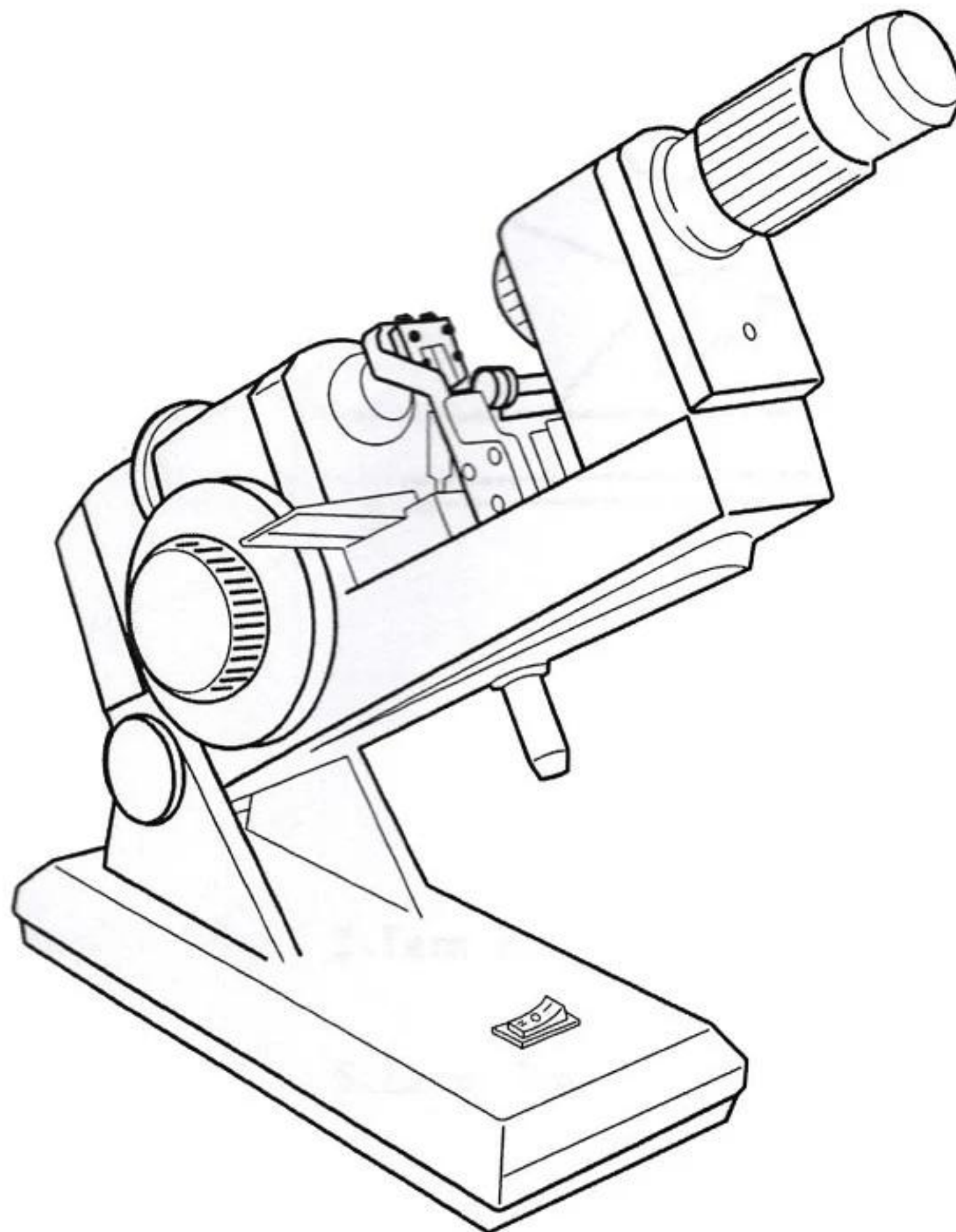
