

# K E R A T O C O N J U S



*"A" Ideal fit of trial lens.  
Support is distributed over the cone and the periphery. Only slight pressure on the cone.*



*"B" 0.2mm flatter than ideal.*



*"C" 0.4mm flatter than ideal.  
Excessive pressure on the cone.*

Photos courtesy of Richard G. Lindsay Bsc. Optom. FVCO.

WE  
CAN  
HELP  
YOU

**ACL**

contact  
lenses

## **KERATOCONIC TRIAL SET LENS DESIGN**

<b>BASE</b>	<b>DIAM</b>	<b>BOZD</b>	<b>BPR1</b>	<b>BPD1</b>	<b>BPR2</b>	<b>BPD2</b>	<b>BPR3</b>	<b>BPD3</b>
5.20	8.00	5.80	6.50	6.80	8.50	7.40	12.00	8.00
5.30	8.00	5.80	6.60	6.80	8.50	7.40	12.00	8.00
5.40	8.00	5.80	6.70	6.80	8.50	7.40	12.00	8.00
5.50	8.00	5.80	6.80	6.80	8.50	7.40	12.00	8.00
5.60	8.00	5.80	6.90	6.80	8.50	7.40	12.00	8.00
5.70	8.00	5.80	6.80	6.80	8.50	7.40	12.00	8.00
5.80	8.00	5.80	6.90	6.80	8.50	7.40	12.00	8.00
5.90	8.00	5.80	7.00	6.80	8.50	7.40	12.00	8.00
6.00	8.00	5.80	6.90	6.80	8.50	7.40	12.00	8.00
6.10	8.00	5.80	7.00	6.80	8.50	7.40	12.00	8.00
6.20	8.00	5.80	7.10	6.80	8.50	7.40	12.00	8.00
6.30	8.00	5.80	7.20	6.80	8.50	7.40	12.00	8.00
6.40	8.00	5.80	7.30	6.80	8.50	7.40	12.00	8.00
6.50	8.00	5.80	7.20	6.80	8.50	7.40	12.00	8.00
6.60	8.00	5.80	7.30	6.80	8.50	7.40	12.00	8.00
6.70	8.00	5.80	7.40	6.80	8.50	7.40	12.00	8.00
6.80	8.50	6.30	7.50	7.30	8.50	7.90	12.00	8.50
6.90	8.50	6.30	7.60	7.30	8.50	7.90	12.00	8.50
7.00	8.50	6.30	7.50	7.30	8.50	7.90	12.00	8.50
7.10	8.50	6.30	7.60	7.30	8.50	7.90	12.00	8.50
7.20	8.50	6.30	7.70	7.30	8.50	7.90	12.00	8.50
7.30	8.50	6.30	7.80	7.30	8.50	7.90	12.00	8.50

## **PERIPHERAL DESIGN**

<b>Base Curve</b>	<b>2nd Curve-width</b>	<b>3rd Curve-width</b>	<b>4th Curve-width</b>
> 7.00	base + 0.50 .5	8.50 .3	12.00 .3
> 6.50	base + 0.70 .5	8.50 .3	12.00 .3
> 6.00	base + 0.90 .5	8.50 .3	12.00 .3
> 5.70	base + 1.10 .5	8.50 .3	12.00 .3
< 5.70	base + 1.30 .5	8.50 .3	12.00 .3

### **FURTHER INFORMATION**

ACL is able to help with lens designs and fitting problems.

***Simply call Bruce Herbert on:***

**03 9792 3127 or 1800 335559**

# Keratoconic Lens Fitting

The only way to fit a keratoconic lens is by using a trial lens to evaluate the fit and doing an over refraction to calculate the required power. Calculations by using K readings and Spec Rx are not accurate with this type of lens. Large cylindrical prescriptions and K readings only need a simple spherical lens in the majority of cases.

The **ACL Kera** design lens should be fitted to give a 3 point touch fluorescein pattern, with less than 3mm of central touch and significant bearing in the mid-periphery. The weight of the lens is then distributed between the cone and the peripheral cornea.

## TRIAL LENS

K readings should be taken as a guide to the initial trial lens selection. The final BOZR with a keratoconic fitting is usually closer to the steepest meridian unlike normal rigid lens fitting which slightly steeper or aligning the flattest meridian is used.

Start with a trial lens that has a BOZR halfway between steepest and flattest K readings or if K's are off the scale start with 6.80 mm.

## BEST BOZR

The fluorescein pattern on the ideal fitting **ACL Kera** lens will show a very fine central touch to almost clearance. If the trial lens selected gives excessive central touch steepen the trial lens by .20mm and recheck the fluorescein pattern. Only the pattern over the BOZR should be carefully evaluated, the peripheral curves and widths are not important at this stage.

Once the correct fitting trial lens is determined an over refraction should be done; this also gives extra time for the trial lens to settle.

The fit should again be checked after the over refraction because the lens will have now settled properly. If the pattern is correct then go steeper by an extra .20mm, which should give central pooling with no central touch. This is to verify that the BOZR is correct.

