The KeraSoft® IC is a front surface asphere or aspheric toric prism ballasted lens with balanced overall thickness and wavefront aberration control. The periphery can be manipulated independently of the base curve if necessary, up to 4 steps flatter or steeper. Also, up to two sectors of the periphery can be modified independently, the location of which is decided by the practitioner. The peripheries in these sectors can be flattened, steepened or remain standard.

KeraSoft® IC Lens with STD Periphery

**Specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Base curve</th>
<th>Diameter</th>
<th>Lens design</th>
<th>Periphery options</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7.40mm to 9.40mm (0.20mm steps)</td>
<td>14.50mm (0.50mm steps)</td>
<td>Front surface asphere or aspheric toric prism ballasted lens with balanced overall thickness and wavefront aberration control</td>
<td>The entire periphery can be steepened or flattened independently of the overall base curve. Additionally, up to two sectors of the periphery can be modified independently of each other (Sector Management Control™ or SMC). Standard, STEEP1, STEEP2, STEEP3, STEEP4, FLAT1, FLAT2, FLAT3, FLAT4</td>
</tr>
<tr>
<td><strong>Periphery options</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard, stEEP1, stEEP2, stEEP3, stEEP4, FLAT1, FLAT2, FLAT3, FLAT4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Power range</strong></td>
<td>Sphere: +20.00D to -20.00D</td>
<td>Cylinder: -0.50D to -12.00D (in 0.25D steps)</td>
<td>Axis: 1° to 180° (in 1° steps)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Material</strong></td>
<td>Efroticlin A, 74% Water* “Definitive”</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DK</strong></td>
<td>60 x 10⁻¹¹ (cm²/sec)[ml/0.2/(ml x mmHg)]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Standard Diagnostic Fitting Set**

Used to determine the following information which should be provided to your laboratory when ordering KeraSoft® IC.
- Base Curve
- Diameter
- Periphery (STD, STP or FLT)
- Power of Diagnostic Lens
- Over-refraction
- Vertex Distance of all lenses (including all cyl lenses)
- Laser mark rotation and direction

The following tables provide a selection of base curve, diameter, periphery and power combinations:

**Base Curve | Diameter | Periphery | Power**
--- | --- | --- | ---
7.80mm | 14.5mm | STD | Plano
8.00mm | 14.5mm | STD | Plano
8.20mm | 14.5mm | STD | Plano
8.40mm | 14.5mm | STD | Plano
8.60mm | 14.5mm | STD | Plano
8.80mm | 14.5mm | STD | Plano
9.00mm | 14.5mm | STP2 | Plano
9.20mm | 14.5mm | STP2 | Plano
9.40mm | 14.5mm | STP2 | Plano
9.60mm | 14.5mm | STP2 | Plano
9.80mm | 14.5mm | STP2 | Plano
10.00mm | 14.5mm | STP2 | Plano

*Definitive™ DK 60 x 10⁻¹¹ (cm²/sec)[ml/0.2/(ml x mmHg)]

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Fitting Manual: Contents

This fitting manual is best used in conjunction with KeraSoft® IC online training.

To register, please visit www.kerasofttraining.com

01 **KeraSoft® IC Design** - Outlines the KeraSoft® IC lens design and gives the parameters available to order.

02 **Corneal Profile Chart** – Explains how to observe and identify the corneal profile to assist in classifying the corneal shape to be fitted.

03 **Initial Lens Selection** – Suggests which lenses from the diagnostic fitting set to use as a starting point when the corneal shape has been identified.

04 **MoRoCCo VA Introduction and Dynamic Assessment Routine** – Introduces the fitting methodology for the KeraSoft® IC lens that uses the MoRoCCo VA fitting system.

05 **MoRoCCo VA Hints and Tips** – Shows how to use MoRoCCo VA to differentiate between optimal, tight and flat fitting lenses.

06 **KeraSoft® IC Fit Assessment Guide** – Explains how to use the MoRoCCo VA fit characteristics to assess the lens on eye using a simple, color-coded system.

07 **Peripheral Options** – Explains how to change the whole periphery of the KeraSoft® IC lens.

08 **KeraSoft® IC SMC™ Design** – Introduces Sector Management Control™ (SMC), the system that allows up to two sectors of the KeraSoft® IC lens to be changed independently and at any angle.

09 **KeraSoft® IC Fitting Examples** – Shows how to work through a KeraSoft® IC fitting, from first assessment of corneal shape to interpreting the MoRoCCo VA characteristics. An example of each type of peripheral change is given.
The Corneal Profile Chart, along with the following guidelines, will assist in selecting the initial diagnostic lens.

