SeilerScope

OPERATING INSTRUCTIONS

SEILER

PRECISION MICROSCOPES

A Division of Seiler Instrument Company

SEILER
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The SeilerScope Biological Microscope is equipped with achromatic objectives and wide field eyepieces with binocular head,so the observer can get the clear image in the wide field.

I. SPECIFICATIONS

1. Eyepieces

Type	Magnification	Focus (mm)	Field (mm)	Remark
Plan eyepiece	10x	25	18	

2. Objectives:

Type	Magnification	N.A.	W. D. (mm)
Achromatic	4x	0.1	37.4
Achromatic	10x	0.25	6.6
Achromatic	40x	0.65	0.57
Achromatic	100x	1.25 oil	0.19

3. Total Magnification:

Objective / Total Magnification / Eyepiece	4x	10x
10x	40x	100x

4. Condenser numerical aperture: 1.25
5. Stage cross travel range: longitudinal 34mm, traverse 75mm
6. Fine focusing knob: minimum division 0.002 mm.
7. Interpupillary distances adjustment range: from 55 mm to 75 mm.
8. Light sources: using a 6V20W Halogen lamp brightness adjustable.
9. Power supply: Can be operated on AC 220V 50HZ or AC 110V 60HZ

II. COMPONENTS

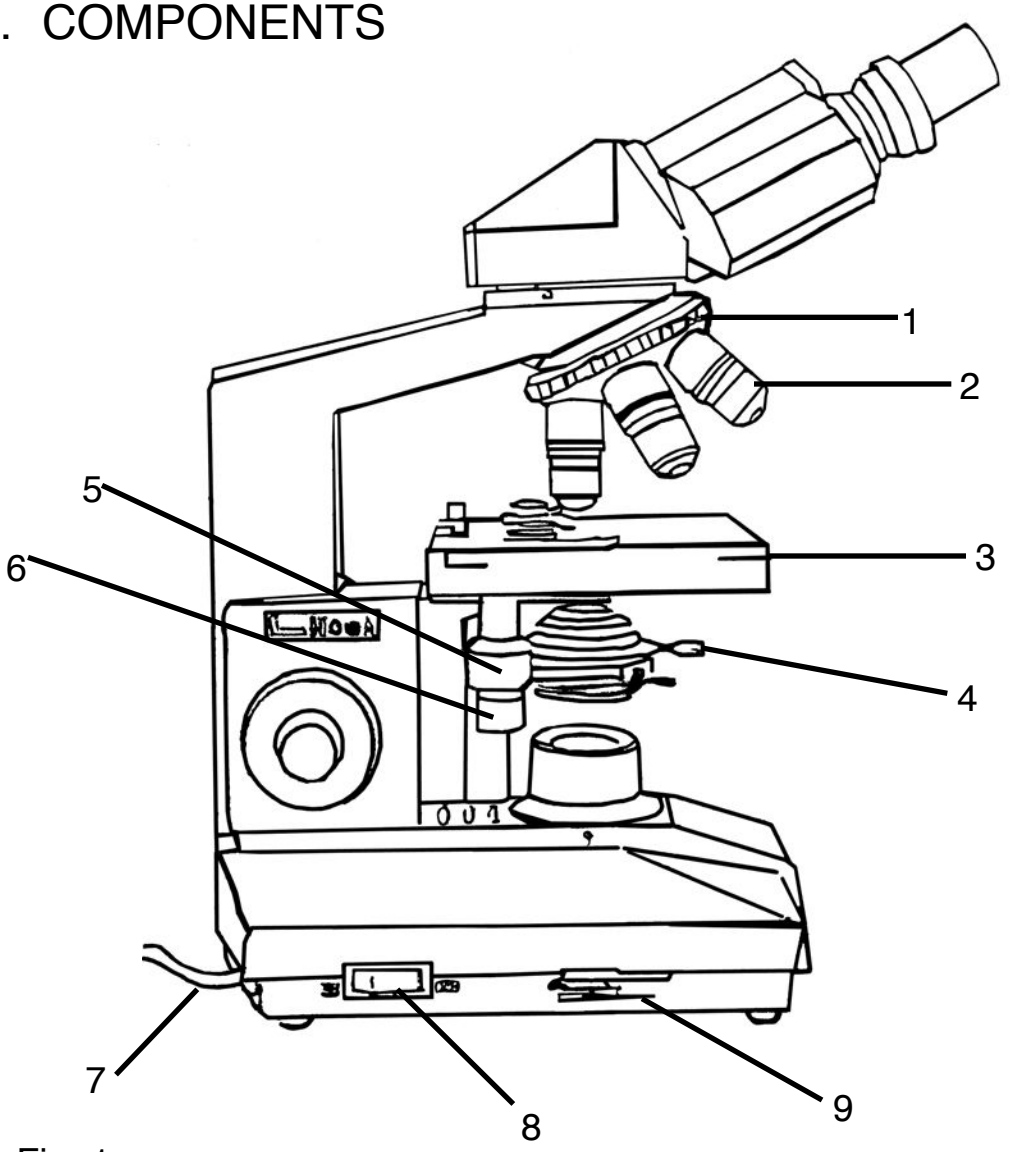

Fig. 1

1. REVOLVING NOSEPIECE 2. OBJECTIVES 3. MECHANICAL STAGE
4. CONDENSER CLIPPING SCREW 5. SHIFTING LONGITUDINAL CONTROLLER
6. TRAVERSE SHIFTING CONTROLLER 7. POWER SUPPLY CABLE
8. LIGHT SOURCE ON/OFF 9. BRIGHTNESS ADJUSTMENT CONTROL LEVER

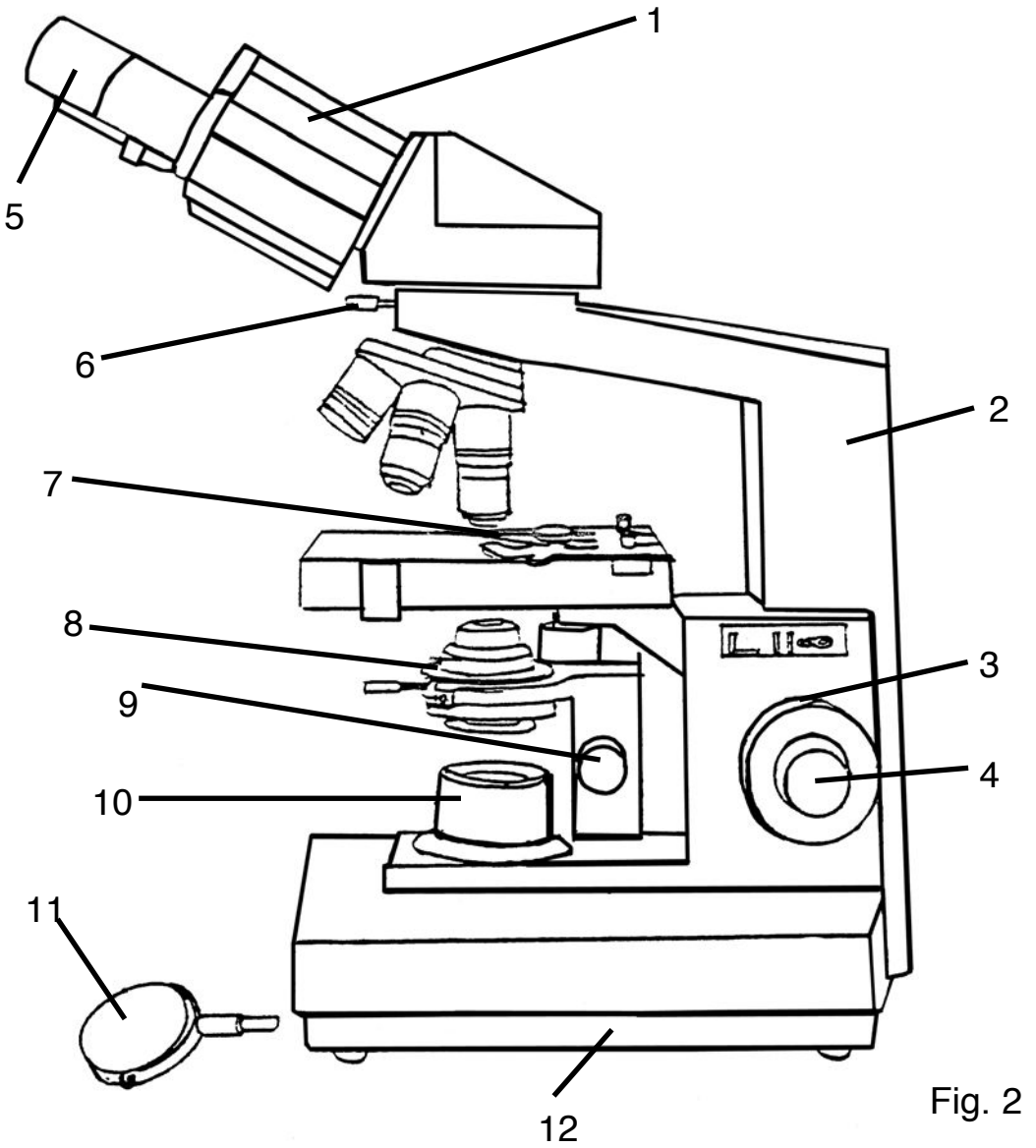

Fig. 2

1. BINOCULAR 2. BODY 3. COARSE FOCUSING KNOB 4. FINE FOCUSING KNOB 5. EYEPIECE 6. BINOCULAR CLIPPING SCREW 7. SPECIMEN CUP 8. CONDENSER 9. CONDENSER UP/DOWN KNOB 10. COLLECTOR 11. REFLECTOR 12. BASE

