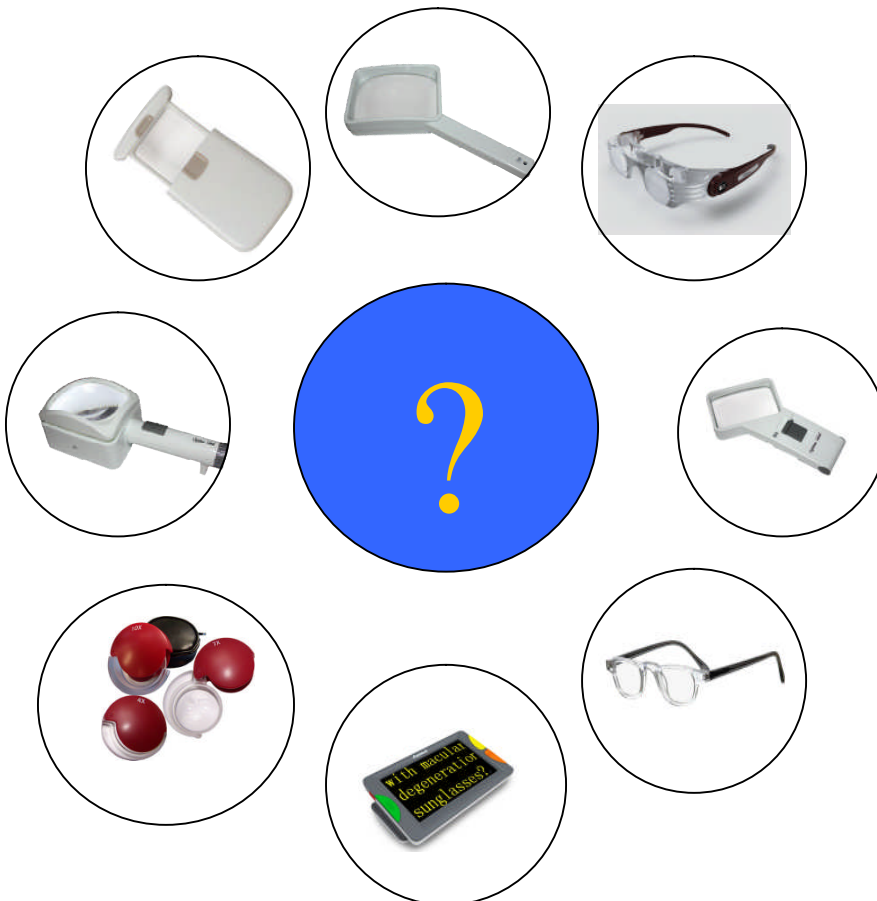




# LOW VISION SERVICES LTD

## Choosing Your Magnifier



**A guide to finding the correct level of magnification and the most suitable type of magnifier for your needs.**

# General Introduction

This booklet has been designed to help people with a visual impairment identify the most appropriate level of magnification for their needs, and to help them understand the advantages and disadvantages of the various types of magnifier to be used for specific tasks. Before proceeding with the choice of a magnifier please read the section "Get the Basics Right First".

This Booklet should be read in conjunction with the current edition of the Optima Low Vision Services Ltd illustrated catalogue.

For further information on the contents of this booklet please contact:



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## Get The Basics Right First

Before you purchase a magnifier of any kind it is vital that you can answer positively the following questions.

- Have you sought the help of your usual local Optometrist and have you been advised that your vision cannot be improved with conventional correction spectacles?
- Have you been examined by an Ophthalmologist and have you been advised that your vision cannot be improved by medical or surgical treatment?
- Have you discussed your visual difficulties with your General Practitioner and has he/she advised that no further help can be offered through medical treatment, surgery or through the prescription of conventional spectacles?

It is only after you have been able to answer these questions positively that you should begin to consider using magnifying aids.

When you are quite sure that you really do need to use magnifying glasses of some kind, then you should continue with the advice contained in this booklet.