**Corneal Profile**
The corneal profile gives important information about the overall corneal shape in the vertical meridian, especially if topography is unavailable or difficult to interpret.

**Natural Ectasia**
The corneal shape in natural ectasias is influenced by the location of the thinnest area of the cornea. The Corneal Profile Chart shows the characteristic shapes found in central and decentered/low cones and Pellucid Marginal Degeneration.

**Post-Surgical**
Corneas that have undergone one or more surgical procedures no longer have a natural shape. Observing the corneal profile, however, is a very useful tool, especially in determining whether the cornea is a reverse geometry shape.

**To Observe the Corneal Profile**
Topography
- Estimate with the classical means of topography or OCT.
- Slit Lamp Profile Method
  - Move the slit lamp illumination system to the side, ask the patient to look straight ahead and open the beam to the widest setting. Observe the anterior cornea, in profile, from the same side as the illumination system, using the side of the patient’s nose as a background.

**Corneal Profile Chart**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Topography</th>
<th>Normal</th>
<th>Mild</th>
<th>Moderate</th>
<th>Advanced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Keratoconus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steep Periphery</td>
<td>8.60mm: 14.50mm: STD</td>
<td></td>
<td>8.40mm: 14.50mm: STD</td>
<td>8.00mm: 14.50mm: STD</td>
<td></td>
</tr>
<tr>
<td>Central Keratoconus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flat Periphery</td>
<td>8.60mm: 14.50mm: STD</td>
<td></td>
<td>8.20mm: 14.50mm: FLT2</td>
<td>8.00mm: 14.50mm: FLT2</td>
<td></td>
</tr>
<tr>
<td>Decentered/Low Cone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.60mm: 14.50mm: STD</td>
<td>8.40mm: 14.50mm: STD</td>
<td>8.20mm: 14.50mm: FLT2</td>
<td>8.00mm: 14.50mm: FLT2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pellucid Marginal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degeneration</td>
<td>8.60mm: 14.50mm: STD</td>
<td></td>
<td>8.40mm: 14.50mm: STD</td>
<td>8.20mm: 14.50mm: STD</td>
<td></td>
</tr>
<tr>
<td><strong>Post-Surgical</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-surgical corneas are often flatter centrally and steeper peripherally but this is by no means a general rule.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Hints and Tips**

- **Initial Lens Selection**
The Corneal Profile Chart assists in identifying the corneal shape being fitted. The table below suggests the diagnostic fitting lens to be used as the first choice for each corneal shape.

In natural ectasia, if there is limited information as to the corneal shape, begin with the 8.20mm base curve: Standard Periphery Diagnostic Lens and assess using the MoReCco VA characteristics.

**Note:** In irregular corneas there is a tendency to fit steeper lenses. Be careful not to confuse a steeper tight fitting lens with the movement of a flat fit. Therefore, if fitting one step steeper results in a more mobile lens, try fitting flatter base curves.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Topography</th>
<th>Mild</th>
<th>Moderate</th>
<th>Advanced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Keratoconus</td>
<td>Steep Periphery</td>
<td>8.60mm: 14.50mm: STD</td>
<td>8.40mm: 14.50mm: STD</td>
<td>8.00mm: 14.50mm: STD</td>
</tr>
<tr>
<td>Central Keratoconus</td>
<td>Flat Periphery</td>
<td>8.60mm: 14.50mm: STD</td>
<td>8.20mm: 14.50mm: FLT2</td>
<td>8.00mm: 14.50mm: FLT2 (Not in Fitting Set)</td>
</tr>
<tr>
<td>Decentered/Low Cone</td>
<td>8.60mm: 14.50mm: STD</td>
<td>8.40mm: 14.50mm: STD</td>
<td>8.20mm: 14.50mm: FLT2</td>
<td>8.00mm: 14.50mm: FLT2</td>
</tr>
<tr>
<td>Pellucid Marginal Degeneration</td>
<td>8.60mm: 14.50mm: STD</td>
<td>8.40mm: 14.50mm: STD</td>
<td>May require Sector Management Control</td>
<td>8.20mm: 14.50mm: STD</td>
</tr>
</tbody>
</table>

For more information view the Advanced Fitting - Natural Ectasia online training module.

