

LENSES DESIGNED FOR VDU/OFFICE USE

Peter Sanders examines the variety of dispensing roles for these lenses.

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The role of these lenses in dispensing is far more varied than might at first be thought, with the potential to achieve much more than is apparent at first glance. 'Enhanced Reading Lenses' is perhaps a better description for the lenses included in this article.

There are eight lenses currently on the UK market for VDU use, two to be

released in spring 2001 and another two, where the importers, as yet, have no plans to bring them to the UK market (these are the Seiko Caster and the Tokai Pro reader). They all have different characteristics and try to achieve, what they claim to be, the same result of intermediate and near vision, although some go further than this. However,

looking at them more carefully, they can be split into three different types. These are:

- The true varifocal offering full distance vision, albeit at the very top of the lens.
- The office environment lens that aims to give vision from near to up to 4 or 5m distance, depending on the Rx.
- The intermediate/near vision lens giving clear vision from near to 2m away.

These lenses have two important roles. The first is obviously the correction of the vision for the appropriate distances depending on the lens chosen. This is generally from 40cm up to 3m, but will vary according to the Rx.

The other is not so obvious in that it enables the user to have a more natural posture when working at a VDU terminal or performing general office duties. This is something that is quite often omitted when prescribing this type of lens. The Shamir literature, in support of the Office lens, refers to 'Computer vision syndrome and its orthopaedic problems'. Many man-hours are lost at work with neck and back problems, which could be caused by bad posture when working at a computer work station. Where a near vision correction is required these lenses can be used to alleviate the problem.

In addition to those who require the lens for VDU/office work, enhanced reading lenses can be useful for the advanced presbyope: many of the readers of this article will have come across the problem of patients complaining that their old spectacles were better as they did not have to hold the print so close to be able to read. These lenses overcome the problem of a reduced field of vision as the reading adds increase. However, patients that may have an add of, say, +2.00 or +2.50 and just require the extra depth of field to read the newspaper, would find a reduction of -0.75 or -1.25 quite sufficient for their needs, and not the higher powers recommended by some of the manufacturers.

This group of lenses has a wider vocational use than just for VDU and office: artists, carpenters, cooks, musicians, electricians, plumbers or anyone with an inter/near requirement should be considered. Sola, when doing extensive trials with their lens, gave it to children and young adults who required some plus power for accommodation/convergence control as well as to presbyopes.

Designs with a shorter progression zone work well in half-eye frames, and, as most people would find the intermediate and near combination more comfortable, this type of lens may be more appropriate for around 80 per cent of the patients who would in the past have had normal reading spectacles. As there is a wide choice of powers and power zones amongst the designs available, an appropriate lens can be found for most requirements.

The reduction in power from the full reading Rx varies from 0.75D in the Sola Access and Shamir Office to 1.75D in the Cosmolit and Shamir Office. (+2.00 in the Nikon Soltes FPIII; however this is not currently being imported.) The length of the progression zone varies from 6mm to 28mm, the method of measuring also varies, as does the way the lens is ordered. See **Table 1**: Quick lens guide.

● The **Essilor Interview** has a power shift of 0.80D over 6mm. This is the shortest power shift zone of all the lenses and one of the lowest changes in power. Therefore it is the most suitable for just VDU and near use and is probably the widest used of all the lenses. Because of the low change in power it is particularly suitable to early presbyopes with adds of around 1.00 to 1.50, who should have enough accommodation to cope with the VDU distance. The lens then makes the VDU viewing more comfortable and also gives a little more clarity in the office environment distance.

When ordering Interview, the measurements should be that of a bifocal, and the prescription given that of the near vision.

This lens should not be confused with Essilor's previous offering, the Proximal, a quite different design with a total power shift of 1.50D.