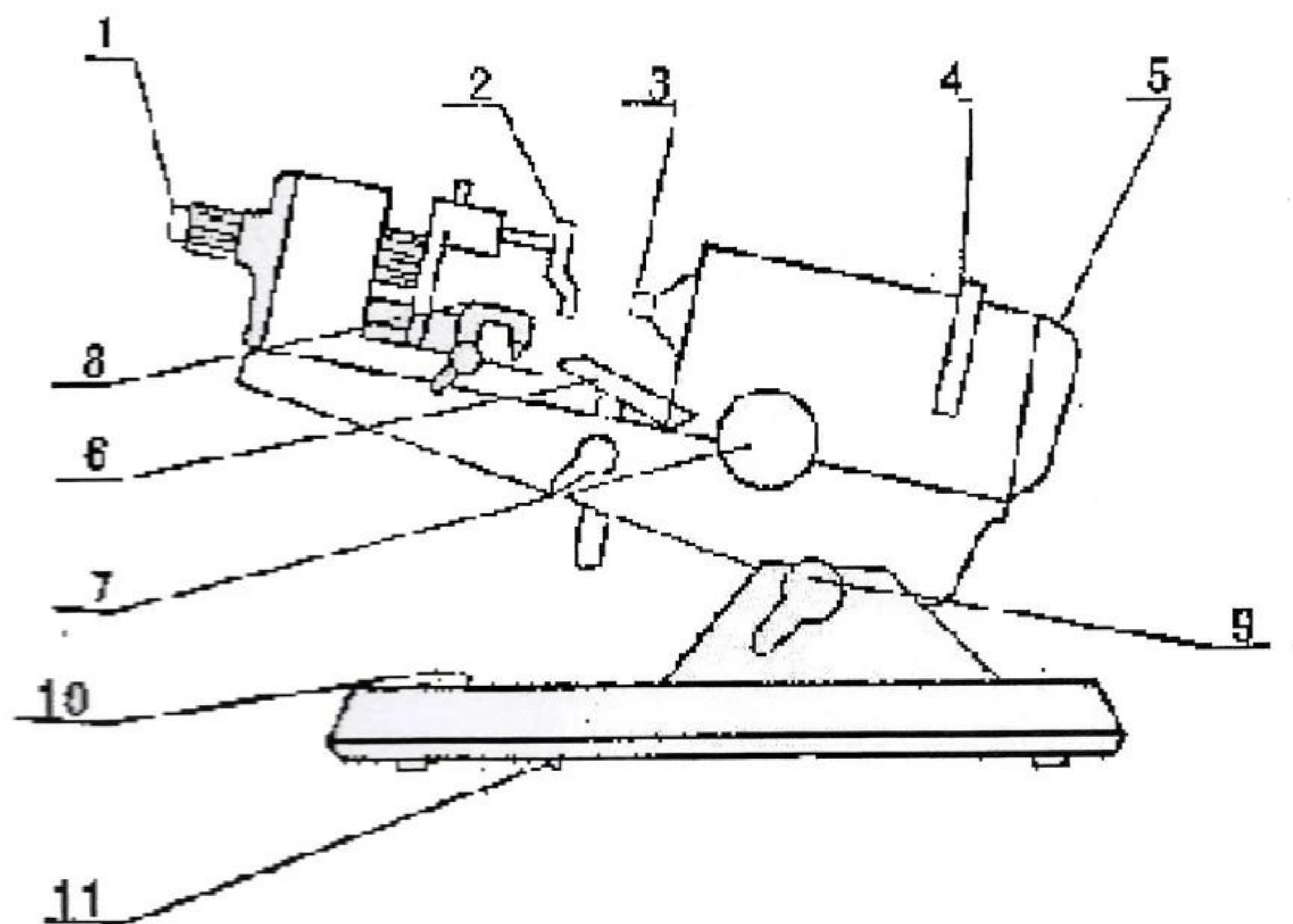


