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Inverted Biological Microscope

NYMCS-290

User Manual

This manual is written for Inverted Biological Microscope NYMCS-290. For safety and for exerting the best performance, making you familiar with the instrument entirely, it is strongly recommended that you read this manual carefully before using the microscope. For the further reference, please place this manual in a position where nearby the worktable and fetched easily.

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USER NOTICE

Safety Note

Figure 1

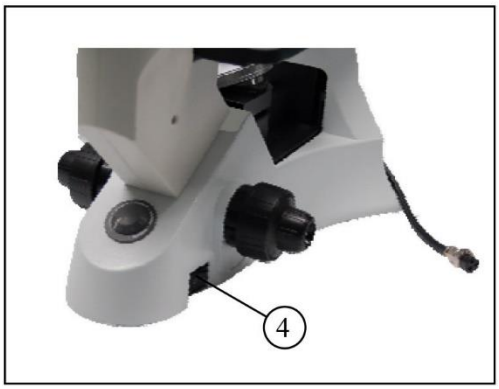

Figure 2

1. Do not keep the instrument in a direct sunlight, high temperature or humidity, dusty and easy shaking environment. Make sure the stage is plane, horizontal and stable enough.
2. When moving the microscope, please hold up the instrument with one hand on the lower side of the eyepiece tube ①, and the other hand on the illumination bracket ②. (Figure 1)
3. If the bacterium solution or the water splash to the stage, objective or viewing tube, pull out the power cord at once, and wipe up the microscope. Otherwise, the instrument will be damaged.
4. When working, the lamp house on the top of the arm ③ (Figure1) will become very hot, be sure there have enough room around the lamp house (especially the top) for cool.
5. Before replacing the lamp bulb or fuse, turn the main switch on the "O" (off) position, then cut off the power. If the lamp is on, or soon after it has been turned off, it is hot and will cause serious burns, please do the replacement after it cool down completely.
   - ❖ **Specified: the halogen lamp 6V30W**
6. Earth this instrument to prevent the lightning strike.
7. Use the supplied power cord, please.

Maintenance

- Use the gauze to wipe the glass parts gently .If removing the fingerprints and oil stains, slightly dampen gauze with the xylene or the admixture liquid which comparison is 3:7 of the ethanol and the ether to wipe.
  - ❖ **Note: the ethanol and the ether are all very combustible, do not put these chemicals near fire or the possible electricity spark source such as the electronic equipment open and close operation. Use these chemicals in a well ventilated room as far as possible.**
- Don't use organic solvent to wipe the non-optical elements, If you need to clean, use the neutral detergent, please.
- When using, if the microscope is splashed by liquid, cut off the power at once, and wipe up the moisture.

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- Do not disassemble any parts of the microscope. That will affect the function or decline the performance of the microscope.
- If haven't mounted the objective, please cover the dust cap to prevent the dust and the splashed liquid of the tissue culture entering the inside.
- When not using, remember to cover up the microscope with the dust casing. And make sure the lamp cools down enough before you do so.

Safety Symbol

Symbol	Meaning
	The surface is very hot, not touch by your hands
	Before using, please read the instruction carefully, improper operation will result in bodily injure or instruction malfunction.
	The main switch on
	The main switch off

