

Just the Facts on Toric Lenses



Last week, we presented *Just the Facts* on the benefits of aspheric optics in a toric lens (available at www.bausch.com/enewsarchives). Today we'll address our second topic in the series:

1. Aspheric optics and the benefits in a toric lens.
- 2. Prism ballast and double slab off designs: different approaches to achieving stability and visual quality.**
3. Satisfied patients appreciate advances in technology.
4. "Ease of fit" is delivered through multiple factors.
5. Vision is a key factor for astigmatic patients.

Discussions about toric lens designs have heated up over the past year. Different options and ideas are being discussed on how to best deliver an excellent contact lens wearing experience with the best visual outcomes for astigmatic patients. The traditional basis for comparing toric lens designs has been their ability to orient and stabilize on the eye. The reason is simple – astigmatic correction is dependent on a stable, centered lens. Since many early toric lens designs demonstrated wide variations in stability, it made sense that this was a main factor in assessing the different options. Keeping the recent market discussions in perspective can be simplified by remembering that effective visual performance of toric lenses depend in part on two key design components: surface optics and lens stabilization.

There are two principal categories of surface optics¹:

- Back surface toric
- Front surface toric

A toroidal back surface is considered to align with and lock-on to the toroidal corneal surface best, and, thereby contribute to lens stability.¹ But even a toroidal back surface is not enough to achieve optimal stability, especially in moderate to low cylinder prescriptions. Prism ballasting and double slab off are commonly used techniques to help optimize lens stability.

Prism ballasting is the basis of the most common toric design, but there are differences even within this design category. Prism ballasting removes mass from the superior and inferior portions, leaving thin zones tucked under the eyelids. It's important to note there have been advancements in stabilizing techniques versus "conventional" toric designs. For example, a lens such as the Bausch & Lomb PureVision® Toric balances the prism stabilizing geometry,

Case Study

Dr. David Geffen has a great deal of experience with PureVision Toric lenses, having refit over 200 patients from other designs in the U.S.

"There have been a number of comparisons made between double slab off and prism ballast toric designs, but over the years I've found that astigmatic patients prefer the vision they get with PureVision Toric lenses and it is an effective lens through any of their day-to-day activities. My patients are extremely happy with the consistency of their vision. My patients have not complained about their vision during activities such as driving at night, watching TV (on the sofa), or working on the computer.

The fact of the matter is that with the toric lenses I fit today, rotational stability is rarely an issue anymore. What's important to my patients now is crisp vision and comfort, especially at the end of the day and the end of the month, compared to their previous lenses.

For instance, I had a patient, a 54-year-old program manager, who was wearing a traditional hydrogel toric lens. He was unhappy with his vision, feeling that things were not "crisp". He

anterior and posterior refinements to the optic zone and a mass-reducing comfort chamfer to successfully stabilize the vertical thickness profile of the lens.

Double slab off (also referred to as peri-ballast, dynamic stabilization, or dual thin zone) also has thicker zones aligned with the inter-palpebral aperture, but these thicker portions are restricted to the lens periphery.

There are key points of interest associated with prism ballasting and double slab off design techniques.

The areas of both of these designs where the thickness is changing serve as “active zones” – the primary point of interaction between the lens and lids with each blink, see Figure 1.

In prism ballasting, one large “active zone” gradually increases in thickness from the superior to the inferior section of the lens. There is a single rotational orientation, and the lens is designed to have specific interactions with the upper and lower lids. The single large active zone allows the lens to rapidly re-orient with the blink if it has been rotated out of alignment. The force exerted as the upper lid sweeps over the lens contours is probably the most important factor influencing good lens orientation, and these active zones are larger in a ballasted design than in a double slab-off design. Both prism ballast and double slab off designs harness the power of the blink for orientation. However, the Lo-Torque® design of the PureVision Toric lenses uses the combined effects of interaction with the eyelid forces during blinking and gravity, thereby offering excellent stabilization.

With double slab off, the “active zone” has a steeper, less gradual slope and resides in four distinct zones in the mid-periphery. This design has less surface area to create a lens/lid interaction for with-the-blink re-orientation. Double slab off has a horizontal symmetrical design. Achieving that symmetry can create a more complex design challenge because, depending on lens orientation, each of the active zones may be interacting with either the upper or lower lids.

had problems with ghosting while driving at night, and his eyes were tired at the end of day and red by mid-afternoon. This patient was not 20 Happy.

I performed aberrometry, and found that the patient had a high amount of spherical aberration, and moderate amounts of trefoil and coma. So I dispensed PureVision Toric – a contact lens that helps reduce spherical aberration. In addition, the healthy silicone-hydrogel material would help give him the healthy-looking white eyes he wants.

At follow up two weeks later, the patient felt night vision while driving was much crisper, and he had no problems with blur, glare and halos. We performed aberrometry over the contact lenses, and found the spherical aberration had decreased by over 50%. His eyes were much whiter and his overall vision was much better than with his previous lenses. His end of day comfort was much better. I was able to exceed this patient’s expectations about contact lens wear.”

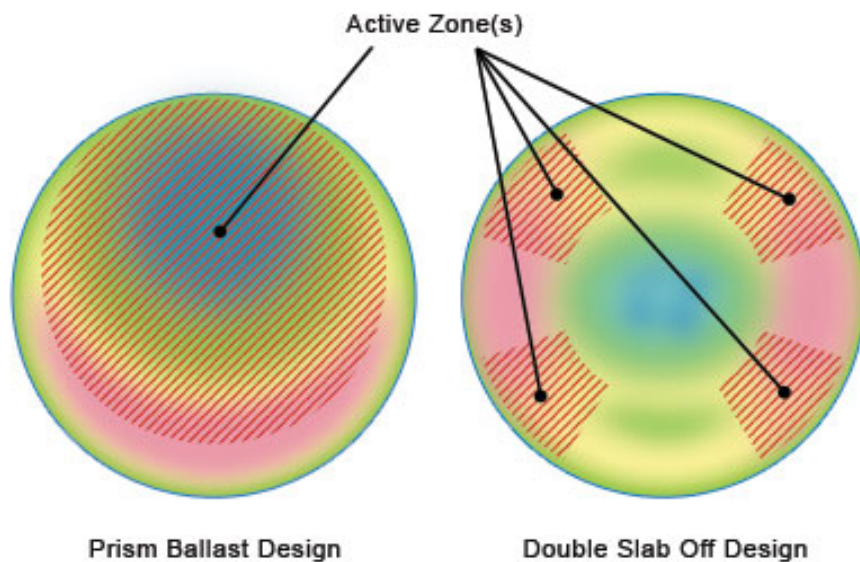
Live Poll - No. 1

Have you found comfort differences for patients between Toric lens designs - double slab off, prism ballast or Lo-Torque® design?

Yes

No

Figure 1. Prism Ballast vs. Double Slab Off Stabilization Designs



Despite these design differences, the bottom line is that both designs utilize geometric thickness profiles and the forces exerted by the lids, including the squeezing forces during blinking, and gravity to influence orientation.

Eye care professionals are now looking at other lens attributes when recommending a lens for their patients including better vision in different lighting conditions, long-lasting comfort and more convenient wear schedules.

If you miss any editions of this *Just the Facts* series you can go to our news archives at www.bausch.com/eneewsarchives.

¹Design of soft-toric lenses – Contact Lenses. Phillips and Speedwell, Elsevier Ltd. 2007

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Live Poll - No. 2

Do you think the Lo-Torque[®] design of the B&L Toric lens offers advanced stabilization vs. conventional toric lenses?

Yes

No