Whilst you cannot damage your vision in any way by using magnifying devices, it is important that you ensure that your vision cannot be improved by the use of conventional spectacles or medical or surgical treatment.

If you are in any doubt whatsoever please discuss the matter with your General Practitioner, Ophthalmologist or Optometrist before continuing.



# Predicting The Required Power of a Magnifier

It is essential that we use the minimum level of magnification necessary when using Low Vision Aids. This is because the power of a lens directly governs its size. In other words the stronger the power of a lens the smaller its size will be. There is no such thing as a large powerful magnifier. Furthermore as magnifiers get stronger their working distance gets shorter; the stronger the power of a lens the closer you have to hold it to your eye and the closer you have to hold the print to the lens.

The magnification power guide on pages 5 & 6 of this booklet will help you predict the level of magnification that you are likely to require in order to read newspaper size print. Obviously this prediction can only be used as a rough guide since other conditions - such as lighting, the strength of your current reading spectacles etc. - may affect the level of magnification needed.

## When using the Prediction Chart:

- Always wear your reading spectacles, even if you have found them of little benefit in the past.
- Try to hold the Chart at 25 centimetres from your eyes
- Starting with the largest print, read down the various print sizes until you find it too difficult.

The smallest print size that you can read should then be used for your prediction. Look at the recommended lens power underneath the last print size that you can read (on the right hand side).

For example if the smallest print size you can read at 25cm. is N32, then you require approximately +16d (5x) magnification in order to read newsprint.





Blue skies

N104 = +52d (14x)

Golden sand

N80 = +40d (11x)

Jack leaned on

N72 = +36d (10x)

the stone wall as  
he gazed out to sea.

N56 = +28d (8x)

He could just see a small  
yellow sailing boat in the

N40 = +20d (6x)

distance. It was close hauled  
because of the fresh sea breeze.

N32 = +16d (5x)

The sun warmed his back as he watched  
from his vantage point on top of the tower.

N24 = +12d (4x)

Over the years Jack has spent many happy hours up on top  
of this sturdy old watchtower observing wild life.

N20 = +10d (3.5x)

Jack could sense the enjoyment of the yachtsmen as they battled to sail  
around the headland and reach the calmer waters of the bay .

N16 = +8D (3x)

He imagined that he could hear the sound of their cheers carried to him on the summer breeze  
now that they had won the race. Jack smiled as he turned to walk down to the

N12 = +6d (2.5x)

harbour with thoughts of the cosy village inn, a roaring fire and some liquid refreshment to go with a tasty lunch  
As he entered the inn the landlord greeted him by name and reached for Jack's favourite tankard

N10 = +5d (2.25x)

without being asked to fill it with strong local cider Jack joined old Ben the retired lighthouse keeper who was sitting in his usual place by the fire  
After a lonely life working in an isolated lighthouse Ben enjoyed the friendship of the locals he has spent a lifetime

N8 Normal Newspaper Print.

safeguarding and the comfort of his familiar surroundings. Ben's large old hands were stretched out towards the glowing flames of the open log fire. Neither Ben or Jack were the most talkative of people, the  
two men just sat in contented silence enjoying each other's company in the manner of old friends without needing to make unnecessary conversation

N6

both staring into the embers of the huge log smoldering at the base of the open fire. It was the cheerful landlord who broke the silence and brought their thoughts back from bygone days by reminding them that it was time they ordered their lunch  
and he then read out from the varied menu whilst pulling two fresh pints of their favourite golden cider. Ben chose his usual Fisherman's Pie whilst Jack ordered a freshly caught Sea Bass

N5

# Choosing Your Magnifier: Introduction

There is a lot of confusion and mystery about what magnifiers can and cannot do. Some of the most common questions that people ask are: Which magnifier is best for which eye condition? Can I buy a big powerful magnifier to cover the whole page? What is the strongest magnifier available?

