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5103-M1000

METALLURGICAL MICROSCOPE

OPERATION MANUAL

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VIDEO

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Attention

- Be sure to turn off the power switch and remove the power cord before installing this unit, replacing the bulb or fuse, plugging and unplugging the power supply.
- Except the removable parts mentioned herein, no part of this unit shall be removed, otherwise the performance of this unit may be reduced, or may cause an electric shock, injury or damage to this unit. Please contact our company if any fault occurs.
- Check if the input voltage is consistent with your local voltage supply. If not, do not operate this unit and contact the supplier. Improper input voltage may cause a short circuit or fire thereby causes damage to this unit.
- Use of an improper bulb, fuse or power cord may cause damage or fire to this unit. Any extended power cord used must be grounded (PE).
- To prevent short circuit or any other fault, do not expose this unit to any high temperatures or dampness environment for a prolonged period of time. A suitable operating environment is designated at a temperature of 5°C-35°C, and relative humidity of 20%-80% (at 25°C). If water splashes on this unit, turn off the power switch and remove the power cord immediately, and then wipe the water off with dry cloth. When any foreign object enters or drips onto this unit, please stop operating the unit and contact our company.
- The lighting bulb generates high temperatures during operation. Do not touch the collector lens or lamp box when the lamp is illuminated, and do not touch the bulb within 10 minutes after the lamp goes out due to high temperatures arising from operation. When replacing the bulb, make sure it has cooled down properly (the lamp should be off for at least 10min).
  1)To prevent burn, do not touch the bulb when the lamp is illuminated or within 10min after it goes out.
  2)To prevent fire, do not place any fibrous product, paper, flammable or explosive material (e.g., gasoline, petroleum ether, alcohol) near the halogen lamp housing or mercury lamp housing.
- This unit employs a coarse/fine coaxial focusing mechanism. Do not turn the left/right coarse/fine focusing knob in the opposite direction. When the objectives lifting device reaches the limit of motion, do not continue to turn the coarse focusing knob, otherwise the focusing mechanism may be damaged.
- This precision optical instrument is heavy and should be handled with care. Strong impact and rough handling are strictly prohibited, it may cause damage to this unit.

Structure

1 Name:

1.Eyepiece
2.Eyepiece tube
3.Main frame
4.Power switch
5.Coarse/fine focusing mechanism
6.Nosepiece
7.Photography device
8.Reflected illuminator
9.Lamp house
10.Objective
11.analyzer
12. polarizer
13.stage moving knob
14. image to eyepiece/camera switch
15. Stage

2 Operation:

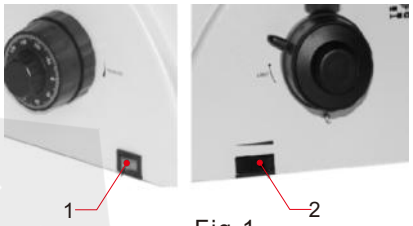

Fig.1

Turn on the toggle switch 1 on the right of the main body frame (turn it to the "-" position), so that the transmitted halogen bulb is illuminated. Turn the brightness control knob 2 to adjust the brightness of the bulb, and make the brightness of the field of view suitable for visual inspection. As shown in Fig.1.

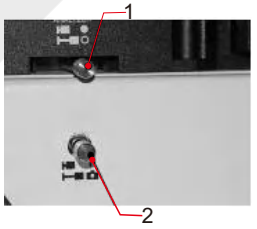

Fig.2

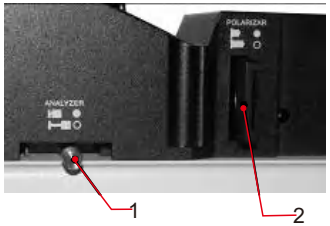

Fig.3

Check the position state of observation / photography switch pole 1. Push the pole into optical path , as show the remark"⊨▷", The remark "⊨◫"means is photography. As shown in Fig.3.

3. Check the position state of analyzer pole 1. Push the pole into optical path, as show the remark "⊨○" . Check the position state of polarizer 2. Push the polarizer into optical, as show the remark "⊨○". As shown in Fig.4.

Parallax can be eliminated by adjusting the interpupillary distance so that the distance of the eyepiece tube is identical with interpupillary distance and enable to observe more comfortably and clearly. When observe through two eyepieces, if the field of view consists of two overlapping circles, alter the exit pupil center distance of the eyepiece tubes by turning the left or right frame body until the field of view becomes a fully overlapped circle.

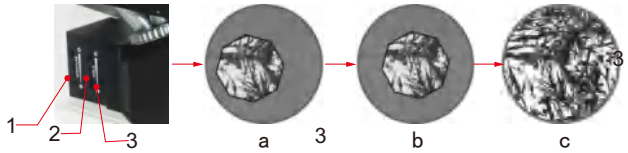

Fig.4

The center of aperture diaphragm 1 has been calibrated before factory release, so that it has no use for centering. When use low magnification objective, adjust the aperture diaphragm bigger, use high magnification objective, adjust the aperture diaphragm smaller.

