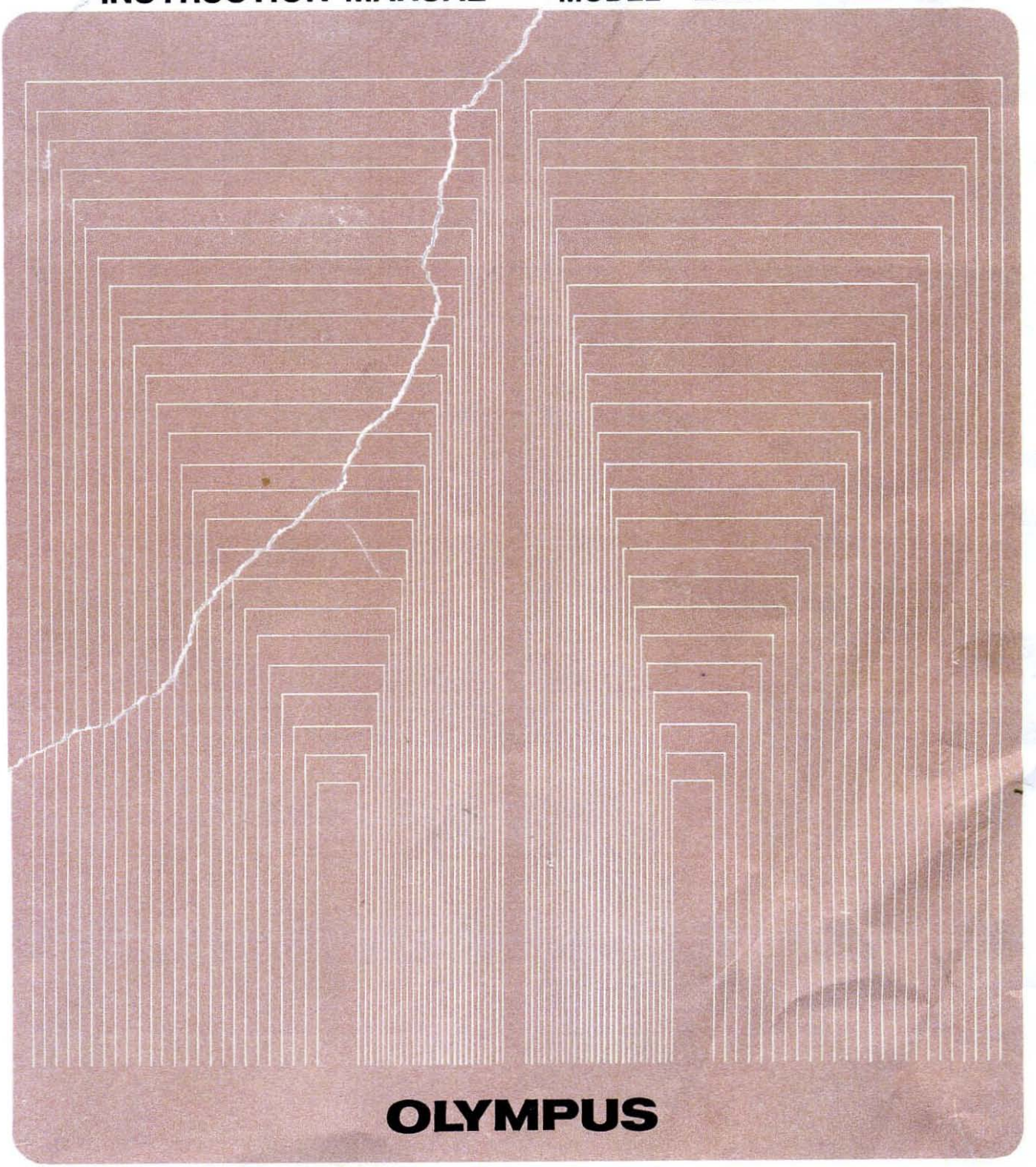
OLYMPUS INVERTED RESEACH MICROSCOPE

INSTRUCTION MANUAL MODEL IMT



OLYMPUS

This instruction manual has been prepared for the Olympus Inverted Research Microscope Model IMT. It is recommended that you read the manual carefully in order to familiarize yourself fully with your microscope in order to obtain optimum performance from this precision instrument.

IMPORTANT

Observe the following points carefully:

■ **Operation**

1. Always handle the microscope with the care it deserves, and **avoid abrupt motions.**

2. Avoid exposure of the microscope to **direct sunlight, dust** and **vibration.**

3. **Only use the tension adjustment ring for altering the tension of the coarse adjustment knobs.** Do not twist the two coarse adjustment knobs in the opposite directions simultaneously, as this causes damage.

4. Ascertain that the **voltage selector switch** on the base plate is set to conform with the local mains voltage.

5. Disconnect the line cord from the AC power outlet for **fuse replacement.**

6. Objectives provided to the Model IMT are designed for observation of specimens through culture vessels of **1 mm thickness.** Therefore, be sure to use culture vessels, the bottom of which is 1 mm ±0.3 thick and evenly flat.

■ **Maintenance**

1. Lenses must always be kept clean. Fine dust on lesn surfaces should be blown or wiped off by means of a hand blower or a clean brush. Carefully wipe off oil or fingerprints deposited on the lens surfaces with gauze moistened with a **small** amount of xylene, alcohol-ether mixture (7 : 3) or ether.

2. Do not use organic solutions to wipe the surfaces of various components. Plastic parts, especially, should be cleaned with a neutral detergent.

3. **Never disassemble** the microscope for repair.

4. The microscope should be stored in its container immediately after use. If this is not possible, it should be covered with the vinyl dust cover provided. It is best to keep objectives and eyepieces in desiccators. containing desiccants such as silica gel.

