GR-BIO2100 BINOCULAR INDIRECT OPHTHALMOSCOPE

USER'S MANUAL

GILRAS

Preface

Thank you for purchasing our Ophthalmoscope. Please read this manual carefully for the sake of your best use.

General Requirements for Safety

Please read carefully about following precautions to avoid unexpected personal injury as well as the product being damaged and other possible dangers.

Precautions

1. Do not use this instrument in the environment prone to fire and blast or where there is much dust and with high temperature. Use it indoors and keep it clean and dry.
2. Make sure all ports operated under the rating condition. Check all the wires correctly and firmly connected before use. Make sure the instrument is well grounded.
3. Turn off the main power before changing the bulb and fuse.
4. Only use fuse according to the specifications and ratings stipulated by our product. Turn off the main power before changing the fuse.
5. The brightness should be as low as possible when you operate the instrument. Please turn off the light after operating.
6. Don’t pull plug out of receptacle by the power cable.
7. Don’t touch the surface of the lens and prism with hand or hard objects.
8. In case there is any trouble, please first refer to the trouble shooting guide. If it still can’t work, please contact the authorized distributor or our Repair Department.

THE SAFETY MARKS USED IN THIS INSTRUMENT:

Attention:
Please Refer to This Manual

Class II

Table of Content

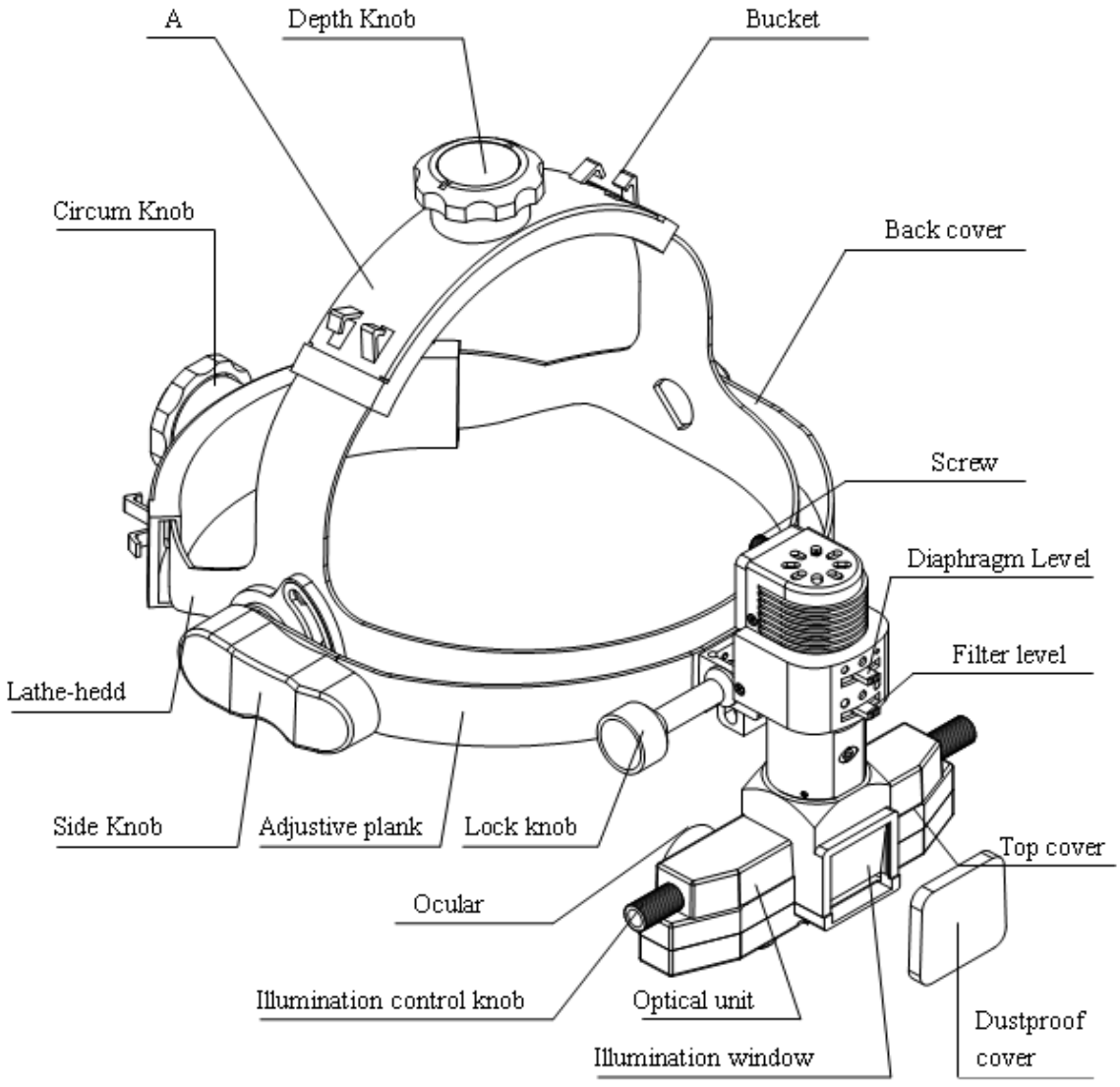
1. USAGE

This binocular ophthalmoscope is an indispensable medical optical instrument for the examination of the fundus and operations of retina resetting.

2. CONSTRUCTION

There is no potential electromagnetic or other interference between this instrument and other instruments.

2.1 Main body



Picture 1

2.2 Power supply

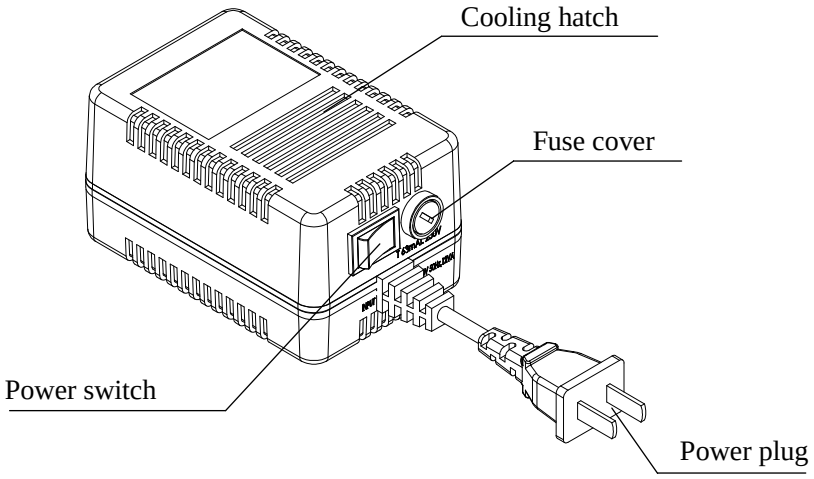


Figure 2

2.3 Dimmer

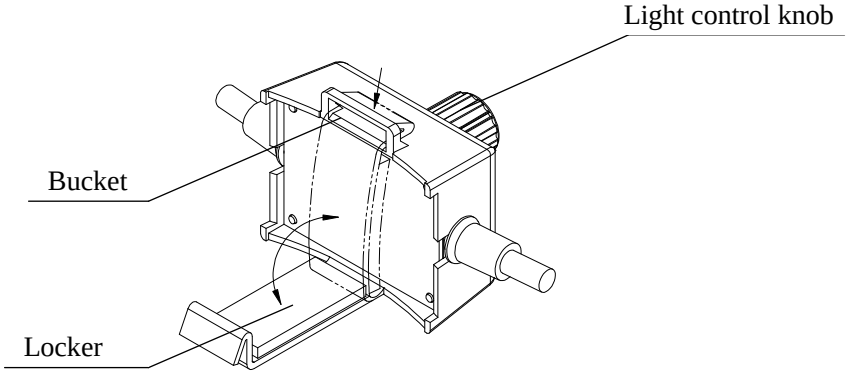


Figure 3

3. ASSEMBLY

All parts should be taken out with great care from the packing case before assembling.