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1. COMPONENT NAMES

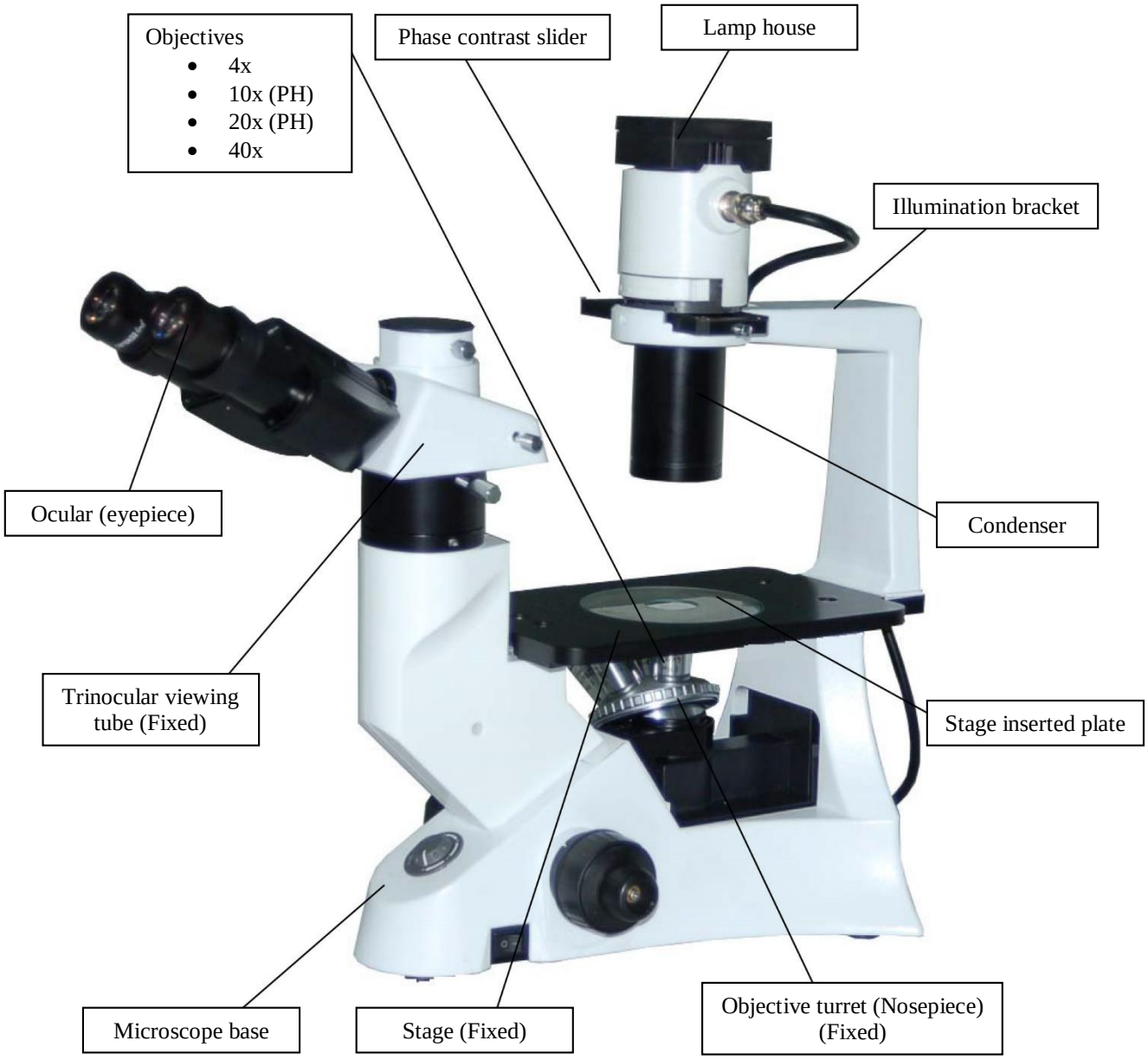

Figure 1

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2. INSTALLATION

2.1. Installing diagram

The following figure shows the installation sequence of the components.

- **Before installing, be sure every components is clean, do not score any parts or glass surface.**
- **Keep well with the supplied hexagon wrench. When changing the components, you will need it again.**

Figure 2

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2.2. Installing steps

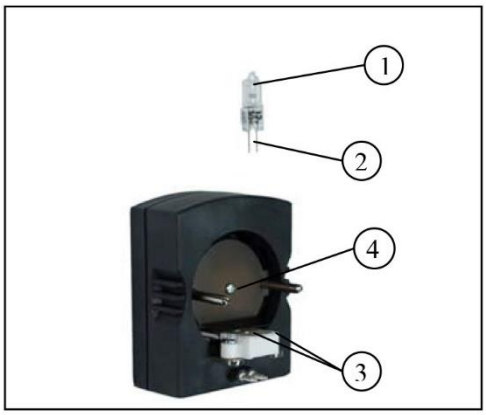

Figure 3

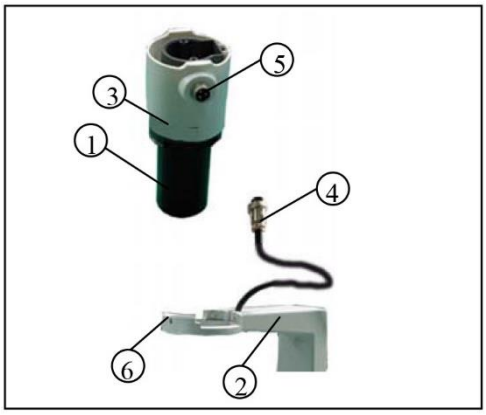

Figure 4

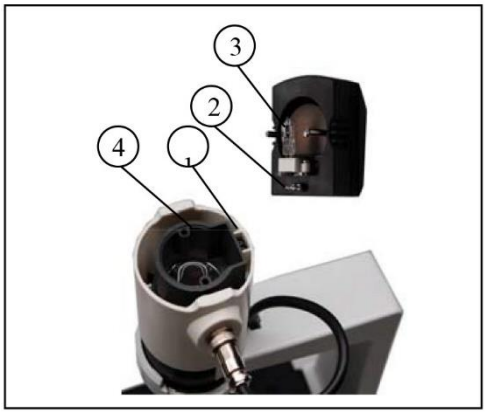

Figure 5

2.2.1. Installing and replacing the lamp (Figure 3)

- Please use the specified halogen Lamp 6V30W

1. Hold to the bulb ① after you wrap it with gauze or other protection materials, then depress the plugs ② into the jack ③ on the lamp house, ensure the filament and the bolt ④ are in a same level.
2. Replacing the lamp when using or soon after.
   When using, or soon after it is turned off, the lamp, the lamp house and nearby parts will be very hot and will cause serious burns. Please turn the main switch on "O" (off), pull up power plug, and make sure the bulb, the lamp house and periphery are all cool. Then, you can do your replacing.

- Please insert the lamp gently, or it will be damaged by excessive extrusion.
- Do not touch the Halogen bulb with your hands. It will shorten the service life or cause it to burst. If you leave fingerprints on the surface carelessly, clean it with a dry soft cloth.

2.2.2. Installing the condenser illumination unit (Figure 4)

1. Insert the condenser illumination unit ① into the bracket ② gently, according the figure showed in the left.
2. Turn the condenser illumination unit at clockwise about 90°, let the "AS" mark of filter holder ③ facing forwards, and keep the screw of condenser illumination unit and the hole of the holder in line, then screw down the bolt in the hole with the supplied hexagon spanner.
3. Insert aviatic BNC connector plugs ④ into aviatic BNC connector jack ⑤.

2.2.3. Installing the lamp house (Figure 5)

Keep the BNC connector plugs ① and the lamp house pin ② in line, and keep the bolt ③ and the condenser jack ④ in line, too. Then push the lamp house into the illumination unit gently until they are against.

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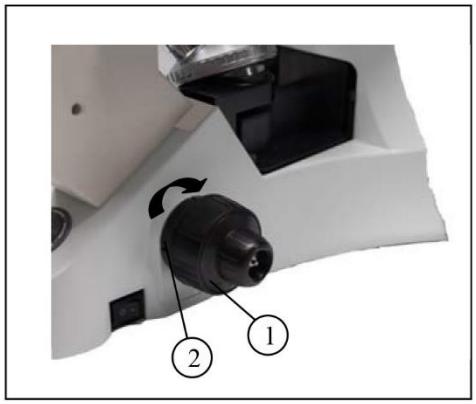