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I. STANDARD EQUIPMENT

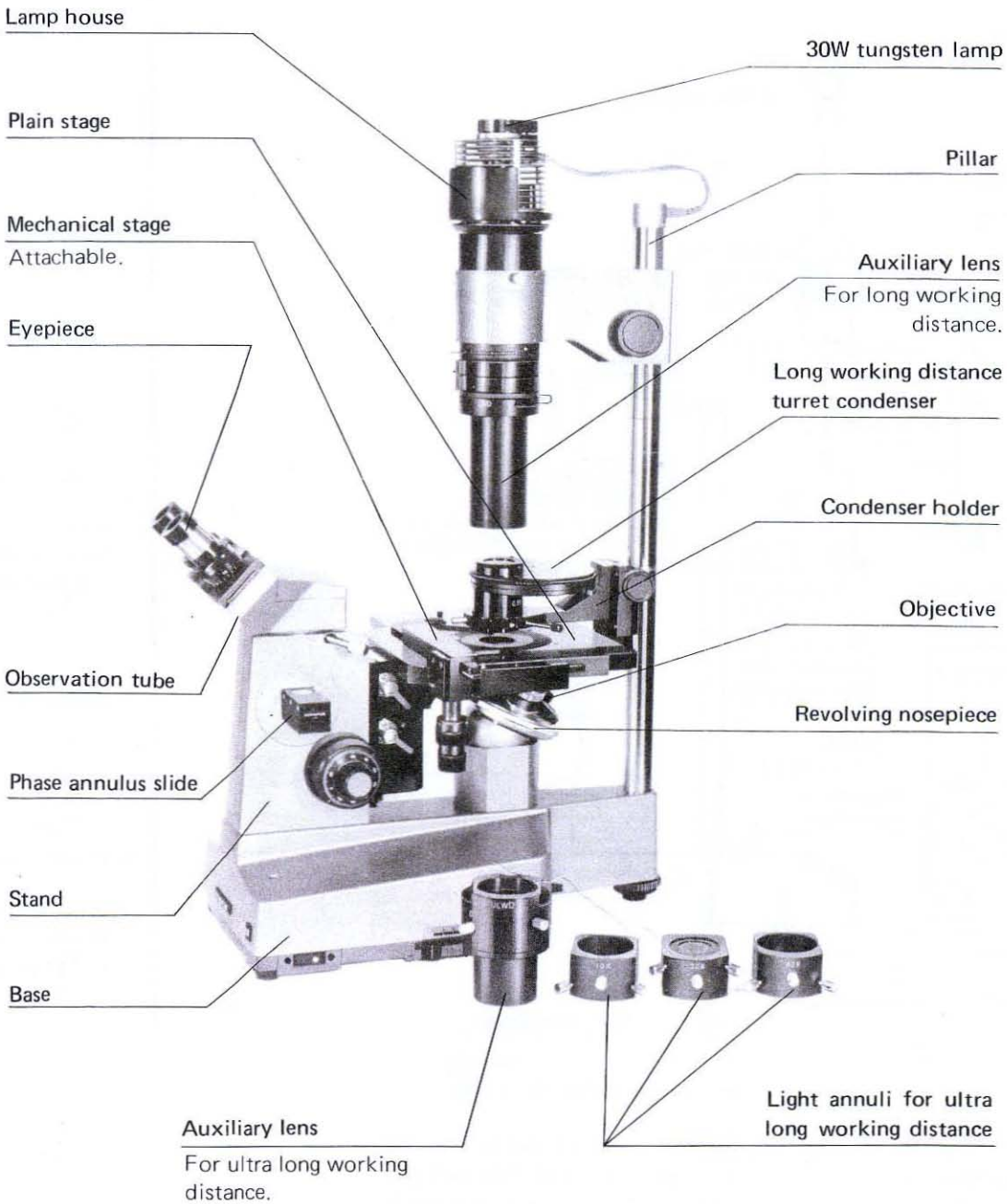
Component		Model	IMT 201	IMT 203	IMT 211	IMT 213
Microscope stand with pillar and base		IMT-F	1	1	1	1
Revolving nosepiece		IMT-RE	1	1	1	1
Binocular tube		BH-BI45	1	1	1	1
Plain stage with two extension plates		IMT-S	1	1	1	1
Mechanical stage with three specimen holders		IMT-MVR			1	1
Condenser holder		IMT-CH		1		1
Long working distance turret condenser		IMT-LWCD		1		1
Auxiliary lenses	For ultra long working distance	IMT-ULWD	1	1	1	1
	For long working distance	IMT-LWD		1		1
Light annuli in mount IMT-RS	Light annulus	IMT-RS-10	1	1	1	1
	Light annulus	IMT-RS-20	1	1	1	1
	Light annulus	IMT-RS-40	1	1	1	1
Lamp house		IMT-LH	1	1	1	1
30W tungsten bulbs		LS30	3	3	3	3
Objectives	Ach. 4X		1	1	1	1
	Ach. 10X		1	1	1	1
	Ach. LWD-C20X		1	1	1	1
	Ach. LWD-C Plan 40X			1		1
Eyepieces BiCK10X, paired			1	1	1	1
Phase annulus slide		IMT-SL	1	1	1	1
Centering telescope		CT	1	1	1	1
Spare fuses 100-115A (1A) or 220-240V (0.8A)			2	2	2	2
Eyepiece caps			2	2	2	2
Green filter		45G-533	1	1	1	1
Vinyl dust cover			1	1	1	1

■ **Optional Accessories:**

1. Trinocular Tube — Model BH-TR45
2. Photo Eyepieces — FK2.5X, FK3.3X, FK5X, FK6.7X
3. Photomicrographic System Camera — Model PM-10
4. Drawing Attachment — Model BH-DA
   (This attachment is provided with a magnification adjustment screw for use not only with the Model IMT but also with various Olympus microscopes such as VANOX, BH, CH, etc. **For use with the Model IMT the adjustment screw on the drawing attachment should be set to the position "C".)**