3.1 List of the Parts (Picture 4)

Notes:No.3,4,5,7,8 is in the accessories box

No.	Name	QTN	No.	Name	QTN
1	Ophthalmoscope noumenon (the lathe-hedd and the optical main part)	1	6	+20D aspheric lens	1
2	Accessory box	1	7	Plane lens	2
3	Sclera depressor	1 big, 1 small	8	Lens cleaning cloth	1
4	Spare bulb	2	9	Power unit	1
5	Demonstrating mirror	1	10	Light adjuster	1

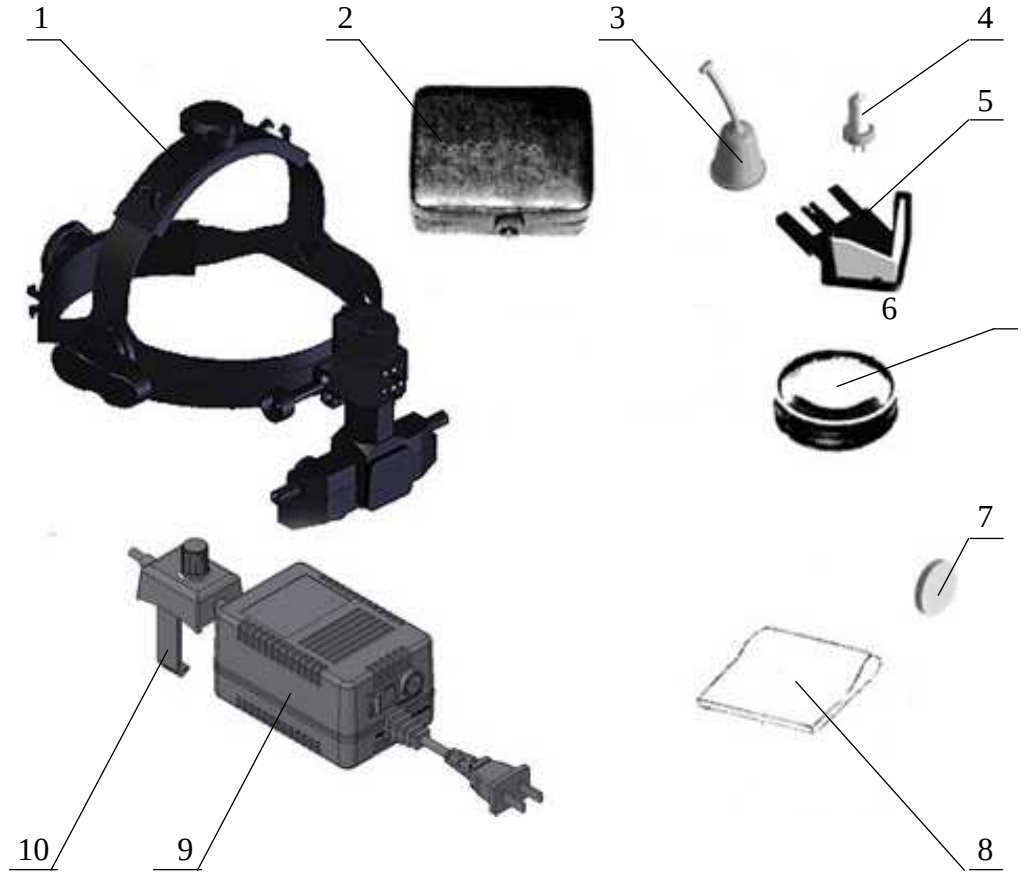


Figure 4

3.2 Assembly Procedure

- Align the electric plug of optical main part with the socket of the dimmer, then insert the plug in the socket.

3.3 Checking after Assembly

- Dismantle the dustproof cover on the illumination window. Insert the transformer's plug in net power socket, turn power switch on. The green light shows the lighting power is on. Turn the light control knob on the dimmer clockwise and the light beam is observed from the illumination window. Revolve continuously to increase the brightness. Project the light spot on a flat surface about 30-40cm distance.
- Turn the diaphragm level, the light spot should have 3 kinds of size variety (Figure 5). Turn the filters level, the light spot should have 3 kinds of colour variety (Figure 6).