**Post-Surgical**
- The patient’s nose as a background.
- In cases where all fitting lenses persist in dropping significantly, it may be necessary to use “Sector Management Control” and changing the sector Management Control design that is applied will usually require a superior FLT sector and inferior STP sector to reflect that these corneas are rotationally non-symmetrical. For more information view the Advanced Fitting - Natural Ectasia online training module.
- Due to the corneal shape, STP periphery fitting lenses with the appropriate base curves may be ordered as required from your laboratory.
- Mild, moderate and advanced cases may all require FLT peripheral fitting lenses with the appropriate base curves. These can be ordered from your laboratory.
- In advanced cases the Sector Management Control design that is applied will usually require a superior FLT sector and inferior STP sector to reflect that these corneas are rotationally non-symmetrical. For more information view the Advanced Fitting - Natural Ectasia online training module.
MoRoCCo VA
Introduction and Dynamic Assessment Routine

To successfully fit the KeraSoft® IC lens one must first observe the characteristics of the lens behavior on eye.

These characteristics can be remembered by using the acronym MoRoCCo VA, which represents Movement, Rotation, Centration and Comfort, all of which, when optimal, give the best Visual Acuity.

All of these characteristics are related to each other and have equal importance when assessing the fit of the lens on an irregular cornea.

If only two or three of the MoRoCCo VA characteristics are optimal, it will reduce the chance of the final ordered lens behaving as expected.

Optimal Lens Fit Characteristics

<table>
<thead>
<tr>
<th>Up to 2mm movement</th>
<th>Vertical Laser mark</th>
<th>Central</th>
<th>Comfortable</th>
<th>Stable</th>
</tr>
</thead>
<tbody>
<tr>
<td>These lathe cut lenses naturally move more than disposable lenses and up to 2mm post blink movement is acceptable, as long as the patient is comfortable.</td>
<td>Rotation of the KeraSoft® IC is a strong indicator that the fit is not correct, unlike normal soft toric lenses where rotation can easily be accounted for by changing the cylinder axis.</td>
<td>The centration of the lens can be easily determined by observing the Front Optic Zone and is a very useful indicator in assessing flat fits. An optimal fitting lens will be central.</td>
<td>KeraSoft® IC lenses should be comfortable. General discomfort can indicate the lens is flat and discomfort in one position indicates the lens is tight at that point.</td>
<td>Visual acuity should be assessed before and after the blink. If VA is clearer after blink, this indicates a tight fit and if VA is worse after blink, this indicates a flat fit.</td>
</tr>
</tbody>
</table>

Dynamic Assessment Routine

Observe the lens within 5 minutes of lens insertion.

The Dynamic Assessment Routine uses the slit lamp to observe three of the MoRoCCo VA characteristics: Movement, Rotation and Centration.

These three characteristics are observed in straight ahead and upward gaze.

Lag is assessed on lateral excursions in the straight ahead position.

Movement is assessed during the natural blink cycle. The push-up test is not used to assess movement.

Hints and Tips

Lenses that fit very tightly can mimic a flat fit and vice versa. The KeraSoft® IC Online Training Module Dynamic Assessment Routine shows how to differentiate between these fits.

Up to 10 degrees rotation is acceptable, if no other fitting lens gives less rotation.

If an ordered lens does not behave like the diagnostic lens, it is an indication that the diagnostic fit was not optimal.

Dynamic Assessment Routine

<table>
<thead>
<tr>
<th>Optimal</th>
<th>Tight</th>
<th>Flat</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mo</strong></td>
<td>UP TO 2.0mm</td>
<td>LESS THAN 0.50mm Conjunctival indentation</td>
</tr>
<tr>
<td><strong>Ro</strong></td>
<td>NO ROTATION Vertical Laser Mark</td>
<td>ROTATION Stable in straight ahead and upward gaze</td>
</tr>
<tr>
<td><strong>C</strong></td>
<td>CENTRAL</td>
<td>CENTRAL</td>
</tr>
<tr>
<td><strong>Co</strong></td>
<td>COMFORTABLE</td>
<td>COMFORTABLE INITIALLY gradually becomes uncomfortable in one area</td>
</tr>
<tr>
<td><strong>VA</strong></td>
<td>STABLE</td>
<td>CLEARER AFTER BLINK</td>
</tr>
</tbody>
</table>
Fit Assessment

Procedure
- Select and insert initial fitting lens
- Assess within 5 minutes to determine which MoRoCCo fitting characteristics below are being achieved (GREEN, YELLOW, RED)
- If any of the MoRoCCo characteristics are in the RED zone, remove lens, then select next fitting lens 1-2 base curves steeper or flatter
- If any of the MoRoCCo characteristics are in the GREEN or YELLOW zone, begin over-refraction while the lens settles further
- If VA is in RED zone, remove and reconsider first lens choice
- If VA is in YELLOW zone, determine whether fit is steep or flat, then adjust fit by 1 step
- When an optimal GREEN fit is achieved, allow to settle for 15-20 minutes then finalize over-refraction and take note of Back Vertex Distance