II. NOMENCLATURE

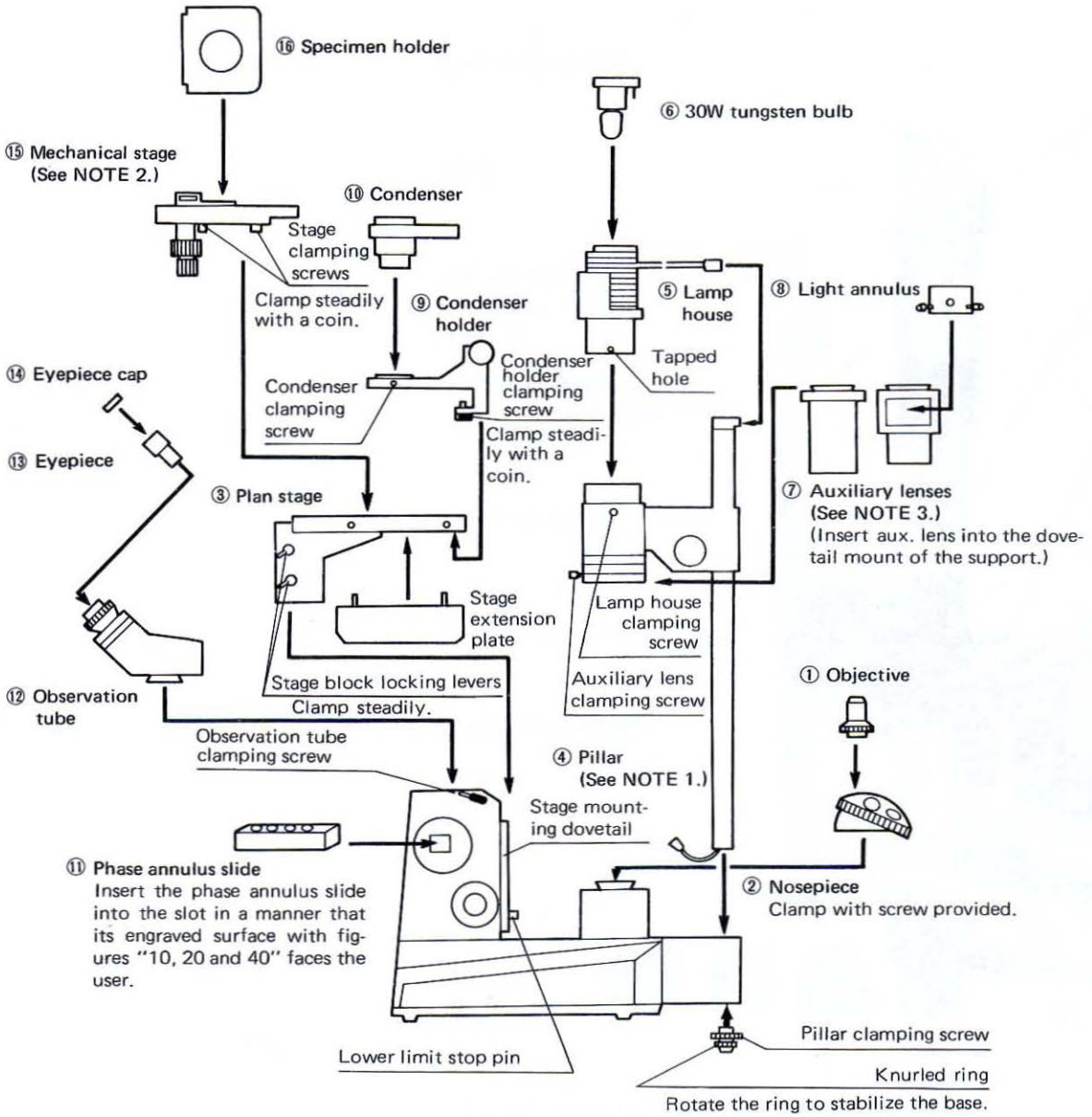
The Model IMT is composed of various components and interchangeable accessories. A variety of combinations, standard or optional, is available according to your requirements.



III. ASSEMBLY

The picture below illustrates the sequential procedure of assembly. The numbers indicate the assembly order of various components.

★ Remove dust caps before mounting components. Take care to keep all glass surfaces clean and avoid scratching the lens surfaces.



NOTE 1: The lower end of the pillar has two notches (larger one at the front and smaller one at the back) and a connecting cord comes out of it. Insert the connecting cord and lower end of the pillar into the base hole vertically and clamp the pillar with screw at the bottom of the base. The pillar direction is determined by fitting the notches so that the connecting cord passes through the larger notch and connects to the receptacle on the left hand side of the base back.

NOTE 2: The mechanical stage is attachable to the right or left hand side of the plain stage and clamped with a coin. If the mechanical stage is attached, only one extension plate can be attached to the opposite side of the plain stage.

◎ **How to mount the mechanical stage:**

Fig. 1 shows the mechanical stage attached on the right hand side of the plain stage. It is possible to attach the mechanical stage on the left side as shown in Fig. 2 according to your preference. To correctly attach the mechanical stage on either side, align the edge of the mechanical stage with the plain stage corner as indicated by arrows.

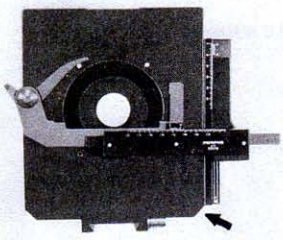


Fig. 1

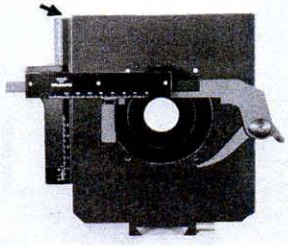


Fig. 2

To those who wish to use a left-handed mechanical stage, the mechanical stage with left-hand low drive controls Model IMT-MVL is optionally available.

NOTE 3: **Set up the illuminator:**

a) **To illuminate for long working distance** (Fig. 3):
Mount the auxiliary lens IMT-LWD ① to the lamp house support ② and attach the consenser and condenser holder to the plain stage; then adjust the height of the support ② , moving it vertically along the pillar until the lower edge of the support is aligned with the yellow line ③ on the pillar and clamp.