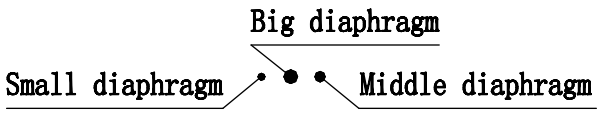


Figure 5

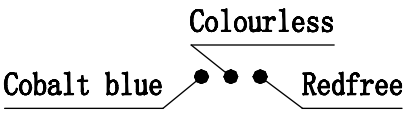


Figure 6

- Turn the light control knob, the light spot should move up or down.

- Each operation should can be operated agility and located accurately.

⚠ **Attention:** To prolong the bulb life span, before inserting the plug of the transformer into the net power socket, the light control knob on the dimmer should be turned to the position“0”(turn it anticlockwise until to the end).

4. THE USAGE OF THE OPHTHALMOSCOPE

4.1 The adjustment of The lathe-hedd and optical main part

- Put on the instrument, adjust the circumambience knob and the depth knob, make the lathe-hedd steady and comfortable.
- Unscrew the lock screw ,press and circumgyrate the side knob (Figure 7), change the position of the adjustive plank and optical main part, make the ocular as close as to your eyes, screw these knobs. Turn on the power and observe the light spot about 30-40cm distance, the object at the position of the light spot must be clearly-focused. Turn the illumination control knob, so that the light spot appears centred vertically in your view. If the light spot is not centered, adjust the lathe-hedd in the left and right uniformly.

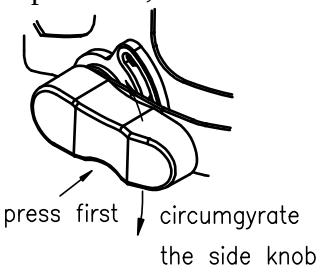


Figure 7

◇ The lenses on the ocular are +2D on the standard package. You can change them with plane lenses included in our product. Just screw off the clamping ring of the ocular, take out the +2D lens and put on the plane lens, then screw the clamping ring back (Figure 8).

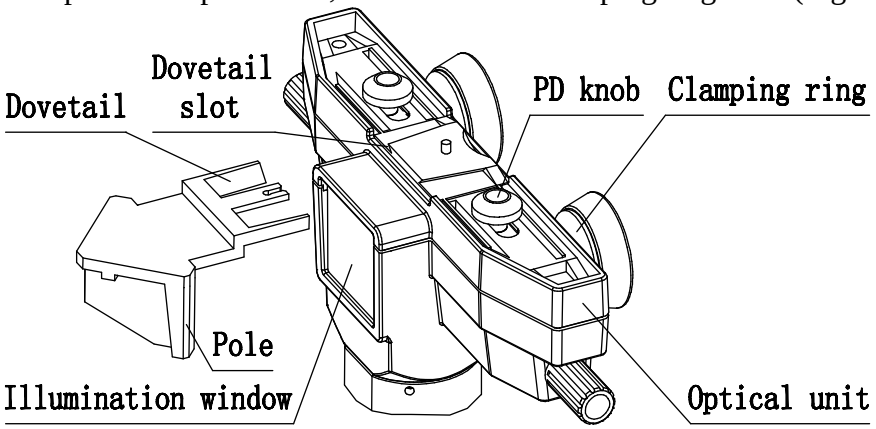


Figure 8

- Observe the light spot alternately with the left and right eye, adjust the PD knobs, so that the light spot separately is placed in the view centers of your left and right eye, then you can get the image with a stereoscopic effect.
- Take down the instrument, check the PD knobs adjusted to symmetry. If dissymmetry, adjust it according to the value of the left and right pupillary distance on the optical main part's top cover. Regulating optical main part accurately is very important, especially while checking small pupil.

4.2 The usage of the ophthalmoscope

- Select the diaphragm size according to the size of the patient's pupil dilated.
- Select different filters according to the different observational demand.
- Put the aspheric magnifier in front of a patient eye to observe the fundus image.

◇ Examiner should face to the convex surface of the magnifier or patient face to the white and bright wreath surface on the bottom of the magnifier.

◇ Slightly incline the magnifier to minimize the reflection for a clear fundus image.

- Regulate the light brightness to adequate value.
- After use, turn the light control knob anticlockwise to the position“0”, the green light is off, it means the power is turned off.

