MAKE A DIFFERENCE IN SOMEONE'S LIFE

msd Select tm
Fits the Challenge

FITTING GUIDE

blanchard
Contact Lenses
DESIGNER. MANUFACTURER. PARTNER.

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INTRODUCTION

The **msd *Select Mini-Scleral Design*** has a distinctive posterior lens surface incorporating reverse geometry with specially designed optical and peripheral curves. The smooth refracting surface created by the posterior surface eliminates much of the irregular and regular astigmatism caused by the corneal surface. The **msd**'s aspheric front surface optics reduces aberrations further improving vision. The msd thinner profile and design results in minimal lens edge/lid interaction, providing excellent patient comfort. The thinner lens profile combined with the high oxygen permeability (msd Select is manufactured in materials with a minimum of 100 DK), allow maximum oxygen transmission, maintaining corneal health.

The **msd** Select is easy to fit and represents the preferred design modality for any corneal ectasia, including advanced Keratoconus, post Lasik and other compromised and irregular corneas.

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APPLICATIONS

Applications for the **msd** lens are numerous and include the majority of pathology cases such as:

> Keratoconus (Oval, Nipple)
> Pellucid Marginal Degeneration
> Keratoglobus
> Post Graft
> RK, PRK and LASIK induced ectasia
> Any compromised and/or irregular cornea

CHARACTERISTICS

1. The **msd** lens centers well for a great majority of applications

2. Due to the proprietary, reverse geometry designs, the sagittal depth of the lens can be changed independently of the central optic zone profile and/or midperipheral/limbal zone clearance values.

3. Sagittal depth value, midperipheral/limbal zone clearance, edge clearance, lens material, and lens power are the only parameters to specify when ordering the **msd** lens.

4. **msd** lenses require complete corneal and limbal vaulting, ideally 175 to 250 microns of clearance after the lens has settled in for a few hours.

5. The proprietary midperipheral curves in the **msd** lens design creates a unique tear pump, providing enhanced tear exchange.

6. The thinner profile maximizes DK/L. The proprietary edge design results in minimal lens/lid interaction, providing excellent comfort.

FITTING PHILOSOPHY

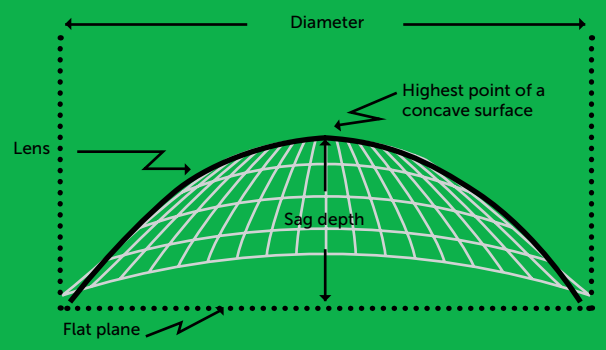
A fundamental principle of GP contact lens fitting is to achieve a particular relationship between the posterior lens surface and the anterior cornea, thus creating a tear layer with specific characteristics. This is also true in fitting the **msd** lens with some differences when compared to corneal lens designs.

Corneal lenses are fitted by manipulating base curve and diameter in order to create the optimal lens/cornea relationship. When the cornea becomes highly irregular, with randomly steep and flat corneal topography, the fit becomes very complicated and often impossible.

The underlying principle of the **msd** lens is **to completely vault the highly irregular corneal topography, as well as the limbus, and use the sclera as the landing area** to properly position the posterior surface of the lens over the highly irregular cornea and create a smooth spherical second refractive surface. With this in mind, sagittal depth, as opposed to base curve value, becomes the most comprehensive and easiest measurement in managing and optimizing the vaulting characteristics of msd lenses *(see illustrations below)*.

