LUXGOOD™

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OUR VISION FOR YOUR PATIENTS

HYDROPHOBIC

MONOFOCAL

Aberration free IOL

CATARACT LASER RETINA

BAUSCH + LOMB

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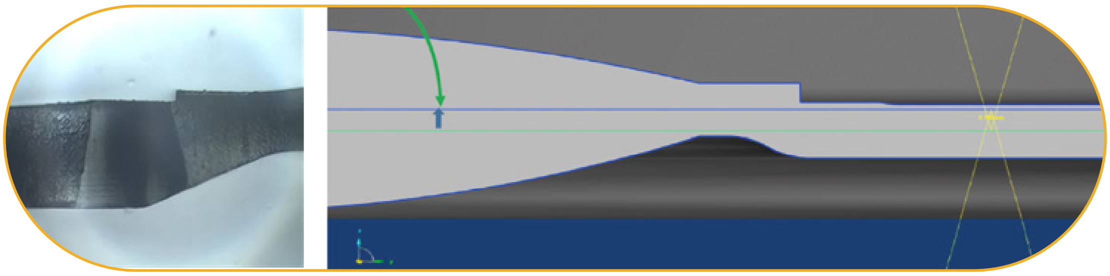
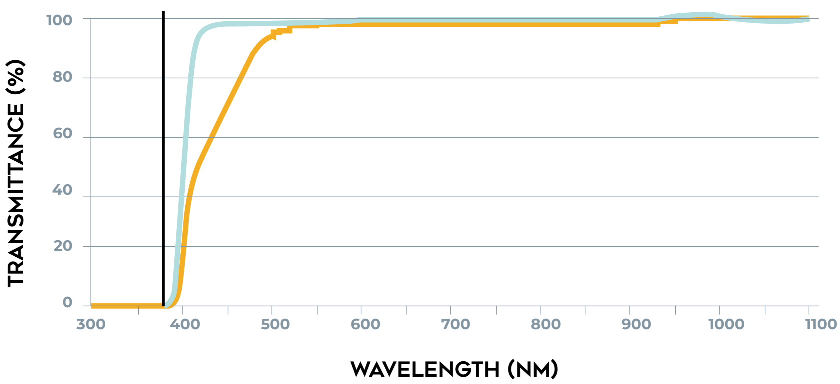
FOR OPTIMIZED EFFECTIVENESS AGAINST PCO*

LuxGood™ has a 360° continuous square edge on the posterior surface **to reduce incidence of posterior capsule opacification** in preventing epithelial lens cell migration under the IOL optic.[1]



Nixon and Woodcock[2] demonstrated that a **continuous 360° square edge had significantly less PCO than a square edge that was interrupted at the optic–haptic junction.**

PROTECTION FROM UV LIGHT



Ultraviolet radiation wavelength cutoff values at 10 % of transmittance:
LuxGood™ Crystal: 393.5 nm
LuxGood™: 397 nm

Figure 1. Spectral transmission curves of LuxGood™ and LuxGood™ Crystal. The continuous vertical line marks the separation (380 nm) between the ultraviolet band and the visible spectrum.

*PCO: Posterior Capsular Opacification

1. BAUSCH + LOMB data on file: RD-R-015. Measurement of sharp edge.
2 .Nixon DR, Woodcock MG. Pattern of posterior capsule opacification models 2 years postoperatively with 2 single-piece acrylic intraocular lenses. J Cataract Refract Surg 2010; 36:929–934

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PLATFORM STABILITY

The shape of the LuxGood™ has been designed to optimize its post-operative behavior in the capsular bag.

IOLs with a similar 4-point fixation haptic design have shown:

- To have **good centration**[3]
- To have similar **postoperative performances in terms of CDVA, inflammation and PCO** compared with the C-loop design[3]
- To have **rotational stability**. 90 % of lenses rotates less than 5 degrees at 6 months[4]
- To be **stable in the eye** and even suitable for the application of a toric surface to correct corneal astigmatism[5]

Orientation features of the LuxGood™ IOL have been designed close to the optic edge **to facilitate visualization, specially in case of constricted iris.**

3. Mingels, A., Koch, J., Lommatzsch, A. et al. Comparison of two acrylic intraocular lenses with different haptic designs in patients with combined phacoemulsification and pars plana vitrectomy. Eye 21, 1379–1383 (2007).
4. Kwartz J, Edwards K Evaluation of the long-term rotational stability of single-piece, acrylic intraocular lenses. British Journal of Ophthalmology 2010;94:1003-1006
5. Buckhurst, Phillip J.; Wolffsohn, James S. PhD; Naroo, Shehzad A. PhD; Davies, Leon N. PhD Rotational and centration stability of an aspheric intraocular lens with a simulated toric design, Journal of Cataract & Refractive Surgery: September 2010 - Volume 36 - Issue 9 - p 1523-1528