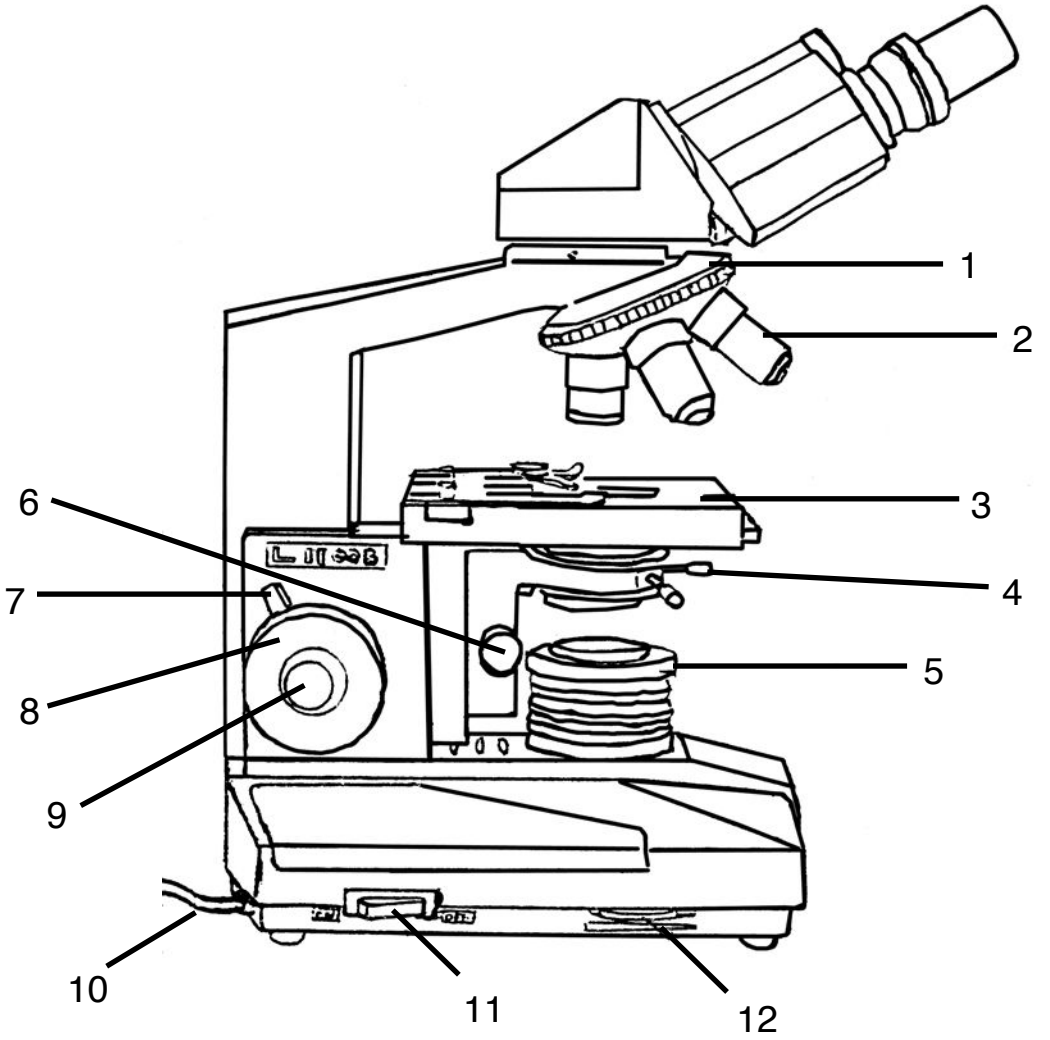

Fig. 3

1. REVOLVING NOSEPIECE 2. OBJECTIVES 3. MECHANICAL STAGE
4. CONDENSER CLIPPING SCREW 5. FIELD DIAPHRAGM (SELECT)
6.CONDENSER UP/DOWN KNOB 7. FOCUSING LIMIT KNOB
8. COARSE FOCUSING KNOB 9. FINE FOCUSING 10. POWER SUPPLY CABLE
11. LIGHT SOURCES ON/OFF 12. BRIGHTNESS ADJUSTMENT CONTROL LEVER

