Atlantis™ SCLERAL

FITTING GUIDE

SPECTRUM INTERNATIONAL

X-CEL SPECIALTY CONTACTS

X-CEL
SPECIALTY CONTACTS

TABLE OF CONTENTS

PATIENT APPLICATIONS

- Keratoconus
- Post Surgical
- Pellucid Marginal Degeneration
- Dry Eye Syndrome*/Corneal Surface Disease
- Stevens-Johnson Syndrome Intolerance
- Keratoglobus
- Astigmatism
- Post-corneal Transplant
- Sjögren's Syndrome
- Graft versus Host Disease
- Presbyopia
- Corneal GP and Soft Lens

LENS PARAMETERS

Base Curve	6.50 to 9.12 mm
Diameter	14.0 to 17.5 (in 0.5 steps)
Power	+20.00 to -20.00D in 0.25D steps
Central sagittal depth adjustment	Up to 200 microns decrease (in 25µm steps) Up to 200 microns increase (in 25µm steps) This will not affect the other 2 zones
Limbal Vault Zone	Up to 200 microns decrease Up to 200 microns increase Quadrant specific control
Scleral Zone	1 flat to 8 flat, 1 steep to 8 steep in 25µm increments
Toric Scleral Zone	Bi-meridian control Quadrant specific control
Cylinder Power	-0.75D to -5.00D in 0.25D steps
Axis	0 to 180°
Multifocal Distance Zones	3.6, 4.0, 4.4
Multifocal Add Power	+0.75D to +4.00D
Materials	Optimum Extra*, Optimum Extreme*, Optimum Infinite, Boston XO*, Boston XO2*, and Paragon HDS NOTE: Materials with an asterisk (*) are indicated for the management of dry eye disease.
Warranty	Unlimited exchanges and cancellation within 120 days of original invoice.
Tangible Hydra-PEG	Recommended for all design options and available materials.
PlasmaEYEZ	All Atlantis lenses are plasma treated free of charge.

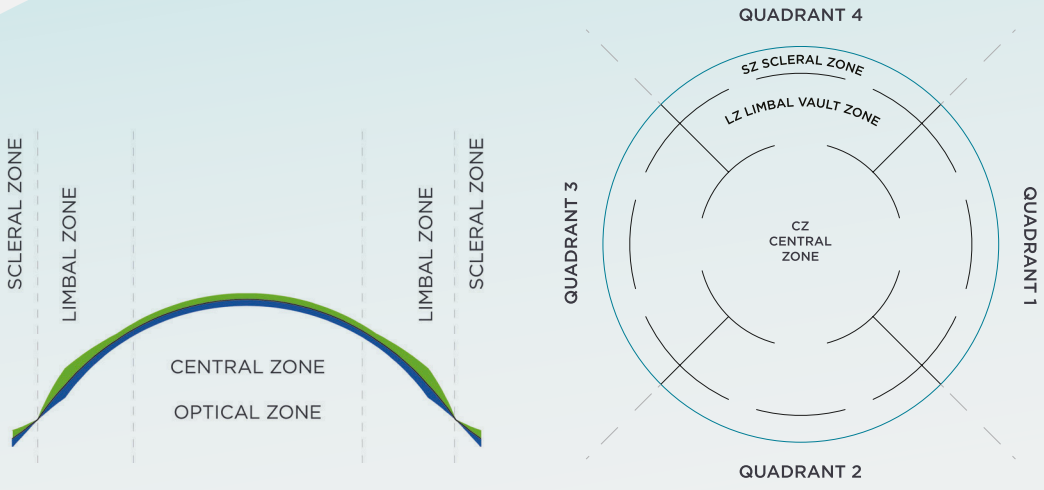
EASE OF FIT WITH THREE ZONES

The Atlantis scleral design has 3 truly independent zones.

Central Zone: This is the optic zone and increases with a diameter increase. On the 15.5 the optic zone is an 8.5. Each individual central SAG can be increased or decreased by a total of 200 microns in 25 micron steps. This will not affect the other 2 zones.

Limbal Vault Zone: This zone extends from the outside of the central zone to the inside of the scleral zone and the width of this zone is consistent with each diameter. The SAG of this zone can be increased (up to 200 microns) or decreased (down 200 microns) with no effect on the other 2 zones. The highest point of this zone can also be adjusted out towards the edge of the lens or in towards the optic zone of the lens. Changes are made in 25 micron steps.

Scleral Zone: This is the edge of the lens and is roughly 1mm wide. This zone can be manipulated to increase or decrease the SAG of just this zone by 200 microns in each meridian or any quadrant. The changes are done in 25 micron steps and will not affect the central zone SAG or the limbal zone SAG.

