



## BIOLOGICAL MICROSCOPE

Mod. **BIO1**

monocular, binocular, trinocular

DIN160mm Optics



**Model BIO1M** Monocular



**Model BIO1B** Binocular



**Model BIO1T** Trinocular

# USER MANUAL

*file:* BEL Photonics BIO1\_manual\_REV2.doc

**The model BIO1** biological microscope is equipped with achromatic objectives and wide field eyepieces, the observer can get the clear image in the wide field. It's suitable for school teaching, medical & health work.

## I. SPECIFICATIONS

### 1. Eyepieces

Type	Magnification	Focus(mm)	Field(mm)	Remark
Wide field eyepiece	10X	25	$\phi$ 18	
Plan eyepiece	16X	16.7	$\phi$ 11	Optional

### 2. Objectives

Type	Magnification	N.A	W.D(mm)
Achromatic Objectives	4X	0.1	37.4
	10X	0.25	6.6
	40X	0.65	0.64
	100X (oil)	1.25	0.19

### 3. Total Magnification

Total Magnification	Eyepieces	4X	10X	40X	100X
16X	64X	160X	640X	1600X	

4. Up-down knob of Abbe condenser with aperture diaphragm and filter seat ,NA=1.25.

5. Mechanical stage,move range: longitudinal 20 mm traverse 50 mm.

6. Coaxial coarse/fine focus system ,minimum division 0.004mm.

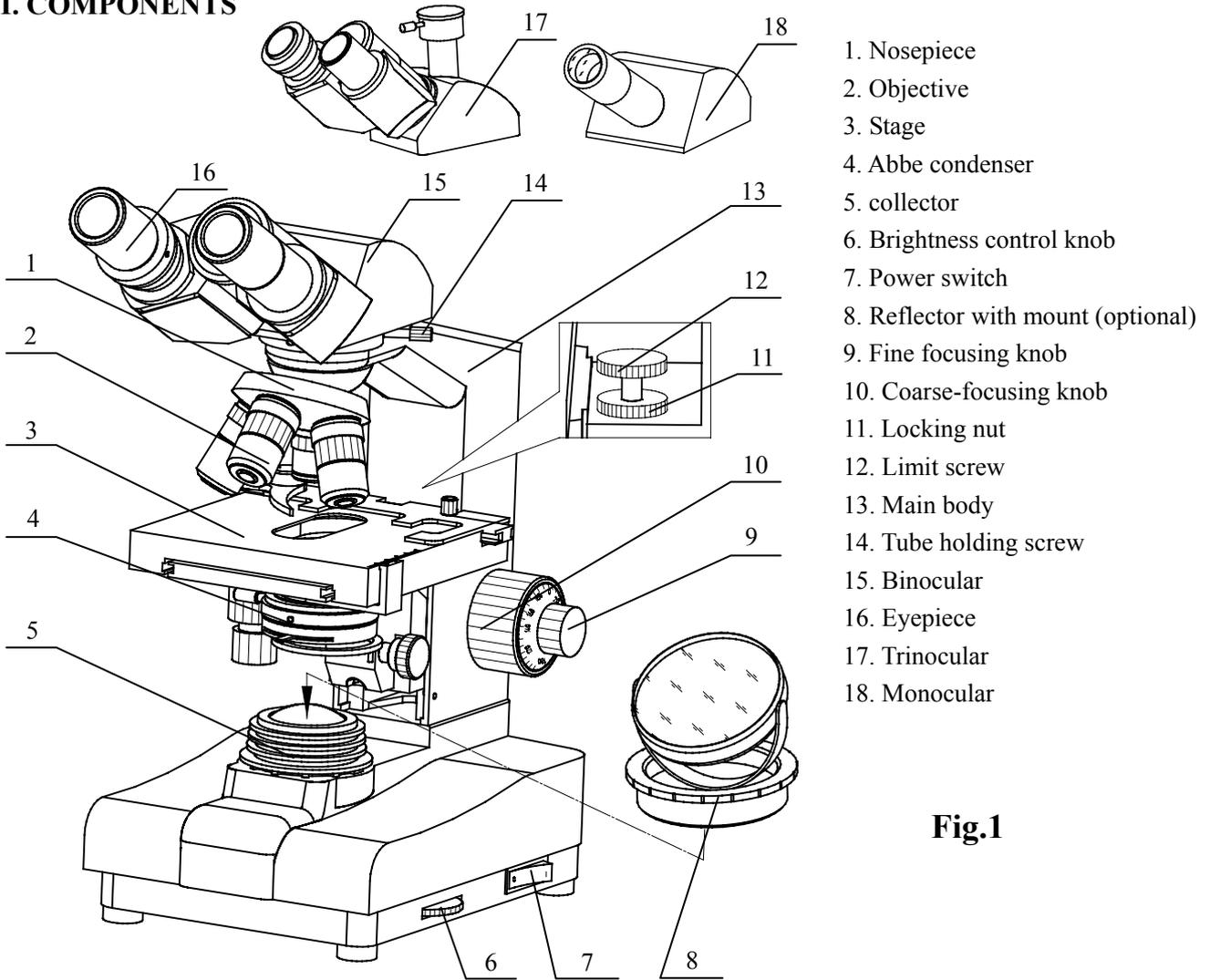
7. Illumination: filament lamp 20W, 220V/110V; halogen lamp: 20W,12V;