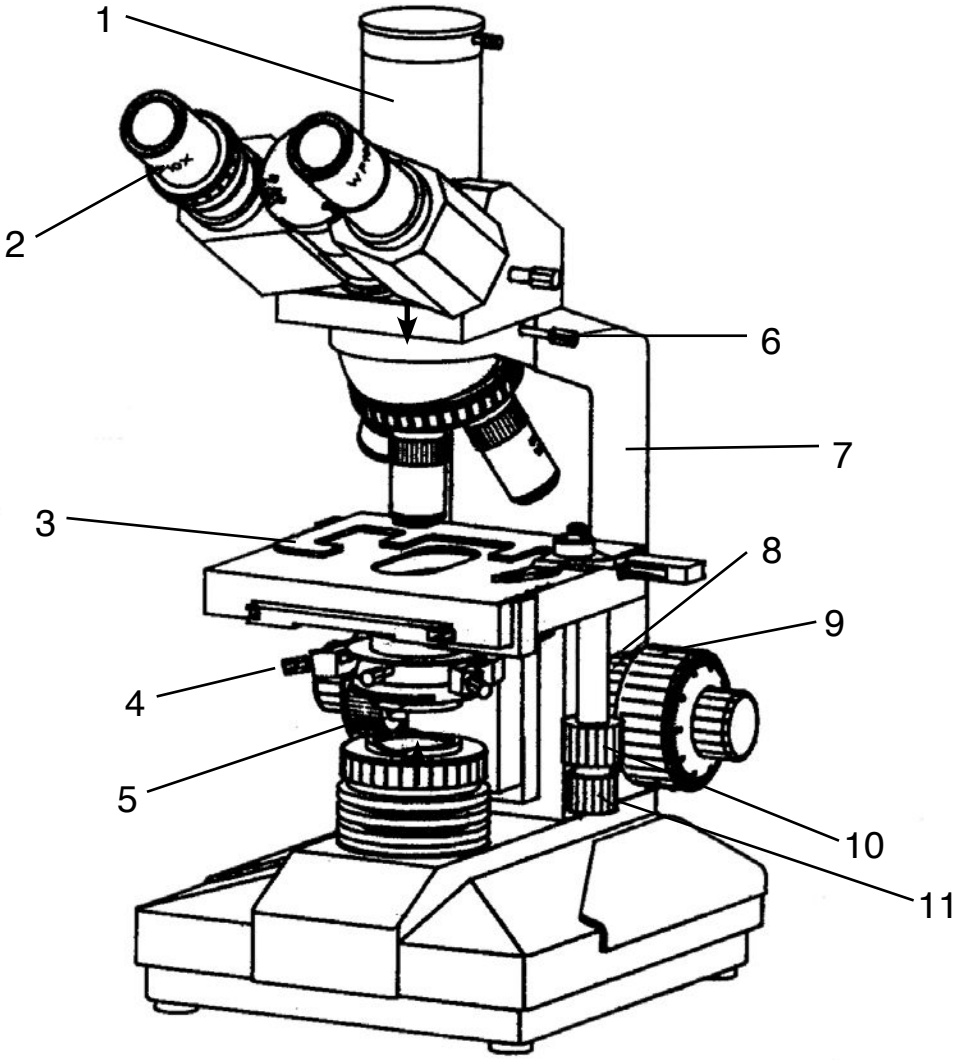

Fig. 4

1. TRINOCULAR
2. EYEPIECE
3. SPECIMEN HOLDER
4. CONDENSER ADJUSTING SCREW
5. CONDENSER WITH APERTURE DIAPHRAGM
6. TUBE HOLDING SCREW
7. MAIN BODY
8. ADJUSTABLE TENSION KNOB
9. COARSE FOCUSING KNOB
10. LENGTHWISE KNOB
11. CROSS KNOB