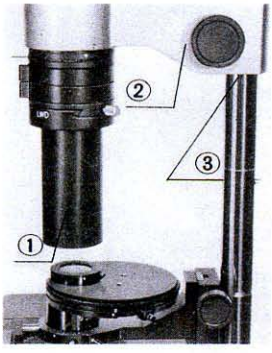


Fig. 3

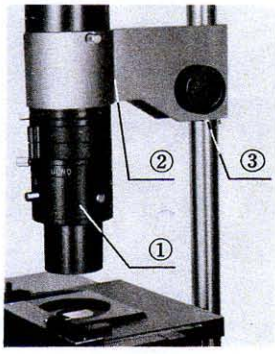


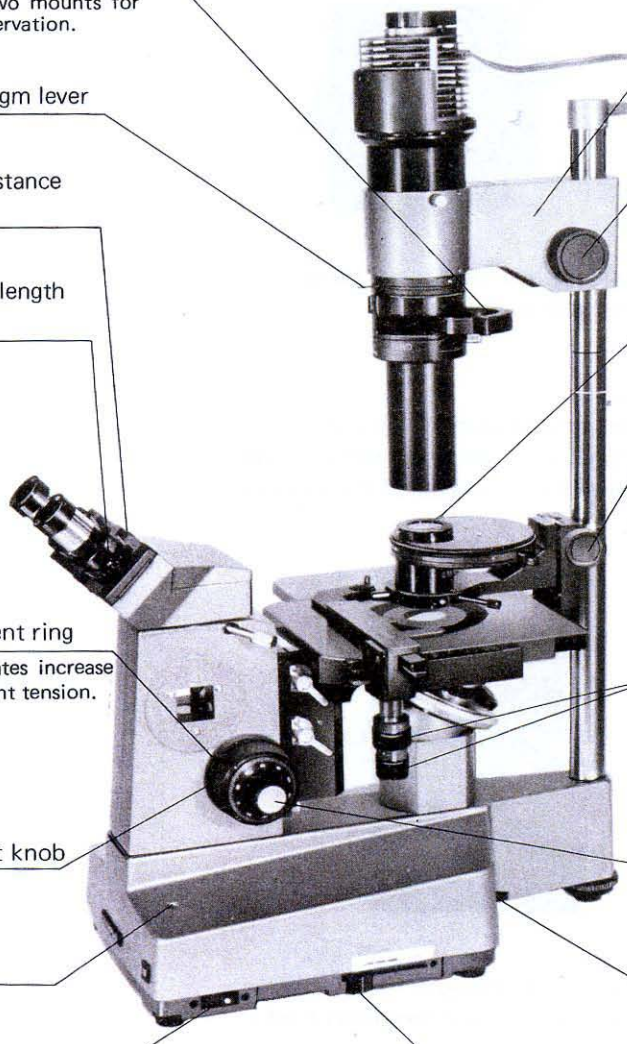
Fig. 4

b) **To illuminate for ultra long working distance** (Fig. 4):
Attach the auxiliary lens IMT-ULMD ① to the support ② and align the lower edge of the support to the red line ③ . For this use, the condenser and condenser holder should be removed.

c) **For use of the Abbe condenser BH-CD or Achromatic/aplanatic condenser BH-AAC:**
It is necessary to mount the optional auxiliary lens IMT-AL to the lamp house support and attach the condenser and condenser holder to the stage. The lower edge of the support should be aligned with the red line on the pillar.
★ For observation with objectives 40x or higher, use an ordinary objective and put a cover glass under the specimen.

d) **For use of the differential interference contrast attachment BH-NIC:**
It is necessary to align the lower edge of the support with the black index line on the pillar, and use the auxiliary lens IMT-AL.
★ Only a cover glass of 0.17 mm thick can be used.

IV. IDENTIFICATION AND FUNCTION OF VARIOUS COMPONENTS



Filter mounts

Insert the green filter 45G-533 into one of the two mounts for phase contrast observation.

Field iris diaphragm lever

Interpupillary distance scale

Mechanical tube length adjustment rings

Tension adjustment ring

Arrow mark indicates increase in coarse adjustment tension.

