

# Information

From the LowVision Specialist



Guidelines for the dispensing  
of optical magnifiers

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# Introduction

Optical magnifiers are one the most common low vision aids for visually impaired people. They are especially used with great success in case of mild or moderate visual impairments. Also for people with a high magnification requirement they are a great help for a quick look.

For example with an optical magnifier persons with a remaining visual acuity of 20 % or more can maintain easily the ability to read, whilst the writing and the

distance orientation do not create bigger problems with such a level of visual impairment.

Before the selection of an optical magnifier a dispensing eye care professional should consider numerous factors such as for example also ergonomic aspects as well as everyday challenges of using an optical magnifier. The following steps are suggested to help the eye care professional in order to satisfy the visually impaired patient systematically and quickly.





# Step 1

## ■ Determination of the magnification requirement for near vision at ambient light

The magnification requirement for near vision at ambient light is determined separately for each eye (monocular).

We recommend the use of a near vision test chart designed for use at a distance of 25 cm. Ideally the test chart includes newspaper print size with appropriate background shading. The magnification requirement to read newspaper print size should be indicated at each paragraph. Such test charts are available in numerous languages. There are also available such test charts with numbers only to be used for a test irrespective of the language spoken by the test person.

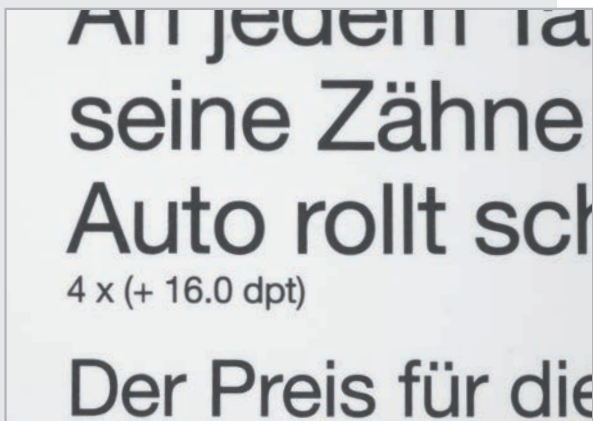
In addition to the distance correction power an addition of +4,0 D has to be added to the trial frame for use of the test chart at a distance of 25 cm without accommodation.

For motivation purposes we recommend to begin the test with the better eye.

First of all the reading ability should be determined. A large print should be offered to the test person. If the test person can read the large print fluently the first step of a successful dispensing of an optical magnifier for reading has been made. In case the test person can only spell the large print character by character the reading ability might be impaired and the successful use of a magnifier for reading is doubtful.

The test person reads aloud until the paragraph where they begin to falter. The magnification shown at this paragraph indicates the magnification requirement for the reading of newspaper print size.

Decisive for the next step is the magnification requirement of the better eye.



An jedem Tag  
seine Zähne  
Auto rollt sch  
4 x (+ 16.0 dpt)  
Der Preis für die



# Step 2

## ■ Choosing the correct power of the optical magnifier

For the choice of the correct power of the optical magnifier we recommend the following approach:

All optical magnifiers should be marked with the D power of the lens. We calculate the nominal magnification according to the formula "Times Magnification X = D/4" and do not use any other magnification value X which might be specified on the optical magnifier as there are different formulas in use.

$$X = \frac{D}{4}$$

We recommend optical magnifiers with high quality aspheric lenses which offer a large field of view with a crisp and clear image. In reality the lower powers of such magnifiers until about 5 X / 20 D are not really used at the calculated shortened distance from the eye which is giving their best level of magnification. The advantage of a longer distance between the lens and the eye despite of giving up some magnification is a more ergonomic and comfortable posture.

For lower tested magnification requirements we consequently suggest to consider an optical magnifier which is one available step higher in magnification than the tested magnification requirement.

## ■ EXAMPLE

Tested magnification requirement:

2,5 X / 10 D

Selected magnifier power:

3 X / 12 D

Optical magnifiers with a power of about 6 X / 24 D and higher can only be used efficiently at a short distance between the eye and the lens and consequently the explained general consideration of a slightly higher magnification is not suggested for such higher powers.