IV. OPTICAL SYSTEM

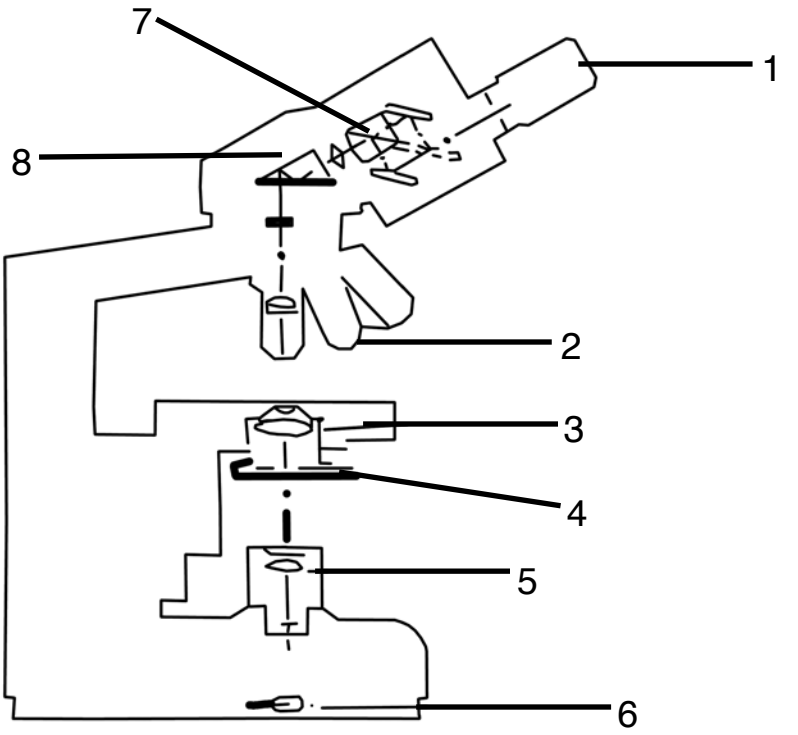

Fig. 5

1. EYEPIECE 2. OBJECTIVE 3. CONDENSER 4. APERTURE DIAPHRAGM
5. COLLECTOR LENS 6. HALOGEN LAMP 7. PRISM-MIRROR SYSTEM

V. OBSERVING OPERATION

1. General operation
   (1) Turn on the power by pressing the ON/OFF switch.
   (2) Set the 10x objective into operation position by turning the nosepiece. Then focus the specimen which is on the stage.
   (3) Adjust the interdistances of binocular to fit the eyes of observer.
   (4) For desirable illumination, up or down the condenser. Vary the illumination controller and adjust aperture of the iris.
   (5) While interchange other objective, turn the nosepiece and refocus slightly with the fine focusing knob. When using the 100x immersion objective, be sure to put a drop of cedar wood oil between the objective and the specimen.
2. Setting components
   (1) Adjust the binocular for fitting the pupil distances.
   Focus the specimen and combine the left and right view fields into one by adjusting the interdistances of the binocular.
   (shown in Fig. 6)
   (2) Fit the binocular's to observer's sight.
   Observe with right eye on 40x objective, bring the specimen into focus by adjusting the coarse/fine focusing knob. The machine now will fit the sight of the observer's eyes.
   (shown in Fig. 7)

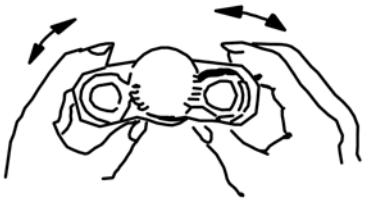

Fig. 6

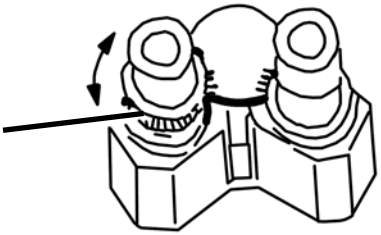

Fig. 7

(3) Coarse/fine focusing

A. For SeilerScope

Coaxial coarse and fine adjustment knobs make the focusing smoother. To suit operator preference or a heavy or light knob touch, a tension adjustment ring is provided. This device can also prevent the stage slides up. In order to prevent collisions between objective and specimen due to accidental stage movement. The microscope has a focusing limit control knob. Once the specimen is focused, tighten the knob to prevent the stage from moving beyond a safe limit. (shown in Fig. 8)