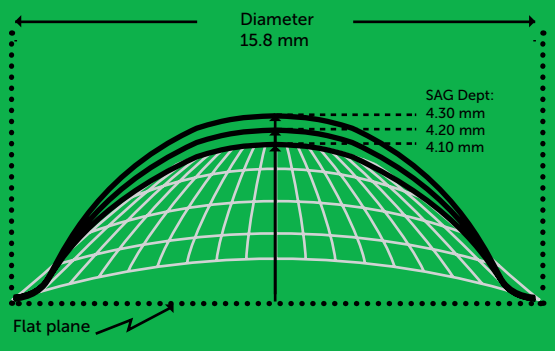
What is sagittal depth? (sag depth)

Sagittal depth (sag depth) is the measurement from the flat plane at a given diameter to the highest point of a concave surface of the contact lens - also descrobed as the degree of corneal elevation for a given chord diameter.



How does sagittal depth effect the fit?

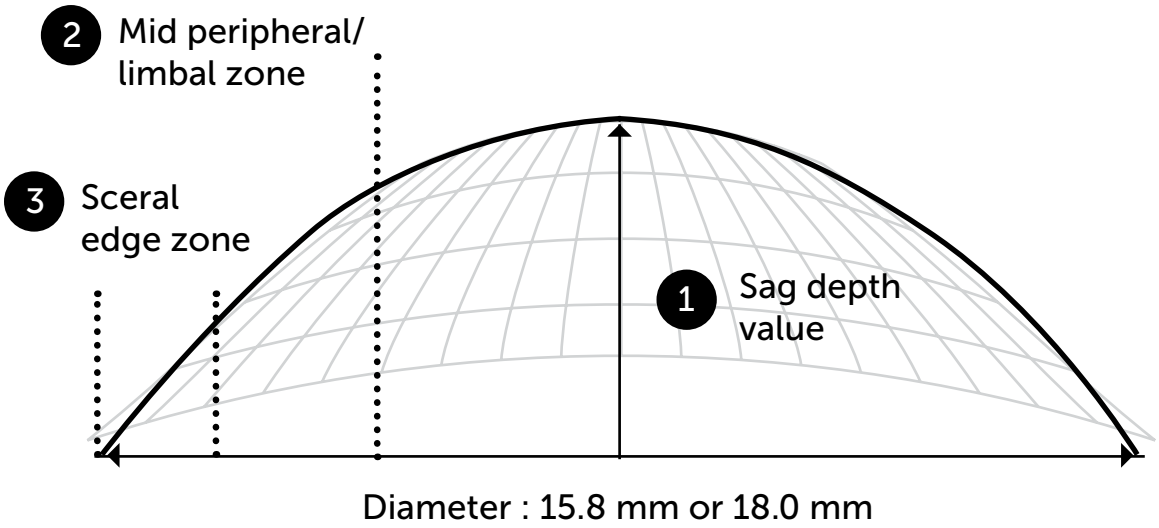
Sag depth value is critical in achieving the desired fit as it serves as a control mechanism for not only completely vaulting, but also controlling the **desired thickness of the tear layer.**



HIGHER sag depth values allow more vaulting, conversely, LOWER sag depth values will increase positive pressure.