Note: A small "nipple" type cone may show only a narrow central touch and appear to be an ideal fit while actually giving harsh central touch because the BOZR is too flat. It is therefore important to double check the BOZR is steep enough.

When ordering a new lens or exchanging a lens it is better to have slightly more clearance than is required because the lens will slowly change the corneal shape and increase the central touch.

Fluorescein pattern in "A" shows the correct central clearance for the **ACL Kera** initial fitting. Following lens adaptation the fluorescein pattern will be similar to the pattern of "B" with central touch having increased slightly. (Refer to pictures on cover page of this leaflet).

## PERIPHERAL CURVES

When you have an acceptable fitting for the BOZR the periphery of the trial lens should then be evaluated. The fluorescein pattern from the edge in .6mm (the width of the last two peripheral curves) should look like a normal TRICURVE edge. The next .5mm (the first peripheral curve) should now align the cornea. It is this first peripheral curve that is changed to vary the edge clearance. If the amount of clearance in the periphery is greater than required then steepening the first peripheral curve will not effect the central fit. However changing the curve flatter to increase the clearance will “drop” the lens back onto the eye, this will then increase the touch or pressure on the cone. A combination of flattening the first periphery curve and steepening the BOZR needs to be in order to increase the peripheral clearance.

**The standard peripheral curves on the ACL Kera are usually correct and will not need changing.**

There are two designs of peripheries available that are different to our standard edge design giving increased or decreased edge clearance.

**ACL Kera STEEP Peripheral.**

**ACL Kera FLAT Peripheral.**

These designs will change the normal peripheral clearance without the need to specify actual curves.

## DIAMETER

The larger the diameter the more any toricity in the cornea will effect the fit of the lens. Therefore the normal 8.0 or 8.5 diameter trial lens will show less signs of toricity in the periphery than any larger diameters.

If the diameter of the lens is increased the BOZ is increased by the same amount, in some cases this will cause the lens to become less stable, as the width of the optic will be larger than the width of the cone. The best way to increase the diameter is not change the BOZ and to add in an extra peripheral curve after the first peripheral curve. This curve only needs to be slightly flatter than the first peripheral curve, usually about .20 flatter and the width is half the change in diameter. We suggest you talk to ACL about this change if you are not confident in changing peripheral curves.

## TORIC PERIPHERY

If there is excessive clearance in one meridian a toric flange may be added.

It is important that there is excessive clearance on both sides of the lens and this must be evaluated with the lids pulled clear of the lens. If a lens is fitting flat and the top lid is pressing on the top portion of the lens it will lift the lower edge of the lens from the cornea and give the appearance of a toric cornea when only a steeper BOZR is required.

If a toric flange is required the fluorescein pattern should be carefully checked.

It is best to talk to ACL and have the correct curves calculated.

## LOW FITTING LENS

The most common problem with keratoconic lenses is that they tend to sit low.

The lens will centre over the cone and if the cone is low the lens will sit low and there is little that can be done, increasing the diameter without changing the BOZ may help to give enough coverage to the pupil.

If the lens is sitting lower than expected (the cone is not low) the fluorescein pattern should be checked.

The central touch should be small and the touch must be in the centre of the lens.

If the central touch is large then a change to a steeper BOZR.

If the touch is in the top portion of the lens than the lens is dropping lower than the cone and the back optic width (BOZ) of the lens is wider than the width of the cone. The BOZ should be reduced to match the cone, which can be done with a small diameter lens or a small BOZ and an extra peripheral curve. The BOZR must be steepened to allow for the change in the BOZ.

## LENS POWER

With the best fitting trial lens do an over refraction. If the BOZR of the trial lens is different to the final lens order then change in tear layer must be taken into account.

The rule of thumb for changes in BVP when changing the BOZR is:

BOZR	CHANGE	BVP CHANGE
>7.00	0.10	0.50D
6.20 - 7.00	0.10	0.75D
5.50 - 6.20	0.10	1.00D
5.00 - 5.50	0.10	1.25D

This rule is correct for small changes in BOZR. Large changes need to be calculated using the normal tear layer formulas, ACL is happy to help with these calculations.

You should check for any residual cylinder even if it is not recommended that it be added into the lens design, the variation in the final visual correction can be accounted for.

The best option when a residual cylinder is present is to prescribe glasses for use over the contact lenses, as the correction would need to be added into the lens with prism ballasting to hold the cylinder on axis.

## TRIAL SETS

ACL has ACL Kera trial sets available for loan. There are 22 lenses in each set and there is no charge for the loan of these sets.

ACL Kera sets can also be purchased for \$200.00 for the full 22 lens set or smaller sets are charged at \$10.00 for each lens.

## LENS ORDERING

Placing an order for an ACL Kera is simple. You can give us the full lens order or just the information from the trial fitting and we can finish the calculations for you.

ACL is happy to advise you with any design or help with any fitting problems that you may have. Please do not hesitate to call.