Figure 6

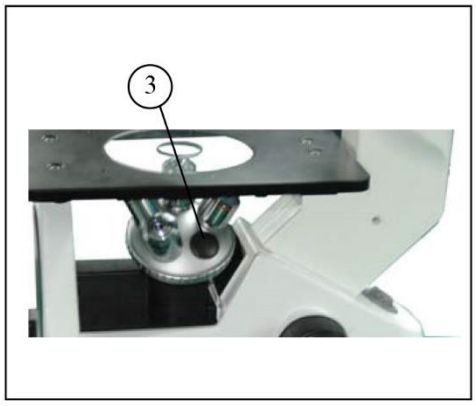

Figure 7

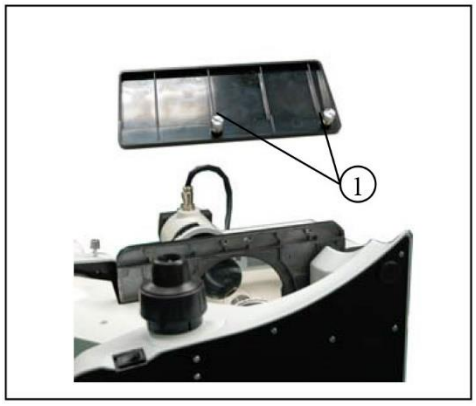

Figure 8

2.2.4. Installing the objective (Figure 6 and 7)

1. Turning the coarse fusing knob ① like the figure shows till the nosepiece get to its lowest position.

❖ **For ensuring the safety of the instruction on transportation, the nosepiece is located in the lowest position and the tension adjustment collar ② is adjusted in an appropriate tight tension while leaving the factory.**

2. Screw the lowest magnification objective on to the turret from the nearside, then turn the turret clockwise, mount other objectives according the magnification sequence of low to high.

- Mount objective like this way will make the change of magnification to be very easy in using.
- It also can install the objective through the stage opening.

❖ Clean the objective regularly, the objective used in the inversed microscope is very sensitivity about dust.

❖ Do cover all the unused holes with turret dust caps ③, to prevent the dust and contamination entering inside.

❖ When operating, use the low magnification objective (4X or 10X) to search and focus the specimen at first, then replace the higher magnifications if necessary.

❖ When replace the objective, slowly turning the nosepiece until you hear “clicked”, which means the objective enter into the right position - center 7 of the light path.

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2.2.5. Installing the stage lengthen splint and the mechanical ruler (Figure 8)

- Stage lengthen splint can be installed in either side of the stage to enlarge the work surface. But you can't install the mechanical ruler together.
- Generally, the mechanical ruler will be installed in the right side for comfortable adjustment.

1. Installing the stage lengthen splint

   First, Screw the fixed bolt① on to the splint , then mount it on to the stage from right or left below, screwing down it until it stay hard.

2. Installing the mechanical ruler

   Please install the ruler like the way of the stage splint.

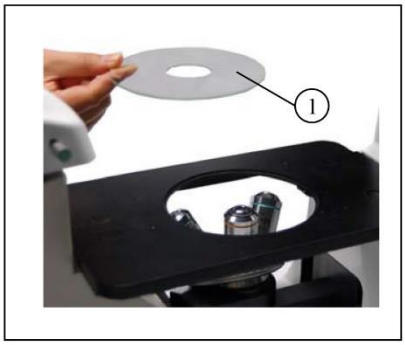

Figure 9

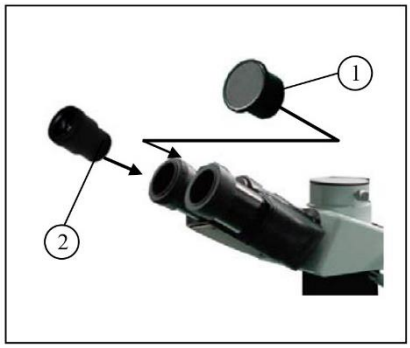

Figure 10

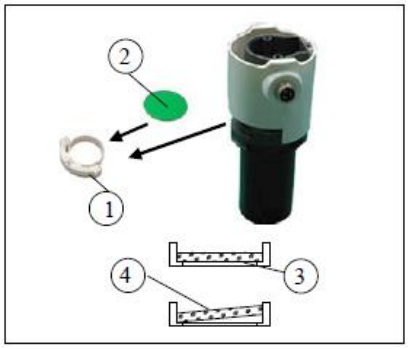

Figure 11

2.2.6. Installing the stage inserted plate (Figure 9)

1. When using the glass stage ①, there is no special require, you just need to place it in a plane.
2. Install the stage inserted plate on to the stage opening.

- Turn the disk, let the V nick to face user, so the recognition of the objective will become easier.

2.2.7. Installing the eyepiece (Figure 10)

1. Remove the cap of the eyepiece tube ①.
2. Insert the eyepiece into tube until they are against.

2.2.8. Installing the color filters (Figure 11)

- ❖ **Be sure the color filter cools down completely before you change them. Take down the filter holder ①, then install the color filters ② you need.**
- Mount the color filter downwards like ③ shown, keep it horizontal through the end, not allow inclined.
- ❖ **If the color filter is inclined or not get to the end, it will drop possibly.**
- The color filter could be piled on the holder, so you can install more than one filter according the needs if you can ensure the whole thickness is less than 11mm.

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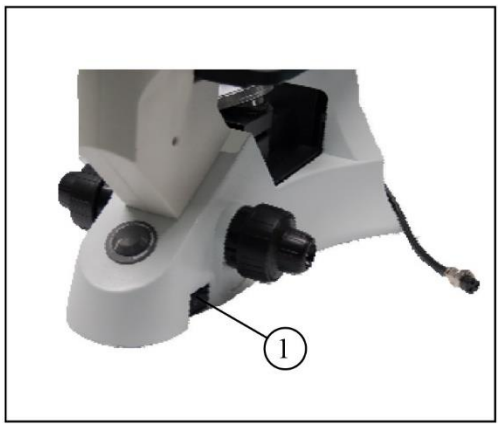