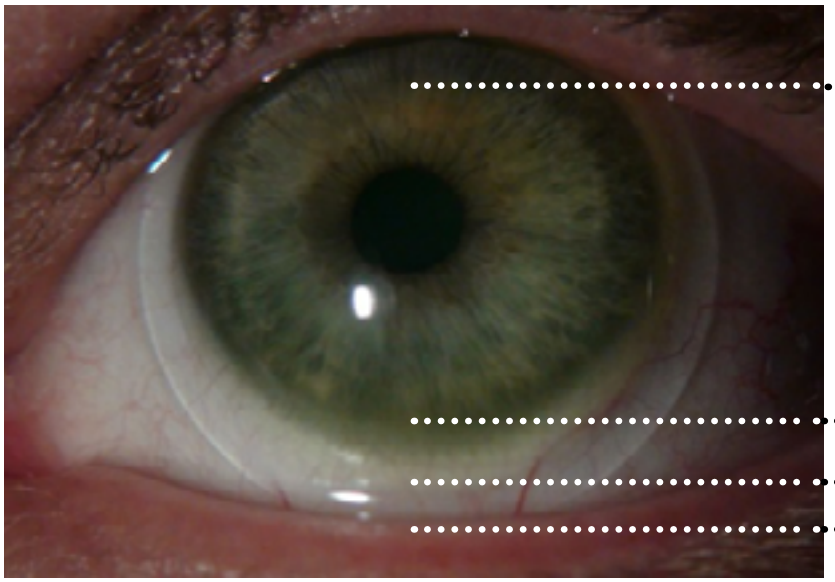
FITTING PROCESS

The **msd** fitting concept is simple and easy to grasp. You are only a few variables away from making a difference in someone's life! First, determine the sagittal depth value ❶; then, specify the midperipheral/limbal zone clearance value ❷; specify scleral edge clearance ❸; and finally over-refract for final power.



IDEAL FIT

The ideal **msd** fit should provide apical clearance between 175 and 250 microns after the lens has settled in for a few hours. Apical clearance greater than 350 microns on highly irregular corneas may cause degradation in visual performance. The midperipheral/limbal zone should completely vault the limbus, and the scleral edge zone, align to the sclera. Lens movement with the **msd** is often very limited and may be difficult for practitioner to discern.



COMFORT VS LENS AWARNESS

This lens is designed to be as comfortable as a soft lens after adaptation. At the initial diagnostic lens evaluation you can expect some lens awareness, particularly for patients with no prior lens experience or those with prior soft lens wearing experience. However, true discomfort is a certain sign of an improper fit lens.

The primary cause of lens discomfort is the scleral edge zone not aligned properly with the sclera, causing edge stand-off (often associated with bubbles forming under the edge of the lens). Similarly, an edge that is too tight will cause peripheral seal off and/or blanching, eventually leading to discomfort. After 30 minutes, if the patient is not comfortable, re-evaluate the scleral edge alignment and consider modifying the scleral edge value.

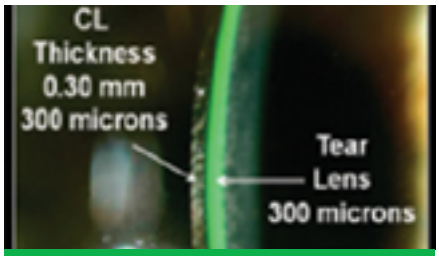
FITTING STEPS

1. Determine sagittal depth value/evaluate clearance

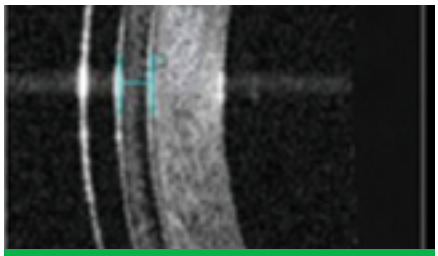
Use the nomogram or evaluate the sagittal depth value by observing the corneal and scleral profile (see illustration). Apply lens and let it settle for a minimum of 20 to 30 minutes. Using an optic section or OCT evaluate the tear layer thickness under the lens. Use the trial lens thickness (300 microns) as a reference. Look for apical clearance slightly higher than ideal (225 to 300 microns) as apical clearance will decrease 70 to 100 microns during a full day of wear, with most of it occurring within 20 to 30 minutes. This is why apical clearance evaluated initially should be higher than that observed during follow up evaluation (lens is fully settled in).