This booklet will attempt to answer these questions. There are many types of magnifiers (Low Vision Aids) available. They all have their advantages and disadvantages; therefore it is important that prospective users understand and appreciate the potentials and limitations of the full range available.

**Question:** ***Who can benefit from Low Vision Aids (LVA)?***

**Answer:** Essentially anyone who can read odd letters of the banner headlines in a newspaper has the potential for using an LVA.

**Question:** ***Which LVA is best for which eye condition?***

**Answer:** In general there is no one type of LVA more suited to a particular eye condition than another. The activity for which it will be used is usually more important than the eye condition. There are one or two exceptions to this rule, which I will discuss in later sections.

**Question:** ***Can I buy a big powerful magnifier?***

**Answer:** No. It is not possible to obtain a large powerful magnifier of any type. The truth is that the more powerful a lens is, the smaller it will be and the closer it will need to be placed to the page. The idea of a large powerful magnifier is unfortunately a fantasy.

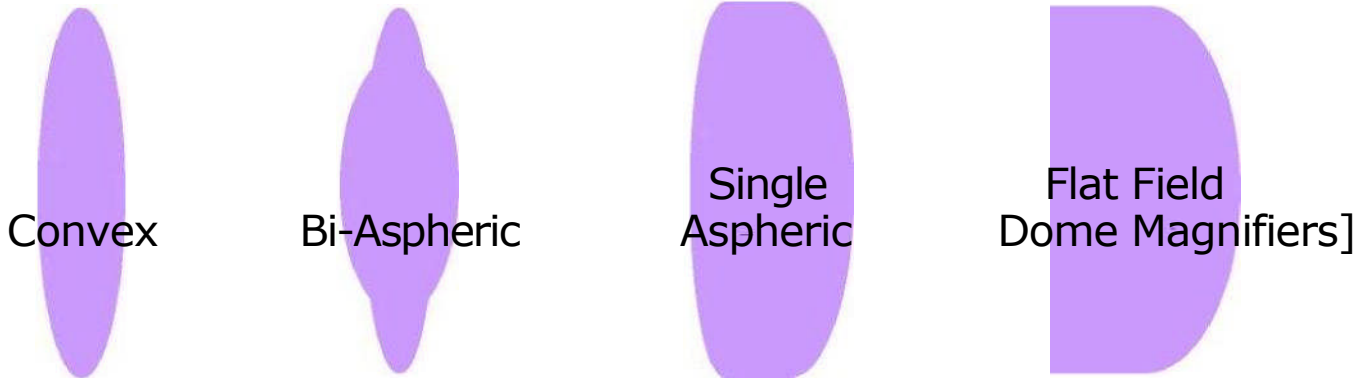
**Question:** ***What is the most powerful magnifier I can buy?***

**Answer:** 30X is about the limit for optical devices. However one should not become pre-occupied with power - I often find people using far too much magnification and then complaining that they can see only three or four letters at a time. There are many other considerations to bear in mind in addition to the power of the lens, for example lighting, the working distance, the type of LVA to be used for specific tasks, as well as the way you look through the lens. The rest of this article will highlight these other important factors.

# Which Type of Lens to Choose?

There are several different types of lens and combination of lenses used in magnifiers. To keep this section as simple as possible I will describe the advantages and disadvantages of only the four most common lens designs.

## Types of Lenses Used in LVA's



The shapes of some of the lenses illustrated above have been exaggerated to identify the differences more clearly.

### Convex Lens

These lenses are inexpensive, light weight and can be viewed through either side of the lens. They are available in powers from 1.5x to 4x. Their biggest drawback is that they tend to distort the image around the edges.

Convex lenses are useful as a "spotting" magnifier for shop prices, checking washing machine controls and cooking instructions. They are not recommended as an aid for prolonged reading activities.