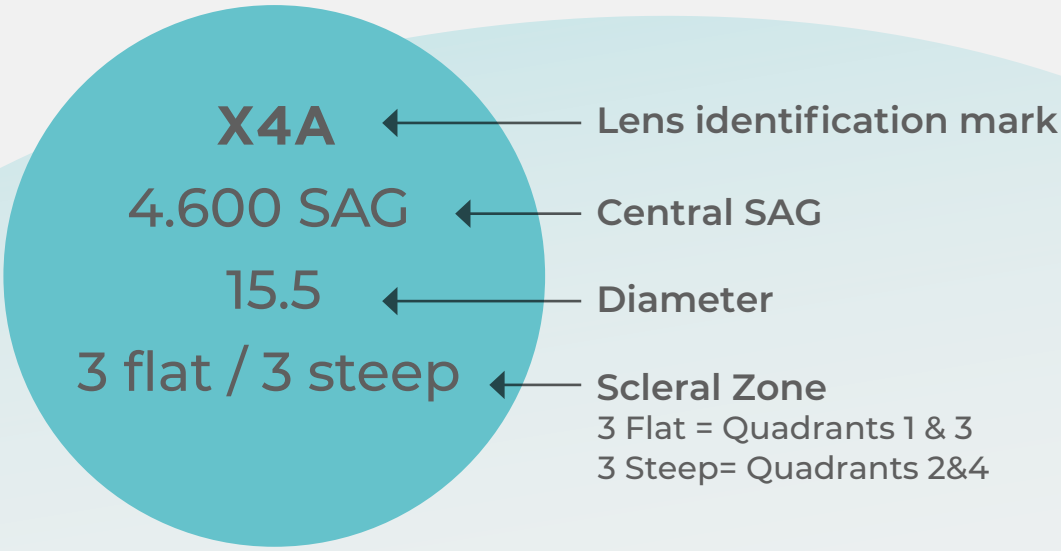


FIT SET AND MARKINGS

START HERE

X1A 4.000 SAG 15.5 3 flat / 3 steep	**X2A** 4.200 SAG 15.5 3 flat / 3 steep	**X3A** 4.400 SAG 15.5 3 flat / 3 steep	**X4A** 4.600 SAG 15.5 3 flat / 3 steep	**X5A** 4.800 SAG 15.5 3 flat / 3 steep	**X6A** 5.000 SAG 15.5 3 flat / 3 steep
X1B 4.000 SAG 15.5 5 flat / 1 steep	**X2B** 4.200 SAG 15.5 5 flat / 1 steep	**X3B** 4.400 SAG 15.5 5 flat / 1 steep	**X4B** 4.600 SAG 15.5 5 flat / 1 steep	**X5B** 4.800 SAG 15.5 5 flat / 1 steep	**X6B** 5.000 SAG 15.5 5 flat / 1 steep
C1A 3.600 SAG 14.5 1 flat / 1 steep	**C2A** 3.800 SAG 14.5 1 flat / 1 steep	**C3A** 4.000 SAG 14.5 1 flat / 1 steep	**L1A** 5.000 SAG 16.5 5 flat / 5 steep	**L2A** 5.300 SAG 16.5 5 flat / 5 steep	**L3A** 5.600 SAG 16.5 5 flat / 5 steep
C1B 3.600 SAG 14.5 2 flat / 0 steep	**C2B** 3.800 SAG 14.5 2 flat / 0 steep	**C3B** 4.000 SAG 14.5 2 flat / 0 steep	**L1B** 5.000 SAG 16.5 7 flat / 3 steep	**L2B** 5.300 SAG 16.5 7 flat / 3 steep	**L3B** 5.600 SAG 16.5 7 flat / 3 steep

Vial Cap Label



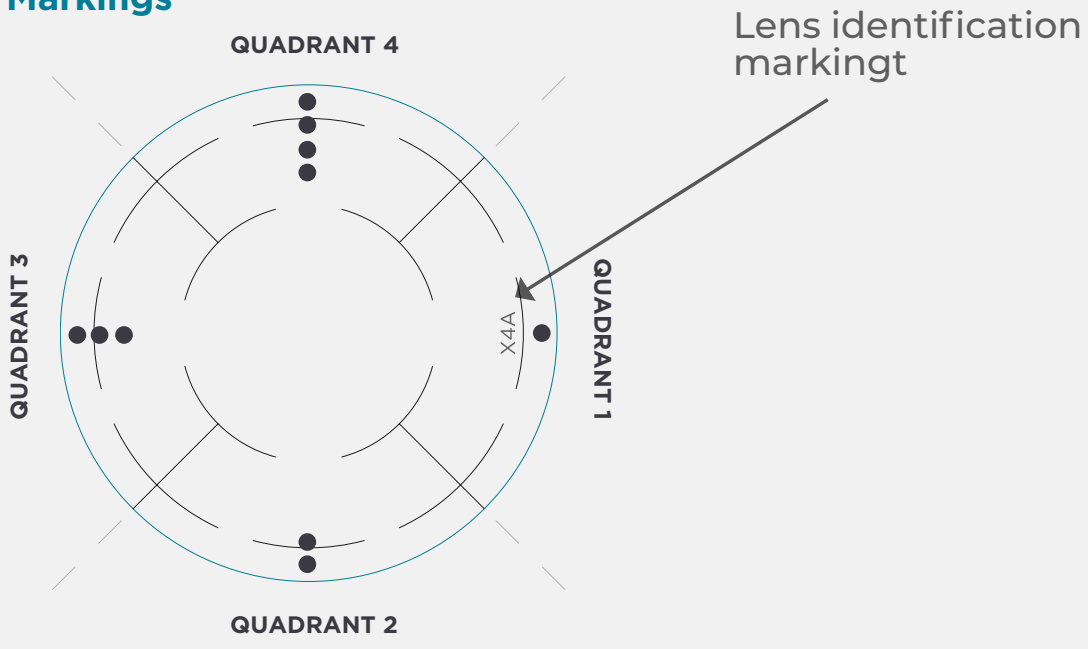
Other lens information is on the vial label.

FIT SET AND MARKINGS

	Diameter	SAG	Total Toricity of Scleral Zone	Power	CT	LENS 1 Scleral Zone	LENS 2 Scleral Zone
*	15.5	4.000	0.150	-3.00	0.300	3 flat / 3 steep **X1A**	5 flat/ 1 steep **X1B**
*	15.5	4.200	0.150	-3.00	0.300	3 flat / 3 steep **X2A**	5 flat/ 1 steep **X2B**
*	15.5	4.400	0.150	-3.00	0.300	3 flat / 3 steep **X3A**	5 flat/ 1 steep **X3B**
*	15.5	4.600	0.150	-3.00	0.300	3 flat / 3 steep **X4A**	5 flat/ 1 steep **X4B**
*	15.5	4.800	0.150	-3.00	0.300	3 flat / 3 steep **X5A**	5 flat/ 1 steep **X5B**
*	15.5	5.000	0.150	-3.00	0.300	3 flat / 3 steep **X6A**	5 flat/ 1 steep **X6B**
	14.5	3.600	0.050	-3.00	0.300	1 flat / 1 steep **C1A**	2 flat / 0 steep **C1B**
	14.5	3.800	0.050	-3.00	0.300	1 flat / 1 steep **C2A**	2 flat / 0 steep **C2B**
	14.5	4.000	0.050	-3.00	0.300	1 flat / 1 steep **C3A**	2 flat / 0 steep **C3B**
	16.5	5.000	0.250	-3.00	0.300	5 flat / 5 steep **L1A**	7 flat / 3 steep **L1B**
	16.5	5.300	0.250	-3.00	0.300	5 flat / 5 steep **L2A**	7 flat / 3 steep **L2B**
	16.5	5.600	0.250	-3.00	0.300	5 flat / 5 steep **L3A**	7 flat / 3 steep **L3B**

*This group of lenses make up the 12-lens fitting set.

