

INSTRUCTION MANUAL
FOR
KERATOMETER

Preface

Thank you for purchasing our keratometer .The keratometer is suitable for detecting the radius of curvature of the anterior corneal surface .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.

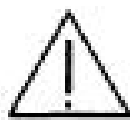
Precautions

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 in the room and simultaneously be careful to keep it clean and dry.
2. Check that all the wires are correctly and firmly connected before using .Ensure that the instrument is well grounded.
3. Please pay attention to all the ratings of the electrical connecting terminal.
4. Only use fuse according to the specifications and rated values stipulated by our product.
5. Use the power cable supplied with this instrument.
6. Don't touch the surface of the lens and prism with hand or hard objects.
7. Turn off the main power first before replacing the main bulb, flash lamp and fuse.
8. To prevent the instrument from falling down to floor ,it should be placed on the floor where the inclination angle is less than 10° .
9. Turn off the power and cover the instrument with dust-prove hood when it is not in use.
10. In case there is any trouble, please first refer to the trouble-shooting guide. If it is still can't work, please contact with the authorized distributor or our Repair Department.

THE SAFETY MARKS USED IN THIS INSTRUMENT



TYPE B



ATTENTION PLEASE
REFER TO MANUAL



TERMINAL OF THE
PROTECTIVE GROUNDING



ATTENTION TO
SAFETY ELECTRICITY

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1 Introduction

Keratometer was developed under the guidance of optometry center. This instrument can give a precise examination of the radius of curvature of the anterior corneal surface. This measurement is utilized to fit contact lenses and to monitor corneal changes produced through the wear of contact of certain corneal abnormalities and to check the radii of curvature of both hard and soft contact lenses. The program can be operated with considerable ease.

2 Components and nomenclatures

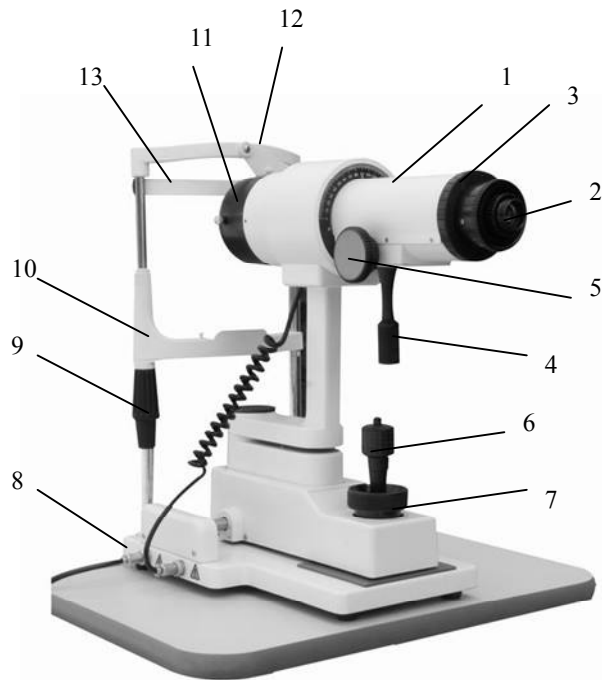


Fig.1

- 1) Protractor scale: Indication the axis of astigmatism.
- 2) Adjustable eyepiece control
Adjustable from to diapers to correct for operator spherical error.
- 3) Horizontal knob
- 4) Axis rotating handle
Must be turned to located the axis of astigmatism when there is horizontal Displacement of the ‘ + ’ and ‘ - ’ mire images.
- 5) Vertical knob
Is revolved to coincide the ‘ + ’ and ‘ + ’ marks of the mire images for finding the radius of the vertical axis .
vertical .horizontal and height adjustment improve performance and focus correctly
- 6) Operating rod
- 7) Up-down adjustable knob
Height of Up-down adjustable for accurate positioning
- 8) Power switch

9) Fluctuation hand-wheel

Is revealed to coincide the ' - ' and ' - ' marks of the mire images for finding the radius of the horizontal axis

