KBA

PRECISION
TECHNOLOGY SERVICES

Professional Fitting Guide

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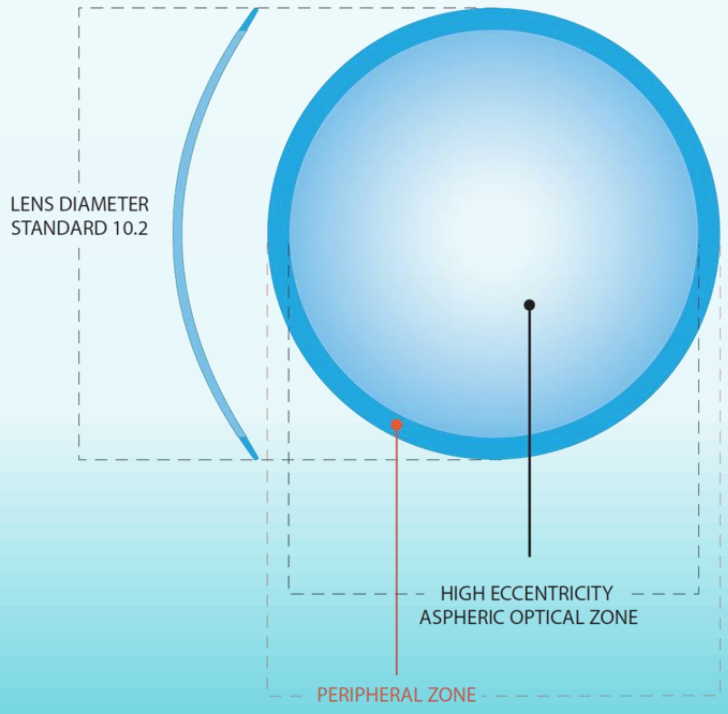
KBA

Design

The KBA GP lens design was developed by the KATT Design Group as a tool to fit irregular corneas of all types (keratoconus, pellucid, post RK, grafted corneas). The KBA lens employs a larger, 10.2mm diameter to create improved centration, stability, comfort and consistency of vision.

Additionally, the KBA uses a high back surface asphericity to better match the highly irregular surfaces it lands on. The eccentricity value of the back of the KBA lens is meant to mimic the corneal rate of change. A close match of corneal eccentricity and lens eccentricity creates a wide area of alignment with the peripheral cornea. Coupled with the larger diameter, the high eccentricity back surface distributes pressure over a broad region and further contributes to centration, stability, comfort and consistency of vision.

KBA Lens Design



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Initial Diagnostic Lens Selection Using K Values

To select the initial diagnostic, determine the flat keratometry reading in millimeters and choose a **0.98e diagnostic lens** with a base curve **0.60mm steeper than Flat K.**

Example:

Flat K-reading measures 45.00D / 7.50mm

Subtract 0.60mm from 7.50mm, which = **6.90mm**

Choose the **6.90mm, 0.98e KBA diagnostic lens**.

Initial Diagnostic Lens Selection Using A Medmont Topographer

In the Medmont Studio Software

Select the best available topography or composite eye capture

Select the **"BE KBA"** from the contact lens fitting software.

Alter the e-value to **0.98e**

Steepen or flatten the BC to produce **20-30 microns** of clearance over the cone.

You do not want **any** central corneal touch.

Diagnostically fit this **closest matching BC from your trial set** and evaluate the fit.

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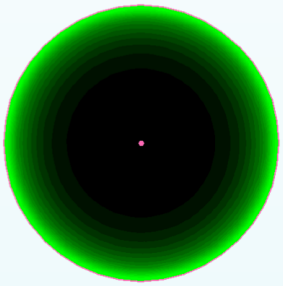
Diagnostic Lens Evaluation – Step 1: Sagittal Height

An ideal KBA fit is achieved when the sagittal depth (sag) of lens is appropriate for the depth or height of the eye. The practitioner's goal is to find the diagnostic lens that clears or vaults the corneal apex and cone. A fluid layer between lens and cornea will protect the sensitive corneal tissue and allow for landing in the mid-periphery of the lens.

