

Fitting Beyond the Limbus

The Evolving msdtm Designs

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Large Diameter GP Lenses

•Bausch & Lomb Boston has made Equalens 2, Boston XO, and Boston XO₂ materials available for manufacturing large diameter lenses.

–Equalens 2 (Dk 85): 27mm

–Boston XO (Dk 100): 17, 21, 26mm

–Boston XO₂ (Dk 141): 17, 21, 25mm



Could not be fit with corneal lenses

Lenses that gave good vision would not stay on the cornea

Lenses that would stay on the cornea did not give good vision



The mini-scleral lens provides excellent stability, comfort, and functional vision.

When should I fit mini-scleral lens designs?

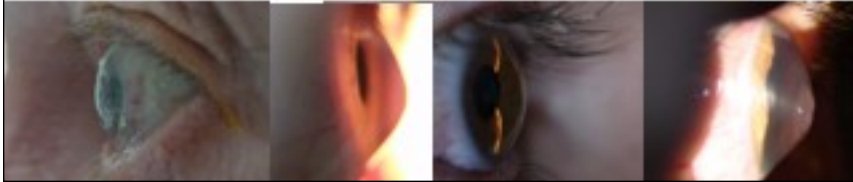
- Advanced cones / pmd
- Piggy-back fits and failures
- Post surgical corneas
- Poor comfort with traditional corneal designs
- Neovascularization with hybrid lens designs
- Stevens-Johnson Syndrome
- Keratitis Sicca / Dry Eye Syndrome
- Corneal Protection
- Presbyopia

How does the patient benefit with mini-scleral lenses?

- Better initial /long term comfort
- Centered optics /consistent visual acuity
- No foreign body complaints
- Healthy cornea
- Improved visual field vs. de-centered corneal lenses
- Elimination of spectacle blur

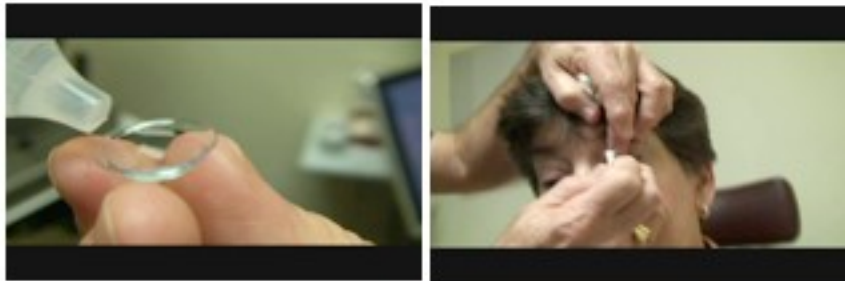
How do I select a lens from the fitting set?

- Look at the profile of the eye from the side
 - Flat eye - choose a low sag lens
 - Average eye - choose a moderate sag lens
 - Steep eye - choose a high sag lens



Using proper lens application and removal technique improves patient comfort





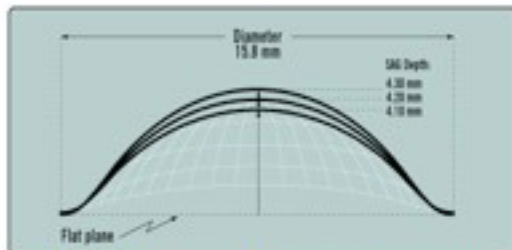
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msd™ PARAMETERS AVAILABLE (Diameter 15.8mm and 18.0mm)

Sagittal Depth Value	Mid-Peripheral/Limbal Zone Clearance	Lens Power	Edge Clearance
15.8 mm msd			
3.60 mm to 5.60 mm (0.10mm inc.)	Decreased - D Standard - S Increased - I Double Increased - II	Any	Standard 1-Flat 2-Flat
18.0 mm msd			
3.60 mm to 5.60 mm (0.10mm inc.)	Decreased - D Standard - S Increased - I Double Increased - II	Any	Standard 1-Flat