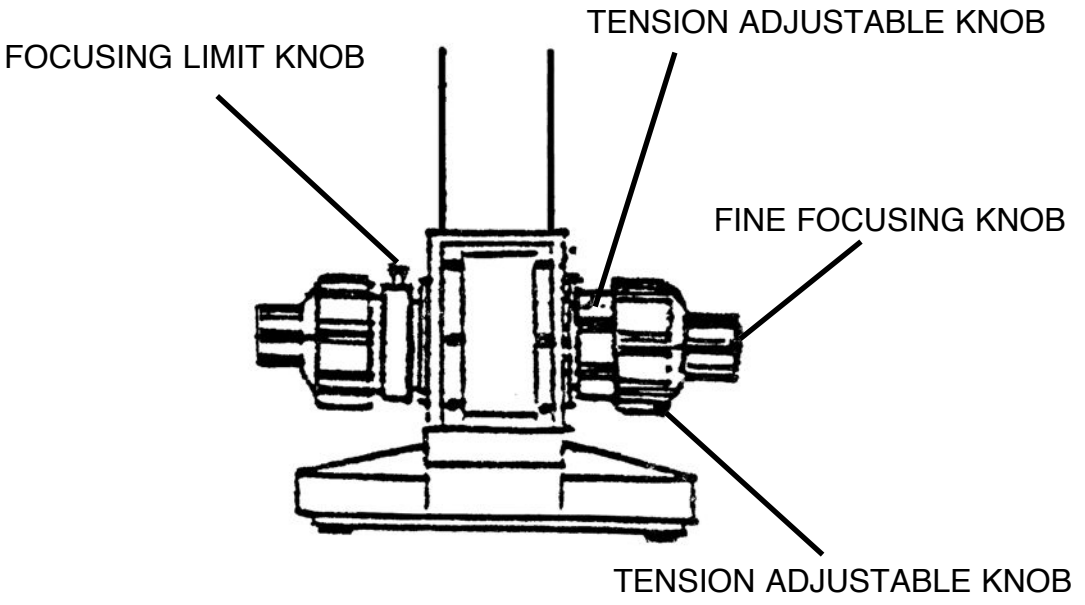

Fig. 8

(4) Stage

The specimen clip which is on the stage hold the specimen very easily. The longitudinal/traverse shifting controller is coaxial and can be used conveniently. (shown in Fig. 9)

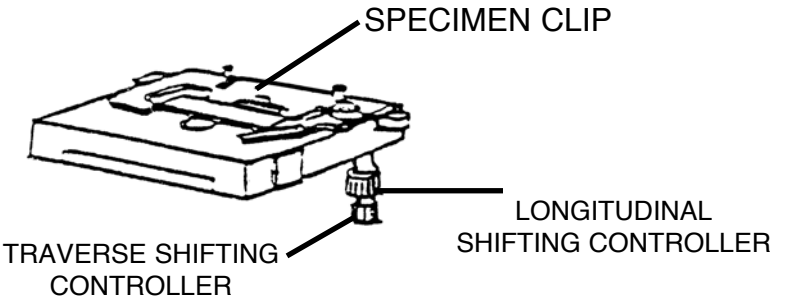

Fig. 9

(5) Up/down the condenser

The condenser will move vertically when turning the condenser up/down knob in manner. (shown in Fig. 10)

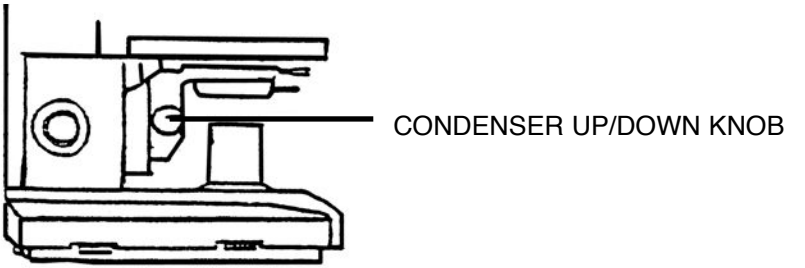

Fig. 10

(6) Utilization of the aperture diaphragm on the condenser.

The numerical aperture of illumination system can be varied by the aperture diaphragm and bring about the change in resolution, contrast and focal depth. Mostly an image of fair contrast may reach, when the diameter of the numerical aperture being 70-80% of the exit pupil of the concerning objective. (shown in Fig. 12)

Removing the eyepieces. Adjust the aperture diaphragm properly while looking through eyepiece tube. The eyepiece tube and the image of the aperture of the bright ring in the objective pupil. Keep in mind the handle position of the aperture diaphragm for each objective when the best image quality is reached.

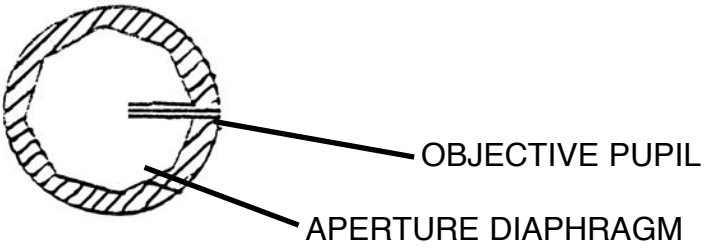

Fig. 11

(7) Power switch and adjusting intensity
Turn on the power, adjusting the intensity knob making the eyes observe image of specimen comfortably.
Note: Don't put the intensity knob on the highest position longly. Avoid deducing livelife of lamp. (shown in Fig. 12)