Post Graft, LASIK, RK, PRK, traumatic corneas Evaluate corneal profile	4.20S (standard)
Moderate Keratoconus (Oval, Nipple), PMD, Globus. K readings between 42.00D and 45.00D	4.40S (standard)
Advanced Keratoconus (Oval Nipple), PMD, Globus Steep K readings above 50.00D	4.60S (standard)

Observe the corneal and scleral profile



Optic section



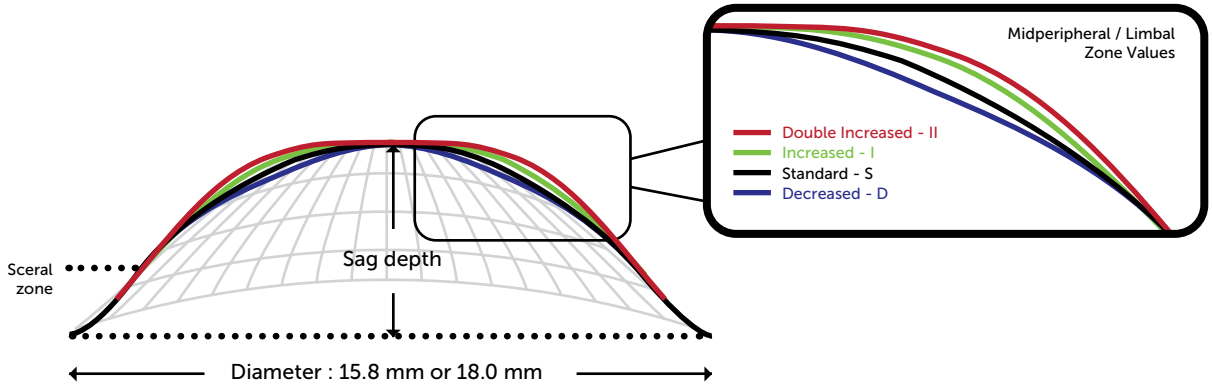
OCT view

Note: the most elevated area on an irregular cornea may not necessarily be central to the cornea. If available, elevation maps are useful in determining the highest point on a cornea. Less clearance is acceptable at the apex of a moderate or advanced keratoconic cornea, but a touch is never acceptable

2. Determine midperipheral/limbal zone value

After determining the msd with the ideal sagittal depth value, select the Profile Curve that provides the preferred lens vault in the midperipheral/limbal zone. There are 4 Profile Curves available: Decreased (D), Standard (S), Increased (I), and Double Increased (II). For example, the Double Increased profile is often used to avoid touch on an elevated or tilted graft junction.

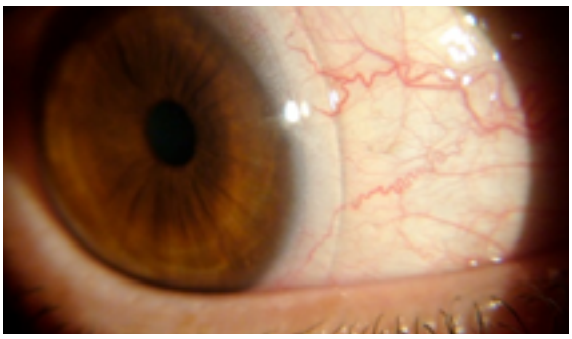
Note: changing the Profile Curve value, changes the tear layer profile within the optic zone, hence a change in tear lens power (see section on msd compensation tool).



Independent of the sagittal depth value, the midperipheral/limbal zone of the lens can be specified with either Standard, Increased, Double Increased or Decreased clearance values.