Coarse adjustment knob

Pilot lamp

Main switch

Lamp house support

Support locking knob

Aperture iris diaphragm lever

Condenser height adjustment knob

Low drive coaxial control knobs

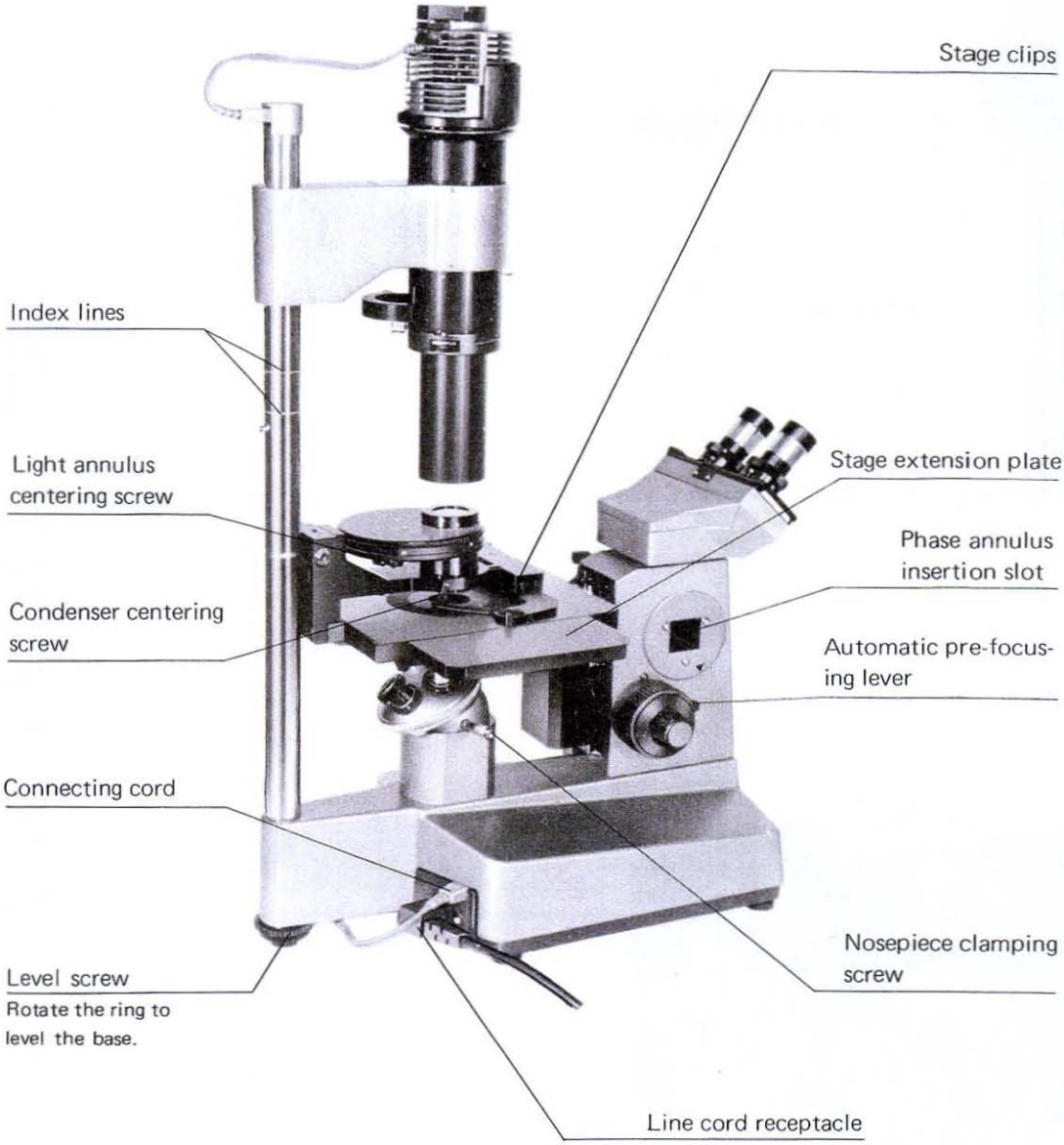
Fine adjustment knob

Graduated in increments of 2μ.

Ground terminal

Sliding control lever

As numbers increase, voltage increases.


Stage clips
Index lines
Light annulus centering screw
Stage extension plate
Phase annulus insertion slot
Condenser centering screw
Automatic pre-focusing lever
Connecting cord
Nosepiece clamping screw
Level screw
Rotate the ring to level the base.
Line cord receptacle

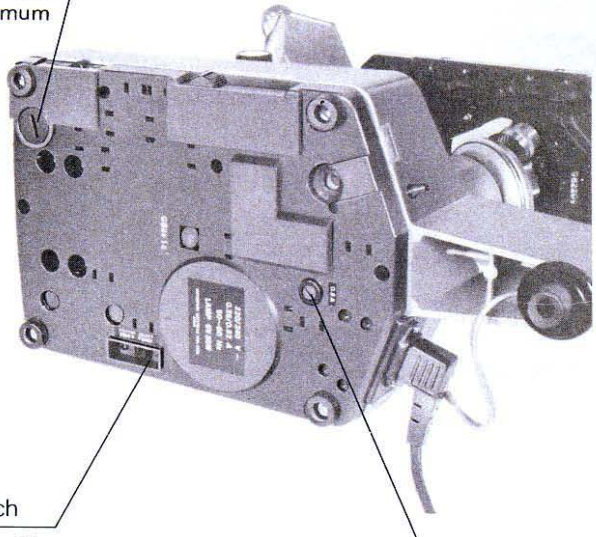
Auxiliary lens clamping screw

Light annulus clamping screw

Light annulus centering screws

Rheostat trimmer screw

After switching on, if necessary, rotate this screw with a coin until the bulb is dimly lit with the sliding control lever at minimum voltage position.



Line voltage selector switch

Set the switch to conform with line voltage.

Fuse holder

Press with a screwdriver and rotate counterclockwise to remove the holder.

SUMMARY OF PUTTING THE MICROSCOPE IN OPERATION

Model IMT

A. Match the line voltage selector switch to local mains voltage (page 8).

B. Switch on the light source.

C. Rotate the trimmer screw until the illuminator dimly lights with sliding control lever at minimum voltage position (page 10).

D. Align the lamp house support to the index line on the pillar according to your microscopic purpose (page 5).

E. Place a specimen on the stage (page 10).

F. Coarse focus with the 10X objective.
★ If necessary, stop down the aperture diaphragm for easier focusing.
For phase contrast, however, make it a point of opening the full aperture.

G. Make interpupillary and diopter adjustments (page 11).

H. Adjust condenser height if the long working distance condenser IMT-LWCD is used (page 13).

I. Engage the phase annulus "10".

J. Engage the light annulus "10".
★ For the use of the auxiliary lens IMT-ULWD, engage the light annulus RS-10.

K. Center the light annulus by means of the centering telescope CT (page 12).

L. Swing the objective of desired magnification into light path.

M. Match the light annulus to the magnification of objective in use and center the annulus.

N. Adjust light intensity.

O. Fine focus.

P. Adjust aperture diaphragm and field diaphragm (page 13).

(Cut off this page at dotted line and put it on the wall near the microscope to see as a reminder of microscopic procedure.)

V. OPERATION

A. Electric Equipment

1. Adjustment of Minimum Voltage

The minimum voltage required for the light source can be adjusted with the rheostat trimmer screw at the microscope base plate in accordance with the line voltage and frequency. The built-in rheostat incorporates a thyristor in its semiconductor circuit for the following advantages:

a) Extremely fine adjustment of light intensity.

b) Elimination of flicker and stabilization of light intensity.

c) Increased life expectancy of the bulb.

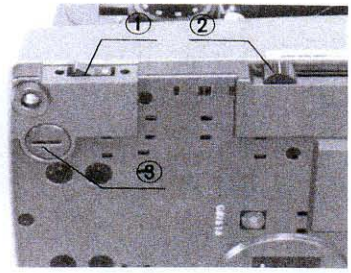


Fig. 5

For adjustment of the minimum line voltage, ascertain that the voltage selector switch is set to conform with the local mains voltage, and the sliding control lever ② is positioned closest to you (low voltage), and then activate the main switch ① . If the bulb is dimly lit, the secondary voltage is correct. If it is not lit at all, rotate the rheostat trimmer screw ③ gradually with a coin, until the bulb is dimly lit; then push the sliding control lever forward in order to obtain optimum light intensity. (Fig. 5)

2. 30W Tungsten Bulb

The standard light source incorporates a 30W pre-centered tungsten filament bulb, provided with a socket for positive contact, eliminating the problems of defective contact and over-heating. When used at the setting "6" on the control lever scale, the average life of the bulb LS30 is longer than 200 hours. This is, however, greatly reduced, if the bulb is used at higher voltage. Therefore, it is advisable to avoid prolonged use at readings over "6" (in the red zone).