10) Chin-rest

11) Lamp- house

12) Glare shield : helps to maintain fixation by blocking of no measured eye

13) Headrest

3 Examination:

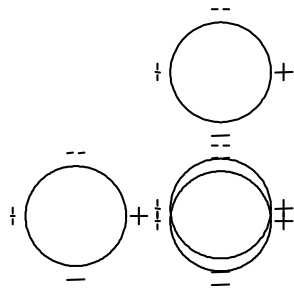


Fig.2

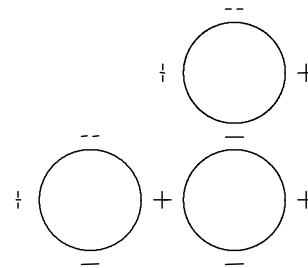


Fig.3

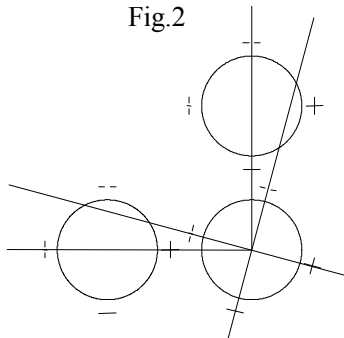


Fig.4

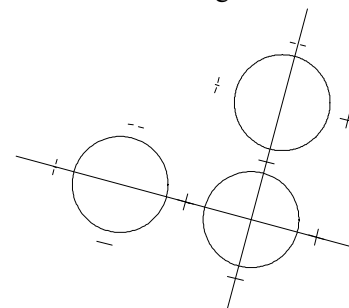


Fig.5

1) Preparation: Use the Keratometer in a quite Darkened room. In order to keep the patients overcomes any apprehension about the examination.

Fully explain the purpose and procedure of the examination before starting. Follow the produce as shown below to make the necessary preparations.

- ♦ Verify the ovular surface of both eyes .
- ♦ Connect the instrument power plug to the outlet.
- ♦ Turn power switch on.
- ♦ Seat the patient at the keratometer to allow for the adaptation to the examination.
- ♦ Adjust both the height of the chair and instrument to assure maximum comfort for the patient.
- ♦ Place the patient's chin in the chin-rest by using the chin-rest height control. Center the patient's pupil in the systems axis when the patient will see his reflected eye image in the instrument.
- ♦ Occlude the eye, which is not being tested.
- ♦ When the occasion demands, use the headband to secure the patient's head

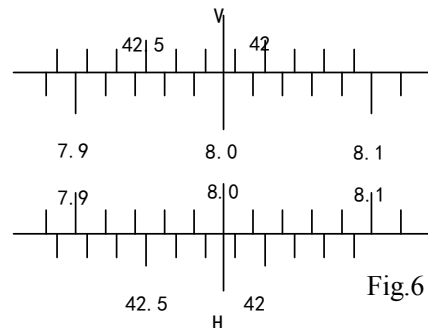
the chin-rest assembly.

2) Examination:

- ♦ Fig.2 the central image is double, including that the instrument is not correctly focused on the central image .Use the adjustment control to bring the central double image into clear one.
- ♦ Fig.3 sows the view seen when instrument is in focus, the vertical doubling and the horizontal and the doubling is insufficient. Adjustment of the vertical knob and the horizontal knob would bring the two minus signs and the two plus into the coincidence tow.
- ♦ Fig.4 illustrates the view seen when oblique stigma tams is present. The entire instrument has been rotated slightly toward the axis of the astigmatism ,but the two plus signs are not yet in alignment with each other. Further rotation would accomplish this alignment .Fig.5 Adjustment of the horizontal measurement control would bring the two plus signs ,into coincidence .in the same way ,adjusting the vertical measurement control would bring the minus signs , B and Bingo coincidence.
- ♦ The vertical and horizontal degrees of doubling are correct.

3) Readings :

- ♦ When the instrument is correctly aligned. record the ready from the diagrams beside the images Fig.6
- ♦ When oblige sating mates is present record the degree of rotation instrument.