4.3 The installation of the demonstrating mirror

The demonstrating mirror is installed in front of the viewing window on the optical main part. (Figure 8) Hold both sides on the root of the demonstrating mirror, insert it after its dovetail align to the dovetail slot on the bottom of optical main part.

5. MAINTENANCE

5.1 Replacing the bulb

⚠ **Attention:** The bulb is hot, do not touch directly.

First close the power switch, after the bulb is cool enough, unscrew the screw and pull the back cover open, then take out the used bulb. (Figure 9) Clean the new bulb with a soft and clean cloth. Insert the new bulb aligning the position pin to the slot inside the lamp housing. Close the back cover, fasten the screw.

The bulb is consumable. When ordering, please speak for our company.

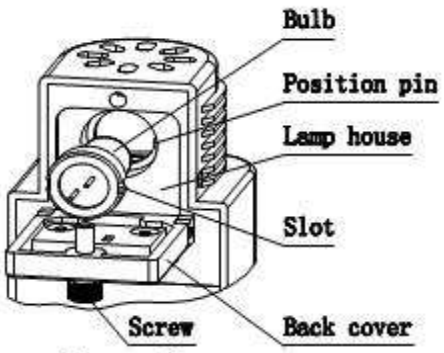


Figure 9

5.2 Replacing the fuse

Turn off the power switch and unplug the power supply. Screw off the cover of fuse box and replace the new fuse.

The fuse specification：

Input power supply（220Vsystem）： T 100mAL 250V

Input power supply（110Vsystem）： T 315mAL 250V

⚠ **Attention**：Please use the fuse with the same specifications.

5.3 Cleanness

The Lens and viewfinder can be wiped using the lens cleaning cloth dipped with alcohol.

◇ The surface of the instrument can be wiped using alcohol and soft cloth.

◇ The soft mat of lathe-hedd can be wiped with soap water and soft cloth.

⚠ **Attention:**

1) Do not scratch the reflecting mirror with fingers or any other hard materials.

2) Do not wipe with any corrosive detergent lest that the surface should be damaged.

5.4 Protection

- This ophthalmoscope is rectified before delivery. Please do not disassemble it.
- The Ophthalmoscope should be used in clean circumstance. If it is not used for long time, it is recommended that it be put into the box in case of dust invasion.
- This ophthalmoscope should not be vibrated, impacted and dropped down.

6. RESPONSIBILITY

- We will supply the circuit diagram of the instrument, electric component list, drawings and calibration details according to the customer's need for repair.
- If there is any need for inquiry of relative information and relative service or some questions, please contact us directly or authorized distributors.

7. TRANSPORTATION AND STORAGE

- When transport this instrument, be careful to prevent tide and turning upside down, avoid shake violently.
- This instrument should be stored in a well ventilated room without corrosive gas where the relative humidity should be 10% to 80% , environment temperature -40℃ to 50℃ and atmospheric pressure 500hpa～1060hpa.

8. TROUBLE SHOOTING GUIDE

In case of any trouble, please check the following table for reference. If it still cannot work, please contact the authorized distributor or Customer Service Department of our company.

Trouble	Possible reason	Remedy	page
The bulb can't light	The transformer loosely jointed with net socket	Fasten the transformer	P3
	The light control knob in the position"0"	Turn the knob clockwise	P3
	Power is not on	Turn on the power	P3
	The back cover of bulb isn't in the position	Fasten the screw.	P5
	The bulb is damaged	Replace the bulb	P5
The brightness is not enough	The light control knob isn't in the position	Turn the knob clockwise	P4
	The bulb is old	Replace the bulb	P5
	The selection of the filter isn't suitable	Change the filter	P3
	The lens or viewfinder has been stained	Clean the lens	P6
The light spot isn't complete	The diaphragm or filter isn't in position	Turn to the position	P3