★ It is recommended to avoid switching on and off the tungsten bulb with the sliding control lever at high intensity position (away from the user). It reduces bulb life.

B. Specimen Holders

1. With the Mechanical Stage

Make a choice of specimen holders according to your specimen and place it on the stage.

Stage plate holder | 60mm dia. Petri dish holder | Slide holder

2. Without the Mechanical Stage

Place a specimen on the plain stage directly and move it manually.

◎ **Thickness of culture vessels**

Objectives provided with the Model IMT are designed to observe specimens through 1 mm thick glass. Make it practice, therefore, to use culture vessels or slides of thickness 1 mm±0.3.

◎ **Use of the correction collar of the objective LWD-C Plan 40X**

After coarse and fine adjustments, rotate the correction collar, keeping the specimen in fine focus until optimum resolution is obtained. A proper use of this collar is specially effective to prevent the deterioration of the objective resolution to be caused by the uneven thicknesses of various petri dishes, culture bottles, etc.

C. Observation Tubes

1. Interpupillary Distance and Diopter Adjustments

1) Hold the knurled sliding grips ① of the right and left eyepiece tubes with both hands and push the tubes together or pull them apart laterally, whichever is required, while looking through the eyepieces with both eyes, until perfect binocular vison is obtained. (Fig. 6)

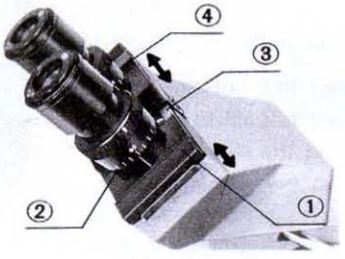


Fig. 6

2) Rotate the tube length adjustment ring ② on the right eyepiece tube to match your interpupillary distance setting whcih you obtained from the scale ③ .

3) Look at the image through the right eyepiece with your right eye and focus on the specimen with the coarse and fine adjustment knobs.

4) Next, looking at the image through the left eyepiece with your left eye, rotate the tube length adjustment ring ④ to focus on the specimen without using the coarse and fine adjustment knobs.

2. Eyepiece Cap

The eyepiece cap is recommended for those who wear eyeglasses. It prevents scratching the eyeglasses.

D. Illumination for Phase Contrast Microscopy

1. Ultra Long Working Distance Illumination

The total working distance is 55 mm, long enough to permit observation of large size culture bottles.

1) Move the phase annulus slide ① until the magnification index engraved on the slide matches the objective magnification in use (Fig. 7).

★ Make sure that the slide clicks into position.

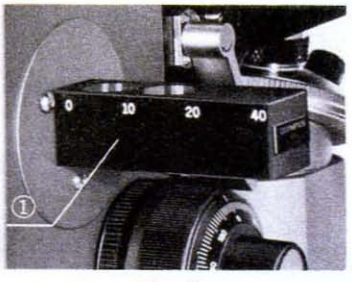


Fig. 7

2) Place a specimen on the stage and bring it into focus.

NOTE: It is suggested to stop down the field iris idaphragm ④ for easier focusing. (Fig. 8) After focusing, open the full aperture ④ .

3) Insert the light annulus ② into the auxiliary lens.

NOTE: Use the light annulus that matches the objective magnification.

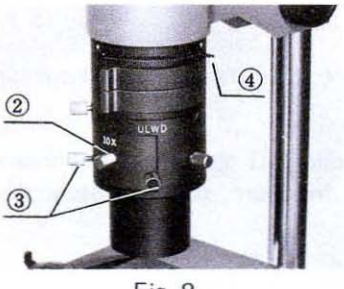


Fig. 8

4) Remove one of the eyepieces from the observation tubes and insert the centering telescope into the observation tube.

5) Rotate the top lens assembly of the centering telescope to bring the bright ring (light annulus) and the dark ring (phase annulus) into focus.

6) Operate the centering screws ③ of the light annulus until both annuli are concentric and superimposed. (Fig. 9)

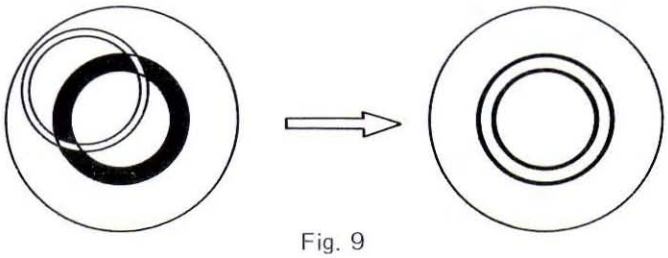


Fig. 9

7) Remove the centering telescope and insert the eyepiece back into the observation tube. Now you can start your phase contrast observation.

NOTE: 1. Repeat the procedure through 1) to 6) above each time objectives are changed.

2. In case of ultra long working distance illumination, the field iris diaphragm ④ in Fig. 8 is used as aperture diaphragm.

2. Long Working Distance Illumination

The total working distance is 20 mm so long as to permit observation of large size Petri dishes.

1) Set the turret condenser IMT-LWCD at the "0" position.

2) Coarse focus with the 10X objective.

NOTE: It is suggested to stop down slightly the aperture iris diaphragm ⑤ for easier focusing (Fig. 10)

3) Stop down the field iris diaphragm to the minimum by means of the lever ① . Rotate the condenser height adjustment knob ② until the image of the field diaphragm is visible sharply in the field of view.