Fitting Set Markings



RECOMMENDED STARTING POINT

The Atlantis design provides customizable zone options to provide a simple, streamlined fitting process that reduces chair time. A single fitting set will provide the necessary coverage to fit any corneal SAG or scleral shape.

When using the diagnostic kit to fit the Atlantis scleral lens, we recommend (regardless of K readings or condition) starting with the "X4A" lens.

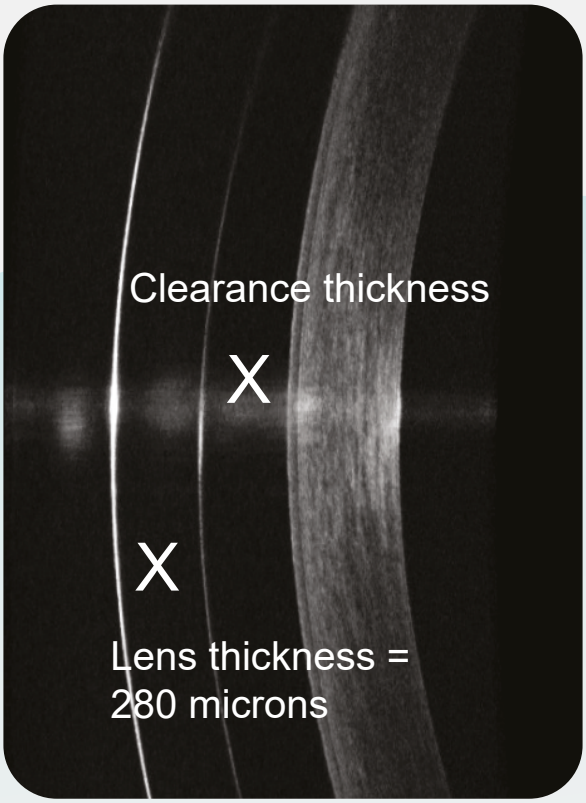
15.5 X Starting point	This is the lens that will be most appropriate for most applications where scleral lenses are used. Lenses in the 15.5 size provide a wide range of clearance and edge fitting options to handle the majority of cases. Oblate corneas | Irregular corneas | Normal corneas with larger HVID > 11.5 needing more limbal clearance
14.5 C Compact	The ideal lens for patients with who would benefit from a slightly smaller lens design. Normal corneas | Presbyopic patients | Smaller than average corneas with HVID < 11.5 | Tight lids or small fissures
16.5 L Large	A great lens size to move to when the 15.5 Dia. lens is not adequate to fit pronounced corneas. More SAG than the 15.5 will provide | Extra-large HVID needing limbal clearance

FITTING & CENTRAL ZONE EVALUATION

a. Apply the diagnostic lens with non-preserved saline and **fluorescein.**
b. Using the CLS evaluation process (Central - 1, Limbal - 2, Scleral - 3)

The ideal fitting relationships are:

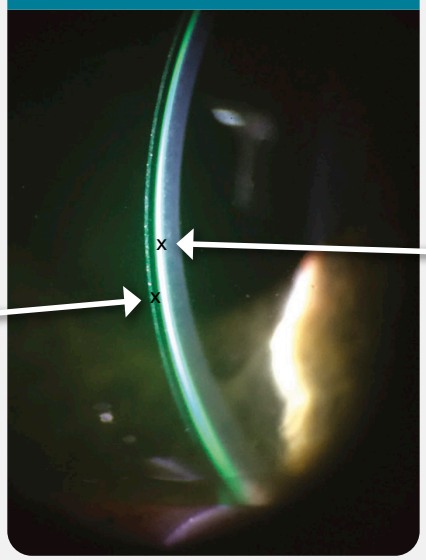
1. CZ - completely vault the cornea, approximately 200 to 400 microns of clearance over the most elevated portion of the cornea. A decrease in clearance will occur with wearing time (loss can range from 50 - 150 microns).



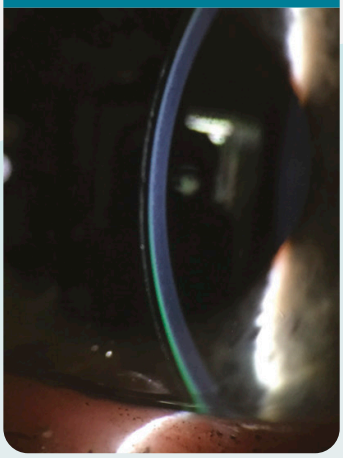
FITTING & CENTRAL ZONE EVALUATION

To evaluate approximate clearance, compare the clearance to either the corneal thickness or the lens thickness (lens thickness is represented on the lens vial). Example: .28 thickness = 280 microns.

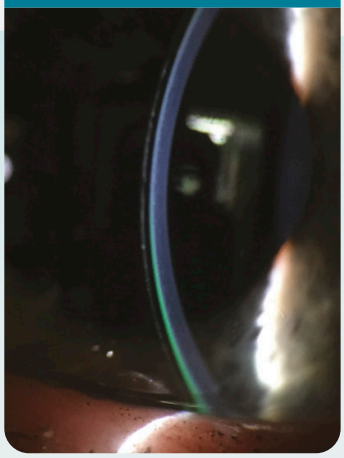
IDEAL



Minimal



Excessive

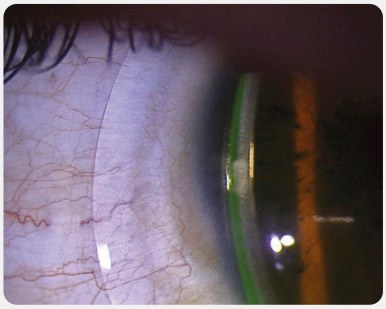


For issues see Troubleshooting in the appendix.