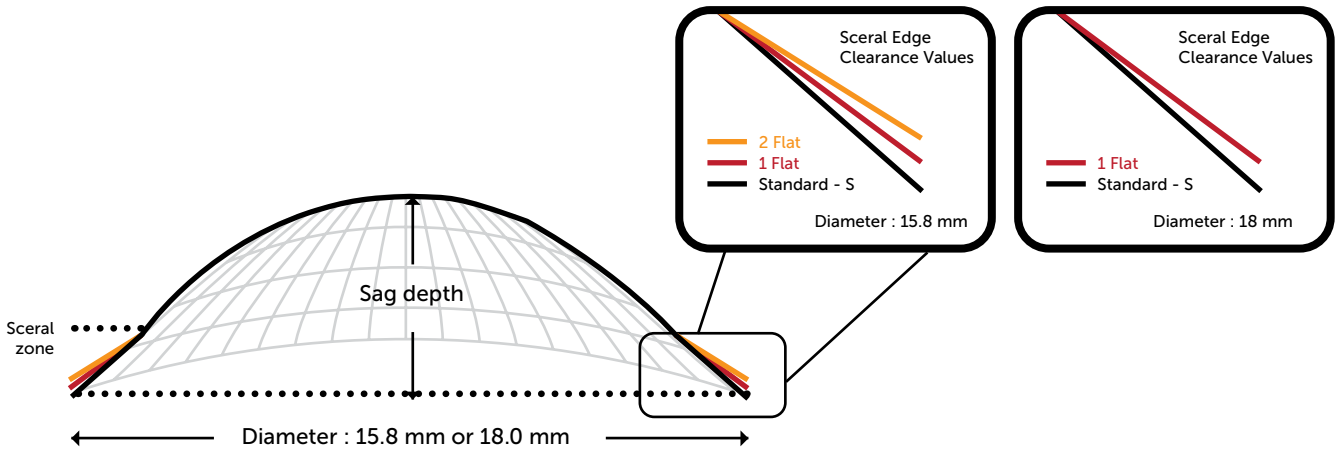
3. Determine scleral edge value

Determine the optimal scleral edge zone value for proper scleral alignment of the lens edge to minimize potential peripheral seal, blanching, and promote healthy tear exchange.



Ideal scleral alignment; no peripheral seal off, absence of edge stand-off, blanching or vessel engorgement.

Note: the sagittal depth value of the lens must be compensated for the lost or gain in sagittal depth resulting from a flatter or steeper edge configuration (see section on msd compensation tool).



4. Over-refract

As is the case for all specialty contact lenses, perform over-refraction after the lens has settled on the eye, to determine the appropriate lens power. Retinoscopy is recommended to begin the over-refraction, followed by sphero-cylindrical over-refraction, monocularly then binocularly.

The presence of residual refractive astigmatism, can be caused by a clearance that is too shallow. If this occurs, consider a higher sagittal value to increase clearance within acceptable values of not more than 300 microns (initial clearance).

Residual cylinder greater than -1.00D or lenticular astigmatism, should be incorporated into an anterior toric design. See section on additional features for more details on anterior toric design.

HANDLING

Similar to other scleral lens, lens application requires the bowl to be filled with solution. Non-preserved saline solution or non-preserved artificial tears are preferable. It is recommended that the patient tilt their head forward and bring the lens up to the eyeball. There should never be a bubble under the lens after application of the lens on the eye. Mishandling is the number one reason for failure with this type of lens. Typically bubbles are the result of insertion error. For application and removal videos, visit Blanchardlab.com under the msd section.

Parameters available

Diameter 15.8 mm and 18.0 mm

LENS DIAMETER	SAGITTAL DEPTH VALUE	MIDPERIPHERAL/ LIMBAL ZONE CLEARANCE	LENS POWER	SCLERAL EDGE CLEARANCE
15.8 mm	3.60 mm to 5.80 mm (0.10 mm inc.)	Decreased-**D** Standard-**S** Increased-**I** Double Increased-**II**	Any	Standard 1 - Flat 2 - Flat
18.o mm	3.60 mm to 5.8 mm (0.10 mm inc.)	Decreased-**D** Standard-**S** Increased-**I** Double Increased-**II**	Any	Standard 1 - Flat

Diagnostic lenses

Diameter 15.8 mm

The fitting set is comprised of 24 lenses as follows:
8 sag depth values ranging from 4.20 mm to 5.60 mm in 0.20 mm steps (200 microns), each having 3 different combinations of midperipheral/limbal values and sceral edge values allowing to trial fit the vast majority of patients (see below for details). All diagnostic lenses are 0.30mm thick (300 microns).