● The **AO Technica** is the oldest of the lenses, having been on the market for about ten years now. It is also unique amongst all the lenses because it is still the only lens available that is a true PAL (progressive addition lens) of a bi-polar design. The distortion of a normal PAL lens is in the reading area with distortion free distance zone. In other words a distance lens with a near and intermediate facility. However, the AO Technica is, in effect, a PAL lens that has been turned upside-down. It is a near/intermediate lens with a distance facility and all the distortion has been put into the distance zone.

Although measured as a normal PAL lens (minimum fitting height 23mm), when glazed into a frame the wearer has to tuck their chin in to look through the top of the lens to access the distant vision zone. (When fitting this lens there should be at least 12mm to the top rim to give comfortable distance vision). When the head is level, looking down by 10-12° (this is regarded by AO as the normal posture for VDU use), there is a wide intermediate zone, and when looking down further the near portion is almost the width of the lens.

This gives comfortable intermediate and near vision for VDU use. In general, using the distance portion occasionally is not uncomfortable.

Because of the distance portion (and the number of years that it has been on the market), it is the lens which may be

Lens make	Power change	Zone length	Measure PD	Fit as	Power range to	cyls to
Essilor Interview	-0.8	6mm	Near	B/F	-2.00 to +4.00	2.00
Shamir Office	-0.75 -1.25 -1.75	20mm	Distance	PAL	-6.00 to +6.00	4.00
Zeiss Business 10 & 15	-1.00 -1.50	24mm	Near	B/F	-2.00 to +4.00	4.00
Sola Access	-0.75 -1.25	12mm	Near	On HCL	-2.00 to +4.00	4.00
Cosmolit Office	-1.00 -1.75	28mm	Distance	PAL	-6.00 to +6.00	4.00
Nikon Soltes CP-I & CP-II	-1.00 -1.50	19mm	Distance	Pal	-4.00 to +5.50	4.00
Nikon soltes FP-I, FP-II, & FP-III	-1.00 -1.50 -2.00	19mm	Distance	Pal	-8.00 to +5.50	4.00
This lens is not currently available in this country						
Hoya Lecture A & B	-1.00 -1.50	Not known	Near	On HCL	-5.00 to +7.00	4.00
Occupational pal lenses	Adds	Progression zone				
A/O Technica	+1.00/+3.00	18mm	Distance	PAL	-7.00 to +5.75	6.00
Zeiss Gradal RD	+1.00/+3.00	21mm	Distance	PAL	-7.00 to +6.50	6.00
Hoya Tact	+1.00/+3.00	23mm	Distance	PAL	-8.00 to +6.00	4.00

Table 1: Quick lens guide.

the most useful in an office environment. However it can also be supplied, very successfully, to people who sing in choirs or play in orchestras.

● **Zeiss Gradal RD** [based on the design of the Gradal HS] is the most expensive of all the lenses being reviewed. But it handles the problem of creating the office environment lens in quite a different way. To achieve this, it adds +0.50 to the distance vision and takes it off the reading add. This should give reasonably clear vision of around 4 - 5 metres (clear vision is guaranteed to at least 3m), which should be enough for an office but also means that when using a VDU the intermediate zone comes in that much earlier. This is in contrast to the Technica, as described earlier, and the other lenses in which a reading prescription is weakened by fixed amounts [giving a wearer with a low add more distance vision than a wearer with a high add]. The Gradal RD is more than a modified PAL lens, as Zeiss also claims that there is 3x the intermediate width, and 2x the near width of the Zeiss Gradal Top.

This lens should be treated as a normal varifocal for ordering purposes with a minimum fitting height of 25mm.

● The other two lenses from Zeiss are Zeiss **business 10** and **15**.

The 10 has a power shift of -1.00D and is designed for prescriptions for adds up to +1.75.

The 15 has a power shift of -1.50D and is designed for the older presbyope with adds of +2.00 and over.

The power shift zone is 24mm long, with 50 per cent of the power shift at 12mm. This seems rather a long

progression zone, but Zeiss claims that it works well.

