The Rose K "System" is designed off a complex computer model yielding the ultimate base curve geometry with appropriate peripheral curve structures. The back surface of the lens is manufactured on computerized lathes in a series of spherical cuts. A special software program was written for the lathes to not only cut the multiple curves but to blend them as well. Only a light polish needs to be performed to finish the base of the lens by the lab. This means total reproducibility assurance for the fitter, lens after lens. The back surface is a series of spherical cuts that are well blended. Looking at the lens in a light source, it may appear to be aspheric but it is not.

There are three standard peripheral systems offered in the Rose K lens design - standard, increased or decreased. You may require a change in the peripheral curve from standard to increased lift or decreased lift. Unfortunately, if you modify a Rose K lens, you no longer have a Rose K lens. Further explanation is provided. The most frequent peripheral change is to increased lift where the peripheral curves are approximately 1.0 mm flatter than the standard lift. Rather peripheral systems can be generated 0.5mm, 1.0mm (standard increased lift), 1.5mm, 2.0mm, 2.5mm or 3.0mm flatter than the standard lift. Although not usually necessary, they are available. These curve systems need to be cut on the computerized lathes by the lab. Steeper peripheral systems are available as well.

The basic steep peripheral lift is approximately 0.5mm steeper than the standard lift. A steeper peripheral system beyond this of 1.0mm can also be generated. Again, these curves must be cut by the lab. Patients exhibiting early keratoconus usually need flatter base curves, often steeper peripheral systems and larger diameters.

Changing peripheral systems other than the standard increased and standard decreased lifts are for rare cases. The basic standard three options for peripheral curve lifts should fit over 90% of your keratoconus patients.

### 9. Sagittal Changes

Changing the peripheral system to steep or flat will change the sagittal height of the lens and consequently the central fit. The lab will therefore calculate a new base curve to keep the sag of the lens to the same, so that the fitting relationship is identical to the diagnostic or the previous prescription lens. The power will alter with the base curve change as well to compensate for this change. Changing from standard peripheral lift to the standard increased lift, the lab will compensate the base curve by steepening it 0.05mm and by adding -0.50D of power. Changing from a standard peripheral lift to the standard decreased lift, the lab will compensate the base curve by flatterning it 0.05mm and by adding +0.25 D power.

### 10. Residual Astigmatism [R.A.]

<table>
<thead>
<tr>
<th>R.A.</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>-0.25 to 0.50D</td>
<td>add -0.25D</td>
</tr>
<tr>
<td>-0.75 to 1.00D</td>
<td>add -0.50D</td>
</tr>
<tr>
<td>-1.25D to -1.50D</td>
<td>add -0.75D</td>
</tr>
</tbody>
</table>

It is rare to see R.A. over this, when it is a toric lens are usually needed anyway.

B. To assess if the R.A. needs to be considered put the uncorrected cylinder in spectacles and assess whether it makes a significant difference to the visual acuity. These patients often have some flare or glare especially for night driving. If prescribing the R.A. in spectacles add A/R coating to the lenses to help eliminate this. Given the choice between a front cylinder toric lens and a combination of a spherical contact lenses and a spectacle over correction, most patients select the spectacles. Each patient needs must be assessed for the best recommendation.

C. A front surface toric lens can be made if the fluorescein pattern looks good with the spherical diagnostic lens. Once base curve and peripheral system is determined, the lab can design the front surface toric lens. An 0.05mm truncation is used, so the toric lens will be made 0.5mm larger than the diagnostic lens and then a lower truncation is added. Normally 1.34 prism ballast is used to start. Steeper bases and oblique cylinders tend to rotate more and are often more difficult to position.

D. When R.A is present and the fluorescein pattern indicates a toric base is needed, a base toric or bitoric can be made. From the best spherical base curve, add and subtract 0.4mm to get the proper bases eg: 6.50 diagnostic lens, need 6.90/6.10 base toric. Next select a spherical lens equal to the flattest base toric and over refract ie: a 6.90 in the example here. Adding this to the power of the diagnostic lens will determine the required spherical power.

### 11. Astigmatism

A. TSP (Toric Periphery Only) - lens can also be made where the OZ is spherical but the last 1.0mm of the lens is toric. The tight areas, usually at 3 & 9 o’clock, will be eliminated with a TSP design.

B. Full Back Surface Toric - The Rose K lens can be made in either full back surface toric or bitoric form.

C. Front Surface Toric - The Rose K lens can be supplied as a front surface toric with a spherical base to correct residual astigmatism.

### 12. Dimple Velling

Occasionally a patient will present with small bubbles trapped under the lens. A combination of increasing the edge lift, flattening the base curve and/or reducing the diameter should be tried first. If the bubbles persist, the lens can be fenestrated to relieve the problem. The fenestration will be at the juncture of the optic zone and the secondary curve. Bubbling will not damage the cornea but will decrease the visual acuity.

### 13. Pooling at the Cone Base

With excessive pooling at the cone base, reduce the diameter as this reduces the O.Z and the cone is fitted closer and the pooling is reduced. Flattening the Base Curve and or increasing the lift can also help. Caution: don’t go so small that vision is compromised with an optic zone that is too small.

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**R O S E K™ keratoconus lens**

Complex lens geometry, combined with the enhanced benefits of Boston materials, makes the Rose K lens the better fit for superior patient comfort and visual acuity.