4 Assembly

- ♦ This section of the manual describes how to assemble BL-8002 keratometer .all parts should be taken out with great care from the packing case before assembling.

4.1 Necessary tools are as follows:

- ♦ Cross screw driver with wood handle
- ♦ Hex wrench

4.2 Assembly procedure

1) Selecting Voltage and Fuse

- ♦ Check the setting on the voltage selector located on the bottom of the power box ().If it don't match with the input voltage, slide it to the proper position.
- ♦ Open the fuse holder with cross screw driver with wood handle (N)and take out the fuse, check and ensure that its rated value is corresponding to the mains voltage:

110V-----1A
220V-----0.5A

- ♦ It has been set to 220V, 0.5A before leaving our factory.

⚠ Attention: Set the input voltage and frequency of the instrument according to that of the mains.

2) Assembling the Worktable

- ♦ To attach the worktable on the BL-16 motorized instrument table , please screw off four M8×18mm bolts with spring washers with the hex wrench .
- ♦ Lift the worktable to aim its screw hole at the assembly hole of the instrument table.
- ♦ Put down the worktable, with the power panel facing the operator; refasten the bolt securely with the hex wrench (Fig.7).



Fig.7

3) Assembling the Head-rest Part (Fig.8)

- ♦ Remove the four screws attached to the chin-rest connection board with the hex wrench.
- ♦ While ensuring the output and input cables are not clamped, retighten the previously removed screws (Fig.9).
- ♦ Remove the cable clips from the bottom of the work table with cross screw driver and wrap two cables respectively, then reattach them to the bottom of the work table.(Fig.9) (Fig.10)



Fig.8

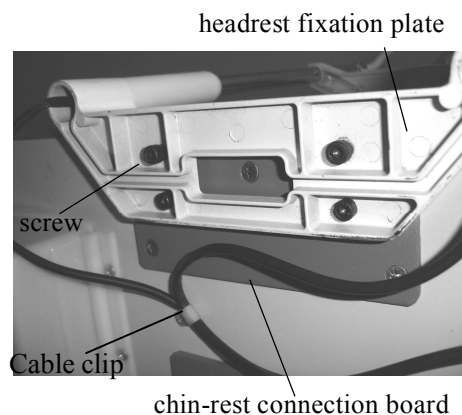


Fig.9



Fig.10

3) Assembling the Base part and the Rail Covers

- ♦ Place the wheels of both sides of the base on the rails on the worktable (Fig.6)
- ♦ Check whether the wheels can be rolled steadily on the rails.
- ♦ Remove four screws attached to the rail, place the rail cover to the rail a

retighten the previously removed screws.

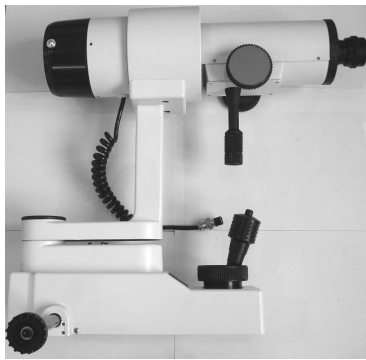


Fig.11



Fig.12



Fig.13

5 Main features

- ♦ The instrument efficiently measures the radius of curvature of the anterior corneal surface. One position measurement is not only more accurate but is truly effective in reducing measuring time and also helps promote patient's cooperation.
- ♦ The brightness of all the three images is equal.
- ♦ The central image is double whenever the instrument is not focus precisely on the corneal mire image. This allows continuous monitoring of correct focus by the examiner.
- ♦ Internal scale reading system
- ♦ Beside the mire images, the millimeter scales for the radius of curve.
- ♦ Radius of curvature and the dipter scales for corneal refractive power are view at all times in the field of view.
- ♦ Measurement of corneal astigmatism
- ♦ Horizontal displacement of the mire images indicates existence of astigmatism and axis rotating handle is used to coincide the measuring head with axis ,after which the vertical and horizontal knobs are used to coined the mire images , showing the great ease and simplicity of one position measurement .