Fig.5

The filters are fixed in the round slots of filters slider 1, have yellow, green, blue filter and ground glass, through-hole. Switch different filters or ground glass through push-pull the puller to exchange the image underlay or adjust the brightness of illumination. Pay attentation to the direction when install the puller, insert from right of maine frame to left, the position slot is located up according the direction of arrow "▯" that marked on the puller, as shown in Fig. 6.

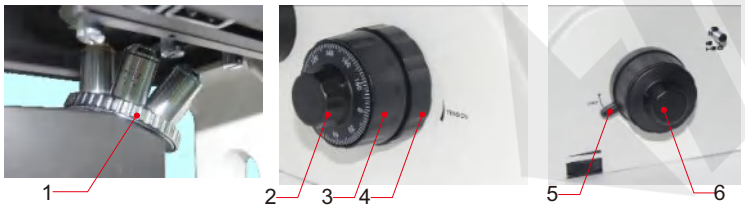

Fig.6

(1)Focus with the 10X objective
Turn the nosepiece 1 to make 10X objective into optical path (when it turns in place, the objective will snap automatically), as shown in Fig. 6.
(2)Turn the coarse focusing control knob 3 to lift the objective to the highest point, then observe and turn the coarse focusing control knob slowly to lower the objective, micro-image will appear in the field of view, stop turning the coarse focusing control knob.
(3)Turn the fine focusing control knob 2 for fine focusing to make micro-image clear.
(4)Lock the objective lifting limit hand wheel 4 as indicated by the arrow in the figure.
(5)Focus Tension Adjustment
The tension of the coarse focus control knob is adjustable and preset at the factory for ease of use. If wish to adjust the coarse focus tension, turn the knob 5 to tension adjustment.Turn the wheel clockwise decrease the tension, and anticlockwise increases it.

Diopter adjustment
Adjust the diopter adjusting on the left eyepiece tube to calibrate diopter, which is difference between both eyes of different user.
(1)Turn 40X objective into optical path, observe micro-image in right eyepiece which the eyepiece tube has no diopter adjusting ring, and focus to make micro-image clear
(2)Observe micro-image in left eyepiece only. If the image unclear, it is necessary to adjust the diopter adjusting to make image clear. The diopter adjusting range is N=±5 diopters.

Observe in polarized light to distinguish double refraction features matter, such as crystal of liquid macromolecule polymer, biomedical polymer and liquid crystal, widely used in geology, mechanics, metallurgy, electron and etc. Equipped with polarizer and analyzer , the polarizer can be adjusted from 0°~360°and drawed out, but the analyzer can't be adjusted and drawed out. Push the anaylzer pole and polarizer into optical path, rotate the turnplate of polarizer to make orthogonal polarization, the field of view will be dark. Push the pole to ratate the center stage and observe in different condition micro-image. Pay attention to the direction when install the polarizer, insert from right of illuminationor to left, the position slot is located up according the direction of arrow "▯" that marked on the polarizer。

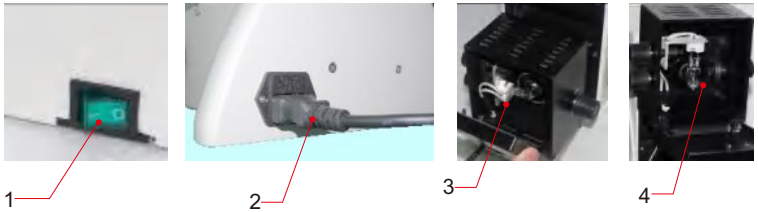

Fig.7

Replace bulb:

The unit light source is 6V30W for the model 5103-M1000. When replace the halogen lamp, should ensure the specification in order to avoid electrical trouble. The following is operating steps.

(1)Turn off the power switch 1, and unplug the power cord 2.

(2)Wait at least 30 minutes until the bulb and its surroundings have cool down. This is to prevent hand getting burnt by heat.

(3)Catch hold of the lamp house back cover and pull out backward, take out the defective bulb 3 and replace a new one. Close the back cover again. as shown in Fig.7.

(4)Connect the power cord and turn on power switch.

(5)Check and adjust the center of the bulb according to the above-mentioned centering method for alignment of illuminator in the inverted microscope .

Parameter

1 Specification:

Code	**5103-M1000**(bright field objectives)			
Illumination	6V/30W halogen lamp, brightness is adjustable			
Objective (infinite plan achromatic)	10X	20X	50X	100X
Working distance	20.2mm	8.80mm	3.68mm	0.40mm
Numerical aperture	0.25	0.40	0.70	0.85
Magnification	100X~1000X			
Eyepiece (wide field)	10X(view field: Ø22mm)			
Stage	double layer			
	size: 242×200mm			
	travel: 30×30mm			
Pupil distance	53~75mm			
Diopter adjustment	±5 diopter (one eyepiece)			
Dimension (L×W×H)	614×250×394mm			
Weight	13kg			