

Adjust the condenser focusing knob ① to get a clear image of the field iris diaphragm.

ADJUSTMENT & OPERATION *(continued)*

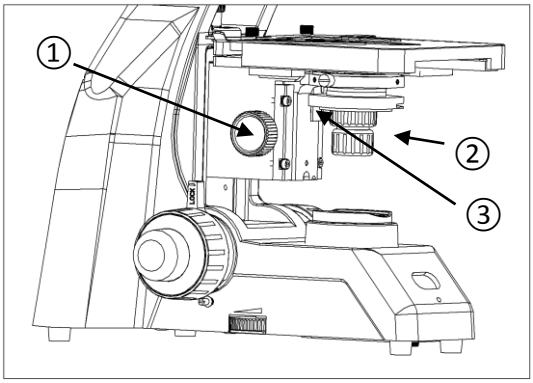


Fig. 15

Re-installing or Centering The Condenser - (Fig. 15)

The condenser was installed and centered by our technicians prior to delivery. If the condenser needs to be re-installed or adjusted in the future, rotate the coarse focusing knob ① to raise the stage to the highest position (see Fig. 1).

Rotate the condenser focusing knob ② to lower the bracket of condenser to the suitable position.

Fully loosen the condenser lock-screw ③.

Insert the condenser into the hole of the stand, until the condenser is even with the stand.

Tighten the lock-screw ③ of the condenser, then raise the condenser with condenser focusing knob to the highest position.

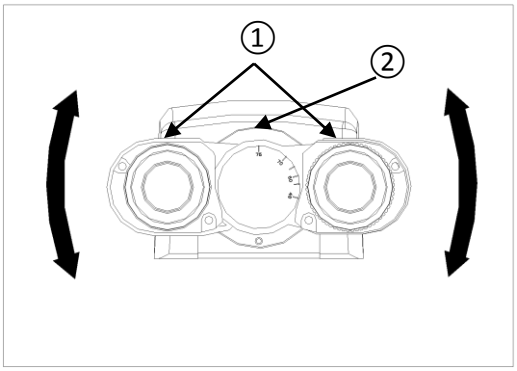


Fig. 16

Adjusting the Interpupillary Distance - (Fig. 16)

To adjust the interpupillary distance, hold the left and right eyetubes while observing a specimen.

Rotate the eyetubes ① up or down as shown by arrows on the central axis ② until the fields of view of both eyetubes coincide completely. A complete circle should be seen in the viewing field when viewing the specimen slide. An improper adjustment will cause operator fatigue and will disrupt the objective parfocality.

Where **"·"** on the eyetube ① lines up, then that is the number for the interpupillary distance.

Range：48～75mm (binocular models)
55～75mm (trinocular models)

Remember your interpupillary for future operation.

ADJUSTMENT & OPERATION *(continued)*

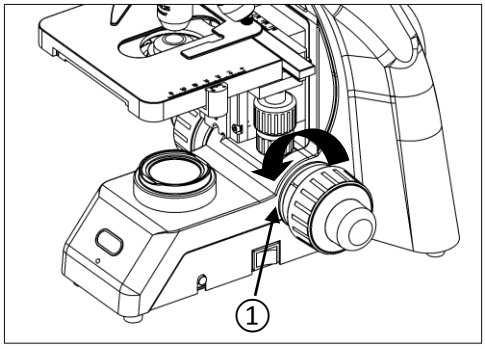


Fig. 17

Adjusting the Tension - (Fig. 17)

If the handle is very heavy when focusing, the specimen leaves the focus plane after focusing, or the stage lowers by itself, adjust the tension adjustment collar ①.

Located on the right side of the stand between the coarse adjustment knob and the vertical arm is an adjustable tension adjustment collar that is preset at our facility. This allows the user to adjust the coarse control tension to their individual preference.

To increase tension, turn the tension adjustment collar counterclockwise to tighten; turn clockwise to loosen the tension.

ADJUSTMENT & OPERATION *(continued)*

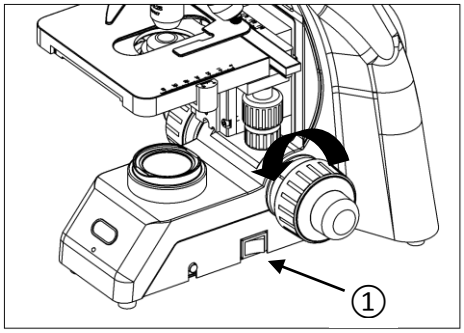


Fig. 18

Fig. 19

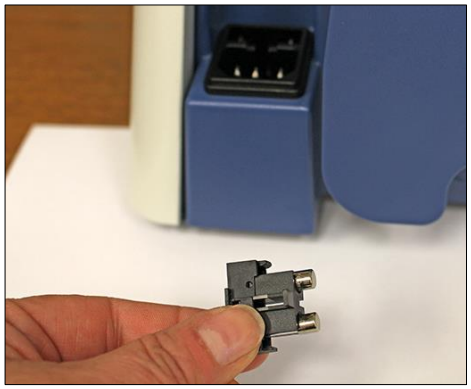


Fig. 20

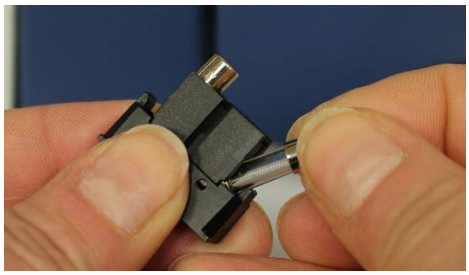


Fig. 21

Replacing the Fuse - (Fig. 18-22)

Before replacing a fuse, turn the power switch ① to “O” (Off), and unplug the power cord from the outlet and the microscope.