fluorescents lamp: 5w, 220/110V; LED illumination(optional).

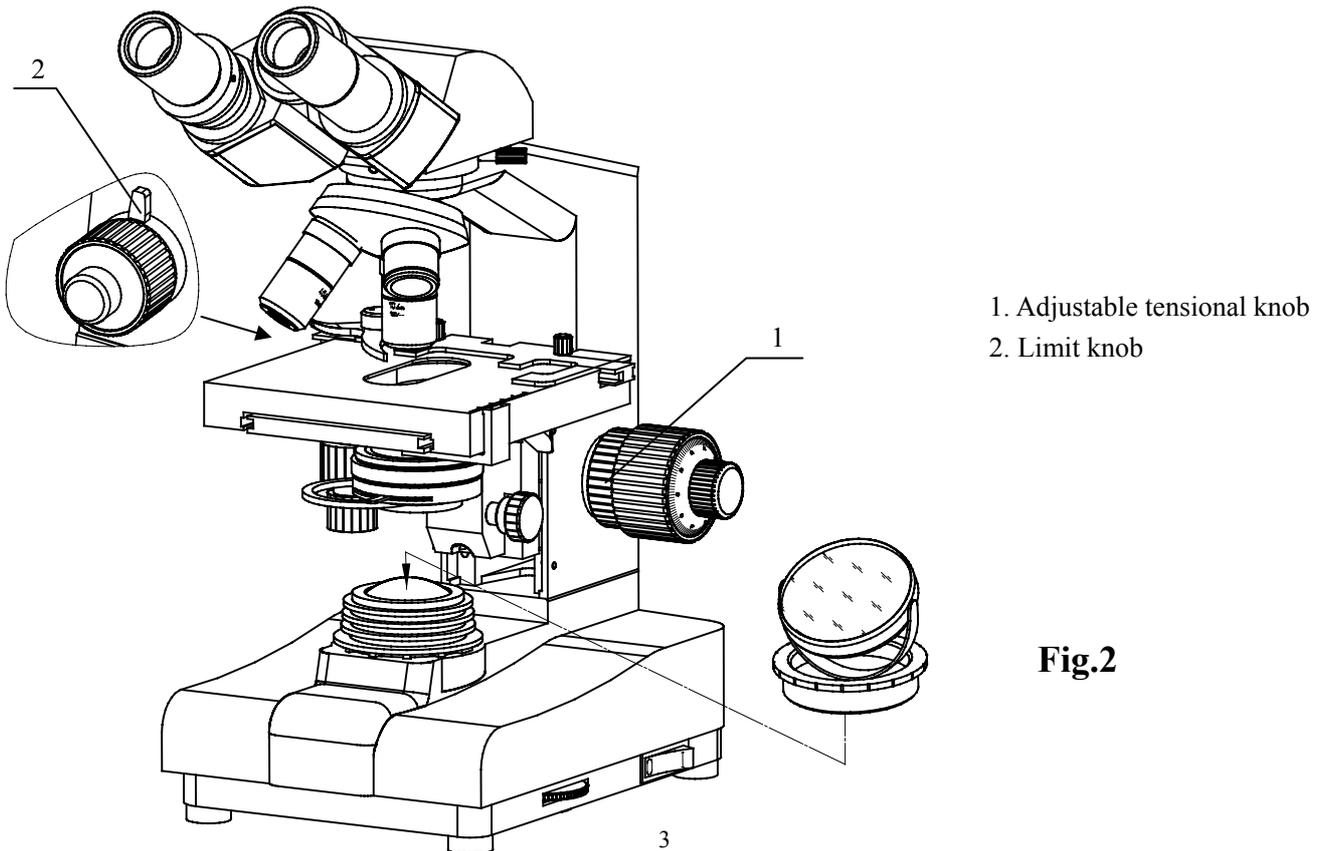
## II. COMPONENTS

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**Fig.1**



**Fig.2**

### III. OBSERVING OPERATION

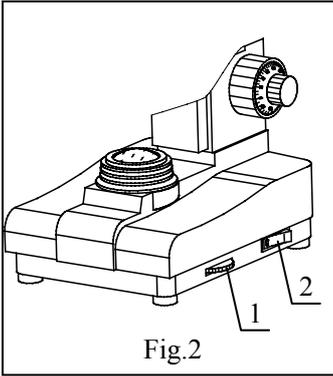


Fig.2

#### 1. Power switch and brightness adjustment

Turn on the power switch 2, adjust the brightness control knob 1 until the image can be observed comfortably.

**Note: Don't let brightness control knob 1 at the lightest position so long that reduce the life of lamp.** (Fig.2)

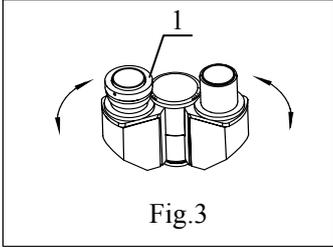


Fig.3

#### 2. Adjustment of interpupillary distance

Put the specimen on the stage and ring the specimen into exact focus. Adjust the interpupillary distance of binocular until the right-left field of view can be composed one. (Fig.3)

#### 3. Adjustment of diopter

Put the specimen on the stage. Turn the 40X objective to working position. Firstly, observe at right tube with right eye, adjust coarse-fine focusing knob to image clearly. Secondly, observe at left tube with left eye, adjust the diopter control 1 to image clearly. (Fig.3)

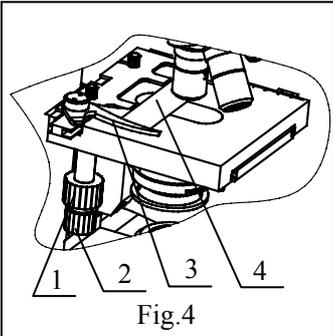


Fig.4

#### 4. Stage

The convenient specimen holder 3 on stage is used for holding slide glass 4, lengthwise knob 1 and cross knob 2 are coaxial, the stage move expediently.(Fig.4)

#### 5. Adjustment of condenser

The condenser is moved up or down via turning up-down knob 1, filter plate places on the filter seat 3 (Fig.5)