Figure 12

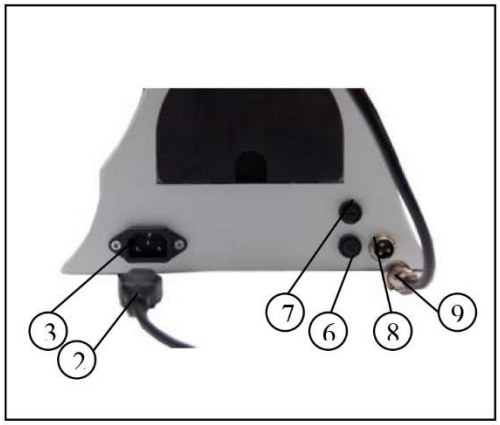

Figure 13

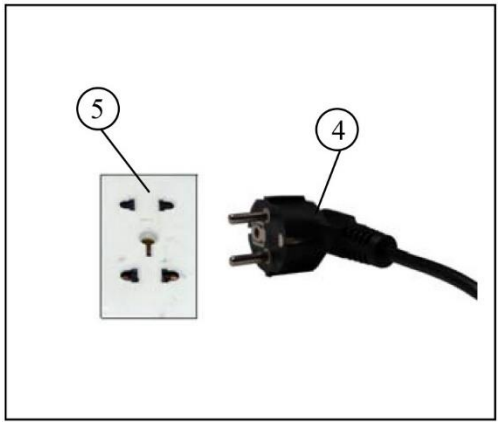

Figure 14

2.2.9. Connecting the power cord (Figure 12, 13 and 14)

- ❖ Do not bring the power cord to bear a powerful stress. When being bent or wrapping, the cable and wires will be broken easily.

1. Turn the main switch ① on "O" (off) state before connecting the power cord.
2. Insert the plugs ② into the power jack ③of the microscope safely.
3. Plug the power cord ④into the power supply receptacle. Make sure the connection is well.
4. Insert aviatic BNC connector plugs ⑨ into aviatic BNC connector jack ⑧

- ❖ **Do use the supplied power cord all the time. If lost or damaged, select the same standard cord, please.**
- ❖ **Connect the power cord correctly, to ensure the instrument is earthing.**

2.2.10. Replacing the fuse (Figure 12 and 13)

Do remember to turn the main switch ①on the state of "O" (off) before replacing the fuse, and unplug the power cord. Rotate the fuse ⑥ kits out of the holder ⑦ by the "--"type screwdriver, replace a new fuse, then rotate back to the holder again.

- ❖ Fuse rating: 250V， 500mA.

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3. OPERATING THE ADJUSTMENT

3.1. Microscope base

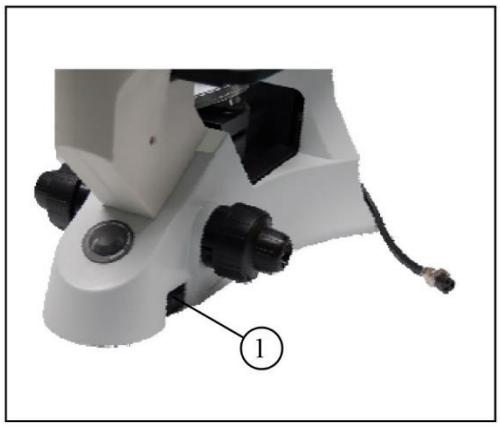

Figure 15

3.1.1. Turning on the lamp (Figure 15)

Connect the power, turn on the main switch ① which on the bottom side of the base to " - " (on).

3.1.2. Adjusting the brightness (Figure 16)

Turning the brightness adjustment knob clockwise, the voltage raise, and the brightness strengthen; whereas turning at the contra direction, the voltage decline, and the brightness weaken.

- Using the lamp in a low voltage condition, will prolong the service life.

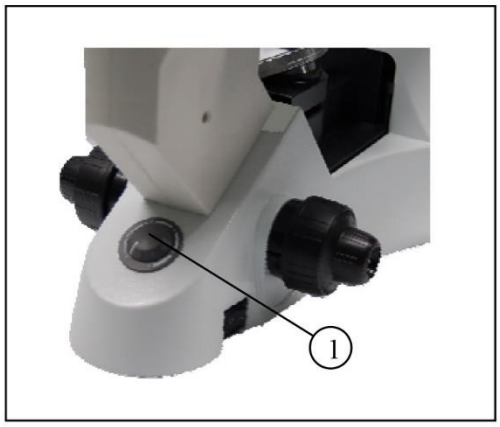

Figure 16

3.1.3. Adjusting the tension adjustment collar (Figure 17)

- **The tight tension of the coarse focus knob ② had already adjusted before leaving factory.**
- How to adjust the tight tension

  Turning the tension adjustment collar ①. While revolving at the direction which shown by the arrowhead on the figure, the tight tension of the coarse focus knob ② is increasing； and if at the contra direction, the tight tension will decline.

  If the nosepiece dropped automatically, or the specimen defocused soon even you focus with the fine focus knob ③. It means the coarse focus knob is too loose, you should screw it down at the direction shown by the arrowhead in the figure 17.