Operation Manual



Lensmeter LM-170

Fig(1)



- | | | |
|---|----------------------|----------------------------|
| 1、Eyepiece Adjusting Ring | 2、Lens Pressing Ring | 3、Supporting Ring |
| 4、Axial Handwheel | 5、Lamp Box | 6、Lens Lift |
| 7、Dioptric Handwheel | 8、Point Axis Stamp | 9、Position-fixed Handwheel |
| 10、Direct Current and Alternating Current are available | | |
| 11、Cell Box in the bottom | | |

Fig. 2

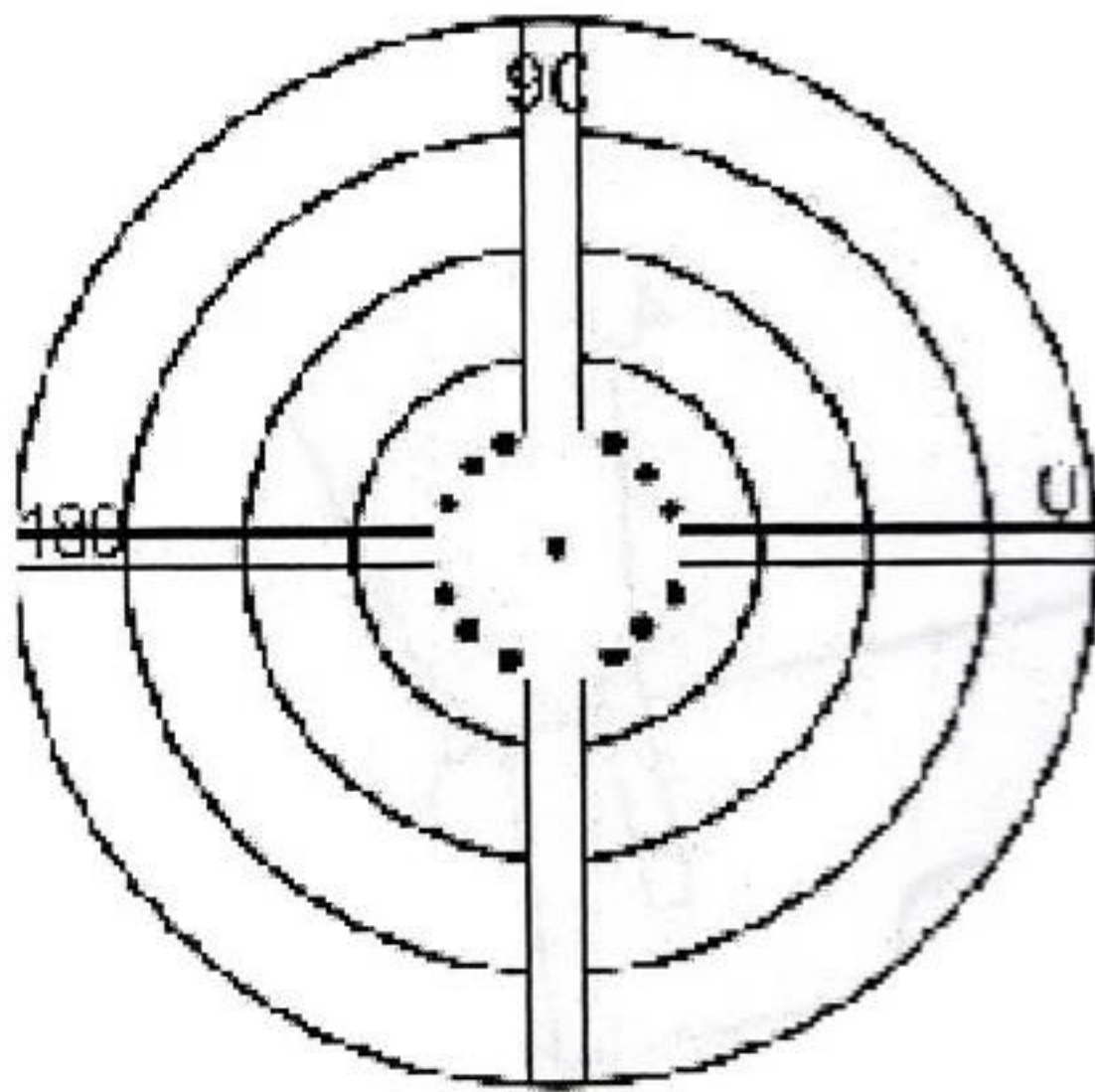


Fig. 3