## Bi-Aspheric Lens

The shape of this lens in the illustration on page 8 has been exaggerated to show the difference in shape from the convex lens. Bi-Aspheric lenses can be used either side and are available in powers from 2.5x to 14x. When used at the correct distance from the page and the eye, Bi-Aspheric lenses give an undistorted image almost to the very edge of the lens. Their biggest drawback is that if they are not used at the correct distance they cause image distortion. In other words Bi-Aspheric lenses are not very tolerant lenses – accurate focusing is essential.



## Single Aspheric Lens

Single Aspheric lenses are best used one way – the flatter side to the page, the more curved side to the eye. They are available in powers from 2.5x to 14x. Single Aspheric lenses tend to be heavier than Convex or Bi-Aspheric lenses. The greatest advantage of Single Aspheric lenses is that they are extremely tolerant of changes in working distance; they will give a distortion free image from rim to rim at varying distances. This means they are ideal for those who find it difficult to get close to their magnifier.



## Flat Field Magnifiers

This type of magnifier (sometimes called Dome Magnifier or Bar Magnifier) is very easy to use. It simply sits flat on the page and, therefore, there is no focusing problem. Flat Fields are also very tolerant in terms of the eye to lens distance. See pages 12 & 13 for further advice about Flat Field Magnifiers.



# Which Magnifier?

## Hand Held Magnifiers

The advantage of hand magnifiers is that they are portable and will slip into most handbags or pockets. They are also relatively inexpensive (from £4.00 - £35.00), socially acceptable (people don't usually mind using them in public) and they are available in a wide range of powers (from 1.5x to 7x).

The disadvantages of Hand Held Magnifiers are that every time you pick one up you lose the use of a hand! It is difficult (though not impossible) to write using a hand magnifier, but if you have a hand tremor then it may be difficult to keep the lens in focus.

A very useful accessory for any hand magnifier is a Double Ended Clamp. This clamp consists of a flexible arm with a large bulldog clamp at each end; one end is clamped to the handle of the magnifier and the other to the edge of a desk or table. It can hold most magnifiers at the appropriate angle, thus allowing both hands to be kept free.

## Illuminated Hand Held Magnifiers

Hand held magnifiers with a built-in battery operated light have the advantage of providing a useful light source for those darker areas of the home or in shops. Those illuminated with an LED (Light Emitting Diode) light source give a brighter illumination than tungsten bulbs. The batteries last for up to 80 hours. The LED itself can last up to 10,000 hours. The disadvantage of hand held illuminated magnifiers is that they are bulkier than conventional hand magnifiers.





## Stand Magnifiers

Stand magnifiers have the advantage of allowing the user to maintain the correct focal distance because they have built-in legs or a base that rest on the page; they can therefore be kept in focus. As a result even if the user has a hand tremor, it makes little difference. They are available in a wide range of magnification (from 2x to 20x). It is possible to write under the lower power stand magnifiers.

The disadvantage is that they tend to be quite bulky and are therefore not as portable as the equivalent hand held magnifier. Due to the short working distance of stand magnifiers of more than 8x magnification, it is sometimes difficult to get sufficient light between the lens and the page.



## Hand/Stand Magnifiers

Another variation is the Hand/Stand magnifier. This style has a folding handle as well as folding legs and therefore can be used as either a hand magnifier or as a stand magnifier.



## Illuminated Stand Magnifiers

This type of Low Vision Aid is very popular. It has the advantage of providing shadow less light close to the page. In most cases this light is provided by battery operated LED light sources.

The disadvantage of illuminated stand magnifiers is that it is not possible to write under them. They are also rather large to carry around.





## Illuminated Magnifiers on Adjustable Arms

This type of magnifier has essentially been designed for fully sighted people to perform fine detail tasks (such as fly-tying and embroidery). Therefore they have limited levels of magnification. However the Daylight Company does provide one with additional lenses which increases magnification to 7x. For those with reasonable vision, they can be of great help with sewing, knitting or other manipulative tasks. These illuminated magnifiers with adjustable arms vary in price from £30.00 to over £230.00. It is important to choose one that will meet your needs for the foreseeable future.



