

ICS 13.100



**NATIONAL STANDARD OF THE  
PEOPLE'S REPUBLIC OF CHINA**

**GB 11533-2011**

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**Standard for logarithmic visual acuity charts**

标准对数视力表

**(English Translation)**

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### Foreword

3.1, 3.2, 3.3, 3.4, 3.5, 4.1, 4.3.2, 4.3.4, 5.2, 5.3, 5.6.1 of this Standard are mandatory.

The rest are recommended.

This Standard replaces GB 11533-1989 "The standard logarithmic visual acuity charts".

Compared with GB 11533-1989, the main changes of this Standard are as follows.

- Revise the Scope (Clause 1 of the 1989 edition; Clause 1 of this edition).
- Add the term and definition "Logarithm record" (2.13 of this edition).
- Modify the provisions on the maximum optotype size, the minimum optotype size, and the measurable range of near visual acuity charts (3.6.2 of the 1989 edition; 3.6.2 of this edition).
- Modify the provisions on the breadth of near visual acuity charts (4.2.2 of the 1989 edition; 4.2.2 of this edition).
- Modify the number of optotypes in the first line of distant visual acuity charts (Table 2 of the 1989 edition; Table 2 of this edition).
- Modify the provisions on the number of lines of optotypes, the number of optotypes per line, and the line spacing of near visual acuity charts (4.3.2 and Table 5 of the 1989 edition; 4.3.2 and Table 4 of this edition).
- Delete the table to express the number of optotypes and line spacing of near visual acuity

charts (Table 3 of the 1989 edition).

- Add requirements for the orientation of adjacent optotypes (4.3.4 of the 1989 edition; 4.3.4 of this edition).
- Modify the record values on both sides of distant and near visual acuity charts AND other printing requirements (4.3.5, 4.3.6, 4.3.7 of the 1989 edition; 4.3.5 and 4.3.6 of this edition).
- Add another regulation on the use method of distant visual acuity charts (5.1.1 of the 1989 edition; 5.1.1 of this edition).
- Modify the provisions on the lighting of visual acuity charts (5.3 of the 1989 edition; 5.3 of this edition).
- Delete a method for the determination of extraordinary visual acuity (5.4.2.2 of the 1989 edition).
- Modify the minimum value that can be measured by the near visual acuity chart [5.4.3.3 of the 1989 edition; 5.4.3.b) of this edition)].
- Modify the table for variable distance correction of near visual acuity chart (Table 7 of the 1989 edition; Table 6 of this edition).
- Delete two methods of special cases for variable distance application (5.5.2.2 and 5.5.2.3 of the 1989 edition).
- Add the informative Appendix "Standard for logarithmic distant visual acuity charts" (see Appendix A).
- Add the informative Appendix "Standard for logarithmic near visual acuity charts" (see Appendix B).

Appendix A and Appendix B of this Standard are informative appendices.

This Standard was proposed by and shall be under the jurisdiction of Ministry of Health P. R. China.

This Standard shall be interpreted by Ministry of Health P. R. China.

## 1 Scope

This Standard specifies the design criteria, printing specification, use methods, and visual acuity statistical methods, etc. of visual acuity charts.

This Standard is applicable to general physical examinations for children, adolescents and adults aged 3 years and above, distant and near optometry and visual impairment screening for physical examinations such as enrollment and recruitment. It can also be used for reference in ophthalmology and optometry clinical aspects.

## 2 Terms and definitions

The following terms and definitions apply to this Standard.

### Optotype

Various characters, numbers, and graphics etc. used to measure visual acuity.

### Visual angle

The angle between two points on the external object at the eye nodal point (N), expressed as  $\alpha$ , in minutes (') (see Figure 1).

### Nodal point, N

The optical center of the eye's refractive system, which is about 7 mm behind the corneal vertex on the optical axis of the eye. When light passes through the nodal point, the direction does not change (see Figure 1).

### Examine distance, $d'$ Actual examine distance.

The distance from the visual acuity chart to the eye nodal point (N) of the examinee during the examination. The design distance of all optotypes can be selected as the examine distance in actual use.

#### 2.11

### Fraction record

Use the examine distance (numerator) and the design distance (denominator) at the same time to express the visual acuity, namely  $d/D$  or  $d'/D$ . Its essence is to express visual acuity by the reciprocal of visual angle.

#### 2.12

### Decimal record, V

Use the reciprocal of visual angle to express the visual acuity. The unit of visual angle is (') (minute). It is formulated as.

#### 2.13

### Logarithm record

Use the logarithm of visual angle to express the visual acuity, i.e.  $\lg \alpha$ .

## 3.1 Optotype shape

Use a square " " -shaped optotype with three strokes of equal length. Each stroke or gap is one-fifth of the side length of the square (see Figure 2).

### 3.2 Standard of normal visual acuity

It is stipulated that the visual acuity that can distinguish 1' visual angle is the normal visual acuity standard, which is recorded as 5-mark, that is, 5.0. It is equivalent to 1.0 visual acuity in decimal record, 6/6 or 20/20 visual acuity in fraction record.

### 3.5 Record

Use the 5-mark record method. For each additional line of optotypes above 3.0, the record is added by 0.1, which is arranged in an arithmetical progression. Each line of optotypes can be accompanied by the corresponding decimal record value (approximate value) at the same time.

## 4.2 Breadth

### 4.2.1

The distant visual acuity chart adopts the 5K (777 mmx217 mm) breadth of 787 mmx1092 mm paper. The allowable deviation is  $\pm 3$  mm.

## 4.3 Format

### 4.3.1

The distant visual acuity chart is arranged with 14 lines of optotypes from top to bottom according to the size. The line spacing is 24 mm. The number of optotypes in each line is shown in Table 2.

### 4.3.4

The number of each orientation of the optotypes is equal. The order of appearance shall be randomly distributed. The orientations of two adjacent optotypes shall be different.

## 4.4 Printing requirements

The optotype is thick black. The ink color is uniform. No white spots are exposed. The boundary is clear. The lines are straight. The allowable error of optotype size is  $\pm 5\%$ .

There are no black spots on white background.

## 5.2 Placement height of visual acuity chart

### 5.2.1

The 5.0-line optotype on the distant visual acuity chart is the same height as the eye to be examined.