The long crossline isn't always clear
While the small point is

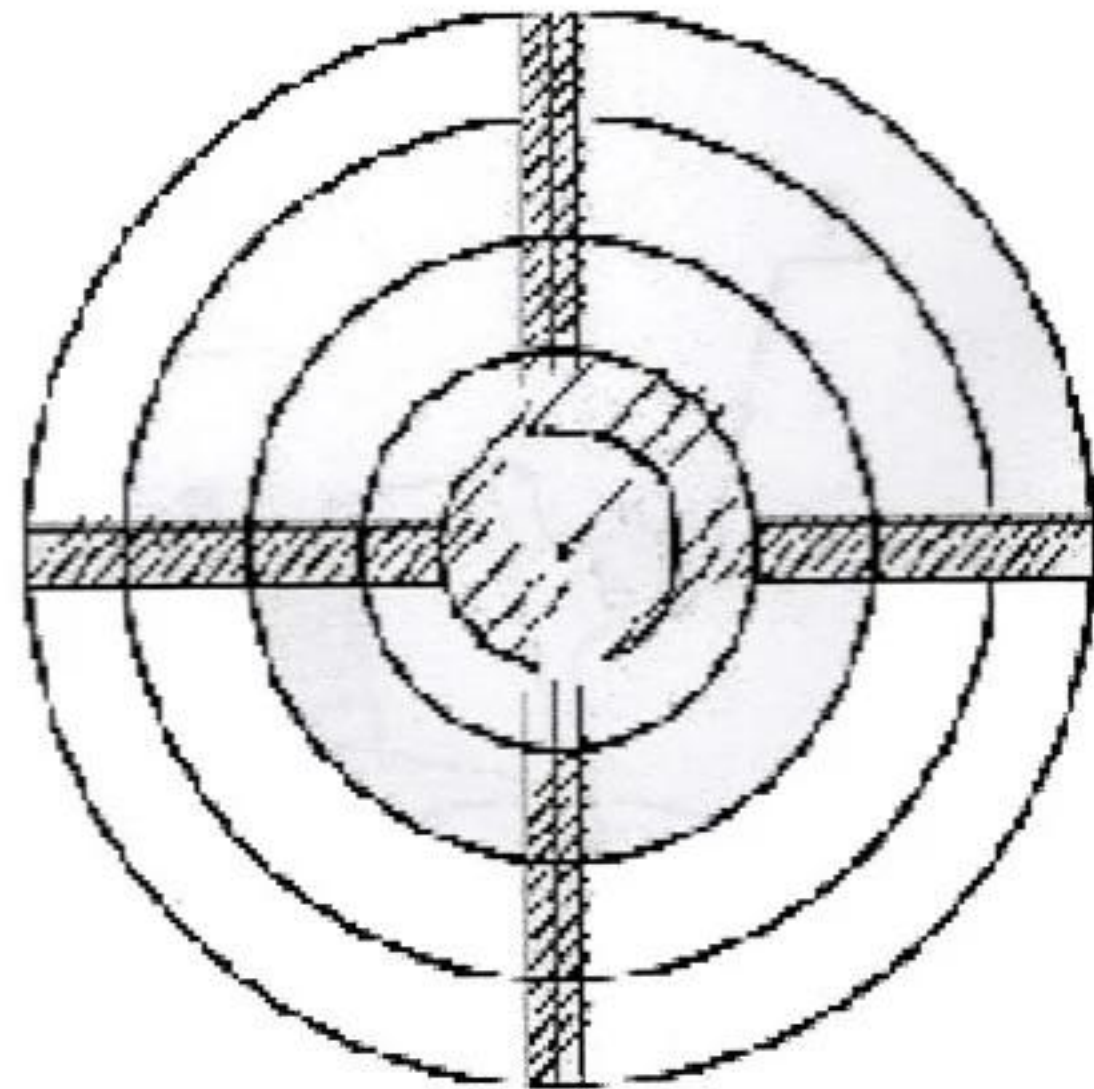


Fig. 4

The 45° axial angle of cylinder lenses

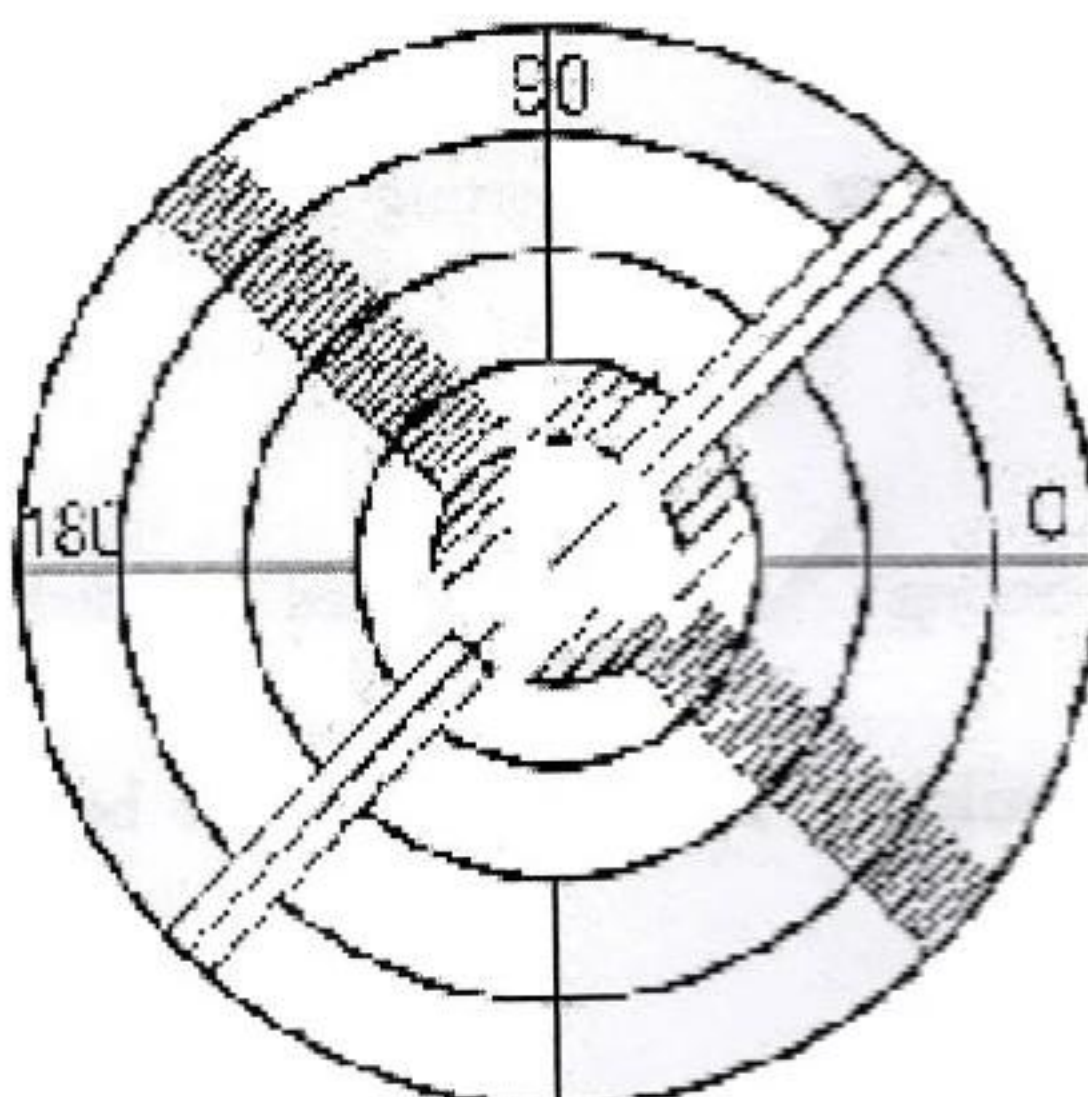
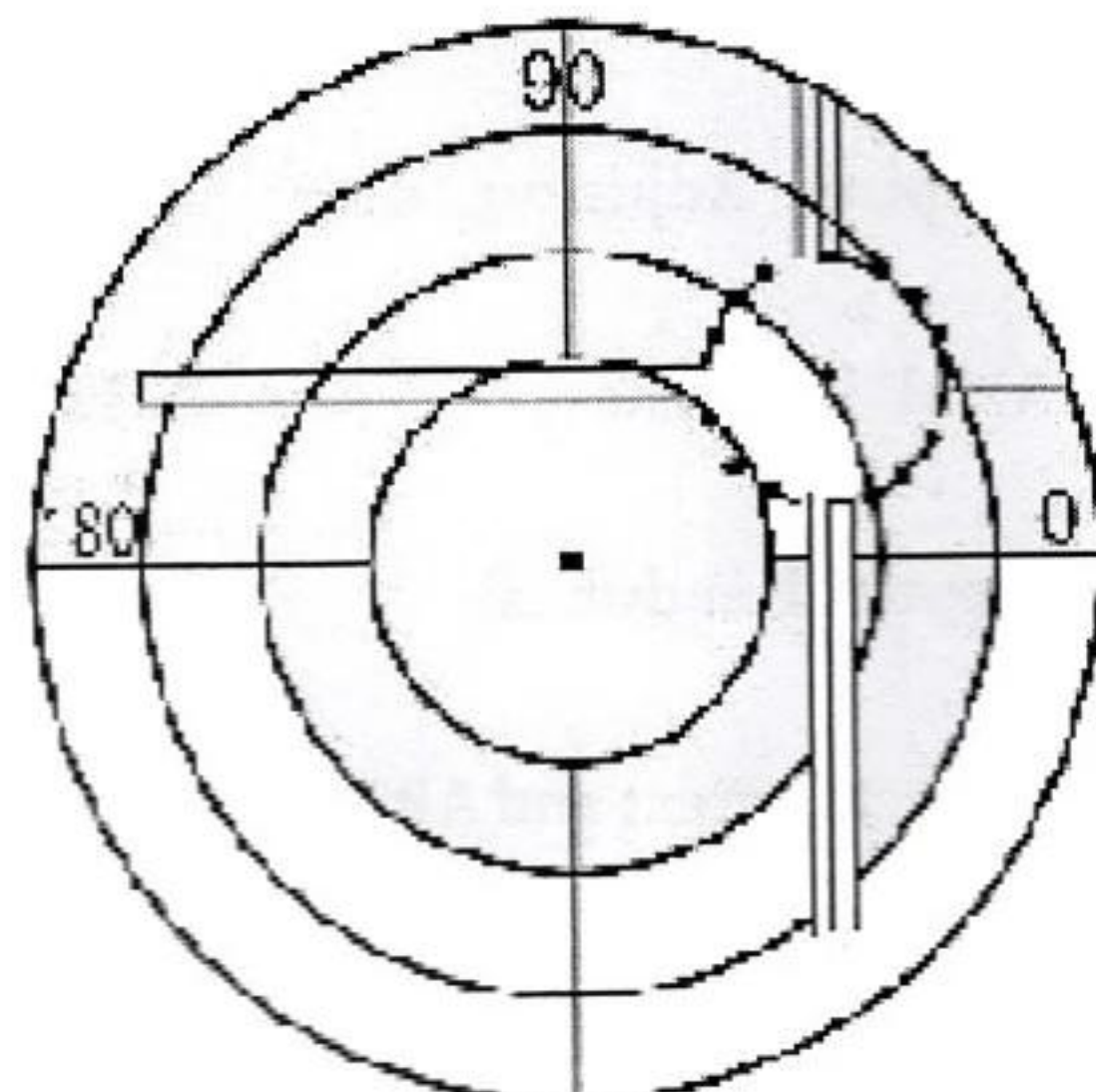