The fuse holder is located on the back of the microscope next to the power cord receptacle.

Insert a flat head (—) screwdriver into the notch on the fuse holder. (Fig. 19)

Carefully slide fuse holder up from the fuse socket and remove the holder (Fig. 20).

Carefully remove a fuse from the fuse holder by tilting out as shown (Fig. 21) and replace with a new one – also tilting it as you slide it in – it will click into place.

Reinstall the fuse holder into the fuse socket by sliding it in until it clicks back into place (Fig. 22).

Plug the power cord into the base of the microscope and then into a wall outlet.

Turn the power switch to “ I ” (On).

NOTE: Replace the fuses with 0.5 amp fuses. Using any other fuse type may result in diminished illumination and may cause damage to your microscope.

Specification of the fuse: 250V, 0.5A.

CAT # 3277

Fig. 22

TROUBLESHOOTING

Under certain conditions, performance of this unit may be adversely affected by factors other than defects. If a problem occurs, please review the following list and take remedial action as needed. If you cannot solve the problem after checking the entire list, please contact your local dealer for assistance.

OPTICAL

Problem	Cause	Corrective Measure
Darkness at the periphery or uneven brightness of view field	Revolving nosepiece not in click stop position	Turn the nosepiece to click stop position so the objective is seated correctly in the optical path
Dirt or dust on the view field	Dirt or dust on the lens - eyepiece, condenser, objective, collector lens or specimen	Clean the lens
Poor image quality	No cover glass attached to the slide	Attach a 0.17mm cover glass
	Cover glass is too thick or thin	Use a cover glass of the appropriate thickness (0.17mm)
	Slide maybe upside down	Turn slide over so the cover glass faces up
	Immersion oil is on a dry objective (especially the 40xR)	Check the objectives, clean if necessary
	No immersion oil used with100xR 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 slightly lower than the upper limit

IMAGE PROBLEMS

Problem	Cause	Corrective Measures
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	Turn the nosepiece to the click-stop position
Image tinged yellow	Lamp intensity is too low	Adjust the light intensity by rotating the intensity control dial and/or iris diaphragm
	Blue filter not used	Use daylight blue filter
Image is too bright	Lamp intensity is too high	Adjust the light intensity by rotating the intensity control dial and/or iris diaphragm
Insufficient brightness	Lamp intensity is too low	Adjust the light intensity by rotating the intensity control dial and/or iris diaphragm
	Aperture diaphragm closed too far	Open to the proper setting
	Condenser position too low	Position the condenser slightly lower than the upper limit

MECHANICAL PROBLEMS

Image will not focus with high power objectives	Slide upside down	Turn the slide over so the cover glass faces up
	Cover glass is to 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 to thick	Use a 0.17mm cover glass
	Diopter adjustment is not set properly	Readjust the diopter settings as outlined in section 4.3

MECHANICAL PROBLEMS *(continued)*

Problem	Cause	Corrective Measures
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

MAINTENANCE

Please remember to ***never*** leave the microscope with any of the objectives or eyepieces removed and always protect the microscope with the dust cover when not in use.

SERVICE

ACCU-SCOPE® microscopes are precision instruments which require periodic servicing to keep them performing properly 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. Should unexpected problems be experienced with your instrument, proceed as follows:

1. Contact the ACCU-SCOPE® distributor from whom you purchased the microscope. Some problems can be resolved simply over the telephone.

2. If it is determined that the microscope should be returned to your ACCU-SCOPE® distributor or to ACCU-SCOPE® for warranty repair, pack the instrument in its original Styrofoam shipping carton. If you no longer have this carton, pack the microscope in a crush-resistant carton with a minimum of three inches of a shock absorbing material surrounding it to prevent in-transit damage. The microscope should be wrapped in a plastic bag to prevent Styrofoam dust from damaging the microscope. Always ship the microscope in an upright position; ***NEVER SHIP A MICROSCOPE ON ITS SIDE***. The microscope or component should be shipped prepaid and insured.

LIMITED MICROSCOPE WARRANTY

This microscope and its electronic components are warranted to be free from defects in material and workmanship for a period of five years from the date of invoice to the original (end user) purchaser. The LED lamp is warranted for a period of two 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 then 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 or ACCU-SCOPE at (631) 864-1000. 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.