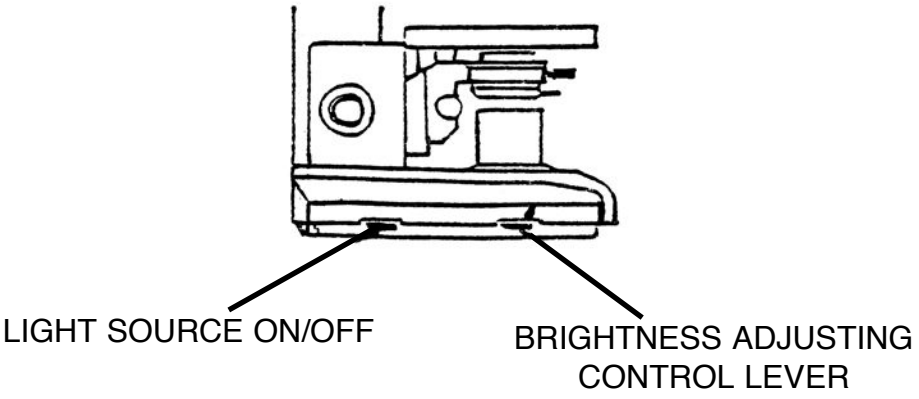

Fig. 12

(8) Adjusting of field diaphragm
Switch on the power, then turn the 10x objective into the optical axis. Observe with 10x eyepieces. Turning the up/down condenser knob then reach the image of field diaphragm. Then concenter field diaphragm and optical axis with adjusting screw. Turn the ring of field diaphragm. When the field diaphragm is more than the field of eyepiece. Using 4x objective, then adjust method as so. (shown Fig. 13)

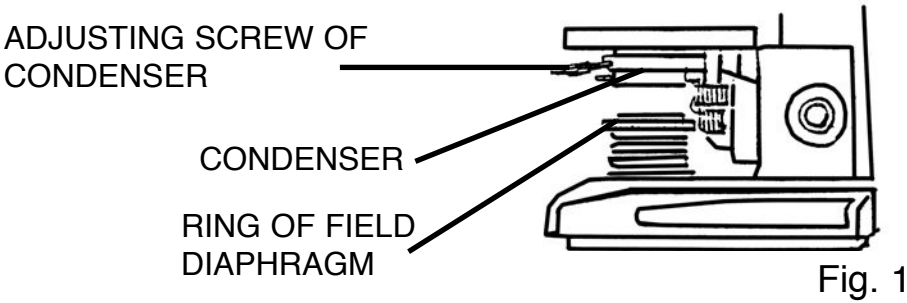

Fig. 13

VI. EXCHANGING THE LAMP AND FUSE

(1) Pull out the plug of power electrical wire [1] and disconnect the power supply.
(2) Incline microscope, loosen screw [2] of fixing lamp base board [3] on middle part of bottom, and remove lamp base board from bottom.
(3) Pull out the old lamp from lamp base [4].
(4) Insert new lamp [5] into lamp base properly, as shown in Fig. 11 direction, make it touch better.
(5) Clean the new lamp with absoluted alcohol.
(6) Refix lamp base board on bottom with screw [2].
(7) Mount the lamp well. Plug in power source. Turn 4x objective lens into path. Adjust condenser upwards and downwards and make light enter view of field. If light spot is offset the center of view, loose screw [6] slightly and move lamp base [4]. Make lamp spot into center, then tighten up the screw [6] to use immediately. (shown in Fig. 14)

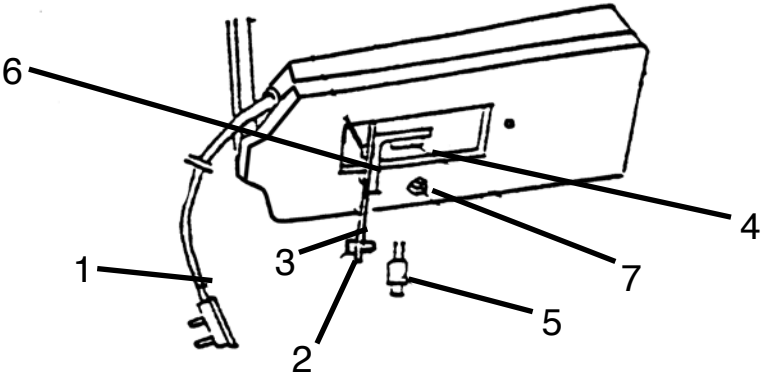

Fig. 14

(8) Loosen the screw of fuse 7, put out the bad fuse, mount the new fuse. Tighten the screw of fuse and use.