## Step 3

### ■ Choosing the best suitable type of optical magnifier

For the best possible selection of the suitable type of optical magnifier it is essential to consider the diverse needs, tasks and goals of the user. There is available a comprehensive variety of different types of optical magnifiers each having specific strengths and weaknesses which are not all obvious immediately to every person without professional guidance.

- LED illuminated hand magnifiers
- LED illuminated stand magnifiers
- Reading magnifiers
- Stand and needlework magnifiers
- Pocket magnifiers
- Bright field magnifiers & Reading bars
- Working stand magnifiers with and without illumination

Please always keep in mind the following rules when selecting an optical magnifier:

1. The magnification should be as low as reasonably possible.
2. The field of view should be as big as possible for best possible orientation on the reading material and for best possible reading speed.
3. An optimized light can reduce the magnification need. An optical magnifier with illumination and/or a suitable separate lamp should always be considered.



ÖKOLUX plus mobil



ÖKOLUX plus



MODULAR LED



TWIN LUX LED

# Step 4

## ■ Choosing the right light

The best possible light is different from person to person and can only be determined by a comparative test with each individual.

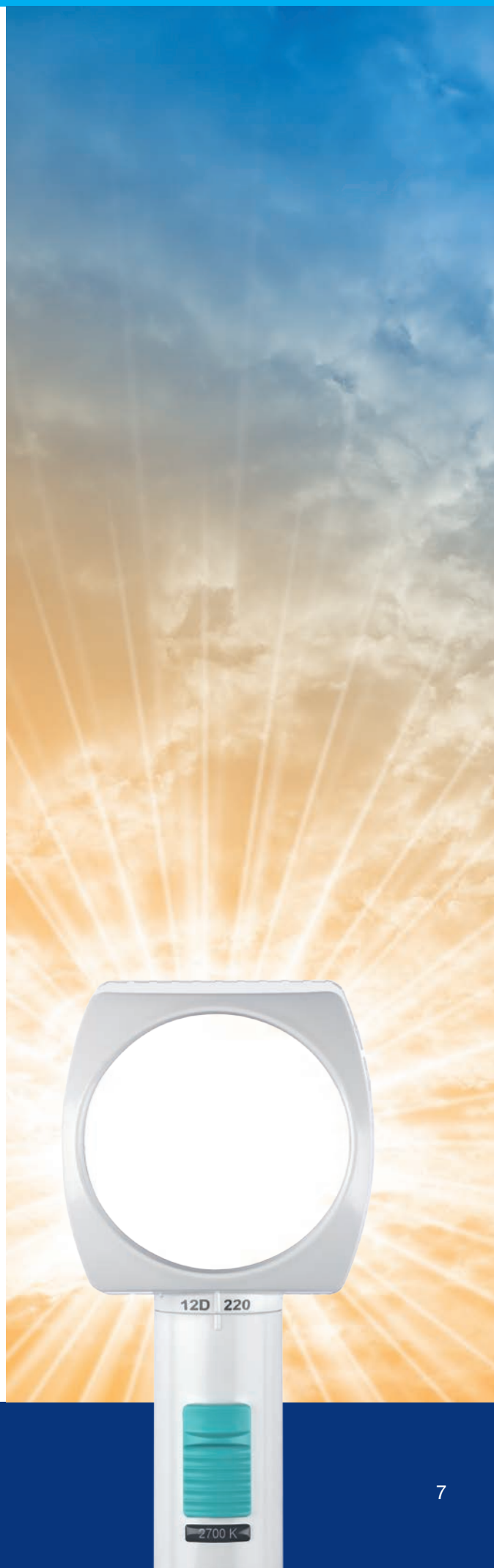
The colour temperature is an important aspect of light. It is specified in Kelvin or K and the higher the K value the cooler is the colour impression. The choice of the colour temperature is affected by the following factors:

If the appropriate colour temperature is used the negative effect of some eye conditions such as for example a lens opacity can be changed for the better by the improved contrast. Therefore we strongly recommend the test of different lights as a complement to the selected vision aid.

One person prefers a higher K value with more blue parts in the light. For another person exactly those blue parts do scatter resulting in a reduced contrast. That other person will prefer a lower K value with more red parts in the light. The best vision is achieved with the highest possible contrast.