Thin profile designed to minimize interaction between the lens edge and the lid

Step 1 - Find the best Sag

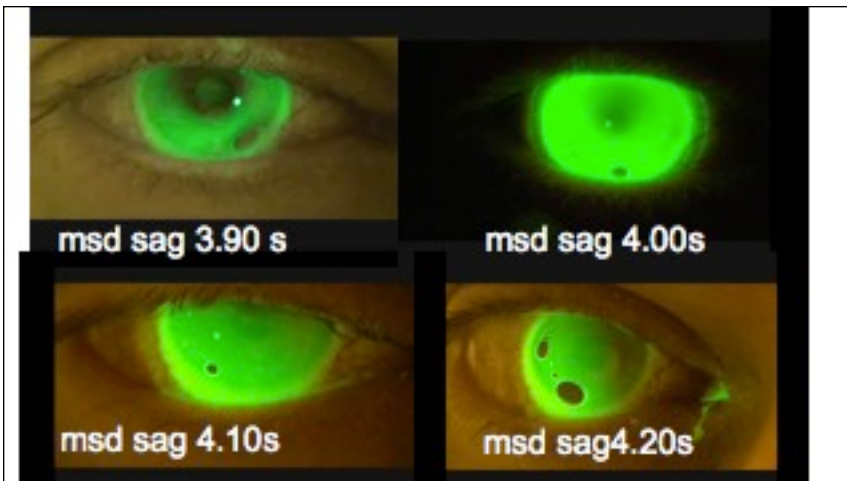


Sagittal depth value of the mini-scleral contact lens is adjusted to vault the highest point on the cornea

The evolving fitting strategy

- Closely align lenses with light touch
- Align lenses with minimal clearance
- Vault the entire cornea - minimum 50 microns
- Fenestrations issues
 - bubbles
 - mucin and debris
 - imprinting
- Non-fenestrated lenses

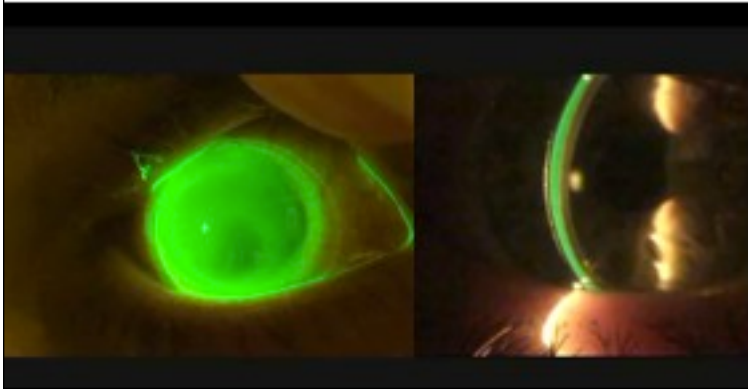
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Evaluate the vault of the lens above the cornea

- Initial evaluation
 - evaluate with optic section and white light
 - Use corneal thickness / contact lens thickness as gauge (550 microns/200 microns)
 - If lens vaults the cornea and limbus – apply nail to front surface of lens and monitor for tear flow behind the lens
- Allow lens to settle on eye for ONE HOUR
 - evaluate with optic section and white light
 - Estimate thickness of tear layer in all quadrants and at highest elevation zone (topography elevation map)