VII. CIRCUIT DIAGRAM

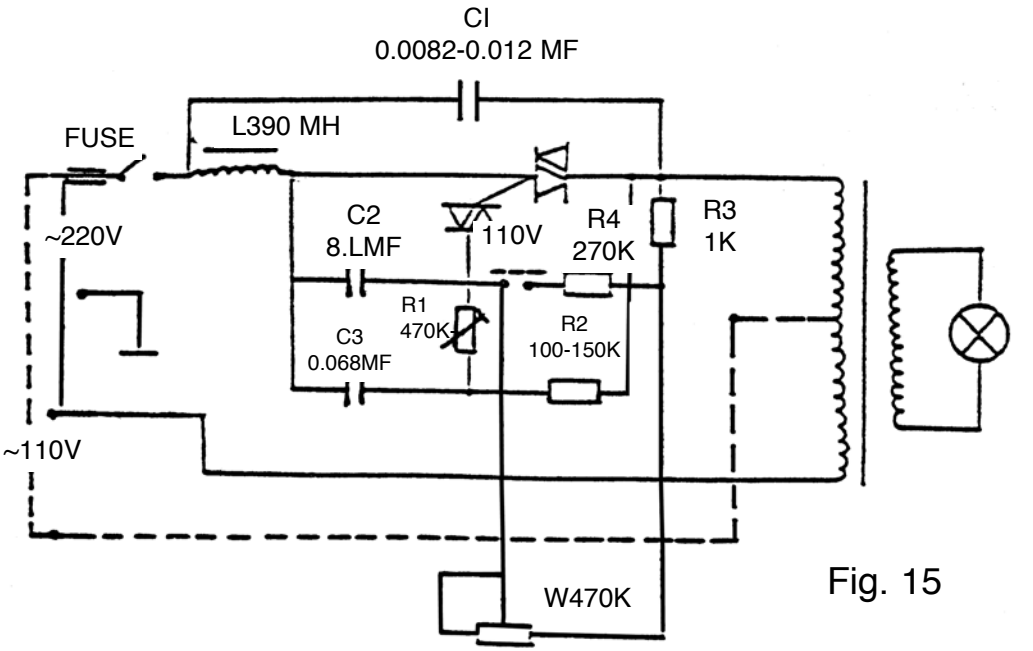

Fig. 15

Tips & Techniques

Troubleshooting the 40x Objective

One of the most common questions the Seiler technicians are asked is what to do when a 40x objective (400x magnification) won't focus or produces a poor image. A poor image on an objective can be caused from a number of problems. By following the simple procedure below, you will be able to troubleshoot about 90% of these problems and get the microscope back in operation:

1. Check the slide. The first step in troubleshooting the 40x objective is make sure the specimen slide is right side up. If the non-cover glass side of the slide is up to the 40x, there will not be enough working distance to focus through the thick glass.

2. Check the cover glass thickness. A cover glass number one (0.17mm thick) is recommended or maximum performance.

3. Make sure the objective is clean. Unscrew the 40x objective and examine it by using a magnifying glass to look at the front lens. To view the front lens, hold the objective in your left hand (if you are right-handed) under good desk lamp or in a well-lit room. Hold the objective vertical with the front lens up (toward the ceiling). Hold the magnifier close to your eye and focus on the very top of the objective. Slowly tilt the tip of the objective toward your eye and away from your eye. At some point you should be able to see dirt or oil on the lens.

To clean the lens, a cleaning solution of for 35mm camera lens is recommended. Apply the solution to the dirty or oily lens area with a cotton tipped applicator. Do not rub or scrub the lens. Lightly rotate the applicator between your forefinger and thumb, moving around the lens area. Rotate about three or four times, then discard the dirty applicator. Repeat this at least one more time and then re-examine with the magnifier to check for dirt or oil. If debris is still present, repeat the cleaning procedure.

After cleaning with the solution, breathe warm air onto the lens and use a clean applicator to remove any moisture from the lens. Rotate the applicator lightly on the lens as you did when using the solution. Repeat this two or three times with a clean applicator each time. Re-examine with the magnifier for dirt or oil and repeat the cleaning procedure if debris is still present.

A substitute cleaning solution of mild soap mixed with a large amount of water can be used for temporary cleaning. Make sure the water is not too soapy. Clean cotton gauze can be used in place of cotton tipped applicators using 1" squares, but this generally cleans only the center of the field of view.

4. Call Seiler's Service Department. If the procedures described above do not improve the image of the 40x objective, our Service Department will be happy to provide further assistance.

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