### Fit Assessment Table

<table>
<thead>
<tr>
<th>Movement</th>
<th>Optimal Fit (Green)</th>
<th>Re-assess Fit (Yellow)</th>
<th>Incorrect Fit (Red)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0-2.0mm Vertical Post Blink</td>
<td>Up to 2.0mm acceptable if patient is comfortable</td>
<td>&lt;1.0 or &gt;2.0mm</td>
<td>Too Mobile OR Immobile Lens that Moves with Push-up</td>
</tr>
<tr>
<td>1.0mm - try one step flatter</td>
<td>2.0mm - try one step steeper</td>
<td>Ill lens too flat - try 0.40mm base curve steeper</td>
<td></td>
</tr>
<tr>
<td>&gt;10 Degrees</td>
<td>Erratic swing on blink - Flat fit</td>
<td>Ill lens too tight - try 0.40mm base curve flatter</td>
<td></td>
</tr>
<tr>
<td>Up to 10 Degrees</td>
<td>Limited swing on blink - Tight fit</td>
<td>Too Mobile OR Immobile Lens that Moves with Push-up</td>
<td></td>
</tr>
<tr>
<td>Central</td>
<td>Minimal decentration is acceptable if visual acuity is good</td>
<td>Central Keratoconus with steep periphery</td>
<td></td>
</tr>
<tr>
<td>Front Decenters on Straight Ahead Gaze</td>
<td>Front Optic Zone Edge Drops Below Limitus or Upward Gaze</td>
<td>Central keratoconus with steep periphery</td>
<td></td>
</tr>
<tr>
<td>Try lens at least 0.20mm base curve steeper</td>
<td>Try lens at least 0.20mm base curve steeper</td>
<td>Post-graft corneas showing a reverse geometry corneal profile</td>
<td></td>
</tr>
<tr>
<td>Centration</td>
<td>Minimal decentration is acceptable if visual acuity is good</td>
<td>Minimal decentration is acceptable if visual acuity is good</td>
<td></td>
</tr>
<tr>
<td>Front Optic Zone Edge Drops Below Limitus or Upward Gaze</td>
<td>Front Optic Zone Edge Drops Below Limitus or Upward Gaze</td>
<td>Front Optic Zone Edge Drops Below Limitus or Upward Gaze</td>
<td></td>
</tr>
<tr>
<td>Try lens at least 0.20mm base curve steeper</td>
<td>Try lens at least 0.20mm base curve steeper</td>
<td>Try lens at least 0.20mm base curve steeper</td>
<td></td>
</tr>
<tr>
<td>Rotation</td>
<td>Laser Mark - Vertical</td>
<td>Laser Mark - Vertical</td>
<td>Laser Mark - Vertical</td>
</tr>
<tr>
<td>Up to 10 degrees stable rotation is acceptable if fitting 0.20mm base curve steeper or flatter does not reduce the angle</td>
<td>Up to 10 Degrees</td>
<td>&lt;1.0 or &gt;2.0mm</td>
<td></td>
</tr>
<tr>
<td>Erratic swing on blink - Flat fit</td>
<td>Erratic swing on blink - Flat fit</td>
<td>Erratic swing on blink - Flat fit</td>
<td></td>
</tr>
<tr>
<td>Limited swing on blink - Tight fit</td>
<td>Limited swing on blink - Tight fit</td>
<td>Limited swing on blink - Tight fit</td>
<td></td>
</tr>
<tr>
<td>Comfort</td>
<td>Comfortable</td>
<td>Comfortable</td>
<td>Comfortable</td>
</tr>
<tr>
<td>Consistently good comfort</td>
<td>General Discomfort</td>
<td>Very Uncomfortable</td>
<td></td>
</tr>
<tr>
<td>Some edge awareness - Flat fit</td>
<td>Discomfort in one location - Tight fit</td>
<td>Comfort does not improve with time</td>
<td></td>
</tr>
<tr>
<td>Discomfort in one location - Tight fit</td>
<td>Very Poor Vision</td>
<td>Very Poor Vision</td>
<td></td>
</tr>
<tr>
<td>No Fluctuation</td>
<td>Visual acuity should not fluctuate on blink</td>
<td>Poor vision not improved by any over-refraction</td>
<td></td>
</tr>
<tr>
<td>VA</td>
<td>Visual acuity should not fluctuate on blink</td>
<td>Visual acuity should not fluctuate on blink</td>
<td>Visual acuity should not fluctuate on blink</td>
</tr>
</tbody>
</table>

### Periphery Options

In cases of irregular corneae where STD periphery lenses do not provide an optimal fit, the periphery of the KeraSoft iC can be steepened or flattened independently of the base curve. It is important to remember that peripheral changes should not be used just to tighten or loosen a fit. Adjusting the fit should be done in the first instance by changing the base curve of the STD periphery lens.