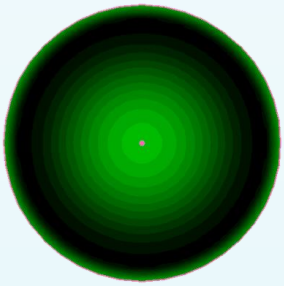
Apical bearing:

Observation: lens is resting on the corneal apex or cone and/or is unstable on eye
Response: Increase the apical clearance by selecting a steeper diagnostic lens



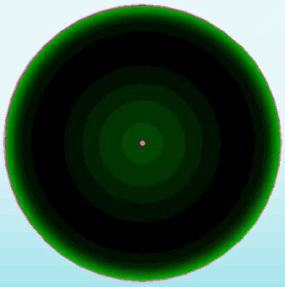
Excessive Central Pooling:

Observation: lens has excessive central pooling or bubble formation/dimple veiling
Response Decrease the apical clearance by selecting a flatter diagnostic lens



Desired Apical/Cone Clearance:

Observation: the lens has subtle central pooling with no bearing on the apex or cone
Response: The diagnostic lens has appropriate sag, proceed to step 2



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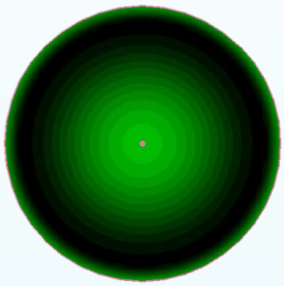
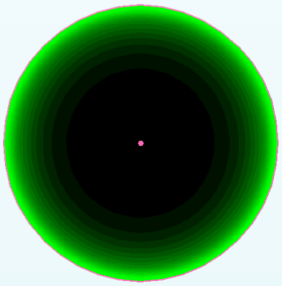
Diagnostic Lens Evaluation – Step 2: Landing and Edge

The KBA should exhibit a healthy landing and edge lift in the periphery. The lens should touch down on the corneal surface in the mid-periphery and share its bearing over as large a surface area as possible. This will distribute lens pressure and create a stable and comfortable fit.



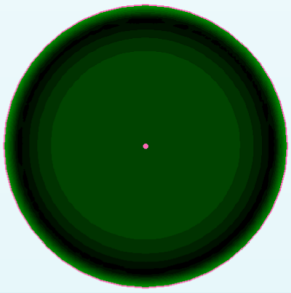
Edge too tight and excessive sagittal depth:

Observation: Tight edge and excessive apical clearance
Response: Fit the next flatter diagnostic lens



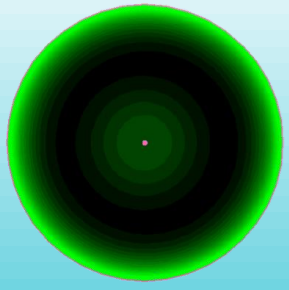
Edge too loose and inadequate sagittal depth:

Observation: Excessive edge lift and central corneal bearing
Response: Fit the next steeper diagnostic lens



Edge too tight and desired sagittal depth:

Observation: desired clearance of the apex/cone, but tight edge
Response: select the 1.30e diagnostic lens with the equivalent sagittal height (**see chart on next page**) and re-evaluate



Edge too loose and desired sagittal depth:

Observation: desired clearance of the apex/cone, but loose edge
Response: Ask your consultant to maintain sagittal height but reduce eccentricity on the ordered lens

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Diagnostic Lens Evaluation – Lens Equivalency

Trial Engraving	0.98 Eccentricity Trials		Sagittal Equivalent	Trial Engraving	1.30 Eccentricity Trials	
	BC	Power			BC	Power
1	5.80	-9.00	→	18	5.20	-15.00
2	5.90	-9.00	→	19	5.30	-15.00
3	6.00	-9.00	→	20	5.40	-15.00
4	6.10	-9.00	→	21	5.50	-15.00
5	6.20	-9.00	→	22	5.60	-15.00
6	6.30	-9.00	→	23	5.70	-15.00
7	6.40	-9.00	→	24	5.80	-15.00
8	6.50	-9.00	→	25	5.90	-15.00
9	6.60	-9.00	→	26	6.00	-15.00
10	6.70	-9.00	→	27	6.10	-9.00
11	6.80	-9.00	→	28	6.20	-9.00
12	6.90	-9.00	→	29	6.30	-9.00
13	7.00	-9.00	→	30	6.40	-9.00
14	7.10	-9.00				
15	7.20	-9.00				
16	7.30	-9.00				
17	7.40	-15.00				

Example of lens Equivalency:

- **The 6.60mm BC, 0.98e diagnostic lens** has good clearance but a tight edge.
- Choose the **6.00 mm BC, 1.30e diagnostic lens** and re-evaluate fit.

