

STEP 1:

DIAGNOSTIC SELECTION AND APPLICATION

Low Asymmetry and VID ≤ 11.9 mm

Astigmatic Eye:
Normal Eye Shape with OSD

Choose 15.5 Diameter

Sag 3400

High Asymmetry and/or VID ≥ 12.0 mm

Normal Eye Shape:
Keratoconus, PMD:
Corneal Transplant:

Choose 16.5 Diameter

Sag 4000
Sag 4400
Sag 4800

Apply with the lens full of preservative free saline
Re-apply if any bubbles are present behind the lens

STEP 3:

ZONE 2: PERIPHERAL CORNEAL ZONE (PCZ)

The SmartLens should clear the peripheral cornea tissue.
Increase the PCZ to lift the lens off the peripheral cornea.
A 1 step change will alter the sagittal depth of the lens 25 microns
(+) Change increases sagittal depth
(-) Change decreases sagittal depth
Compensate for sag changes with base curve adjustments when necessary. A 1D base curve change = 50 microns of sag adjustment.

STEP 5:

ZONE 4: SCLERAL LANDING ZONE

The SmartLens should land without restricting vessel flow.
If blanching is present, increase the edge lift
Mild vessel restriction in one quadrant, order SLZ -1
Opposing quadrants of blanching, order SLZ -2
>180 degrees of blanching, order SLZ -3
If excessive edge lift is present, order SLZ +1 for mild, SLZ +2 for moderate or SLZ +3 for severe

STEP 2:

ZONE 1: CENTRAL VAULT ZONE (CVZ)

Ensure the lens does not show any corneal bearing or near touch.
Using the slit lamp, compare the lens thickness to the posterior fluid thickness. SmartLens Diagnostics are 0.3mm/ 300 microns thick.
The initial diagnostic should have approximately 300-400 microns of fluid on application. Re-apply a higher or lower sag lens to optimize apical clearance if required.

STEP 4:

ZONE 3: LIMBAL LIFT ZONE (LLZ)

The SmartLens should clear or vault through the limbus.
If limbal and peripheral corneal bearing is present, order LLZ +5.
A 1 step change to the LLZ = 25 microns
(+) Change increases sagittal depth
(-) Change decreases sagittal depth
Compensate for unwanted apical clearance changes by altering the PCZ.

STEP 6:

SCLERAL LENS POWER

Determine the best spherical equivalent over-refraction.
If cylinder correction is required, do topography or k's over the lens to determine if its flexing on eye.
If the lens is not flexing, determine if the flat meridian scribes are rotationally stable (15.5 & 16.5mm diameters). Note the axis of the flat meridian markers and the axis of the over-refraction.
If the 15.0mm diagnostic requires cylinder correction, place the 15.5mm trial on eye and evaluate its rotational stability.

WHY SMARTLENS IS SO SMART?

QUICK ACCESS

- The lens is labelled entirely according to sagittal depth and not base curve. Since all changes are done in microns it is "smart" to avoid using base curves.
- Zone changes: all zone changes are done in microns and with SmartLens all changes in any zone are the same. 1 step equals 25 microns across every zone. Smart!
- Base curves: the SmartLens uses flatter base curves than typical scleral lenses. This means that the lens powers is closer to plano with reduced thickness for better oxygen permeability and reduced junctions on the anterior surface that might reduce comfort. Very smart!
- Additionally, you will note that many trial sag ranges use the same base curve. This means you can trial one sag and custom order another sag but the base curve may stay the same. This makes custom lens calculation simple because there isn't a lacrimal lens adjustment to be made nor are you likely to have the odd over-refractions, we often have in sclerals. Very Smart!
- The PCZ and LLZ are controlled by SMART4Z technology. More forgiving and easily adjusted when we need to increase or decrease elevation. Smart!
- SLZ: uses a proprietary shape that's designed to distribute its pressure over a broad surface area. It is uniquely designed to be forgiving based on the wide range of scleral angles it may land on. And it can be easily adjusted to suit an extremely high or low scleral angle.
- Toricity: the 16.5 & 15.5mm diameters use toricity in the landing to distribute the force evenly across the asymmetric sclera. This produces better comfort, less blanching (tight edge) and less fogging. It also means that the lens should be rotationally stable in case we need a bitoric scleral lens due to residual astigmatism. Smart!!!! And super-efficient!
- LLZ markers: the smallest 15.0mm trials use unique markers to note the end of the LLZ and when a larger diameter may need to be ordered. The markers define where the lens should vault the limbus so if they appear well within the borders of the visible iris, then you know you need a larger lens. Smart!
- Description: The SmartLens uses a proprietary algorithm that auto-adjusts the second zone in the lens (PCZ) when diameters changes are required. This serves to keep the apical clearance the same when altering from one diameter lens to another. For instance, when fitting a 16.5mm trial diameter and ordering a 16.0mm custom lens.
- Finally, the SmartLens is a 3rd generation scleral lens. If the first lenses were constructed using curves/radii in their zones and the second generation uses tangents, the SmartLens is 3rd generation and therefore benefitted from all that was learned from the first two generation of lenses. It is a super smart construction!!! Only the most extreme peripheral corneal and scleral angle eyes are likely to require adjustments from the diagnostic parameters. Very smart!