Fig. 5

A sketch map showing the measurement
of shuttle lenses ($2\Delta S$ in the picture)



1、The Uses And The Features

Lensmeter LM-170 is used to measure the dioptries of spherical lens and cylinder lens, the axis of cylinder lens, the strength and the baseline direction of shuttle lens. It can also stamp the optical center of lens, the axis of cylinder lens and the base direction of shuttle lens.

This instrument (Both Ac and Dc are permitted Two 5# cells When Dc) has clear readings and graduations as well as high objective precision and reliabilities except that it can be operated easily and conveniently. All the lenses and the made glasses can be measured by it, which, therefore, is a required and ideal measuring instrument for glasses manufacturers, glasses stores and ophthalmological hospitals.

2、The Technical Parameters:

- | | |
|---|-------------------------|
| (1) Eyepiece focusing range: | $\pm 5D$ |
| (2) The top point dioptre measuring range: | $0 - \pm 20D$ |
| (3) The minimum measuring square value: | $0.125D$ |
| (4) The shuttle lens measuring range: | 5Δ |
| (5) The shuttle lens square value: | 1Δ |
| (6) The cylinder lens axial range: | $0 - 180^\circ$ |
| (7) The cylinder lens axial square value: | 5° |
| (8) The maximum diameter of the measured lenses | 100mm |
| (9) The lighting: | AC 220V/110V-6V DC3V |

3、The Appearance And The Structure of This Instrument

(1) Please see The Appearance And The Structure of This Instrument in Fig.1. The functions of all its parts are introduced in The Using Methods of This Instrument

(2) The dial dioptre measure:

When the lenses are measured and the target resolving pictures are adjusted most clearly, the numerical values, pointed by the indicator, of the

graduation is that of the dioptré

4、The using Methods Of This instrument (Please see Fig.1)

(1) The Preparations:

① Put the plug in the socket and turn on the switch.