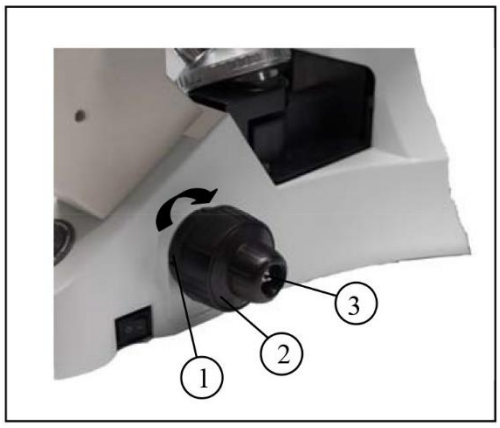

Figure 17

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3.2. Stage

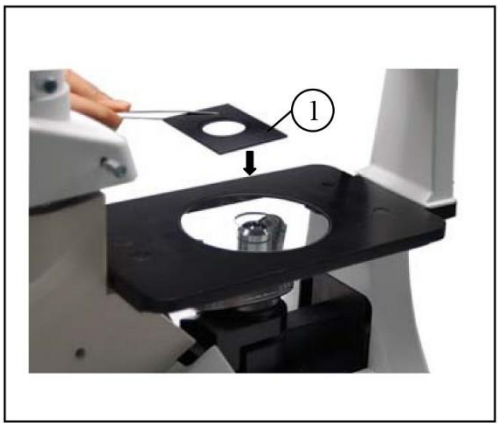

Figure 18

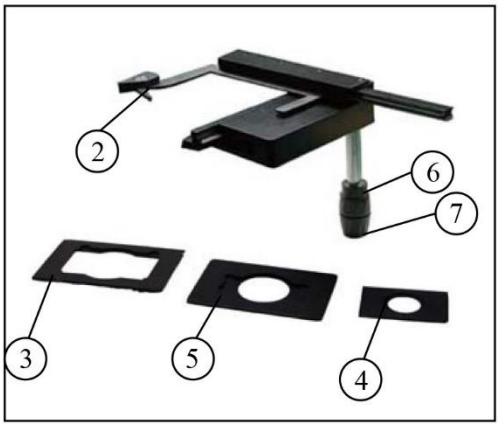

Figure 19

3.2.1. Setting the specimen (Figure 18 and 19)

Set the specimen in the center of the stage, please.

- ❖ To obtain the best observe effect, please select the containers, such as culture dish and culture bottle, with the bottom thickness is 1.2mm, and the same thickness is also required by the object slide when it is laid the specimen.

- ○ Using the Φ35mm culture dish

  You can lay a Φ35mm culture dish on the stage directly by using the standard center board ① of the stage.

- ○ Using the mechanical ruler

1. When using the 96bit or 24bit micro-titration board, please fasten it tightly by the stage clips ②.
2. When fastening other model boards, please use the following supplied brackets with mechanical ruler:
   - Terasaki bracket ③ for Terasaki board
   - Culture dish bracket ④ for Φ35mm culture dish
   - Object slide bracket ⑤ for object slide and Φ54mm culture dish
3. Turning the transverse knob ⑥and lengthways knob ⑦, move the specimen to the required position. Movement Range: 120mm (width) × 78mm (Length)

3.2.2. Moving the specimen

Turn the knob of the mechanical ruler or use your hands directly to move the specimen to the position you wanted, please.

- ❖ **Be careful when you replace the objective, please, especially after a short work distance observation. Not let the objective to touch the stage inserted plate or the culture dish bracket.**

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3.3. The viewing tube

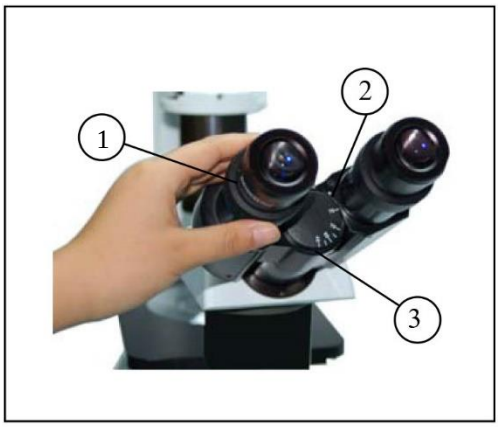

Figure 20

3.3.1. Adjusting the diopter (Figure 20)

1. Look into the right ocular by your right eye, then revolving the coarse focus knob to focus on the specimen.
2. Then use your left eye to look into the left ocular. If the image is not sharp, just use the diopter adjustment ring ① to adjust please.

❖ **There are ±5 diopter in the adjustment ring. The number which the reticle on the eyepiece holder pointed is your eye's diopter graduation.**

Figure 21

3.3.2. Adjusting the interpupillar distance (Figure 21)

When observing with two eyes, hold on the left and right prism holder, turn around the axis, adjusting the interpupillar distance until the left and right fields of view coincide completely.

❖ The reticle on the interpupillar distance indicator ③, pointed by the spot "." ② on the eyepiece holder, shows the scale of the interpupillar distance. (Figure 20)

The range of the interpupillar distance：48～75mm.

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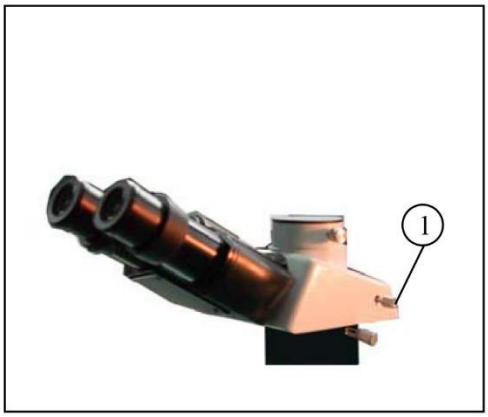

Figure 22

3.3.3. Switching the light path (Figure 22)

- Pulling out the light path selector lever ① by your thumb, select the light path you needed.
- When in the binocular observation, pushing in the lever until you heard a “clicked”. While in video or photography, pulling out the lever until it reached the “clicked” position.

Light path selector lever	Brightness proportion	Application
Pushing in the lever until it reached the limit position	100% used for binocular observation	Binocular observation
Pulling out the lever until it reached the limit position	20% used for binocular observation, and 80% used for video or photography	Binocular observation, television, and micrography or video can be operated simultaneous

3.4. Illumination Unit

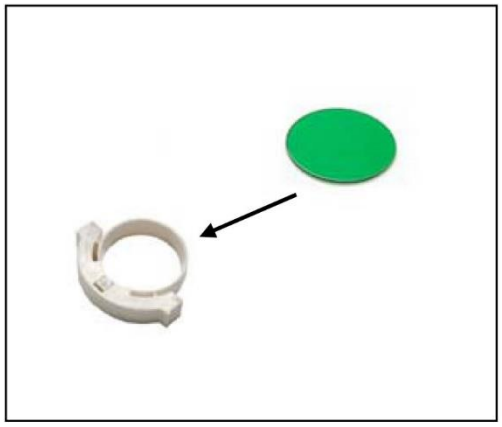

Figure 23

3.4.1. Using color filter (Figure 23)

- Selecting the appropriate color filters according your need, it became more effective to observe or photography the specimen. Especially, we suggest using the LBD color filter, which can compensate more neutral colors.
- You could pile up a group of color filters to the filter holder, if you ensure they are level and the whole thickness is less than 11mm.