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Diagnostic Lens Evaluation – Step 3: Position and Movement

The KBA is dispensed on the diseased and irregular cornea where the eye's asymmetry is very high. The KBA's large diameter and high aspheric back surface promotes good centration of the lens. Although many of these challenging cases make it difficult to achieve perfect centration, it is always the goal.

Observe the movement and position of the lens before and after the blink. Sharing these findings with your KBA consultant can assist the two of you in optimizing lens parameters and the patient outcome.

Position and Movement Considerations

Does the lens move excessively, inadequately or acceptably?
Where does the lens habitually position?
Does it have a tendency to ride high or low?

Diagnostic Lens Evaluation – Step 4: Over-refraction

One of the principle functions of the KBA trials is to allow the practitioner to over-refract on a diagnostic lens. These findings help to improve the first fit success of the lens and provide the patient with quality vision.

Perform a spherical over-refraction on the best fitting diagnostic lens and provide this information to your KBA consultant.

Hint: If a patient has been habitually wearing another lens with bearing on the cone, the cornea may need some time to recover. It is not uncommon for the vision to be reduced a line or two when you refit these patients into a KBA lens with a healthy apical clearance. It can take 4-6 weeks for the cornea to recover and normalize under the new KBA. Vision will often improve to the same level or better over time. It is important to communicate to the patient that their eye needs to recover and this healthier lens to cornea relationship should improve visual quality over time while also protecting their eye health.

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Ordering a KBA Lens

Upon successful completion of the diagnostic visit, you are ready to order the patient's custom KBA lens(es). To complete the order, your KBA consultant will require the following information:

Diagnostic lens used

Base curve

Diameter

Power

Eccentricity

Fit and Acuity Evaluation

Sagittal depth observations

Edge lift observations

Movement or position considerations

Over-refraction

Consultant Resources

The KBA is a very advanced lens design for the keratoconic and irregular cornea. Its unique construction is meant to mimic the rate of flattening of very irregular eyes. Your KBA consultant can assist with customization to the parameters to optimize the fit for each and every eye. Don't forget to visit our website to access fitting guides for our other lens designs and much more.

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Diagnostic Lens Evaluation –Quick Reference

Observation	Cause	Recommendation
Apical bearing	Inadequate sag / lens too flat	Steepen BC >/= 0.10mm
Excessive movement, sloppy fit	Inadequate sag / lens too flat	Steepen BC >/= 0.10mm or increase diameter 0.3mm or decrease E >/= 0.10
Superior or lateral displacement	Inadequate sag / lens too flat	Steepen BC >/= 0.10mm or increase diameter 0.3mm
Excessive edge lift - with good apical clearance	Eccentricity too high (flat)	Decrease E >/= 0.10 compensate with flatter BC KBA consultant can assist
Excessive central pooling	Excessive sag / lens too steep	Flatten BC >/= 0.10mm
Central bubbles	Excessive sag / lens too steep	
Central dimple veiling	Excessive sag / lens too steep	
Inadequate movement	Excessive sag / lens too steep	Flatten BC >/= 0.10mm or reduce diameter 0.3mm
Inferior displacement - with good apical clearance	Eccentricity too low (steep)	Increase E >/= 0.10 compensate with steeper BC KBA consultant can assist
Fluctuating vision	Excessive movement	See excessive movement above
	Large pupil	Increase diameter
Poor Visual Acuity	Excessive apical clearance	Flatten BC >/= 0.10mm
	Refit from flat fitting GP	Wait 4-6 weeks and re-assess

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