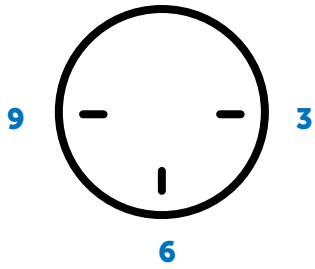
SAG DEPTH VALUE	MIDPERIPHERAL/ LIMBAL ZONE	SCLERAL EDGE ZONE
For each sag depth value	Standard	Standard
	Standard	1 Flat
	Double Increase	Standard

Powers vary with each sag depth value and range from plano (4.2 mm) to -8.00D (5.6 mm)

ADDITIONAL FEATURES

Anterior Toric Design

Residual astigmatism greater than -1.00D should be incorporated into an anterior toric design. Simply give the laboratory your over-refraction when ordering. At dispense, allow the front surface toric lens to settle a minimum of 30 to 45 minutes. Observed the positioning of the scribe marks at 3, 6 and 9 o'clock (see illustration) and make any adjustment to the axis using LARS (Left Add Right Substract). Compensate cylinder axis by the amount of rotation observed (each hour of rotation represents 30 degrees). If axis orientation is relatively close to that ordered (scribe marks within 10 degrees of 3, 6 and 9 o'clock) and vision is functional, if possible encourage the patient to wear the lens for an additional 7-10 days, and re-evaluate axis orientation at the subsequent visit.

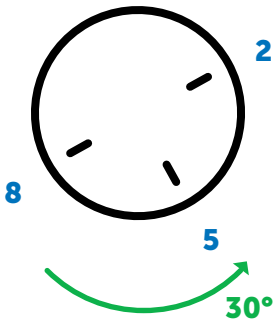


Scribe marks at 3, 6 and 9 o'clock

Example: After the lens has settled for 30 to 45 minutes, you evaluate the right lens and notice the scribe marks are at 2, 5 and 8 o'clock and the patient has reduced vision (see illustration). The initial Rx is -2.00 -0.75 x 90. Since the lens is rotating to the right by 30 degrees, you need to substract this amount from the cylinder axis (see LARS above).

The new compensated lens (-2.00 -0.75 x 60) will position the same on the eye (scribe marks at 2, 5 and 8 o'clock) but since the cylinder axis has been compensated for rotation, the vision will be re-stored.

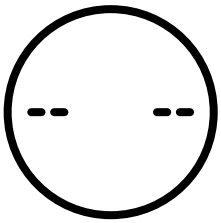
Msd anterior toric design is manufactured using the proprietary Sector Prism Technology, which confines prism ballast within an area of lenticulation outside of the optical zone while maintaining a uniform edge thickness for the entire circumference of the lens. The absence of prism within the optical zone insures there is no visual disturbance and the uniform edge provides exceptional comfort.



Rotation to the right by 30 degrees

Toric Peripheral Curves

When conjunctival impingement occurs, showing excessive blanching in just one meridian toric peripheral curves can be specified. The meridian with the flat peripheral curves is identified with scribe marks (- -). (see illustration)



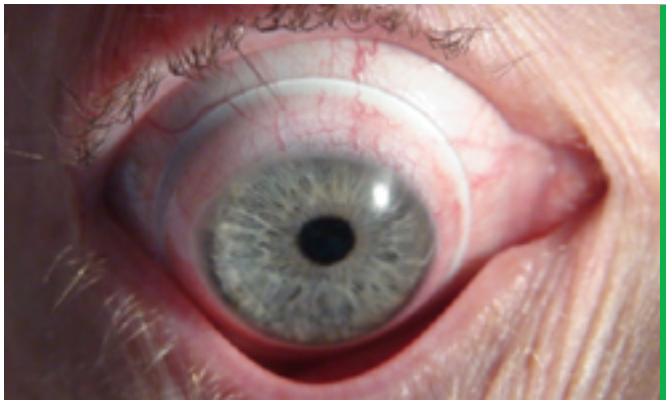
Scribe marks identifiing the flattest meridian

A lens that positions low on the eye, often caused by limbus to limbus cylinder, can be re-centered with toric peripheral curves.