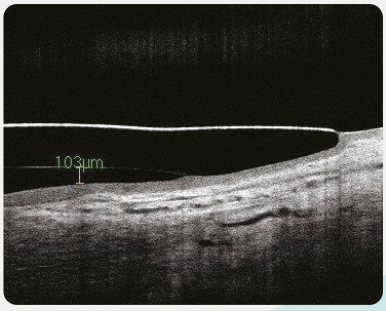
FITTING & LIMBAL ZONE EVALUATION

2. **Limbal Vault Zone:** completely vault the limbus. Avoid limbal touch while keeping clearance at a minimum (approx 100 mm of clearance).

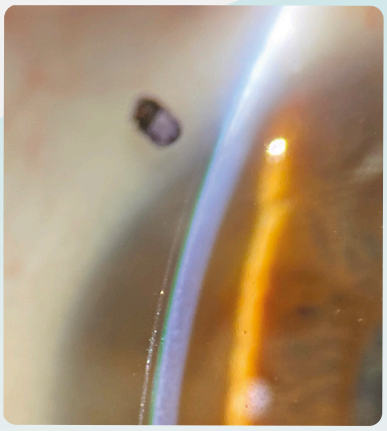
   Small, stagnate bubbles may be acceptable in the Limbal Vault Zone and may resolve over time.



Limbal Vaul



OCT Limbal Vault

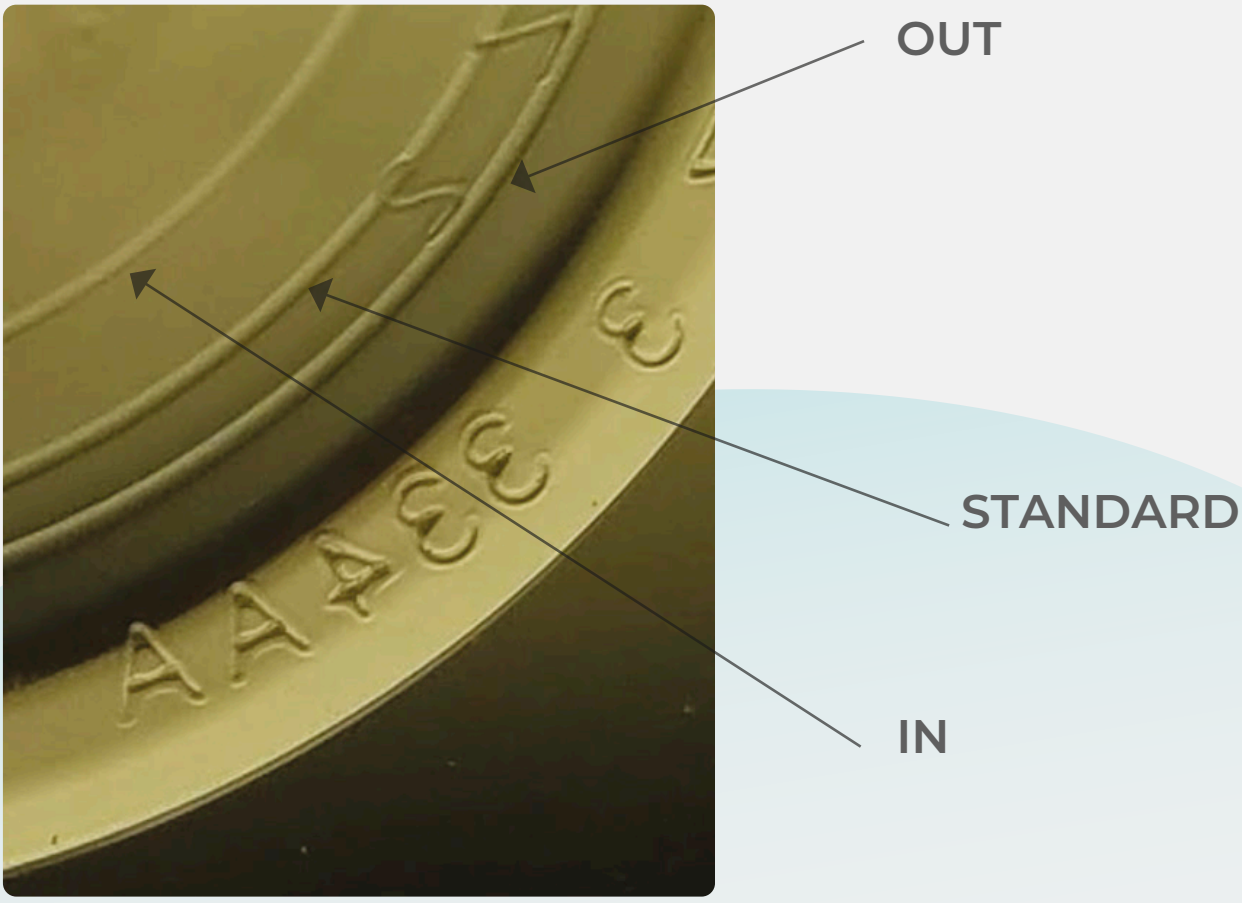


Insufficient Limbal Vault

LIMBAL VAULT OPTIONS

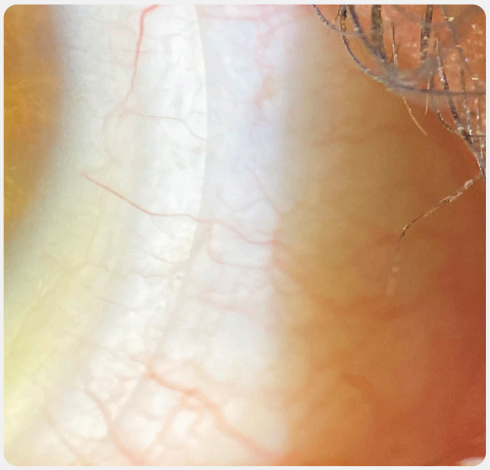
This revolutionary enhancement allows the limbal sag apex to be adjusted in/out or up/down, optimizing mid-peripheral clearance.