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**Practitioner’s Fitting Guide**

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**Printed in Canada • BCL220404A**

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**The Boston Logo is a registered trademark of polymer technology, a Bausch & Lomb company.**
The Rose K Lens Features:
- Flexible peripheral systems
- Diameters: 7.9mm - 10.2mm
- Base curves: 4.75mm - 8.40mm
- Power: any

The Rose K Lens Benefits:
- Better visual acuity - clinical results have consistently shown
- Fitting ease - our 26-lens diagnostic fitting set makes it easy to find just the right fit for your patient.
- Better visual acuity - clinical results have consistently shown an improvement in patient vision.
- Increased patient comfort - patients who have worn other Keratoconus RGP designs choose Rose K. It’s simply more comfortable.

Fitting Procedure: By following this simple guide and the following procedures, we estimate that you can successfully fit nearly 100% of your Keratoconus patients with the Rose K lens.

1. Determine the corneal shape. Keratometer - Choose your first trial lens 0.2 steeper than the average of the K readings. Topographer - Choose your first trial lens the same radius as the 3rd ring out on the temporal side.

2. Instill anesthetic. You are advised to use a small amount of corneal anesthetic on every fitting, even when the patient is a long-time contact wearer. Anesthetics reduce tearing which allows for quicker, more accurate fluorescein assessment and consequently reduced chair time.

3. Instill fluorescein. Too much fluorescein will give false patterns - so be careful when instilling it - use a minimum amount.

4. Assess the central fit. Ignore the peripheral fit at this stage. A light, feather touch at the apex of the cone is desirable (Fig A). The lens is too steep if you can not discern where the apex of the cone is (Fig B). The rest of the pattern should look as close to an alignment fit as possible.

5. Assess the peripheral fit. The trial lenses have a standard edge lift, but an increased or decreased edge lift on the same base curve can be ordered. If the central base curve looks good but you have inadequate peripheral edge lift (Fig C) then order increased lift. Conversely, order decreased lift if there is excessive peripheral edge lift (Fig D).

6. Assess the diameter. The standard diameter is 8.7mm but any diameter is available. Smaller diameters of 8.1 - 8.3 often work well on very steep corneas. A larger diameter is often required for early cones and will also tend to make the lens ride higher. The lens should hang off the top lid and be well clear of the lower limbus.

7. Assess the power last. Do a careful over-refraction using +/- 1.00 D steps initially and refine with 0.50 and 0.25 steps. Be sure the final over-refraction is performed in a well lit room to approximate normal light conditions and pupil size.

Multiple parameters make fitting the Rose K lens easy, for reduced chair time and increased practice efficiency.

Important information for successful fitting of Rose K lenses

1. Diagnostic Fitting Procedures and Tips

   Placing a series of diagnostic lenses on the eye can be arduous and uncomfortable for the patient. We suggest using a minimal amount of anesthetic for maximum patient comfort and to minimize tear flow. We recommend this for all patients not just new contact lens wearers. Increased tear flow will cause the lens to sit low and give abnormal fluorescein patterns. Also instilling large amount of fluorescein can give false patterns, so be cautious about the amount placed on the eye.

2. Fluorescein Evaluation

   Critical to the success of a Rose K lens fit is careful fluorescein pattern evaluation. Look to achieve a light feather touch on the cone apex, as close to alignment as possible across the cornea, with lift off over the last 0.6 to 0.8mm. It is important that the lens is located centrally to judge accurately the fluorescein pattern. If the lens lays down use upward pressure on the lower lid to centralise the lens to judge the fit. Some initial low riding lenses will position better after several days wear.

3. Apical Staining

   Apical staining should not be permitted with the Rose K lens. If at any time after care visit apical staining is obvious, refit the lens with a steeper base curve.

4. Diameter

   The Rose K lens design is based on a complex mathematical computer model that yields thousands of peripheral curve combinations. These vary by base curve, edge lift, power, and diameter. One common request is to take a larger lens and cut it down when the larger diameter does not function optimally. This can not be done because the peripheral system on an 8.5mm lens is drastically different from the peripheral system on an 8.7mm lens. The smaller lens must be remade.

5. Visual Assessment

   A. For patients that complain of ghosting or cloudy vision, increase the diameter if possible. This will increase the optic zone and often give clearer vision. In many instances, the problem can also be improved by having the patient wear spectacles with an anti-reflective coating.

   B. If visual acuity is not as good as expected try flattening the base curve by 0.1 to 0.2mm.

6. Positioning Lenses

   Remember that the Rose K lens will position over the apex of the cone. Getting a low riding lens to position may require an increased diameter, flattened base curve, increased edge lift or a combination of these. A high riding lens can be positioned by reducing the diameter, steepening the base curve or reducing the edge lift. Never judge the fit of a lens in a low riding position. Manually manipulate the lens to a central position and then evaluate the fluorescein pattern.

   An important rule of thumb is to fit a flatter base curve rather than a steeper one, if a choice is available.

7. Problem Solving Order of Preference

   Start with a 8.7mm diameter with a standard edge lift. Fit the central base curve first followed by the peripheral fit.

   If required, improve the peripheral fit by flattening or steepening the peripheral system.

   If excessive pooling results around the cone base, or the fluorescein pattern shows high astigmatism, reduce the lens diameter. This option is not available with large corneas as they need larger lenses for proper positioning and good vision.

   For larger corneas and/or large cones select a larger diameter (9.0mm) to start. Lens fits which exhibit significant toric “dumb bell” patterns, which can result in poor location, poor comfort, 3 and 9 o’clock staining, or excessive edge lift off inferiorly, may require a Rose K back surface toric lens.

8. The Peripheral System

   The Rose K lens design is a departure from other lenses for the treatment of KC. The present approach is to order a diameter and base curve and then try to figure out a peripheral curve structure that will work for the patient. This can be very time consuming, many times unsuccessful, and in-office modifications can be hard to reproduce lens after lens.
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