As mentioned earlier, a presbyope with a reading add of +1.25 will have a greater range of distance vision with the business 10 than with the Gradal RD.

This is an aspheric lens it should be fitted as such, dropping the centres from the pupil centre when looking straight ahead by 0.5mm for each degree of frame tilt (pantoscopic angle). Since the average tilt is 8 to 12 degrees, it is advisable to fit the centres as a high set bifocal, ie just above the lower eyelid.

The other way that Zeiss recommends is to get the patient to tilt their head back until the frame is vertical and then mark the optical centres.

When ordering, use the near vision Rx and specify distance centres.

● The **Sola Access** is now made with a reduction of -0.75 and -1.25D. The -0.75 for adds up to +1.75 and the -1.25 for the higher adds. Patients with lower adds should get reasonably clear distance vision with this lens. Whereas patients with higher adds would get a more restricted range.

The power shift zone from intermediate to near is 12mm, and the recommended fitting height is on the Horizontal Central Line. This usually equates to 3-5mm below pupil centre. This means that when the patient views a VDU screen their vision is in the power shift zone.

The lens is not inset, so an uncut lens can be glazed for either the right or left eye. This is the easiest lens to order as no height measurements are required. It is ordered with near Rx and near centres.

● The **Cosmolit Office**, as with all Cosmolit lenses, is aspheric. This lens is ordered as a PAL and the power is adjusted according to the reading add. Basically there are two designs of the Cosmolit Office, the 10 and the 17. The 10 is for adds from 1.25 to 1.75 and the 17 is for adds from 2.00 to 2.50. The power change zone is the longest of them all, at 28mm. It has one of the widest availability ranges, taking into account that the distance Rx is used with a reading add, the range is +6.00 to -6.00 with a reading add of 1.25 to 2.50. **Figure 1** shows how the lens was designed to be used for clear viewing from 2.00m down to 0.40m although the clear vision distance at the top part of the lens will vary according to the reading add. A patient with a reading add of 1.25 will have a residual prescription of +0.25D in the top. This will start to blur the distance vision at 4.00m. Although the patient will probably have quite comfortable vision up to about 6.00m.

Because of the large power change zone, the depth of the frame should be at least 24mm from the pupil to the bottom rim, and 14mm from the pupil to the top rim.

● The **Shamir Office** is the least well known of these lenses. As with the other companies a great deal of research has gone into the design, in order to establish what the patient requires from this type of lens. As a result the company has produced the lens in three different power changes to give a wider choice. It has been designed on same eye point technology that Shamir use for their varifocal lenses. The design of the lens is such that 2mm below the fitting point should provide distance vision of around 70cm. This is the normal distance of a VDU screen, which is usually situated slightly below the horizontal gaze, therefore the 2mm drop from the fitting centre should give comfortable vision at an average work station. The power changes are -0.75, -1.25 and -1.75. The idea is that you can provide the optimum

combination of near and inter using the chart that Shamir provide. When selecting the appropriate power change it has been recommended that the higher power change is selected if there is a choice of two on the chart, see **Table 2** (This table has been extended to take into account the other makes). The fitting of this lens has quite specific parameters, inasmuch as the optical centres must be at least 13mm below the top rim and at least 16mm above the bottom rim.

The Shamir fitting instructions leaflet is well worth carrying in your practice as it shows very well the problems that this type of lens is designed to overcome.

Do remember that the Rx range is for the near Rx. The range has recently been extended to -6.00. This is the only lens available in glass and plastic.