This design feature allows custom enhancements for multiple corneal conditions, such as; oblate (post myopic lasik, RK, etc...) and prolate (ectasias, trauma, etc...).This design feature can be fit utilizing the standard Atlantis fit set.

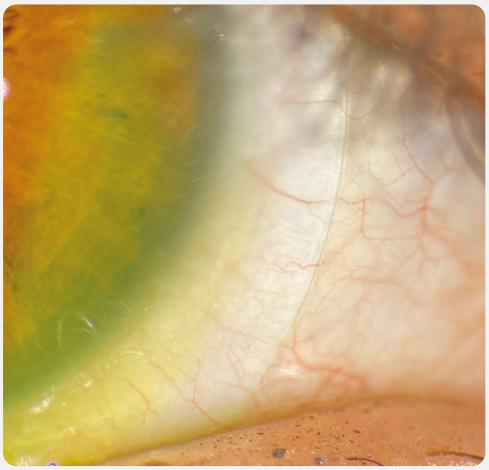


FITTING & SCLERAL ZONE EVALUATION

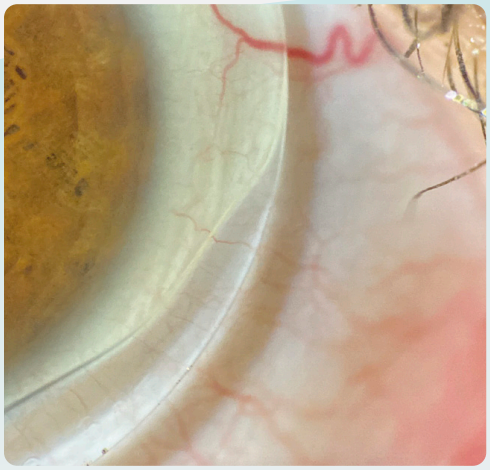
2. **Scleral Zone:** uniform alignment 360° Look for disruption of vessels at the edge, blanching, impingement, and/or edge lift.



Edge alignment



Edge impingement

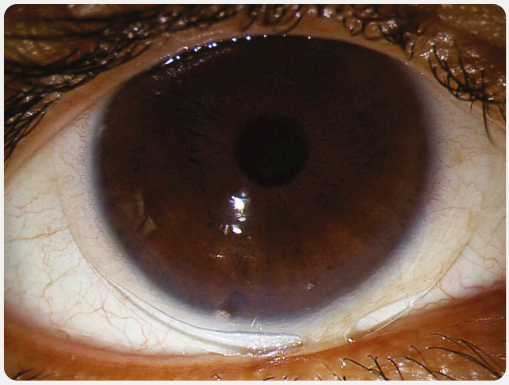


Edge Lift

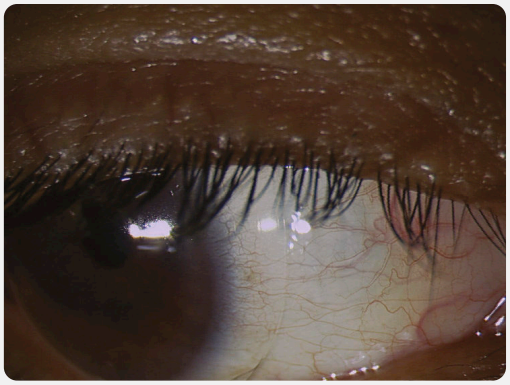
ASYMMETRIC SCLERAL ZONES

Studies have shown that as you move further away from the limbal area, the sclera often has more toricity and in some cases quadrant asymmetry.

With the Atlantis design, you have the ability to adjust the scleral zone by quadrant to better align with the sclera. Whether the scleral shape is with the rule, against the rule or oblique, the laser marks will align with the steeper of the two meridians.



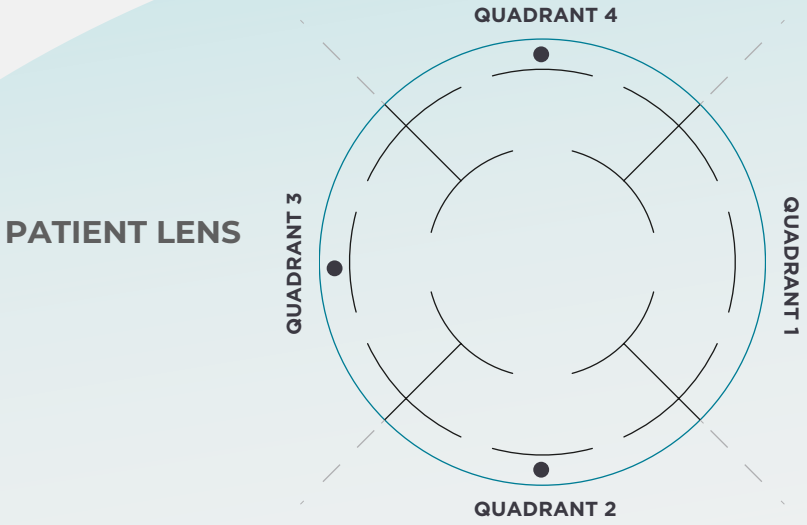
Inferior edge standoff



Nasal blanching

Images on this page are courtesy of Buddy Russell, COMT, FCLSA, FSLS

For toric or quadrant specific scleral zones, patient lenses will be marked with three dots always representing quadrants 2, 3, and 4.