② Rotate the Eyepiece Adjusting Ring (1) until you can observe the graduation line of the eyepiece resolving (black 180°)

③ If the user's eyes are astigmatic, let him wear his own glasses and then adjust them.

(2) The dioptré measurement of the spherical lenses.

① Put the lenses awaiting measure on to the Lens Lift (6) (Note: The concave lens or the plane lens are in the direction of the Supporting Ring (3), that is at the back of the instrument) Rotate the Dioptré Handwheel (7) and observe the target resolving pictures (green) through the eyepiece. And then move the lenses by hand from side to side and have the target center coincide with the eyepiece resolving center, rotating the adjusting handwheel of the Lens Lift.

(2) Further rotate the Dioptré Handwheel (7) slightly till you can most clearly see the target resolving pictures when the numerical value, pointed by the arrow as a sign, of the dial is the right lens' dioptré (see Fig.2)

(3) Have the center of the target resolving picture coincide with the eyepiece resolving center exactly and let the Point Axis Stamp (8) stamps it with the optical center's signs of the lenses.

5、The measuring astigmatic degrees of the cylinder lenses and their axes;

(1) The astigmatic degrees of cylinder lenses mean that there are different numerical values on some sections that are vertical to each other. Measure the dioptries of these two directions separately and the differences between them are the astigmatic degrees of the cylinder lenses.

(2) When the astigmatic lenses are measured, the target resolving pictures

cannot always be adjusted clearly, as in Fig.3. Then you can see the 13 small points (like long small lines) on the target resolving pictures. Rotate the Axial Handwheel (4) to the same direction as the lines and shift the long crosslines to the same angles as the small points. At this time a long direction line appears clearly; if you go on adjusting the Dioptre Handwheel (7) until the other long direction line appears clearly. There are two numerical values appearing on the dioptre dial: The difference between them is just the astigmatic degrees while the higher numerical values appear clearly with the long lines, whose directions are the astigmatic axes (Fig.4)

(3) The locations of the astigmatic axes are indicated through angles from 0° to 180° . Every graduation of the instrument is 5° . When the astigmatic axis is determined, please adjust the Axial Handwheel (4) and the axis required can point the long crossline at the axial angle (Take the graduation in the eyepieces as the standard while the axial graduation on the Handwheel as the reference).

Take the higher value of dioptre as the location of axis. If it is not clear, rotate the lenses till they are clear enough. Meanwhile, you can stamp them with the signs by the point Axis Stamp (8)

6. The measurement of shuttle lens and its base direction.

Put the lenses awaiting measure on the Lens Lift (6) and then adjust it in order that the centers of shuttle lenses coincide with the axes of the instrument. At this time you can find through the eyepiece that the center of the target resolving diverges from that of the eyepiece. You must rotate the lenses to make the longline center of the target resolving onto the level line (or the vertical line) of the eyepiece resolving (see Fig.5) At the same time the longline center will diverge from that of the eyepiece resolving. How many squares it diverges is how many degrees of shuttle lenses it has. The square values of this instrument is 1Δ and it can measure 5Δ s in all.

7、The maintenance of this instrument

(1)Please read this Operating Instrument carefully before you use this instrument. If you use it for the first time, please get to be familiar with its using methods, following the instructions in this Operating Instructions.

(2) This instrument should be put into a clean and dry room with good ventilation and nothing acid or alkaline. Please cover it with a piece of cloth casing after it is used.

(3) While carrying it, please handle with care to prevent it from colliding or dropping.

8、Don't touch the optical lenses by hand. If you find some dust in this instrument, please blow off with a blowing ball. If there is something greasy or mildewy on the lens, please wipe it gently with a piece of soft paper or some absorbent cotton dipping in a little mixture of alcohol and ether.

9、If there are any damages to this instrument, please deliver it to our factory to be repaired. We will secure the quality of this instrument for a year's guarantee (from the day of purchasing it).

10、This instrument is a set, including;

(1) A main instrument;

(2) A dust cover;

(3) An Operating Instruction;

(4) A spare bulb.

(5) Two cells 5#

LM-170 Manual Lensmeter



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