#### 6. Adjust aperture diaphragm

The aperture diaphragm handle 2 can be turned to adjust NA of the illuminating system and the contrast of image. When you change objective, you should adjust the aperture diaphragm handle to obtain satisfactory observation effect.(Fig.5)

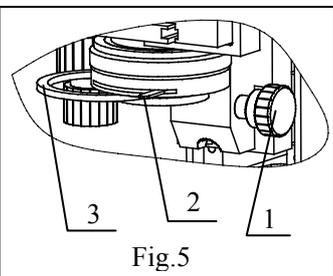


Fig.5

#### 7. Adjustment of Coarse/Fine focusing and Limit screw

Put the specimen on the stage, adjust the coarse/fine focusing knob to make the image clearly. Adjust limit screw 12 and locking nut 11, then to be quickly into observation position.(Fig.1)

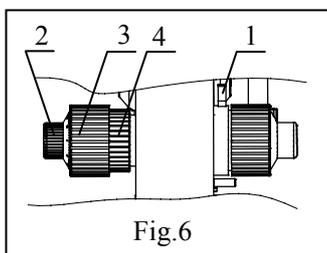
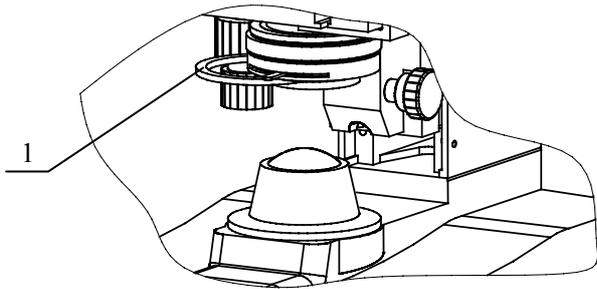


Fig.6

#### 8. Coarse/Fine focusing

The instrument used coaxial coarse/fine focusing mechanism. The adjustable tensional knob 4 used for adjusting the tension of the coarse focusing knob 3 to prevent the stage from naturally sliding down. The limit knob 1 prevents accidental specimen/objective contact. 2 is fine focusing knob.( Fig.6)

## 9. Observation of LED illumination (Fig.7) (OPTIONAL)



Place ground glass 1 on the filter seat, turn the filter seat in observation position when observe the specimen image with 4X or 10X objective.

Fig.7

## IV. EXCHANGE THE LAMP AND FUSE (Fig.8)

1. Switch off the power switch and pull out the power plug from power socket;
2. Incline the microscope, loose the screw 4 of fixing lamp base board 3 on the middle part of bottom and remove 3 from bottom;
3. Pull out the old lamp 2 from lamp base 1;
4. Insert a new lamp into the lamp base 1;
5. Reinstall lamp base board 3 on bottom with screw 4;
6. Plug the power plug and turn on the power switch, turn objective into light path, adjust condenser upwards and downwards, If light spot is offset the center of view, loose the screw 6 slightly and move the lamp base 1, make lamp spot into center, then tighten up the screw 6;
7. Switch off the power switch and pull out the power socket when change the fuse, then loose the screw of fuse 5. Put out the bad fuse and insert a new fuse, then tighten up the screw 5;

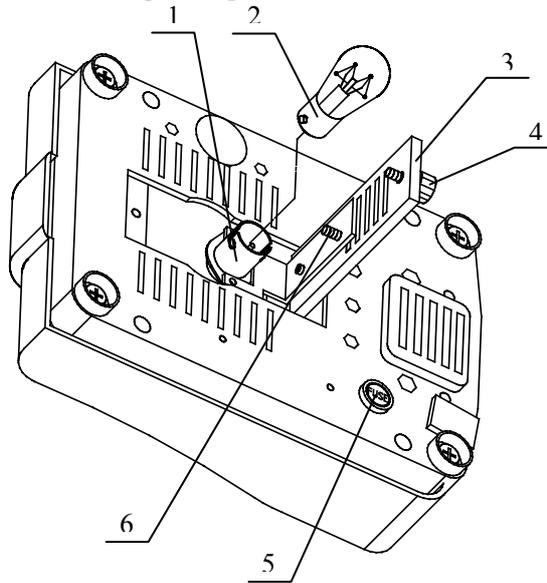


Fig.8

## V. MAINTENANCE

### 1. Sweep the lens

Sweep the lens by lens tissue or soft fabric immersed with mixed liquid of alcohol/ether or diethyl benzene. Cleaning the oil on the 100X objective whenever finish operating.