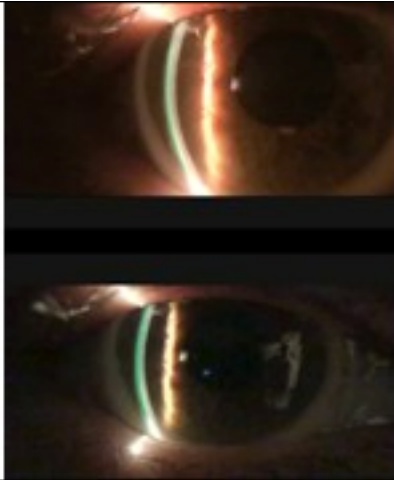
The fluorescein/tear lens profile



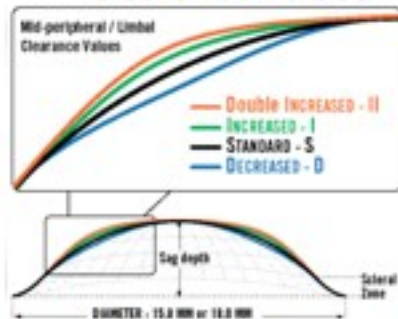
The lens rests on the conjunctiva that covers the sclera

The lens settles into the conjunctiva

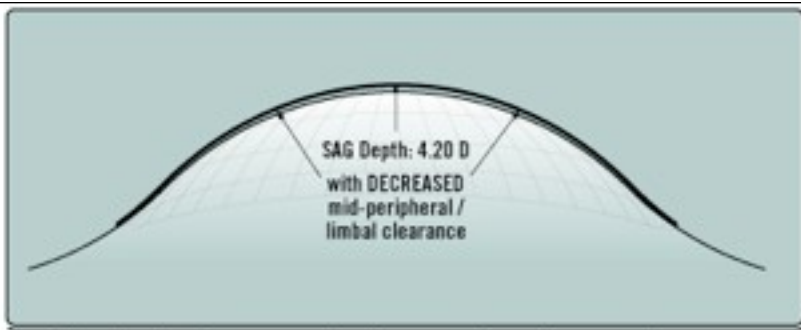
Evaluate the fluid lens profile at insertion and at one hour to insure complete corneal vaulting



Step 2 Adjust the mid-peripheral / limbal clearance values



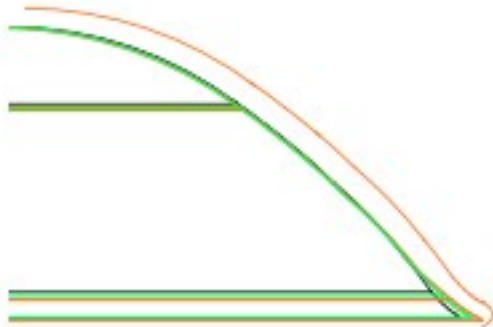
Each "Sagittal Depth" in the fitting set has 4 Mid-Peripheral/Limbal Clearance Values - Decreased, Standard, Increased, and Double Increased - to better align the lens in that area.



- The Profile Curve can be increased or decreased
 - Decreased - Standard - Increased - Double Increased
- Flattening the Profile Curve loosens the periphery from the inside

• The Peripheral Zone can be Flattened

- Standard
- 1 Flat
- 2 Flat



• Flattening the Peripheral Zone loosens the periphery from the outside

5.00 Sag Standard Profile
Sample Peripheral Zones



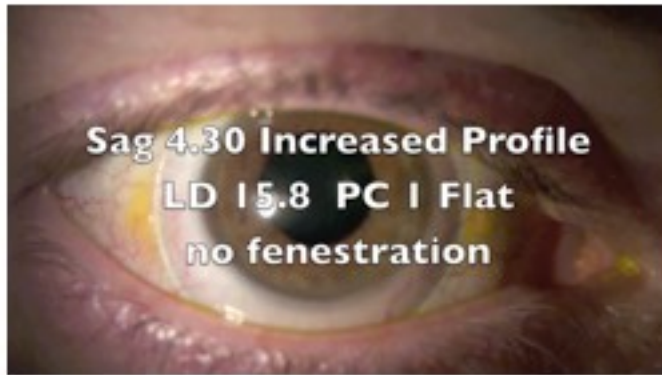
Sector Bulbar Injection

Standard PC



1 Flat PC
with Increased
Profile Curve

Average lens wear is 18+ hours / day Comfort is 10/10
Wears glasses for residual astigmatism



Are thick tear layers OK?