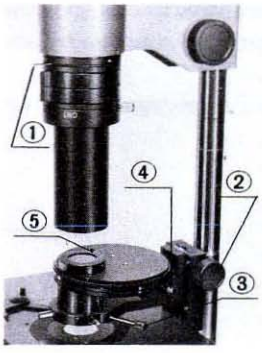


Fig. 10

4) Bring the image of the field diaphragm into the center of the field by means of the condenser centering screw ③ (Fig. 10). Re-open the diaphragm until the small ring of the diaphragm becomes a larger polygonal ring around the circular edge of the field (Fig. 11).

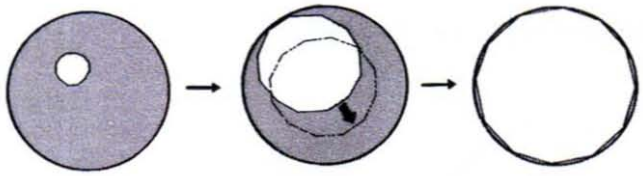


Fig. 11

5) For phase contrast observation, open the aperture diaphragm fully.

6) Rotate the turret condenser until the light annulus "10" is in position.

7) Match the phase annulus slide at the "10" position (Fig. 7).

8) Insert the centering telescope CT into the observation tube after removal of the eyepiece, and rotate the top lens assembly of the CT to bring the light annulus and phase annulus into focus.

9) Operate the centering screws ④ of the light annulus (Fig. 10) until light annulus and phase annulus are concentric and superimposed.
★ After complete centration, clamp the centering screws with care.

10) Remove the CT and insert the eyepiece back into the observation tube. Now it is ready for phase contrast observation.
NOTE: Match the light annulus and phase annulus to the objective magnification whenever objectives are changed, but re-centration is not necessary.

E. Field and Aperture Iris Diaphragms

1. Field Iris Diaphragm

The field iris diaphragm controls the diameter of the ray bundle impinging on the specimen surface and thus increases image definition and reduces glare.

2. Aperture Iris Diaphragm

In order to achieve optimum objective performance in brightfield, the opening of the aperture iris diaphragm should be mateched to the numerical aperture of the objective in use. It is often preferable, however, to stop down the aperture diaphragm by about 70% to 80% of the objective N.A. (Fig. 12).
During phase contrast microscopy, however, the aperture iris diaphragm should be kept at full opening.

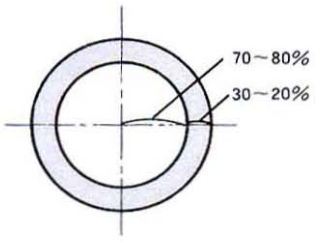


Fig. 12

F. Focusing Adjustment

1. Tension Adjustment of Coarse Adjustment Knobs

A tension adjustment ring ① is provided next to the right hand coarse adjustment knob. With this device the tension of the coarse adjustment is freely adjustable for either heavy or light movement, depending on operator preference (Fig. 13). However, do not loosen the tension adjustment ring too much, because the stage drops or the fine adjustment knobs slip easily. If it recommended to tighten the ring especially for prolonged observation or cinephotomicrography.

NOTE: Be careful not to rotate the right and left coarse adjustment knobs in the opposite directions simultaneously.

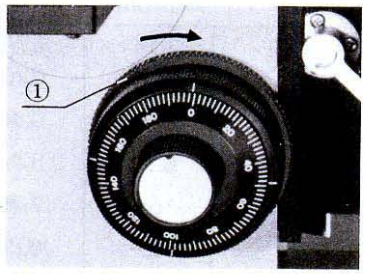


Fig. 13

2. Automatic Pre-focusing Lever

This lever ① is provided to prevent possible contact between specimen and objective as well as to simplify coarse focusing. The lever is locked after coarse focus has been accomplished. This prevents further downward travel of the stage by means of the coarse adjustment knobs and automatically provides a limiting stop if the stage is raised and then lowered again. The automatic prefocusing lever does not restrict fine focusing (Fig. 14).

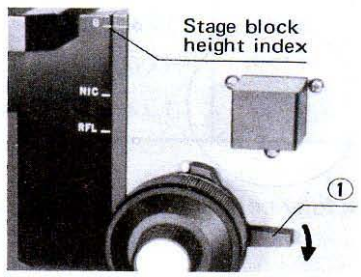


Fig. 14

3. Adjustment of Stage Block Height

The stage block should be aligned with the stage block height index "B", engraved on the microscope stand (Fig. 14) for biological and tissue culture observation.

Beside the vertical movement of the stage by means of coarse and fine adjustments, the stage block height can be changed upward after loosening two stage block locking levers from the "B" index to the "NIC" index (for the differential interference contrast attachment) or to the "RFL" index (for the fluorescence vertical illuminator).

On the other hand, after removing the lower limit stop pin, it is also possible to lower the stage from the "B" index for observation of a specimen with larger depth within the working distance of the objective in use.

> **CAUTION:** After lowering the stage block from the "B" index, however, be careful not to hit the objective front lens against the stage by rotating the nosepiece. Make it a point to hold the stage block steady with your hands while you change the stage block height when the lower limit stop pin is removed.

VI. OPTICAL DATA

Objective / Eyepiece	Type	Achromat			Plan Achromat
	Magnification	4X	10X	LWD-C20X	LWD-C Plan 40X
	N.A.	0.10	0.25	0.40	0.55
	W.D. (mm)	18.77	6.78	5.44	2.00
	Focal length (mm)	28.45	16.08	7.79	4.36
	Resolving power (μ)	3.4	1.3	0.84	0.61
	Remarks				Spring-loaded, correction collar
BiCK10X (Field number 17.2)	Total magnification	40X	100X	200X	400X
	Focal depth (μ)	172.5	27.6	9.19	3.87
	Field of view (mm)	4.3	1.72	0.86	0.43

(The resolving power is obtained at the fully opened aperture diaphragm.)