Any magnifier illumination and/or separate lamp for a visually impaired person should meet the following criteria:

- Choice of different light temperatures (yellowish soft white, neutral white, bluish cool white)
- No heat radiation
- Even illumination



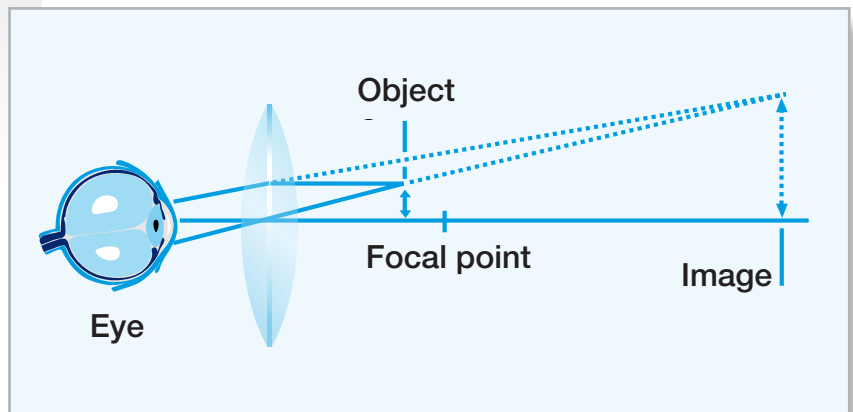


## Step 5

### ■ The use the right pair of glasses with the optical magnifier

For best results the selection of the right eyewear is important. We recommend the consideration of the following facts:

The virtual image created by an optical magnifier is further away than the reading material, it is “under the table”. The eye has to accommodate on this distance or must be corrected for this distance by glasses. Most reading glasses allow only a shorter distance. Usually the distance glasses are also not suitable. The progressive zone of multifocal glasses can make possible the use of an optical magnifier in an ergonomic posture.





However, the best solution appears to be an additional single vision spectacle with a medium addition which is matched to a use of the optical magnifier in the best possible posture. Normal reading glasses with an addition of 3 D or more are too strong for the use with an optical magnifier.

For the use with a lower power optical magnifier in a comfortable posture a lower addition is required. Often such glasses are then also liked to be used as a visual aid for intermediate distances (household, etc.).

Since higher power optical magnifiers can only be used efficiently at a short distance between the eye and the lens a reading with them at the table is no longer possible in a comfortable posture and consequently the use of a reading stand is recommended. An addition of 2,5 D can be used to adjust the distance between the eye and the virtual image created by the optical magnifier to 40 cm without accommodation of the eye. This distance gives the best image quality and level of magnification under observance of the recommended distance between the eye and the lens marked on some quality brand fixed focus magnifiers.





# Special feature of bright field magnifiers

Bright field magnifiers have a relatively low magnification of 1,8 X only but the virtual image created by them is located directly under the reading material. Therefore a young user without any considerably declined accommodation ability can easily benefit from a higher magnification by a reduced distance.

## ■ EXAMPLE

Reduction of the distance by 50% from 25,0 cm to 12,5 cm.

Based on its definition the D power is the reciprocal value of the focal length in metres, thus 12,5 cm are equivalent to an accommodation of  $1/0,125 = 8$  D.

Following the formula

$$\text{Times Magnification } X = D/4$$

this means a magnification of 2 X.

The magnification of the bright field magnifier of 1,8 X is multiplied by the magnification caused by the reduced distance of 2 X giving a total magnification of 3,6 X.

# Final check and further considerations

As a final check the chosen magnifier is used with the near vision test chart. Now the test person should be able to read newspaper print fluently.

Every visually impaired person needs more than one type of magnifier. A stand magnifier for extensive comfortable reading, a hand magnifier as a mobile solution at home and on the go, a magnifier for hobby, for leisure, for work...

In addition there are often necessary other aids for best possible results such as for example reading stands, suitable lamps and the right pair of glasses for the use with the magnifier.

There is not available one low vision aid suitable for all visual tasks but for almost every visual task there are available suitable low vision aids.





# Do you have questions ...

... about our products or do you need further information?

Please give us a call, we have the right specialists for you!

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