## Flat Field Magnifiers (Dome or Bar Magnifiers)

**Dome magnifiers** are half-spherical magnifiers (sometimes also called “bright field” or “paper weight magnifiers”). They sit directly onto the reading material. The advantages are that they are always in focus and have the ability to “gather” light. This type of magnifier is particularly beneficial to those with myopia (short sightedness) who often find normal magnifiers of little or no use. The Optima range includes Domes of 50mm, 65mm, 80mm and 95mm. diameter.



LHP manufacture a very popular version of a flat field magnifier called “The Hedgehog” which has the ability to focus into the centre spine of the thickest book, as well as stay in focus when reading from a food can. The Hedgehog is particularly popular with children.



## Bar Magnifiers

Bar magnifiers are semi-cylindrical lenses, which lie on top of a page and magnify just one line of print at a time. They are available with or without LED illumination. Bar magnifiers are helpful to some people with relatively good vision who wish to read telephone directories or other reference material with columns or lists of information. The main disadvantage of bar magnifiers is the limited level of magnification (up to 1.5x). The other disadvantage is that they tend to suffer badly from reflected light and distortions.



## Pocket Magnifiers

Pocket Magnifiers can be very useful in the kitchen, out shopping or in a restaurant. They are lightweight, easy to use and range in magnification from 2x to 14x. They can come with LED illumination or without illumination. Disadvantages are that they tend to have a narrow field of view and a short working distance.



## Spectacle Mounted Magnifiers for Near Vision

The main advantage of this type of low vision aid is that it allows the user to have both hands free. The major disadvantage is that it has a short working distance – the wearer has to bring the object quite close to the face in order to get it in focus. If one can manage with magnification of 3x or less then the Half Eye Prismatic Spectacles which allow the wearer to use both eyes would be suitable. They are available in magnifications from 1X to 4X.

For those who require higher levels of magnification, the Hyperoculars - *single magnifying lenses fitted into spectacle frames* - are available in magnifications from 4x to 12x. Hyperoculars allow the wearer to use only one eye and a lens of 12x will mean that the page will need to be held almost against the nose in order to get it in focus.



## **Spectacle Mounted Telescopes for Near, Intermediate and Distance Viewing**

For those people who wish to use magnification to read music, watch TV; see more clearly at the theatre, read notice boards, VDU displays, bus numbers, street signs etc. a telescope of some sort is the only option. Telescopes of up to 6x magnification can be fitted into spectacle frames or clipped onto the users own spectacles.

It is very important that anyone who uses spectacle-mounted telescopes does not attempt to walk around when wearing them. This is because telescopes have a very restricted field of view and objects will look much closer than they actually are; a flight of steps 10 or 15 metres away may be seen quite easily but a step right in front of the wearer will not be seen at all.

The exception to this rule is the Ocutech BiOptic systems or the Beecher Mirage range of spectacle binoculars. These systems allow the user to walk safely when wearing them.

When sitting down watching TV, or at the theatre, the less expensive – but less powerful – spectacle mounted telescopes can be quite useful because they are very light weight.



## **Hand Held Monoculars**

For those who require higher-powered telescopes (up to 14x) then hand held monoculars are the only effective option. Hand held telescopes can be very useful for spotting bus numbers, reading street signs etc. They are also useful at sporting events – watching cricket or football matches.

An increasing number of people find a telescope enables them to play bowls. It does take a lot of skill and practice to use a monocular effectively; however those people who do have the will and patience to persevere usually find them indispensable.



## The Importance of Good Lighting

Eyes run on light! Good level, well-positioned lighting is one of the most important aids to seeing well. One of the most useful aids to improving visual performance is a properly positioned task lamp. It has been found that one of the most effective task lamps for people with a visual impairment is a fluorescent or LED “daylight” fitment incorporated into an adjustable table top or floor standing lamp. Please see the Optima Low Vision Services Ltd Catalogue for details.