Technical terms:

- **Working distance** . . . . . The distance from the specimen slide or culture vessel to the nearest point of the objective.
- **Numerical aperture** . . . . The N.A. represents a performance number which could be compared to the relative aperture of a camera lens. The quantity of light which the objective receives from the object increases with the square of the performance number.
- **Resolving power** . . . . . The resolving power of a lens is measured by its ability to separate two points.
- **Focal depth** . . . . . The distance between the upper and lower limits of sharpness in the image formed by an optical system. As you stop down the aperture iris diaphragm, the focal depth becomes larger. The larger the N.A. of an objective the shallower the focal depth.
- **Field number** . . . . . A number that represents the diameter in mm of the image of the field diaphragm that is formed by the lens in front of it.
- **Field of view diameter** . . . The actual size of the field of view in mm.

VII. TROUBLESHOOTING

Troubles	Causes	Remedies
1. Optical System		
a) Field of view is cut off or illuminated irregularly.	Auxiliary lens is not correctly mounted.	Correctly mount the lens. (Page 5)
	Lamp house support is not positioned at correct height.	Adjust the height correctly. (Page 5)
	Nosepiece does not click in position.	Slightly rotate the nosepiece until it clicks into position.
	Illumination is not correctly matched to the observation purpose.	Correct it referring to "III. ASSEMBLY" at page 5.
	Condenser is not correctly mounted on the holder.	Remount the condenser correctly.
	Field diaphragm is stopped down excessively.	Open the diaphragm properly. (Page 13)
	Bulb is not correctly attached.	Re-insert it into the socket all the way.
	Phase annulus slide is not click stopped in position.	Click it into position.
b) Dust or dirt is visible in the field of view.	Dust on condenser top lens.	Remove dust.
	Dirty specimen.	
	Dust on eyepiece.	
c) Excessive image contrast.	Condenser is excessively in high position.	Lower the condenser.
	Aperture iris diaphragm is stopped down excessively.	Open the diaphragm. (Page 13)
d) Resolution problems: • Image is not sharp. • Insufficient contrast. • Image details lack definition.	Objective is not correctly positioned in light path.	Slightly rotate the nosepiece until it clicks into position.
	In case of LWD-C Plan 40X, correction collar is not adjusted.	Adjust the collar correctly. (Page 11)
	Dust on objective front lens.	Clean.
	Dirty specimen.	
	Dust on condenser lens.	
	Illumination is not matched to observation purpose.	Correct the illumination referring to "III. ASSEMBLY" at page 5.
	Specimen slide is mounted on the stage upside down.	Reverse the specimen slide. (Page 10)

Troubles	Causes	Remedies
e) Specimen image is partially out of focus.	Objective is not correctly positioned in light path.	Slightly rotate the nosepiece until it clicks into position.
	Specimen is not correctly positioned on the stage.	Plece the specimen correctly on the stage. (Page 10)
f) When objectives are changed they are not parfocal.	Mechanical tube length is not correctly adjusted.	Adjust the length with the tube length adjustment rings on observation tube. (Page 11)
g) No effective phase contrast is obtained.	Aperture iris diaphragm is stopped down.	Open.
	Objective, light annulus and phase annulus are not correctly matched.	Match them correctly. (Page 12)
	Light annulus and phase annulus are not correctly centered.	Center them correctly. (Page 12)
2. Electric System		
a) Illuminator is too bright (or too dark).	Voltage selector switch is not matched to mains voltage.	Match the selector switch to mains voltage.
	Mains voltage is too high (or too low).	Adjust mains voltage with a variable voltage transformer.
	Rheostat trimmer screw is not matched to mains voltage.	Adjust trimmer screw until the bulb is dimly lit with sliding control lever positioned at minimum voltage. (Page 10)
b) Voltage for illuminator cannot be regulated.	Voltage selector switch is not matched to mains voltage.	Match the selector switch to mains voltage.
	Mains voltage is too low (or too high).	Adjust mains voltage with the variable voltage transformer.
c) The light flickers and the intensity is unstable.	Mains voltage is unstable.	Use a voltage stabilizer.
	The filament of bulb is likely to burn out.	Replace the bulb.
	Loose electric connection.	Tighten the connection.
d) Fuse burns out too often.	Fuse is not a standard one.	Use a standard fuse.
	Voltage selector switch is not matched to mains voltage.	Match the switch to mains voltage.
e) Pilot lamp lights but illuminator bulb does not.	The bulb is burned out.	Replace the bulb.
	Loose electric connection.	Tighten the connection.
f) Reduced bulb life.	Voltage selector switch is not matched to mains voltage.	Match the selector switch to mains voltage.
	The bulb is not a standard one.	Use a standard bulb.

Troubles	Causes	Remedies
	Bulb is used on higher voltage to increase light intensity.	Keep the output voltage under 6V (with the sliding control lever at "6" setting on the scale) as much as possible, or use a high intensity light source such as a halogen lamp, etc.
3. Focusing		
a) Coarse adjustment is too tight.	Tension adjustment ring is tightened too much.	Loosen the tension adjustment ring properly. (Page 14)
	The user is trying to lower the stage passing over the lower focusing limit imposed by the engaged pre-focusing lever.	Unlock the pre-focusing lever. (Page 14)
b) Stage drops and specimen goes out of focus.	The tension adjustment ring is too loose.	Tighten the ring properly. (Page 14)
c) Stage cannot be lowered to the lower limit of the working range.	Pre-focusing lever is engaged in higher than focusing position.	Unlock the lever. (Page 14)
d) Stage cannot be raised to the upper limit.	Stage block is not aligned to the correct stage block height index.	Adjust the stage block height correctly. (Page 14)
4. Observation Tube		
a) Incomplete binocular vision.	Interpupillary distance is not correctly adjusted.	Correct the interpupillary distance. (Page 11)
	Diopter adjustment is incomplete.	Complete diopter adjustment. (Page 11)
	The user is unaccustomed to binocular vision.	Prior to looking at specimen details, try to look at the entire field of view, or look at a far away object before resuming microscopic observation.
5. Stage		
a) Image easily goes out of focus when you touch the stage.	The stage is not correctly clamped.	Clamp the stage securely.
b) The specimen stops midway on the east-west traverse.	Specimen is not correctly positioned on stage.	Adjust specimen position.
c) Specimen stops midway on the north-south traverse.	Mechanical stage is not mounted in correct position.	Mount the mechanical stage in correct position. (Page 5)

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