

FITTING GUIDE: Maxim™ Scleral Lens

Lens Design

Maxim scleral lens is a semi-sclera design. It performs exceptionally well on dry eyes and irregular corneas including keratoconus, corneal trauma, pellucid marginal degeneration, penetrating keratoplasties, post LASIK and RK patients. It incorporates a proprietary multiple posterior curve system to obtain corneal alignment. Patients who wear Maxim will have unsurpassed comfort and clarity throughout the day. The trial lens set contains both 16.0mm and 17.5mm diameters in non-fenestrated clear material.

Pre-Fitting Examination

It is recommended that corneal topography be done, taking note to the symmetry of the cornea. Your initial base curve should mimic the cornea’s shape. (steep cornea steeper base curve; flat cornea flatter base curve)

Selection Lens Size

Maxim trial lenses are in 16.0mm and 17.5mm diameters. Theses two designs are independent of each other and both work well on all patients. However, some patients may have difficulty inserting the larger 17.5mm lens. The overall diameter of the lens should extend at least 2mm beyond the limbal area of the eye. This is very important since Maxim needs to bear primarily on the sclera and not the cornea.



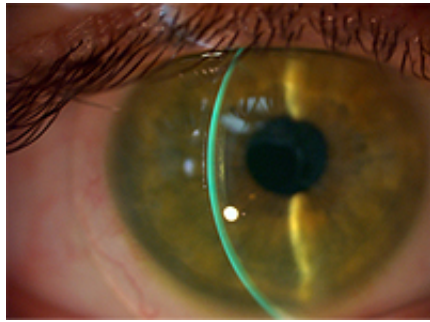
Proper Lens Diameter

Choosing Base Curve and Sag

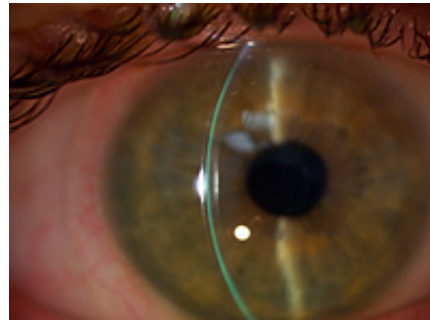
The most difficult parameter to determine on a distorted corneal is the initial trial lens. The Maxim lens is fit by Sag value and not base curve. However, the base curve does need to mimic the cornea. i.e.: use a steeper base curve on steeper corneas and flatter base curves on flatter asymmetric corneas such as pellucid LASIK and RK eyes. Below is a suggested initial base curve / Sag guide.

Moderate Cone	Advanced Cone	Post Surgical / Pellucid (Lasik / RK)	Post Surgical (Bulging)
7.03 bc / 16.0 / 4.33 Sag	7.18 bc / 16.0 / 4.70 Sag	8.88 bc / 16.0 / 4.15 Sag 8.44 bc / 16.0 / 4.42 Sag	7.18 bc / 16.0 / 4.70 Sag
7.85 bc / 17.5 / 5.20 Sag	6.89 bc / 17.5 / 5.64 Sag	7.85 bc / 17.5 / 5.20 Sag	6.89 bc / 17.5 / 5.64 Sag

A properly fit lens will have alignment over the cornea. The ideal vault will have 100 microns clearance over the steepest part of the cornea. **Your goal is to find the minimum SAG Value that vaults the cornea with little or preferably no apical bearing.**



Too Much Vault
250 Micron Clearance



Ideal Vault
100 Micron Clearance

Calculating Lens Power

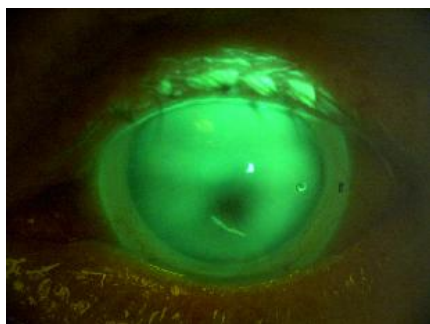
Lens power is best determined by over-refraction. The spherical and or the cylinder value of the over-refraction are simply added to the trial lens power to determine the power prescribed.

Center Thickness

Center thickness is a function of lens design and should be calculated by the laboratory.

Fluorescein Pattern

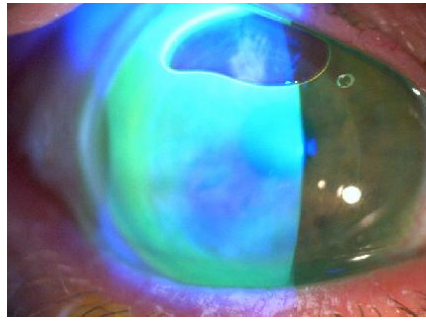
Lens selection should be aided by an examination of the fluorescein pattern. It helps to place the fluorescein in cup of the lens at insertion. The most accurate way to determine the proper SAG is to evaluate a trial lens that has apical touch. If there is central bearing the SAG value should be increase by 0.1mm for every 1.0mm of touch. ***You goal is to determine the minimum SAG that vaults the cornea with very little or preferably no touch.*** The ideal pattern will align cornea with out any bubbles at the limbus or under the optical cap and it will vault the steepest part of the cornea by only 100 microns or less. Once that is obtained, a close evaluation of the periphery is needed. There should not be any excessive edge lift or worse impingement in the conjunctiva. If there is excessive lift or impingement in the periphery, the lens edge should be adjusted. Contact your AccuLens consultant for assistance.