TROUBLESHOOTING

Conjuctival impingement

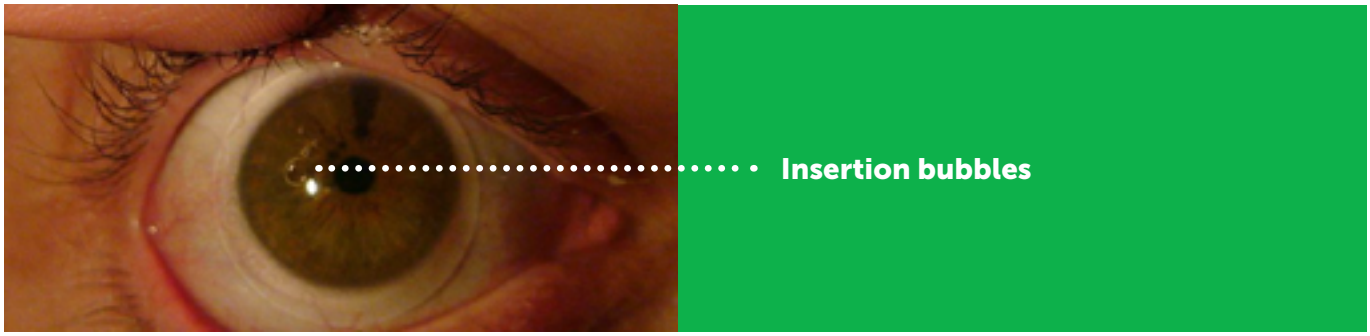
When conjunctival impingement occurs, showing excessive blanching; order a lens with a flatter scleral edge zone. The 15.8mm lens offers two options (1 Flat, 2 Flat), and the 18.0mm lens only one option (1 Flat). When a flatter edge is ordered, lens sag depth value must be increased by 100 microns (per step flatter), to compensate for lost apical clearance. (see section on msd compensation tool).



Corneal blanching requiring a flatter edge (standard edge to a 1 Flat edge). In doing so, the lens sag depth must be increased 100 microns to compensate the lost in sagittal depth (see section on msd compensation tool).

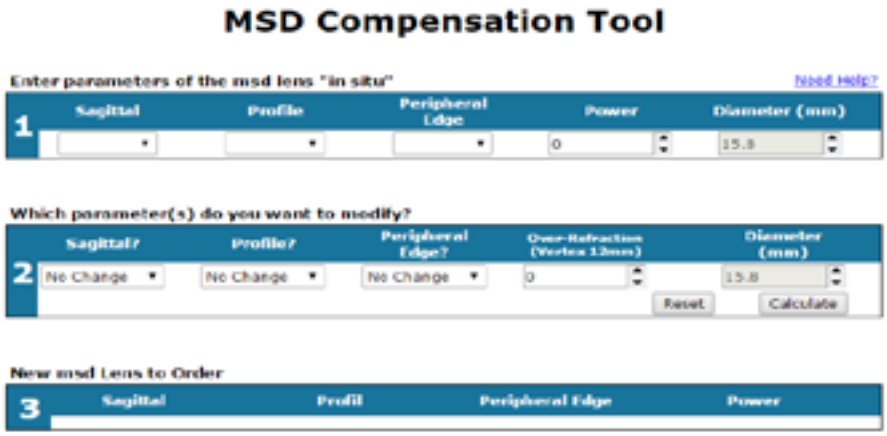
Insertion bubbles

Due to the large diameter of the lens, insertion bubbles are not uncommon. To avoid insertion bubbles ensure that the posterior surface of the lens is completely filled with the proper solution prior to insertion. With the patient's head parallel to the floor, place the lens on the eye by immersing his/her eye into the bowl of solution. Try to avoid pushing the lens onto the eye as this creates negative pressure and may alter an optimum lens fit.



MSD COMPENSATION TOOL

To help determine the parameters of a new **msd** lens based on your observations of an existing fit, we recommend you always use the **msd** compensation tool available at **www.blanchardlab.com**



The **msd** compensation tool will automatically compensate any desired modification(s) to an existing fit, as well as re-calculate the final lens power taking into consideration any over-refraction.

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