● The **Nikon Soltes CP** and **FP**. The CP lens is a standard CR39 lens and currently is the only one available. The design of this lens is easy to comprehend. With all the others the fitting heights are given by the manufacturer, but none of them actually states where the full reading area is, as it will change with design. Various pieces of information have been given about the other lenses, but with the Nikon the full reading area is 5mm below the fitting cross. In other words, the full reading area is in the same position as it would be on a bifocal, set at standard height. Literature sent by Nikon stated that the philosophy when designing this lens was to have a stable wide near vision zone with virtually no swing and distortion, any residual distortion not placed in the reading area, and the near vision positioned to give comfortable natural vision. This lens has the shortest progression zone of all the offerings from Japan, with the rest of them having the near vision point lower than the Nikon. As expected the Nikon lens is available with the Nikon HCC A/R coat. Their argument for having an anti-reflection coat on an enhanced reading lens is very interesting. To quote from their literature: "Nikon Soltes is designed for close range

vision. Therefore, it is mainly worn indoors, in artificially lit rooms, where the brightness of the lamps contrast sharply with curtains and carpets. These conditions combine to produce annoying ghost images that cause visual fatigue. This can be avoided thanks to the Nikon HCC coat".

The minimum fitting height of this lens is 15mm, this will guarantee a clear reading portion of 11mm.

When ordering this lens give the distance Rx, Add and Degression (power shift) required (The powers are for the near Rx, not distance Rx) as well as pupil heights and distance PD. Degression recommended is:

+1.50 and lower use Degression of 1.00D
+1.75 to 2.25 use Degression of 1.50D
2.50 and higher use Degression of 2.00D
(this power is not currently available)

The FP lens is the only 1.67 High index lens (unfortunately Nikon do not intend to import the FP at the present time. However, if enough interest is shown in the lens, Nikon might reconsider). This lens, if available, would supply a good range for the higher myopes.

● The **Hoya Lecture** lenses and **Tact Indoor Progressives** have not yet been released, and information about them is hard to obtain. As far as can be ascertained, the information is correct, however the length of the degression zone of the Lecture lenses was not divulged! The implication is that it varies according to the prescription, but this may not be correct. When the lenses are released in this country, Hoya may supply more information.

The Lecture A has a degression of -1.00D. (When reading and intermediate is the objective.) This lens is designed for the presbyope that reads a lot, and wants an extra wide reading area accompanied by an effective depth of field.

Lecture B has a power shift of -1.50D. (When depth of visual field has more priority than reading) This lens is for the presbyope who prefers a working distance of more than 50cms (eg:

Table 2: Maximum clear distance vision for dynamic power/add combination.

Dynamic power	-0.75		-0.80		-1.00		-1.25		-1.50		-1.75		
	Feet	Metre	Feet	Metre	Feet	Metre	Feet	Metre	Feet	Metre	Feet	Metre	
0.75	Infinity												
1.00	13.33	4.00	16.67	5.00	infinity								
1.25	6.67	2.00	7.41	2.22	13.33	4.00	infinity						
1.50	4.43	1.33	4.76	1.43	6.67	2.00	13.33	4.00	infinity				
1.75			3.51	1.05	4.44	1.33	6.67	2.00	13.33	4.00	infinity		
2.00			2.78	0.83	3.33	1.00	4.44	1.33	6.67	2.00	13.33	4.00	
2.25			2.30	0.69	2.67	0.80	3.33	1.00	4.44	1.33	6.67	2.00	
2.50			1.96	0.59	2.22	0.67	2.67	0.80	3.33	1.00	4.43	1.33	
2.75					1.90	0.57	2.22	0.67	2.67	0.80	3.33	1.00	
3.00					0.53	0.16	1.90	0.57	2.22	0.67	2.67	0.80	
	Shamir Office Sola Access		Essilor Interview		Zeiss Business Cosmolit Office Hoya Lecture Nikon Soltes			Shamir Office Sola Access		Zeiss Business Hoya Lecture Nikon Soltes		Shamir Office Cosmolit Office	

