



# Empirical Design Instructions

**Empirical ordering of UltraHealth lenses is now available.** This may be used for 100% empirical fitting without a fitting set. Or, an empirical consultation may be used to identify a starting trial lens from the UltraHealth fitting set. The starting lens is then evaluated for fit and an over-refraction provides information for lens power.

UltraHealth lenses are fit according to sagittal depth rather than radius of curvature due to the reverse geometry in the lens design. This allows for flatter optic zones and crisper vision while still achieving the desired apical clearance.

## Provide Information for Lens Design

Provide a topography (PDF or raw data) with the following information to the SynergEyes clinical consultant:

1. Keratometry readings
2. Eccentricity data, often listed as e, e<sup>2</sup>, CEI, Shape factor, or Q value
3. Manifest Rx, or previous RGP/scleral base curve and power with over Rx
4. HVID
5. For power: previous RGP or scleral data with base curve and over-refraction

Using the data listed above, a recommended lens will be ordered. Determining power empirically on an irregular cornea is inherently inaccurate. If available, please provide previous RGP/scleral data with over-refractions.

A first lens will be designed and ordered from the measurements. Or, a first lens from the diagnostic set will be recommended as a starting point for an in-office fitting.

In the ideal fit, clearance is 100 microns over the apex. After settling, the final lens should clear the apex of the cornea about 40-50 microns and the inner landing zone (ILZ) should have feather clearance.

## The Dispense Visit

The same fitting principles apply as they would with a diagnostically ordered lens. Perform a fluorescein evaluation of the lens fit at the 5 minute mark, before the fluorescein dissipates.

Observe the following at the dispense visit:

- Assess the central vault: verify vault by assessing the clearance over the apex of the cone by optic section or OCT. Desired vault is roughly half of the lens thickness, or 50 to 100 microns. (Figure A) If there is bearing, increase the vault. If there is excessive clearance, decrease the vault.
- Check centration. The lens should center overall and the skirt should lie flat without fluting or bubbles. The lenses may move very little on primary gaze blink, but should move freely with a push up test.
- Assess the inner landing zone. The ILZ should show a slightly darker color of green. If you see a dark ring of heavy bearing, sometimes accompanied by poor centration, there is not enough clearance under the ILZ. (Figure B) Confirm that the lens is not overvaulted.



**FIGURE A**  
Ideal fit at 4 minutes exhibits 100µ apical clearance, with feather clearance under the inner landing zone.



**FIGURE B**  
Heavy bearing of the inner landing zone is not desirable. Lowering vault, or changing to UltraHealth FC design, will be recommended by your consultant.

**To Place an Empirical Order Contact Technical Consultation:**

**Phone:** 877.733.2012 option 2    **Email:** [consultation@synergieyes.com](mailto:consultation@synergieyes.com)



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- Verify the correct vault. Once the correct vault is determined, if air bubbles appear after insertion, and/or there is fluting/buckling of the skirt, order a steeper skirt.
- Verify the correct power by performing an over-refraction. If the power change is minimal, have the patient wear the lenses for a week and check again at follow-up before an exchange is made. The cornea-to-contact lens relationship may change slightly as the lenses settle over a few days' time, eliminating the need for a power change. If acuity is not achieved as expected, check for residual lenticular astigmatism or lens flexure.

## Troubleshooting Tips

### Fitting Tips

- Minimize changes at lens dispense visit
- Remember to assess inner landing zone with each lens
- Lens discomfort at a 3-4 hour mark, a low-riding lens, and/or difficult removal may indicate over-vault
- If excessive movement with blink and/or bubble uptake after insertion, steepen skirt after confirming appropriate vault
- Impression ring may be visible after wear and is acceptable as long as there is no epithelial disruption. If there is epithelial disruption, recheck the fit for over-vault or ILZ bearing.

### Patient Tips

- Set proper patient expectations; reassure there will be initial lens "awareness" that will go away in a few days with gradual build-up of wear time.
- Have patient review insertion, removal and lens care video PRIOR TO DISPENSE APPOINTMENT
- Dry lens and dry fingers are key for removal, tissue can be used over pincher fingers for lens removal
- Train staff on I&R; assure patient that removal is "**Different**" then what they are used to, but not "**Difficult**"

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