This type of task lamp should not be used as a conventional reading lamp [directed from behind and positioned to shine over the shoulder and onto the task] but positioned quite close to the page or task to be viewed. If one is using a magnifier and a task lamp at the same time it is essential that the light falls directly onto the page or task and NOT onto the magnifier, otherwise it may cause disturbing reflections of the light in the magnifier lens and shadows on the page.



## Typoscopes

Typoscopes are matt black cards with a small rectangular hole which allows just a few lines of text to be seen. As well as helping with tracking, it prevents reflections from the part of the page not being read and is particularly useful when using task lighting at close range to the reading matter. People with restricted fields of view and those experiencing cataracts and corneal opacities may find this device beneficial. It is quite simple to make a typoscope to meet the individual needs of each task by purchasing a piece of matt black card from a local arts shop and cutting it to fit the desired task.





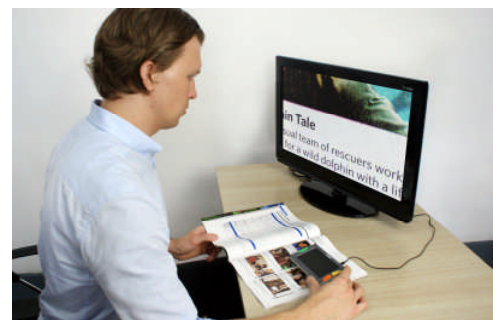
# Video Magnifiers

This type of low vision aid uses a video-type camera which is directed at the text or object to be seen and the magnified image is produced on a screen. The main advantage of this type of magnifier is that the working distance is not governed by the power of an optical lens. The distance at which you view is personal choice rather than being dictated by the lens.

There are two basic designs:

Desk Top Video Magnifiers have a camera and dedicated monitor. They have an adjustable level of magnification from 1.5x to 90x. They are in full colour with autofocus and may have features such as background / foreground colour change, and line guides. They may incorporate an X-Y Platform underneath the camera so that the user can move the reading material smoothly.

Portable Video Magnifiers are significantly less expensive and more portable. Some models have their own integral screen, variable magnification and are battery operated. The latest models can be connected to a domestic TV through an AV cable. Whilst the top of the range models top of the range model will transmit the image to a domestic TV without cables.



## **Special Notes - (1)**

### ***For people with Macular Degeneration and other eye conditions which affect central vision***

It is likely that people with a central vision loss (often associated with Macular Degeneration) will need to develop an Eccentric Viewing technique in order to continue reading (even when using a magnifier). Basically this means that if some of the letters in the middle, or at the beginning or end of long words seem to be missing, or the letters appear to run into each other then you need to look slightly away from that particular word to find where the clearest area of vision is. Then you need to learn to control your eye movement.

Using the charts below, please look at the smallest line of figures that you can read with your normal reading spectacles. Look directly at the No. 5. Even if that number goes missing, is blurred or distorted, look where the number ought to be! Try not to move your eye from that position as you undertake this test. When you are looking at the number 5 position, which numbers are clearest – to the right – or to the left? If the 6789 is clearer than the 1234 then you need to look to the left in order to see the 456 at their clearest. If the 1234 is clearest then you will need to look to the right in order to see the 456 clearest. If neither way works try looking along the line above the 5 to see whether the numbers appear clearer when you look above, then try looking below the 5 to see whether the numbers appear clearer. Remember that the aim of this exercise is to find the best angle to look in order to see the 456 at their clearest.

Once you have found the best angle to see the 456 at their clearest try glancing away and then back again; do this until you can find the centre quickly and accurately. It is important that you are able to find your best “viewing position” quickly and accurately because without this no amount of magnification will help you to read again. Now, try reading a line of print of a similar size. The trick is to get the first word (or first few letters of the word) into the clearer vision and then keep your eyes still and move the print from right to left in front of your steady eye so that each word flows through the clearer area of vision. Initially this can be quite difficult to master. You will be tempted to move your eyes to the right but if you do the words will “go missing” again. Try practicing this technique for 5-10 minutes at a time and then stop. Do this several times a day – the more you practice the easier and faster you will be able to read. When you use this technique in conjunction with a magnifier, remember to keep the magnifier steady - as well as your eye - and move the print from right to left under the magnifier.