6 Maintenance

1) The instrument should be avoided from any strong vibration or shock .



Fig.14



Fig.15



Fig.16

2) Replacing the illumination bulb:

- ♦ Turn the main power switch off.
- ♦ Loosen the positioning screw (Fig.14), unscrew the retaining screw with 1

cross screw driver (Fig.15) and remove the lamp cap from the illumination part.

- ◆ Remove the old bulb and replace it with a new one (Fig.16).

⚠ Attention: The bulb is hot

- ◆ Place the lamp cap in the original position and insert the connecting plugs.
- ◆ Retighten the screws.
- ◆ Turn on the main power switch and check whether the new bulb is illuminated.

3) Replacing the fuse:

- ◆ Turn off the main power switch and remove the power cable from the outlet.

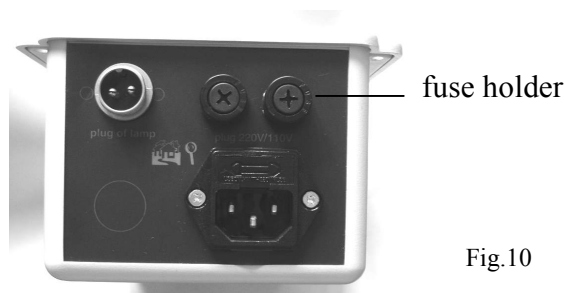


Fig.10

Fig.17

- ◆ With the cross screw driver, turn the center of the fuse holder (Fig.17).
- ◆ Replace it with a new fuse, then tighten the fuse holder.
- ◆ The fuse specifications and rated values are as follows:

110V-----1A/125V
220V-----0.5A/250V

⚠ Attention: Please select the fuse of the same type, specification and rate value.

- 4) Measure the standard balls at regular to make the instrument accuracy.
- 5) Cover the instrument to keep it from dust when not used.
- 6) A rubber blower is provided to assist in removing dust, if the dust remains, a soft bristled brush may be utilized.

7 Trouble shooting guide

Trouble	Possible cause	Remedy
No illumination	The cable isn't connected correctly with the power socket	Connect the power cable correctly
	The main power switch is on 'I' position	Place the switch on 'O' position
	The plug on the power box is loose	Insert the plug firmly
	The bulb has burnt out	Change the bulb
	The fuse has blown	Change the fuse
Fuse has blown	Voltage selector is wrongly set	Set the voltage selector properly
	The fuse doesn't comply with the specification	Replace it with a su fuse

8 Specifications

- ♦ Range of corneal radius of curvature : 5.5-11mm
- ♦ Range of corneal refractive power : 31-61D
- ♦ Power : 110V/220V、 68W
- ♦ Axis of corneal astigmatism : 0-180°
- ♦ Head-rest adjustment range : 90
- ♦ Mainframe volume: 585mm×385mm×585mm.

9 Safety precautions

9.1 Installation:

- ♦ The instrument should be placed in an area that will be free of excessive temperature and humidity .the room should have adequate humidity .Be free of dust the instrument should not be in direct sunlight.
- ♦ The instrument should be installed in a table position, avoiding any vibrations or shock.
- ♦ The correct current voltage and frequency must be used.
- ♦ All cords should be correctly connected.
- ♦ The instrument should be properly grounded.

9.2 Operation:

- ♦ Proper comfort patient position is essential for an effective exam.
- ♦ When disconnecting any cable, never use excessive force and do not attempt to disconnect any cable by pulling on the cord itself.
- ♦ In the event that the instrument requires any service, contact your authorized distributor .only qualified service personnel should make repairs .
- ♦ Any modification to the unit may affect its performance, as well as voiding the warranty.

10 Accessories

- ♦ Standard balls : R7.15、 R9、 R10
- ♦ Working lamp (12V 10W) : two
- ♦ Standard ball measurement unit
- ♦ Instruction: one
- ♦ Screws