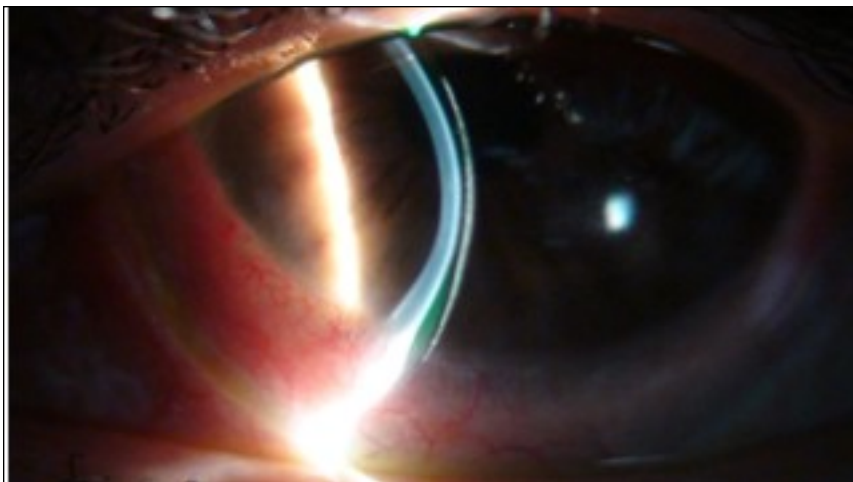
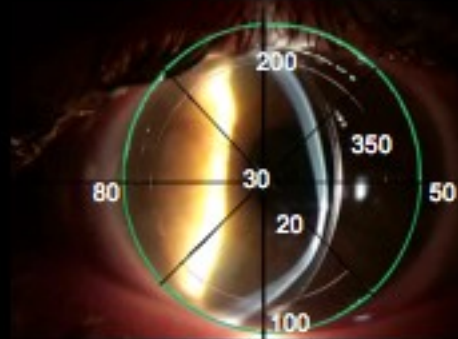
- Thin film forces develop between surface that are close and parallel to each other
 - Thin film (< 15 microns) forces cause surfaces to be drawn towards each other
 - Lens adhesion can result
- Thick fluid pools supports the lens
 - A thick saline pool (50 to 600 microns) behind the lens protects and moistens the cornea
 - A properly fit lens will have some tear flow behind the lens
 - High dk lens material provide adequate O₂ – corneal edema has not been a problem with lenses fit with high vaults



Trial Lens - med extended set

med 5.60 sag 6.20 profile plano 15.8 no fenestration

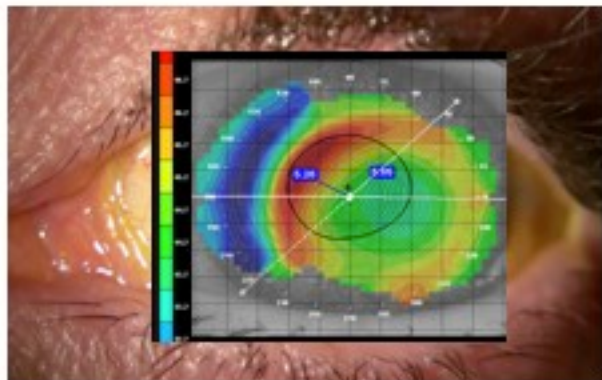
Estimated tear lens depth at 1 hr



Do over-ks to evaluate for lens flexure

- Lens flexure can be the cause of residual astigmatism
 - Increasing the lens thickness reduces flexure
- Internal residual astigmatism will not be corrected by eliminating lens flexure

Do topography over the lens to evaluate for lens flexure and location of the optic zone



Refract over the lens

- Refract using spheres to best VA
- Refract again with Sphere and Cylinder if best VA is not 20/20
- Best Corrected VA may be reduced due to corneal distortion and/or scarring from corneal pathology