FLEXURE & RESIDUAL ASTIGMATISM

It is best to determine if the residual astigmatism is due to any lens flexure prior to ordering front toric optics.

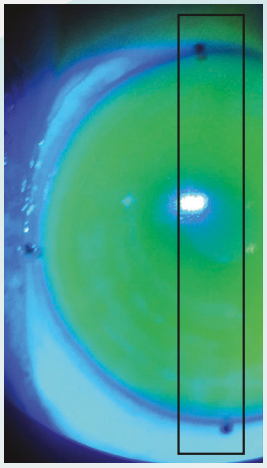
Determine if lens flexure is present. With the scleral lens on the eye, simply perform keratometry or topography. If keratometric readings (or Sim K) are NOT spherical, increase the center thickness by .10 and stay with spherical optics.

If trial lens on eye shows residual cylinder of 0.75D or greater and does not have a toric scleral zone, order spherical equivalent lens with the following amount of scleral toricity:

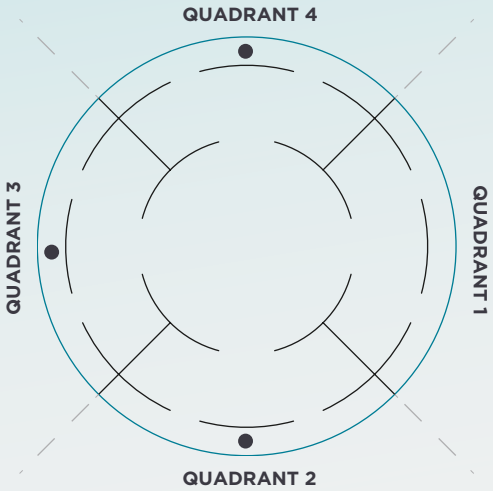
- 14.5 start with 50 microns of toricity
- 15.0 start with 100 microns of toricity
- 15.5 start with 150 microns of toricity
- 16.0 start with 200 microns of toricity
- 16.5 start with 250 microns of toricity

SIf trial lens or patient lens has a toric scleral zone and residual cylinder is still greater than 0.75D:

- Use slit lamp reticule to determine steep meridian axis
  o Quadrants 2 and 4 marks steep meridian.



PATIENT LENS



FRONT TORIC CALCULATION

1. Call Consultant with steep meridian axis, over refraction, and trial or patient lens information for final lens parameters.

2. Use the following examples to determine final lens power.

Algorithm for calculating cylinder axis on lenses:

A = Over refraction axis (x130 in example below)

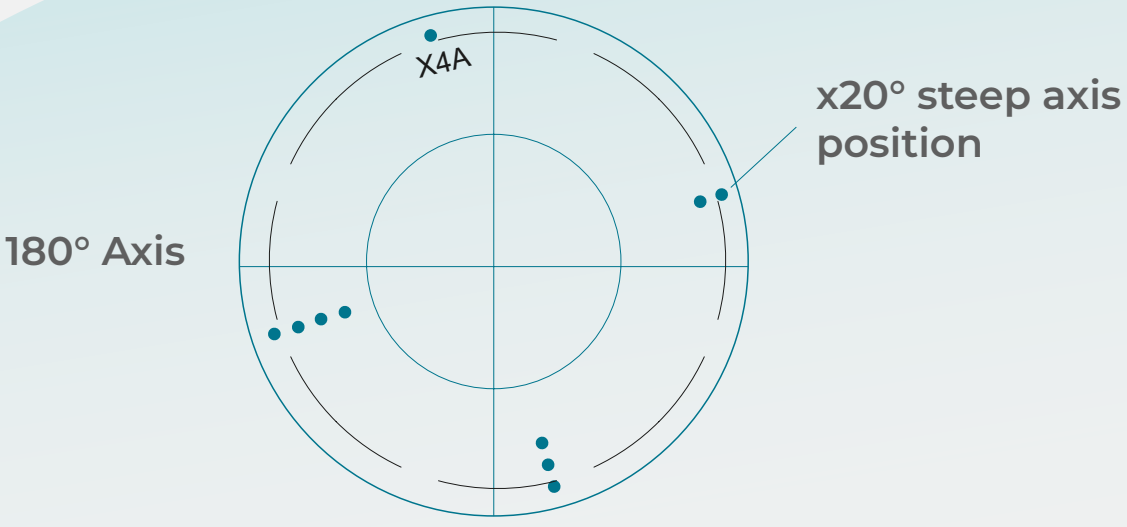
B = Steep axis of scleral (x20 in example below)

Example 1 - If A - B is positive, then lens cylinder axis = A - B (130 - 20)

Example 2 - A - B is negative, then lens cylinder axis = 180 + A - B (130 - 150)

Example 1:
Over refraction: -3.00 -1.50 x130
Steep axis x20 = -3.00 -1.50 x130 – x20
Final lens power and axis = -3.00 -1.50 x110

Trial Lens Markings

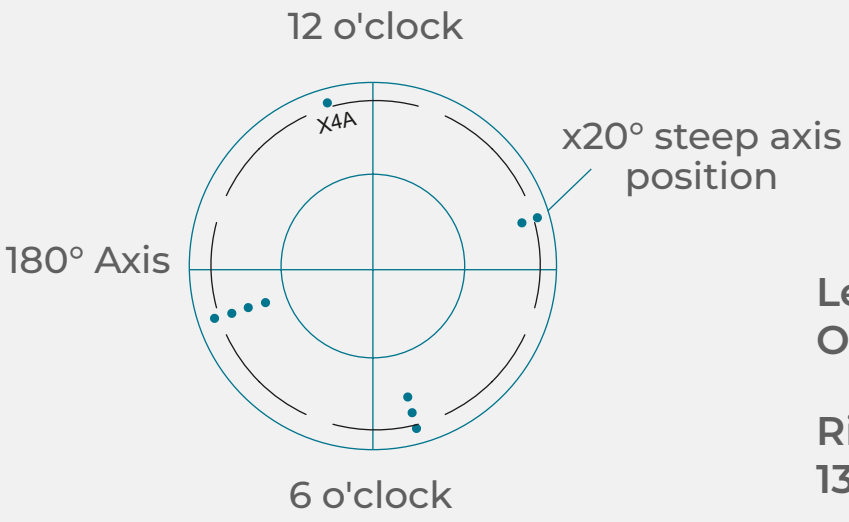


FRONT TORIC CALCULATION

LARS: Left Add, Right Subtract

Evaluating from the 0/180 meridian, determine steep meridian (Quadrants 2 and 4) using slit lamp reticule.