Color Filter	Meaning
IF550	Single contrast color filter (green) (used for the phase contrast microscopy)
LLBD	Color temperature transit color filter (blue) (used for bright field observation and microphotography)

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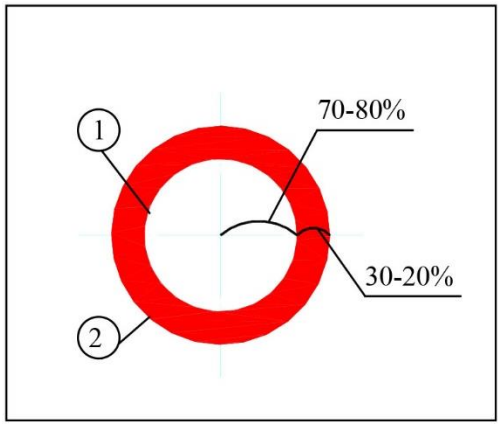

Figure 24

3.4.2. Using the aperture diaphragm (Figure 24)

- When in the bright field observation, the aperture diaphragm control the numerical aperture of the illumination system. Only when the numerical aperture of the objective and the illumination system being matching, you can obtain the higher image resolution and contrast, and the increased depth of field, too.
- To recognize the aperture diaphragm, you could remove the eyepiece if necessary. (You also could insert in the center telescope) then looked into the viewing tube, you might see a field of view like the figure shown. The proportion could be changed by dialing the aperture adjustment lever according your need. (①is the image of the aperture diaphragm, ② is the edge of the objective)
- Generally, when observing the chromatic specimen, you need to set the size of the condenser aperture diaphragm at 70%～80% of the numerical aperture which marked in the objective. But if observing the bacterium specimen which not colored, you could turn the aperture diaphragm lever at the direction of "↻" (clockwise).

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4. PHASE CONTRAST VIEWING

4.1. Name of the components

Figure 25

4.1.1. Phase contrast objective (Figure 25)

- The optional magnification of the phase contrast is: 10X, 20X.
- If you want to know how to mount the phase contrast objective, please see **2.2.4**. You ought to mount it on the turret.

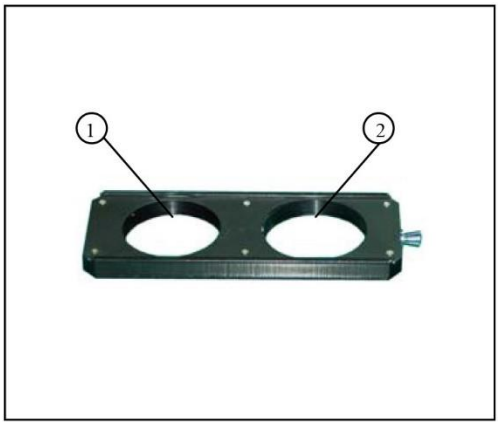

Figure 26

4.1.2. Phase contrast slider (Figure 26)

- Phase centering adjustable slider
- The light ring was centered beforehand, so it needn't to adjust in the use process. If the ring is not in the center, you could adjust by the centering bolt.
- The 10X/20X light ring ① is worked with the 10X, 20X phase contrast objective, while the opening ② is used for bright field.

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4.2. Installation and use

Figure 27

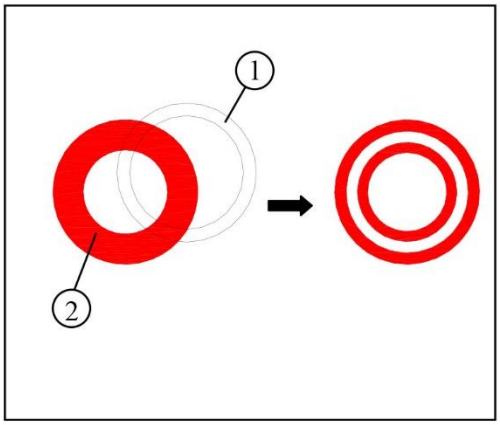

Figure 28

Figure 29

4.2.1. Installing the phase contrast slider (Figure 27)

1. Keep the slider ① face (the surface which had character) up towards, then inserted it into the illumination system from the right to the left like the figure showed.
2. Every light ring or opening has its own located position, so you need to move them until you heard the “clicked” to ensure the ring or the opening reach the center of the light path.
3. When in the phase contrast observation, do keep the aperture diaphragm adjustment lever ② on the position of “O” (wide opening).

4.2.2. The centering ring (Figure 28 and 29)

❖ **Usually you needn’t the operation of centering. If necessary, please accord to the following steps:**

1. Place the specimen on the stage and focus it.
2. Take out the eyepiece, replace it with the CT (the centering telescope), and inserted it into the viewing tube without diopter adjustment.
3. Make sure the matched phase contrast objective and light ring (in the phase contrast slider) have been in the center of the light path.
4. Using the CT to look the light ring’s image ① and the phase contrast ring’s image ②, if the light ring’s image is not sharp, please shifting the CT’s ocular until you can see a clear image of the light ring ②.
5. Adjusting the bolts of the two centering holes ③ in the phase contrast slider by the screwdriver ③ until the light ring center and the phase contrast center are coincided.

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6. The 10X and the 20X phase contrast objective use the same light ring on the phase contrast slider. So you need to check the coincidence of the light ring center and the phase contrast center when changing the objective. If having departure, you ought to center again.