Correcting Residual Astigmatism

- Put residual astigmatism correction in spectacles for wear over lenses
- Use a front surface toric lens
 - Dot the lens to evaluate lens rotation on eye
 - Toric front surface can be dialed in for correction of residual astigmatism
 - Determine if prism is required for mini-scleral lens stabilization

Understand the conjunctiva's response to the presence of a rigid lens

- Conjunctival "chalasis" is a benign finding
- Lens compression into the conjunctiva resolves quickly upon lens removal (usually within 15 minutes)
- Conjunctival injection from lens wear should be addressed - see above
- Conjunctival injection after lens removal is short lived and is not a problem



Evaluating the scleral fit



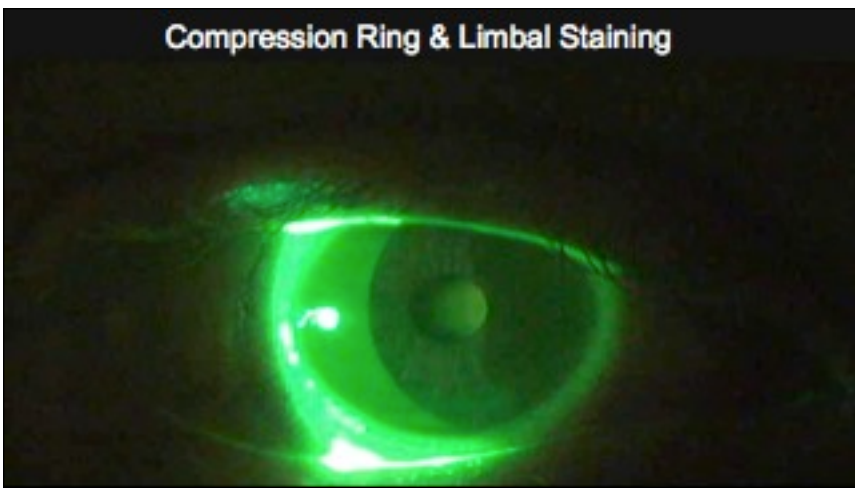
Conjunctival Blanching



Conjunctival Chelasis

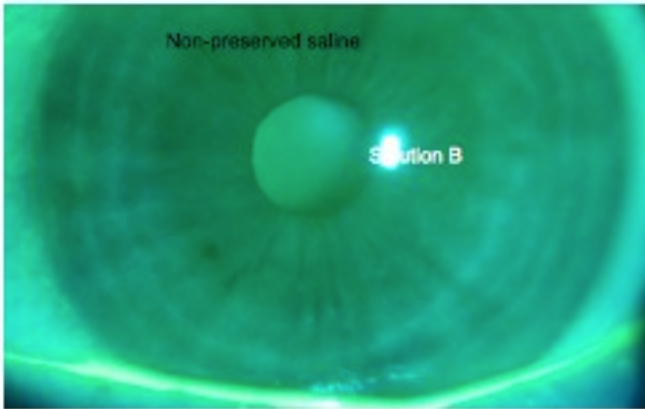


Compression Ring & Limbal Staining



Non-preserved saline

Solution B



Which is -4.20 -4.30 -4-40 ?

Advantages of vaulting the Cornea

- Corneal protection from dryness and abrasion
- Reduce spectacle blur
- No "foreign bodies" getting behind the lens
- Stable and centered optics
- Easy to fit any irregular cornea - just vault it
- No lens discomfort or adaptation issues

Challenges with Scleral Lenses

- Conjunctival inflammation
- Conjunctival impingement/blanching
- Bubbles and mucin entrapment
- What happens with pterygia and pingueculae?
- Conjunctival Chalasis
- Limbal engorgement
- Solutions preservative issues
- Lens removal can be difficult without a plunger
- Tilted optic system lens to cornea result in crazy residual cylinder corrections

Thank you!