2 mm touch / 4.20 SAG



No Touch / 4.40 SAG



**Too Flat / Heavy Central Bearing
with Limbal Bubble Increase
Sag Value by 0.3 - 0.4mm**

Bubbles

Sometimes at insertion a false bubble can be induced. It is very important when inserting the lens that it be filled fully with saline and placed on the eye with the head down and parallel with the table top. You do not want any bubbles as they will cause the cornea to become dry within those areas.



Proper Position



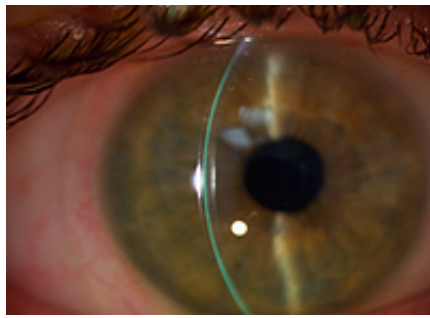
Induced Bubbles

Edge

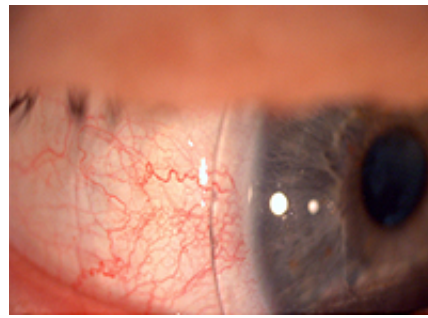
A proper edge should not lift off of the sclera or more importantly impinge into it. An edge that lifts excessive will cause lens awareness while an edge that impinges can cause edema, redness and discomfort. If the edge is not aligned with the sclera recheck to make sure that you have **a minimum SAG that vaults the cornea**. If you do have the appropriate SAG with an incorrect edge call our consultation department for advice on peripheral curve changes.

Ideal Fit

The lens should align the cornea with 100 microns of clearance. There should not be any bubbles under the optical cap (too steep of a sag) or over the limbus (too flat of a sag). A Maxim lens will have very minimal to no movement. In addition, attention should be observed at the periphery. There should not be any conjunctival impingement or excessive edge lift with Maxim.



Ideal 100 Micron Clearance



Ideal Edge

Insertion & Removal

Make sure your patient understands the importance of proper insertion and removal. When inserting a Maxim it is important that the concave surface be fully filled with saline so as to reduce the risk of induced unwanted bubbles. Most patients find that holding the lens between the index and middle finger works best. Since Maxim tends to settle on the eye, it needs to be pre-loosened before removal. We recommend irrigating with saline and massage the lens prior to blinking the lens out or removing with a DMV suction cup. (refer to our Care and Handling video for more detail)



Troubleshooting

While not common, corneal edema may occur in some patients. A lens with too much vaults can cause this. Make sure to re-evaluate your SAG value. ***It should be the minimum SAG that vaults with very little or preferably no apical bearing (100 microns).*** Another cause may be that the periphery of the lens is impinging into the conjunctiva. If this occurs flattening the PC's while maintaining the appropriate SAG is indicated. Lens awareness can occur if there is too much edge lift. Excessive edge lift is caused by either the PC's being too flat or the lens SAG being too low. If excessive edge lift is observed you should first determine if the SAG is appropriate. Often when the SAG is increased, the edge will improve. If the lens SAG is correct then a steeper periphery is indicated. The two most common causes for SPK are either from preservatives in the solution or excessive bearing on the apex. Because these lenses have very little or no movement, tear exchange is very slow to occur. Therefore, it is very important that a benign saline be used when inserting. This will eliminate any possibility of chemical irritation. On rare occasions metabolic debris accumulation can be an issue. Usually the patient will complain of decrease acuity after eight to ten hours wear. If this occurs have the patient remove, clean and re-insert during mid-day. Excessive redness can be a sign that the lens is fitting too tightly. Patients may complain that their wearing time is limited to only a few hours a day. Recheck the SAG value to make sure it is at minimum apical vault and adjust as necessary. If the SAG is appropriate then re-design with a flatter periphery.

ISSUE

Corneal Edema

Corneal Edema

Excessive Edge Lift

CAUSE

Too much vault

Lens edge impingement

Low SAG

RESOLVE

Re-evaluate lens SAG with fluorescein. Decrease SAG

Flatten PCs/Maintain appropriate SAG

Re-evaluate SAG with

Excessive Edge lift	Low SAG	Re-evaluate lens SAG with fluorescein. Increase SAG
Excessive Edge lift/with correct SAG	Flat PC's	Steepen PC's
SPK	Non-preservative free solutions used	Use preservative free solutions
SPK	Excessive bearing on the corneal apex	Re-evaluate lens SAG with fluorescein. Increase SAG
Decreased acuity	Metabolic debris	Remove, clean and re-insert during mid-day
Excessive redness	Tight fit/excessive SAG	Re-evaluate lens SAG with fluorescein. Decrease SAG
Excessive redness/with correct SAG	Tight PC's	Flatten PC's

Fitting Pearls

- Lens Diameter should be at least 2mm larger than limbal area of the eye.
- Your 1st trial lens should be flat fitting. That way, you can very accurately adjust the SAG up.
- Central bearing, edge lift and or limbal bubbles indicate a flat fit.
- Increase Sag value if there is a central bearing (0.1mm for every 1.0mm of bearing)
- Deep central pooling or central bubbles indicate a steep fit.
- Decrease Sag value if you have a steep fit.
- Ideal fluorescein pattern will be aligned at 100 microns of clearance.
- Edge should not impinge or lift excessively off of the sclera.

****Your goal is to find the minimum SAG Value that vaults the cornea with little or preferably no apical bearing, 100 microns.***