- **If the light ring is centering incorrectly, you will fail to obtain the best viewing effect of the microscopy.**
- **After removing or replacing a thick specimen, the light ring and the phase contrast ring are likely to deviate each other, which will result in a decline of the image contrast. So if happened, please repeat the steps as above.**
- **If the container or the cover flip which used to place the specimen is not flat, it maybe need to repeat the centering steps for obtaining a more contrast effect. Please center the light ring by the phase contrast objective, according to the sequence of low to high magnification.**

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5. MICROSCOPE PHOTOGRAPHY AND VIDEO

5.1. Microscope video

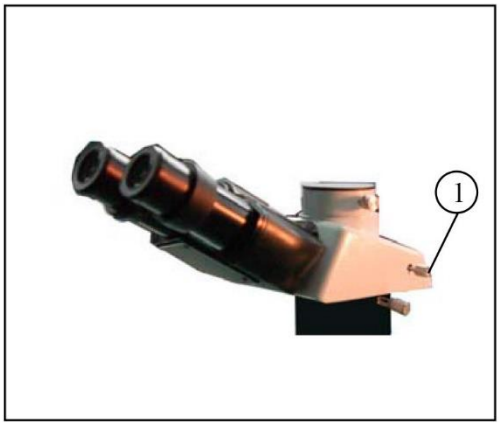

Figure 30

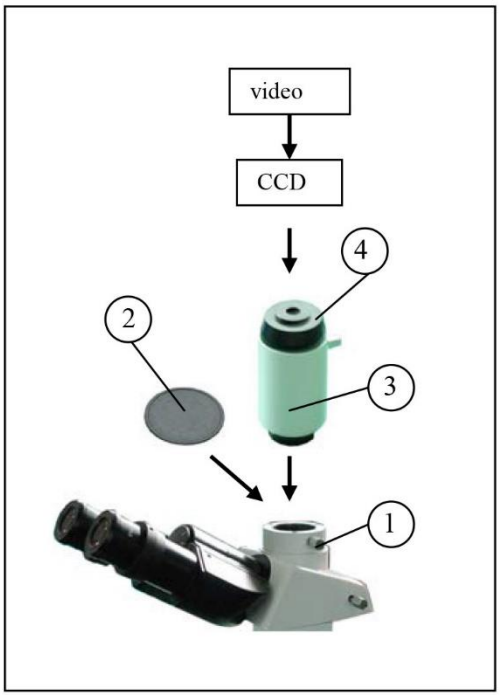

Figure 31

5.1.1. Selecting the light path (Figure 30)

- ❖ Just used in the trinocular observation

1. Pulling out the light path selector lever, until you heard the "clicked".

- ❖ In the dark specimen observation, you can make the focus by both eyes at first, then change the light path

5.1.2. Installing the video set (Figure 31)

1. Loosen the locking bolt ① on the trinocular viewing tube, and take out the dust cap ②.
2. Remove the dust cover on the both ends of the video accessories ③, and revolve the screw head end into the CCD/CMOS port.
3. Install the accessories into the tri-through port, and screw down the bolt ①.

5.1.3. Focus (Figure 31)

Doing a binocular observation at 20% brightness, look the image on the video or the computer which connected with the microscope video system when the image is sharp. If it is not in focus, please turning the revolving video connected tube ④ until the image is sharp enough.

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5.2. Microscope photography

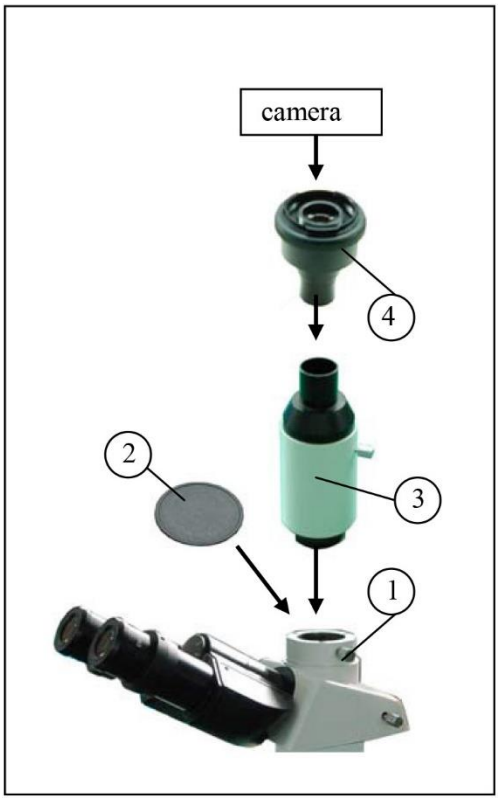

Figure 32

5.2.1. Selecting the light path

- ❖ Just used in the trinocular observation

The operation diagram is shown in **5.1.1**, and the details reference is in **3.3.3**.

5.2.2. Installing the photography set (Figure 32)

1. Loosen the locking bolt ① on the trinocular viewing tube, and take out the dust cap ②.
2. Install the photography accessories ③ into the tri-through port, and screw down the locking bolts ①.
3. Inserted the camera gate which on the digital photography connected head ④ into the correspond position of the camera set port, and screw it down clockwise.
4. Plug the digital photo connected head into the photo tube, then screw down the locking bolts ①.

- Before connecting the camera and adapter, remove the camera lens firstly, then connect the lens port with the adapter. Pay attention to the gate type, please.
- To avoid the disturbing from the ocular in the observation, please place the viewer finder on the two sides of the microscope when installing the camera set.
- The camera magnification = objective magnification × camera lens magnification

- ❖ When shooting the micrograph, the lens close will bring an impact in some camera. In order to weaken the impact, and obtain a clear image, you could select a longer time of exposure or decrease the brightness to have some compensation.
- ❖ This explanation is used for Nikon single-lens reflex digital camera

5.2.3. Focus

Do the binocular observation at 20% brightness, and focus primary. When in microscope photography, do use the camera viewfinder to focus the specimen. Please refer the user manual of the camera set to obtain the details.

5.2.4. Adjusting the color temperature

- When shooting the chromo photograph, please use the sunlight film.

1. Mount the LBD temperature changed color filter on to the color filter bracket.
2. Turn the brightness adjustment knob to the maximal position, so you obtain a sunlight illumination.

