

المرحلة الثانية

المحاضرة الرابعة

Department of Optics Techniques

Lecture4

Trial case

Dr. Dhay ali sabur

Trial case

In practical applications, the combination of all types of trial case lenses is called a trial lens set. A trial lens set is a type of ophthalmology measuring instrument used in ophthalmology departments in hospitals and opticians to detect the refractive state and strabismus, or amblyopia and other visual.



Functions of the human eye

It can be helpful to think of very basic lens forms in terms of prisms. Recall, as light passes through a prism it is refracted toward the prism base. Minus lenses therefore resemble two prisms apex to apex spreading light rays outward as they pass through the lens, while plus lenses resemble two prisms base to base converging light rays as they pass through the lens.

Trail case lenses mainly consist of positive and negative spherical power trial

case lenses, positive and negative cylinder power trial case lens and prismatic power trial case lenses, as well as supplemental trial case lenses etc. Trial case lenses can be divided into categories as below:

1. Spherical – power trial case lenses

A spherical- power trial case lens consists of a positive and a negative spherical- power trial case lens. Positive spherical- power trial case lenses are used for the detection of hyperopia and presbyopia in the human eye; negative spherical – power trial case lenses are used for the detection of myopia.



2. Cylinder – power trial case lenses

A cylinder- power trial case lens consists of a positive and a negative cylinder- power trial case lens. Positive cylinder- power trial case lenses are used for the detection of hyperopia, presbyopia and astigmatism in the human eye; negative cylinder – power trial case lenses are used for the detection of myopia and astigmatism in humans.



3. Prismatic – power trial case lenses

Used for the detection of the strabismus and heterophoria in the human eye.



Supplemental trial case lenses

It normally consist of cross-cylinder lenses, Maddox rod lenses, pinhole lenses, opaque lenses, stenopic lenses, Plano lenses, frosted lenses, crosshair lenses, filters and polarisers, etc.

- **cross-cylinder lenses**

Cross-cylinder lens is a type of special cylinder lens, which has two mutual perpendicular orientations, indicated by the same two numerical values with opposing plus and minus symbols, marking the positive and negative cylindrical vertex powers respectively. Cross-cylinder lenses are used for the detection of the axial position and the cylindrical power of cylindrical lenses.



- **Maddox rod lenses**

A Maddox rod lens consists of a row of smooth cylinders with the same diameter, and has the function of light transmission.



- **Opaque lenses**

Opaque lenses are also called opaque discs. These lenses are completely opaque and are used to cover whichever eye is not undergoing examination.



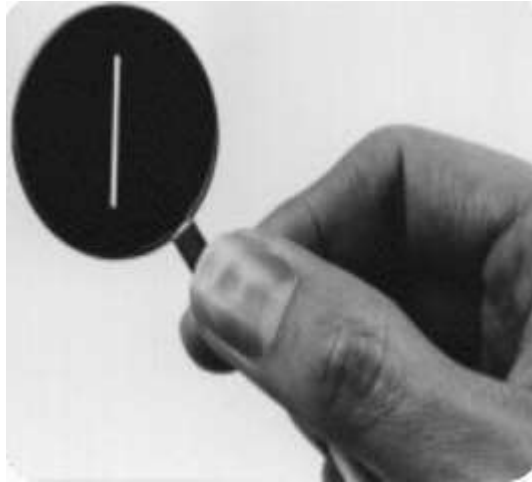
- **Pinhole lenses**

A pinhole lens is an opaque lens with a clear aperture in the center. It is mainly used to distinguish whether hyperphysical eyes are caused by refractive errors or pathological change of the eyes. The clear aperture should be round, smooth, and other parts of the pinhole lens should not allow light to pass through.



- **Stenopeic slit lenses**

A stenopeic slit lens is an opaque lens with a narrow slit which allows light transmission. It used for astigmatism inspection.



- Frosted lenses

Frosted lenses are semi-transparent and are used by young children or outdoors to replace opaque.



- Plano lenses

Plano lenses are transparent and are used to test conditions such as simulated blindness.



- **Filters**

Filters are Plano lenses. They normally include red and green lenses, used for chromatometry. The combination of red and green lenses can be used for binocular stereo vision testing, or for visual function testing of people with refractive media opacity. Red filters can also be used for amblyopia treatment and for chromatometry. There is also a tawny filter which can be used in lenses for examining the vision of people with photophobia.