123456789

123456789

123456789

123456789

123456789



## Special Notes (2.)

**For people who are myopic (shortsighted) and also have a significant visual impairment.**

People who are myopic often experience problems when using magnifying glasses. Before buying a magnifying glass, firstly try taking off your spectacles altogether and hold the print close to the eye. If this does not help then often the most effective type of low vision aid will be a Flat Field Magnifier (Dome or Bar magnifier). Whilst Flat Field Magnifiers appear to be quite weak they are very suitable for people who are myopic and the low magnification is not usually a problem.

Myopic people should avoid using Stand Magnifiers because the fixed focus of these aids may cause problems. If Dome or Bar Magnifiers are not successful then hand held or spectacle-mounted aids will usually prove more helpful than stand magnifiers.

## Using your Magnifier

### Hand Held Magnifiers

Most spectacle wearers get best results from a hand held magnifier when using their Distance Spectacles rather than their Reading Spectacles. Place the magnifier flat on the page to be read and then raise the magnifier slowly away from the page until you get the clearest image. Remember that the more powerful the magnifier, the closer you will have to hold it to your eye and the closer the print will be to the magnifier. It is often helpful to put the reading material onto a clipboard or other firm surface to keep the print in focus. This is especially true when reading letters, newspapers etc.

### Stand Magnifiers

Most people prefer to use their Reading Spectacles with a Stand magnifier. It is essential that the reading material is on a firm and flat surface such as a clipboard, a table or adjustable reading stand. The more powerful the magnifier, the closer its working distances. If you are too far away from the lens the print may appear to be up-side-down or you will only see one or two letters at a time. Always remember ***the closer you get the more you will see.***

## **Spectacle Mounted Magnifiers**

Spectacle magnifiers have a much shorter working distance than normal spectacles. You will need to hold the print much closer to your eyes. When using high powered spectacle magnifiers you will need to hold the print extremely close – it may even touch your nose!

To find the correct working distance of a spectacle magnifier put the magnifier on - everything will be blurred! - gently bring the print closer to your eyes until the print comes into focus. Once in focus you may find it easier to move the print from right to left in front of your eye rather than move your head. Moving your head may result in losing the focus.

## **Flat Field and Bar Magnifiers.**

These are very simple magnifiers to use. Simply place them on to the reading material and move them along as required.

For further information on any aspect of using Low Vision Aids contact:



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For anyone wishing to purchase a Video Magnifier, Optima Low Vision Services offer a 14 Day - No Obligation - Home Trial Service.

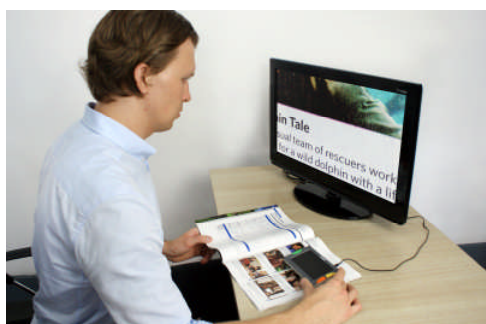
Simply phone 01803 864218 to request a Home Trial of one of our Video Magnifiers and one of our experienced demonstrators will contact you to arrange a convenient time to visit you to show you the Video Magnifier of your choice. \* Once it has been installed and you have been shown how to use it we will leave it with you for 14 days so that you will have the opportunity to make sure it meets your needs. Your pre-payment will only be taken after you have had the opportunity of a 14 day home trial. If you decide not to proceed with the purchase we will pick up the unit and cancel the pre-payment. \*\*

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\* Smaller items will be posted directly to your home.

\*\* If you wish to return an item which was posted to you we require that you send it back via Royal Mail Special Delivery.



## **Notes**



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