Using LARS method, each clock hour represents 30 degrees.



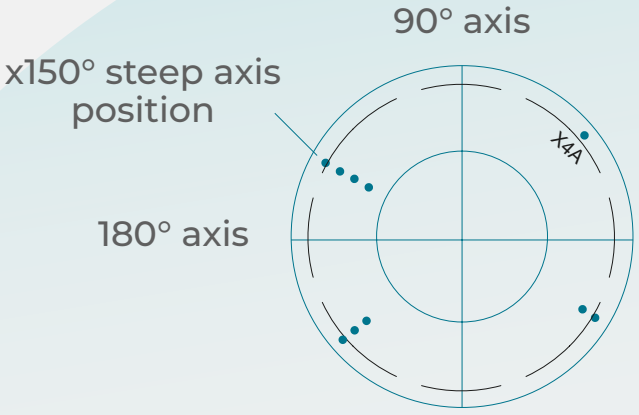
Lens rotated 20° to the right.
OR -3.00 -1.50 x130

Right subtract
130 - 20 = 110

Example 2:

If OR axis is less than steep axis or -3.00 -1.50 x130

Steep axis after settling from reticule measurement x150.

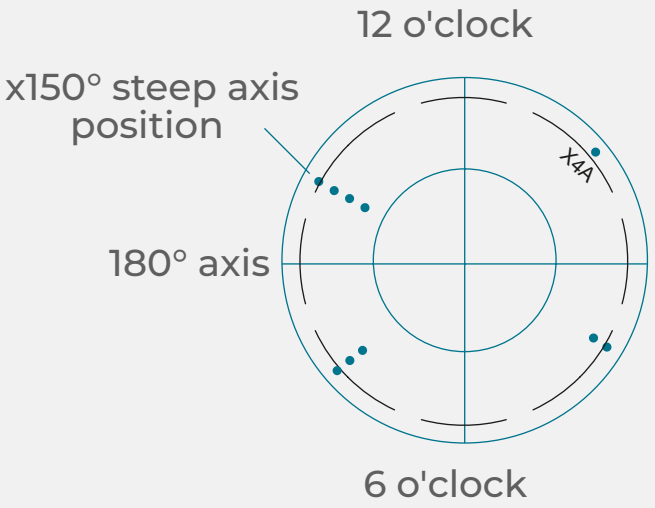


-3.00 – 1.50 x (180 + (130 – 150))
Final lens power and axis = -3.00 -1.50 x160

FRONT TORIC CALCULATION

LARS: Left Add, Right Subtract:
Evalué el meridiano desde 0 / 180 grados, determinando el meridiano inclinado o curvo (Cuadrantes 2 y 4) utilizando el retículo en la lámpara de hendidura.

Using LARS method, each clock hour represents 30 degrees.



Lens rotated 30° to the left or -3.00 -1.50 x130

Left Add
130 + 30 = 160

The steep axis marks on the lens should be in the exact same position as those of the first diagnostic lens. LARS is used to eliminate the axis misalignment resulting from lens rotation and NOT TO ELIMINATE THE ROTATION.

ATLANTIS MULTIFOCAL

The Atlantis also offers a center distance scleral lens **multifocal** option. No additional diagnostic kit is needed. The only additional parameters to determine is the distance zone diameter and add power. The bi-aspheric multifocal design does not alter the fit of the lens as the sagittal depth is unchanged compared to the single vision Atlantis lens.

Three different distance zone diameters are available: 4.4 mm, 4.0 mm, 3.6 mm.

Fitting the Atlantis Scleral Multifocal

1. Determine the dominant eye.

2. Determine pupil diameter under normal lighting conditions.

3. Standard distance zone is 4.0 mm. For larger pupil diameters order the 4.4mm and smaller diameters 3.6mm.

4. Order add power determined by refraction.

Pointers for achieving best vision in the Atlantis Multifocal:

1. Desires better distance vision.
- change distance zone of dominant eye only to 4.4mm

2. Desires better near vision.
- change distance zone of non-dominant eye only to 3.6mm

3. Desires BEST distance vision
- use 4.4 mm OU.

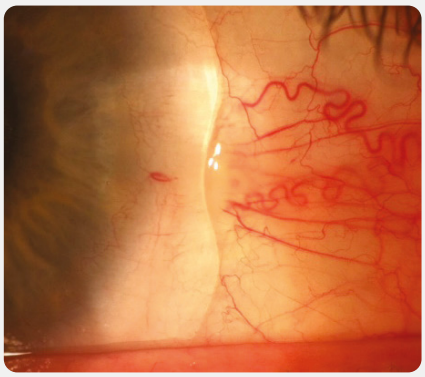
4. Desires BEST near vision
- use 3.6 mm OU.

CONJUNCTIVAL ELEVATIONS

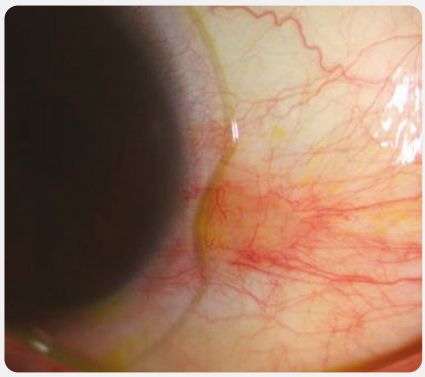
For those patients with a scleral elevation such as a conjunctival bleb, pinguecula, or pterygium, a final fit lens can be “notched” around the conjunctival irregularity.