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6. TECHNICAL SPECIFICATIONS

6.1. Main specifications

Optical System	Infinite Optical System
Viewing Tube	Compensation Free Trinocular Tube Inclined at 30; Division ratio: 20% of Binocular Viewing and 80% of Video Viewing & Micrography
Eyepiece	Wide Field Eyepiece 10X, Linear Visual Field: 22 mm
Nosepiece	Backward Quintuple Nosepiece
Objective	Infinite Long Working Distance Plan Achromatic: 4X, 40X Infinite Long Working Distance Plan Phase Contrast: 10X, 20X
Focusing System	Coaxial Coarse and Fine Focusing System Sensitivity and Graduation of Fine Focus: 0.002mm Movement Range (from the surface focus of stage plate): up 8mm, down 3mm
Stage	Area: 160mm (width) × 250mm (Length)
Mechanical ruler	Movement Range: 120mm (width) × 78mm (Length)
Illumination	Halogen Lamp 6V 30W, Preset Center, Intensity continued Adjustable
Condenser	Long working Distance Condenser, Numerical Aperture 0.3, Working Distance 72mm
Operation environment	• Use indoor • Altitude: Maximum 2000 m • Temperature: 5℃~40℃ (41°F~109°F) • Maximum Relative Humidity: 80% at 31℃ (88°F), then Fall Linear. • 70% at 34℃ (93°F), 60% at 37℃ (104°F), 50% at 40℃ (104°F). • Pollution Degree: 2 (refer to IEC60664)

6.2. Objective specifications

Type	Magnification	Numerical Aperture (N.A.)	Working Distance (mm)	Conjugate Distance (mm)	Focus Distance (mm)	Cover Slip Thickness
Infinite Long Working Distance Plan Achromatic Objective	4X	0.1	25.2	∞	45	–
	40X	0.6	3.2	∞	45	1.2mm
Infinite Long Working Distance Plan Phase Contrast Objective	10X	0.25	11	∞	45	0.17
	20X	0.4	6	∞	45	0.17

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7. TROUBLESHOOTING

Under certain condition, some no-fault factors will bring a reversible influence to the instrument's performance. If the problem is happened, please take proper measures according to the follow table. If you can't solve the trouble by the supplied methods, please contact with the sales department of our company.

PROBLEM	REASON	Solution
I. Optical Part:		
1. The illumination is opening, but the field of view is dark.	The plug of the lamp holder is not connected into the illumination set	Connect them well
	The bulb burnt out	Change a new lamp
	The brightness is too low	Adjust to a proper position
	The color filter is piled too much	Minimize the number of the filters
	No use the appointed lamp bulb	Use the specified halogen Lamp 6V30W
2. The edge of the field of view has shadow or the brightness is asymmetry	The nosepiece is not in the located position	Turn the nosepiece into the position where you can hear "clicked"
	the color filter is stopped midway	Insert deeply
	The phase contrast slider is not located in the proper position	Turn the slider into the "clicked" position
3. Find dust and stain in the field of view	There are stains on the specimen	Change a clean specimen
	There are stains and dust on the eyepiece	Clean the eyepiece
4. Appear double image	the size of the aperture diaphragm is too small	Open up the aperture diaphragm
5. Resolution problems: • Image is not sharp; • The contrast is not high; • The detail is not clear; • Don't obtain the phase contrast effect	The nosepiece is not in the center of the light path	Ensure the nosepiece is turned into the "clicked" position
	the aperture diaphragm in the view of field is opened too large or too small	Adjust the aperture diaphragm correctly
	The lens (condenser, objective, ocular or culture dish) become dirty	Clean all
	In the phase contrast observation, the bottom thickness of the culture dish is more than 1.2mm.	Use a the culture dish whose bottom thickness is less than 1.2mm
	Use a bright field objective	Change to the phase contrast objective
	The condenser ring is not coincident with the objective phase ring	Adjust the condenser ring to match the objective phase ring
	The light ring and the phase contrast kits is not centered	Adjust the bolts to center them
	The objective used is not fit to the phase contrast observation	Please use the compatible objective
	When looking at the edge of the culture dish, the phase contrast ring and the light ring is deviated each other	Moving the culture dish until you obtain phase contrast effect. You also can demount the slider, dial the field diaphragm with the direction of "  "

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6. One side of the image is unfocused	The nosepiece is not in the center of the light path	Insure the nosepiece is in the "clicked" position
	The specimen don't place properly	Place the specimen on the stage correctly.
	The optical performance of the culture dish bottom is poor (such as erose figure and soon)	Please use a regular culture dish
II. Mechanical Part:		
1. The coarse focus knob is hard to run	The tension adjustment collar is too tight	Loose properly
2. The image can't stay on the focal when observation	The tension adjustment collar is too loose	Tighten properly
III. Electric Part:		
1. The lamp can't light	No power supply	Check the power cord, and connect them exactly
	the installation of the bulb is wrong	Install the bulb correctly
	The bulb burn out	Change a new bulb
2. The bulb burns out in a high frequency	Not use the specified lamp	Use the required lamp
3. The height of the brightness is not enough	Not use a appointed lamp	Use an appointed lamp
	The brightness adjustment knob is used wrong	Adjust the brightness adjustment knob in a correct way
4. The light glimpse	The bulb is going to spoil	Change the bulb
	The power cord have a poor contact	Check the power cord, and connect them exactly
IV. Viewing tube		
1. The two eyes' field of view is different	The interpupillary distance is not correct	Adjust the interpupillary distance
	The diopter is not right	Adjust the diopter
	Not adapted to the microscope observation	When observing, do not stare at the specimen but at the whole field of view, or move the eyes away to see other things, then back into the objective
V. Microscope video		
1. The image is unfocused	Focus incorrectly	Adjusting the focus system, make the double reticle and the specimen distinctly to see
2. There is faintness around the image	It is an inherent character of the achromatic objective	The problem is unavoidable if you used an achromatic objective
3. The indoor window or the fluorescence lamp develop	The extra light entered into the eyepiece and viewfinder is reflected	Cover up the eyepiece and the viewfinder of the microscope illumination system