**How to calculate the periphery change**

In some cases, one STD periphery fitting lens will give the best overall fit in terms of rotation and movement but a different one will give the best VA.

During the fitting process, record the fitting lens that gives the best fitting characteristics, Best Peripheral Fit (BPF).

Then record the fitting lens that gives the best possible VA, Best Central Fit (BCF).

The difference in base curves is then calculated: the Periphery Table indicates the periphery required.

Each periphery step is equivalent to a 0.20mm change in base curve.

Note: when a periphery change is made, it affects the diameter of the Posterior Fitting Zone. The Front Optic Zone is not affected.

**When to use FLAT peripheries**

- If all STD lenses give stable rotation, this implies the periphery of the cornea is flat compared to the center, e.g., Nipple Cones.
- When STD lenses show central bubbles, general poor vision or VA clearer after blink and flattening the base curve improves VA but gives flat fit characteristics.

**When to use STEEP peripheries**

- When STD lenses show fluting or unstable rotation and steepening the base curve improves the fit but gives VA clearer after blink. Such cases include: Post-refractive surgery, Central keratoconus with steep periphery, Post-graft corneas showing a reverse geometry corneal profile

**Example**

1. **The best possible VA is found using an 8.00mm fitting lens but shows tight fitting characteristics.** This base curve is recorded as the Best Central Fit (BCF).

   The base curve giving optimal rotation and movement is found to be 8.20mm, however, the VA is now worse after blink. This base curve is recorded as the Best Peripheral Fit (BPF).

   **BPF - BCF = 8.20mm - 8.00mm = +0.20mm which gives a peripheral value of FLT1 from the table.**

   This would be ordered as 8.00mm: FLT1

2. **The best possible VA is found using an 8.40mm fitting lens but shows flat fitting characteristics.** This base curve is recorded as the Best Central Fit (BCF).

   The base curve giving optimal rotation and movement is found to be 7.80mm, however, the VA is now clearer after blink. This base curve is recorded as the Best Peripheral Fit (BPF).

   **BPF - BCF = 7.80mm - 8.40mm = -0.60mm which gives a peripheral value of STP3 from the table.**

   The required lens would be ordered as 8.40mm: STP3
Sector Management Control™ (SMC)

It choosing this design, you may want to review the Advanced Fitting Module of the training video. For more irregular corneas, up to two sectors of the periphery can be modified independently of the base curve and customized to the specification of the practitioner (indicated in less than 10% of Kerasoft iC fits).

How to define the SMC Sector Angles

Record angles counter-clockwise around the lens circumference as A1, A2, A3 and A4.

A1 and A2 define beginning and end of the first sector. A3 and A4 define beginning and end of the second sector.

Each sector can be ordered as either STD, STP 1-4 or FLT 1-4. Blend areas are automatically set once sector angles are defined.

There must be a minimum of 30 degrees between each sector.

When to Use

Sector Management Control™

Sector Management Control is typically used in cases where:

1. A good fit cannot be obtained with an STD lens or by changing the whole periphery. Such cases include:
   - Low cones and PMD
   - Very irregular post-graft cases
2. Lenses are otherwise a good fit, yet persistently decenter or drop significantly on upward gaze.
3. The optimal fitting STD periphery lens consistently results in ghosting or shadowing of images. Using SMC in these cases can significantly improve Visual Acuity.
4. Decentered cones where the resultant corneal shape consistently causes all lenses to decenter.

Classic SMC Design Sector Angles

This design can be used for most corneas that have a natural ectasia.

A1 = 30°  A2 = 150°
A3 = 220°  A4 = 320°

For cases where tightening only in the inferior sector is required, keep the superior sector STD and steepen the inferior sector by STP1. Post-graft corneas may require a more customized design.

Example 1:

Classic SMC - Low Cone/PMD

This SMC would be ordered as:
8.40mm: 14.50mm:
STD: A1 = 30°  A2 = 150°
STP1: A3 = 220°  A4 = 320°
Using the Classic SMC design.

Example 2:

Customized SMC - Fluting on Post-Graft Cornea: Image demonstrates edge lift at approximately 4 o’clock

If the lens requires tightening in the area between 20 and 290 degrees, the order would be written as:
8.60mm: 14.50mm:
STD: A1 = 110°  A2 = 210°
STP2: A3 = 290°  A4 = 20°