### 2. Clean the painted parts

The dust on the painted parts can be removed by gauze, for the grease spots, the gauze immersed slightly with aviation gasoline is recommended. Do not use organic solvents such as alcohol, ether or other thinner etc, for cleaning the pointed parts or plastic components.

### 3. Avoid disassembling the microscope

Being a precise instrument, do not disassemble the microscope casually that may cause serious damage to its performance.

### 4. Being not used

Cover the microscope with polymethyl methacrylate or polyethylene and places where there is dry and modules. Suggest that storage all objectives and eyepieces in closed container with drying agent.

**CERTIFICATE No. 42304Rev.1**  
**According to Art. 10 clause 2 of Electromagnetic Compatibility Directive**  
**89/336/EEC as amended by 92/31/EEC and 93/68/EEC**

CERTIFICATO N° 42304Rev.1

*In accordo all'Art. 10 paragrafo 2 della Direttiva Compatibilità Elettromagnetica 89/336/EEC  
 come modificata da 92/31/EEC e da 93/68/EEC (recepimento italiano D.L. n. 615 del 12  
 Novembre 1996)*

Equipment <i>Apparato</i>	<b>LABORATORY BIOLOGICAL MICROSCOPE</b>	
Applicant <i>Richiedente</i>	BEL Engineering S.r.l. Via Venezia Giulia, 1 20052 Monza (MI) Italia	
Manufacturer <i>Costruttore</i>	BEL Engineering S.r.l. Via Venezia Giulia, 1 20052 Monza (MI) Italia	
Model/type <i>Modello / Tipo</i>	<b>BIOVIDEO</b>	
Ratings <i>Dati tecnici</i>	100-240 Vac, 50-60Hz	
Additional information <i>Informazioni aggiuntive</i>	---	
Variants <i>Varianti</i>	BIO2; L3000; L135; L1600; L2000; XDS; XTL; XTC; XTX	
Certificate referred to TCF <i>Certificato riferito al TCF</i>	No.:	01
	Issued by/Redatto da:	BEL Engineering S.r.l.
	Rev. No./ Rev. n°:	Rev1.2
	Date of issue/Data di emissione:	08 February 2006
	Pages/Totale pagine:	256

**THE A.M. EQUIPMENT COMPLIES WITH THE REQUIREMENTS OF THE  
 COUNCIL DIRECTIVE 89/336/EEC as amended by 92/31/EEC and 93/68/EEC.**

*IL SOPRA INDICATO DISPOSITIVO SODDISFA I REQUISITI DELLA DIRETTIVA 89/336/EEC  
 COME MODIFICATA DA 92/31/EEC E DA 93/68/EEC*

The certificate is valid 10 years provided that all signed certification conditions are complied with, and that modification to product or TCF is notified to Nemko SpA for acceptance prior to implementation. The validity time may be reduced in case new standards are made applicable.

*Il certificato è valido per 10 anni, sempre che tutte le condizioni di certificazione siano soddisfatte, e che qualsiasi modifica al prodotto o al TCF sia notificata a Nemko S.p.A. per accettazione prima dell'implementazione. Il tempo di validità potrà essere ridotto nel caso in cui nuove norme diventassero applicabili.*

**Date of issue: 2006-03-15**

*Data di emissione:*

**Nemko S.p.A.**

Certification Dept.

  
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 Alberto Reati

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