9. SPECIFICATIONS

- Type: Head-worn binocular non-contact ophthalmoscope
- Working distance: 50.5mm (from the patient's corneal to the aspheric lens)
- Pupillary distance: Adjustable from 52-74mm
- Intensity of illumination: Stepless adjustable with the maximum intensity not less than 200Lx
- Lathe-hedd: 530-630mm in circumference,85-125mm in depth
- Light spots: Three spots, big, middle and small
- Filters: Three filters including redfree, colourless and cobalt blue
- Demonstrating mirror: Coated mirror with both sides viewing
- Power supply of illumination: mini halogen bulb 6V/10W
- Input power supply（220Vsystem）：AC220V,230V,240V
- Input power supply（110Vsystem）：AC110V,120V
- Input power frequency：50/60HZ
- Input power: 20VA
- Electric safety standard: GB9706.1-1995 Class Ⅱ, IPXO, Not AP or APG device
- The fuse specification:
  Input power supply（220Vsystem）：T 100mAL 250V
  Input power supply（110Vsystem）：T 315mAL 250V
- Work Condition: Continuous

10. NORMAL WORKING CONDITION

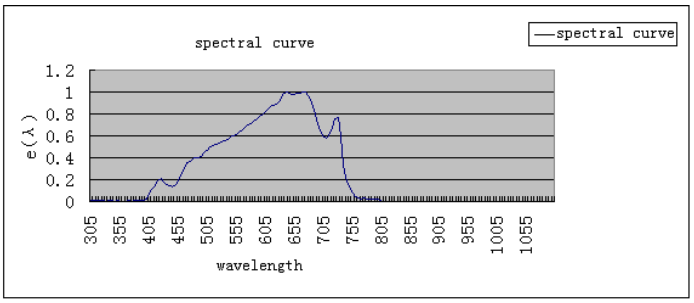
- Temperature: 5℃～40℃
- Relative humidity : 30%～75%
- Atmospheric pressure: 700hPa～1060hPa
- Input power supply（220Vsystem）：AC220V,230V,240V
- Input power supply（110Vsystem）：AC110V,120V
- Input power frequency：50/60HZ

11. WASTE DISPOSAL

The used bulb and fuse can be disposed as normal indusrial products.

12. SAFETY CONSIDERATIONS

The relative spectral output of the YZ25B between 305 nm and 1100 nm indicates that this device is comparable with other ophthalmoscopes:



$$L_A = \sum_{305}^{700} L_\lambda(\lambda) \cdot A(\lambda) \cdot \Delta\lambda = 21.2 \text{ mW/(cm}^2 \cdot \text{sr)}$$

$$L_B = \sum_{380}^{700} L_\lambda(\lambda) \cdot A(\lambda) \cdot \Delta\lambda = 18.1 \text{ mW/(cm}^2 \cdot \text{sr)}$$

Spectrally weighted photochemical radiance L_B and L_A give a measure of the potential that exists for a beam of light to cause photochemical hazard to the retina. L_B gives the measure for eyes in which the crystalline lens is in place. L_A gives this measure either for eyes in which the crystalline lens has been removed (aphakes) and has not been replaced by a UV-blocking lens or for the eyes of very young children.

The value stated for this ophthalmic instrument gives a measure of hazard potential when the instrument is operated at maximum intensity and maximum aperture. Values of or over 80 mW/(cm^2 • sr),are considered high for beams which wholly fill a delated pupil.

The retinal exposure dose for a photochemical hazard is a product of the radiance and the exposure time. For instance, at a radiance level of 80 mW/(cm^2 •sr),3 min irradiation of the dilated (8 mm diameter)pupil would cause the retinal exposure dose level to attain the recommended exposure limit. If the value of radiance were reduced to 40 mW/(cm^2 •sr),twice that time (i.e.6min) would be needed to reach the recommended limit. The recommended exposure dose is based on calculations arising from the American Conference of Governmental Industrial Hygienists(ACGIH)—Threshold Limit Values of Chemical Substances and Physical Agents (1995-1996 edition).

While no acute optical radiation hazards have identified for ophthalmic instruments, it is recommended that the intensity of light directed into the patients's eye be limited to the minimum level which is necessary for diagnosis. Infants, aphaks and persons which diseased eyes will be at greater risk. The risk may also be increased if the person being examined has had any exposure with the same instrument or any other ophthalmic instrument using a visible light source during the previous 24 h. This will apply particular if the eye has been exposed to retinal photograph.

- **Subject to change in design or specification without notice in advance.**

GR-BIO2100 BINOCULAR INDIRECT OPHTHALMOSCOPE

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