Lens design options:

- Smaller diameter that lands before the elevation.
- Larger diameter to completely vault the elevation.
- Lens Notching.



Dr. Luis Noriega



Dr. Mauricio Pulido

Determining the size of a lens notch is optimized by sending a picture to our consultation team. Physically marking the lens with a sharpie marker or estimating the depth and width in millimeters can also be utilized.

DISPENSING VISIT AND FOLLOW-UP EVALUATION

Dispensing Visit

Patient should wear lenses for a minimum of 45 - 60 minutes prior to evaluation. Instruct application and removal, provide appropriate care system, care instructions and discuss increasing wearing time.

At the dispensing visit be sure to discuss warnings and precautions while referring the patient to the package insert and patient instructions for use.

Lens movement will be minimal (similar or less than a soft lens) and there will be very little tear exchange behind the lens.

1. Have patient arrive for follow-up preferably mid-morning to mid-afternoon after applying lenses in the morning.

2. Questions to patient:
   a. How many hours a day are you wearing the lenses?
   b. How is the comfort throughout the day?
   c. How is your vision throughout the day?
   d. Upon removal is there any discomfort or redness?

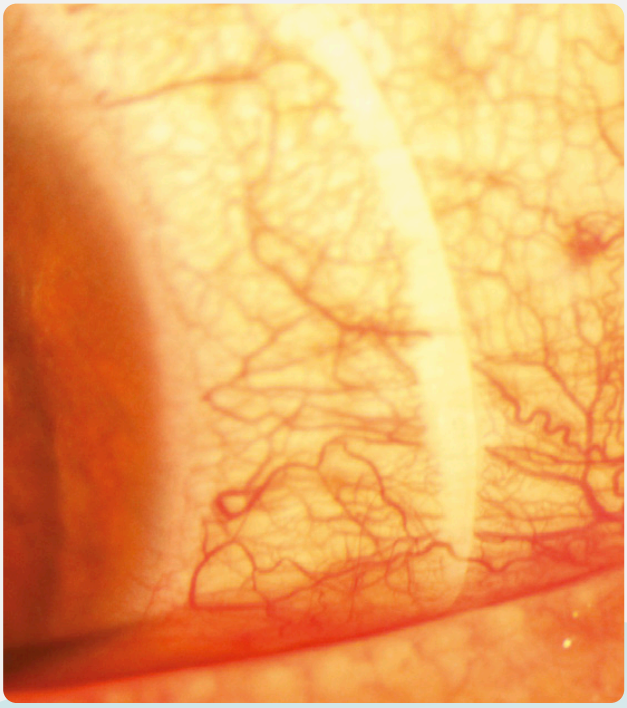
3. Determine if adequate central and limbal clearance is present with high magnification and optic section illumination and white light (or OCT).

DISPENSING VISIT AND FOLLOW-UP EVALUATION

4. For scleral zone evaluation determine if blanching is present. Evaluate edge clearance (none/adequate/ excessive) in all meridians.

5. Remove the lens and evaluate the ocular surface for ocular insult.

Lens indentation and rebound hyperemia



Recommended Follow-up Visit Schedule

· 2 weeks
· 1 month
· 3 months
· 6 months
· **1 year

** It is recommended that scleral lenses be replaced on an annual basis.

TROUBLESHOOTING

Observation	Plan
Impingement Blanching (at the edge)	- Determine Quadrant and flatten SZ 1 step (25µm) accordingly. - Circular – Flatten all quadrants by 1 step (25µm).
Compression Blanching (inside the edge)	- Determine quadrant and steepen SZ 1 step accordingly (25µm). - Larger lens diameter.
Edge Lift	- Determine quadrant and steepen SZ 1 (25µm) step accordingly. - Circular – Steepen all quadrants 1 step (25µm).
Excessive lens movement	- Steepen entire SZ by 1 step (25µm). - Increase diameter.
Inferior Decentration (common and acceptable if mild)	- Increase SZ toricity by 1 step (25µm) in each meridian. - Increase lens diameter by .5mm.
Limbal bearing	- To the edge -steepen LZ by 2 steps (50µm) and OUT position. - All other areas steepen the LZ by 2 steps (50µm). ***Quadrant specific changes available through consultation**
Paracentral bearing	- Outside OZ - Steepen LZ by 2 steps (50µm) and the IN position. - All other areas steepen LZ by 2 steps (50µm). ***Quadrant specific changes available through consultation.**
Residual astigmatism	- Refer to front toric section of fitting guide.

TROUBLESHOOTING

Observation	Plan
Debris/Cloudy in tear/saline layer	- Reduce CZ clearance if excessive (25µm per step). - Increase SZ toricity by meridian or quadrant. - Decrease LZ if clearance is excessive - Address solution use and cleaning. process with patient.
Lens discomfort	- Check for SZ lift and steepen by 1 step (25µm) in each quadrant. - Check for limbal area clearance and steepen LZ accordingly. - Possible limbal obstruction-refer to lens notching section. - Add Tangible Hydra-PEG.
Blurry vision (under achieving BCVA)	- Check surface quality - If lens build-up order with Tangible Hydra-PEG. - Check for lens flexure with Over Ks or Topography.
Bubbles under lens	- Check for proper application process. - Flatten CZ vault (25µm steps) - Check for edge lift by quadrant and steepen by 1 step accordingly
Desires better distance vision	- Change distance zone of dominant eye only to 4.4mm
Desires better near vision	- Change distance zone of non-dominant eye only to 3.6mm
Desires BEST distance vision	- Use 4.4mm OU.
Desires BEST near vision	- Use 3.6mm OU.

X-CEL
SPECIALTY CONTACTS

Atlantis™
SCLERAL

sales@spctinternational.com
+1 (470) 208-7030

SPECTRUM
INTERNATIONAL