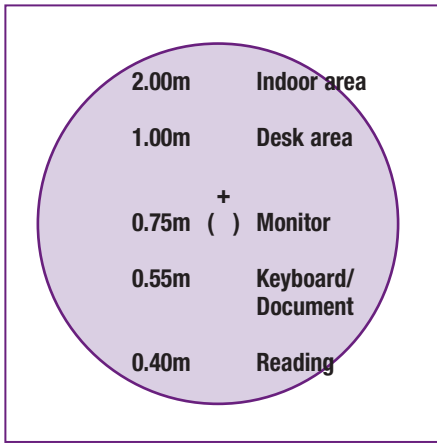


Figure 1: Vision expected from each portion of the lens (based on Cosmolit Office).

because they work with computers). This lens offers a slightly less distortion-free periphery in the reading area compared to the Lecture A but greater depth of field especially in the higher reading powers.

The Tact Indoor Progressive appears to be just what it says: a progressive lens designed for office use. The implication from the literature is that it is more on the design of the AO Technica with a wide reading and intermediate. To quote from the literature received from Hoya: "Aimed at wearers who want to maintain spatial vision up to far distance when working at a computer station, ie: anyone who requires a lens which allows them to perform general office duties and meets their needs for a useful lens at intermediate/near."

Norvilles have just released a new lens called **Continuum**. The power range is from -2 to +4 and is ordered by using the reading prescription. Norvilles could not supply any more information of this lens at the time of going to print.

Two lenses are not being generally imported into this country. Norville could not supply any information on the **Seiko Caster** which has a progression zone of 25mm. The other one is the **Tokai Pro Reader**. This is an interesting lens, as it is more like the old Essilor Proximal. As with the old Proximal there was an excessive near power (ie: the power increased above the required reading power) of +0.50D (the proximal increased by +0.75D). The full progression zone of this lens is 30mm; however this includes a 5mm zone for the excessive power. The Tokai Pro Reader can probably be ordered as a special from Young Optical, but check on the price and availability, as it would have to be a special import.

A personal view

I have dispensed most of the lenses available and have had, in the main, success with them all. I have had great success with the Sola Access, but mainly in the -0.75 version. This is the easiest to

dispense as the heights do not have to be measured; however, unlike some of the other lenses, it does not have a non-tolerance guarantee from Sola.

I have been supplying more of these lenses and have had a few non-tolerances on some of them mainly because the patients expect more from the lens than it is designed to give. These problems have largely arisen from previous varifocal wearers. They have appreciated the greater reading area but have missed the distance vision. But, on the other side of the coin, I supplied a pair to a woman who works in a bookshop, who finds them ideal for her requirements. I also had a patient who had been supplied varifocals and could not get on with them. The lenses were changed over to the Interview and were found to be so good that a second pair was purchased. If a patient requires an anti-reflection coat, I tend to use the Rodenstock Cosmolit Office as the Rodagreen A/R is only a very small amount extra per lens.

In the past my favourite of all these lenses has been the AO Technica, as it offers a lens more custom-made to the patient's requirements. (The others are a compromise with fixed power shifts.) It is also at a price that most patients are prepared to pay. I have several patients who think these are the best lenses ever made. The nearest lens to the Technica that offers similar custom made properties is the Zeiss Gradal RD which is an excellent lens, but at a premium price. Nonetheless, with such a choice of lenses on the market now I find I am using a wide range of these lenses to meet the individual needs of each patient.

For people whose prescription falls outside the power ranges there are:

- Bifocals with an intermediate power in the top and reading in the bottom.
- Trifocals in all sorts of combinations.
- An occupaid. This looks like a flip-up clip-on sunglass, but instead of having a sunglass lens, there is a correcting lens. In this case the spectacles can be made up with the intermediate add and have the adjustment to the full add on the occupaid. This last solution is available from **Lessar Brothers**. However, they are not really suitable for small modern-styled frames.

I would urge dispensing opticians to use these lenses for near use, instead of supplying patients with standard CR39 reading lenses, and put up with the odd non-tolerance as, in the main, it will provide the patient with greater reading comfort.

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