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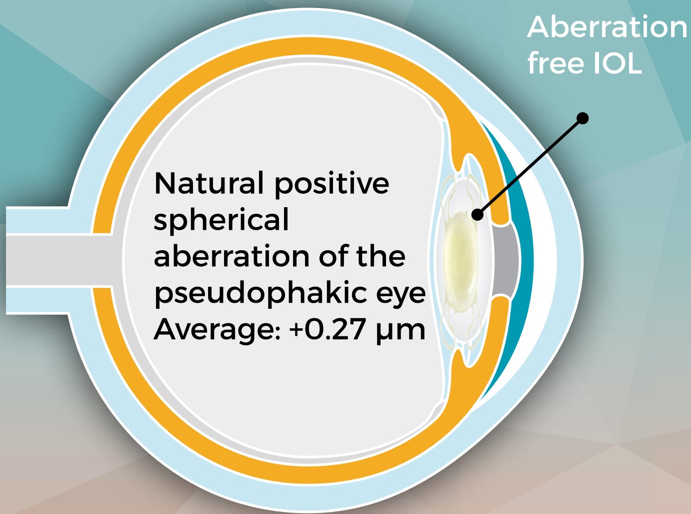
ABERRATION-FREE ASPHERIC OPTIC DESIGN

LuxGood™ and LuxGood™ Crystal are designed to have no spherical aberrations. Both are inherently **“aberration-free”.**

The resultant pseudophakic eye has a natural amount of positive spherical aberration.

Residual spherical aberration = Natural positive spherical aberration of the pseudophakic eye with LuxGood™ and LuxGood™ Crystal.

Average: +0.274 ± 0.089 µm[6]



DEPTH OF FOCUS AND RESIDUAL SPHERICAL ABERRATION

Maintaining a certain amount of positive spherical aberration after surgery can provide greater depth of focus[7]

- Using Adaptive Optic simulation, some authors reported that a slight residual amount of positive spherical aberration offers a good compromise between distance visual acuity and depth of focus[8]
- In an optical bench evaluation, aspheric IOLs designed to compensate the spherical aberrations demonstrated a lower tolerance to defocus with a significantly smaller depth of focus compared to spherical IOLs[9]
- A randomized study reported a statistically significant lower distance-corrected near visual acuity with aspheric negative IOLs compared to the spherical version[10]

6. Beiko, George H.H. BM, BCh, FRCS(C); Haigis, Wolfgang MS, PhD; Steinmueller, Andreas MS Distribution of corneal spherical aberration in a comprehensive ophthalmology practice and whether keratometry can predict aberration values, Journal of Cataract & Refractive Surgery. May 2007 - Volume 33 - Issue 5 - p 848-858 doi: 10.1016/j.jcrs.2007.01.035.
7. Nio YK, Jansonius NM, Fidler V, Geraghty E, Norrby S, Kooijman AC. Spherical and irregular aberrations are important for the optimal performance of the human eye. Ophthalmic Physiol Opt. 2002 Mar;22(2):103-12.
8. Ruiz-Alcocer J, Pérez-Vives C, Madrid-Costa D, García-Lázaro S, Montés-Micó R. Depth of focus through different intraocular lenses in patients with different corneal profiles using adaptive optics visual simulation. J Refract Surg. 2012 Jun;28(6):406-12. doi: 10.3928/1081597X-20120518-03. PMID: 22692522.
9. Marcos S, Barbero S, Jiménez-Alfaro I. Optical quality and depth-of-field of eyes implanted with spherical and aspheric intraocular lenses. J Refract Surg. 2005 May-Jun;21(3):223-35.
10. Rocha KM, Soriano ES, Chamon W, Chalita MR, Nosé W. Spherical aberration and depth of focus in eyes implanted with aspheric and spherical intraocular lenses: a prospective randomised study. Ophthalmology. 2007 Nov;114(11): 2050-4.

Using optical ray tracing simulations, the aberration-free IOL demonstrated a wider range of improved image resolution when compared to an IOL with a negative spherical aberration.

Simulation of visual acuity with depth of focus

USAF resolution test chart obtained on an 21.00 D Enhanced enVista® IOL in R+D laboratory testing at BAUSCH + LOMB[11]

- Aberration-free IOL shows a 0.25 D to 0.30 D depth of focus increase (compared with negative spherical aberration IOL) based on the resolvability of the target of 20/20 or 20/30.

	Depth of focus based on 20/20 vision	Depth of focus based on 20/30 vision
Aberration free IOL	-0.50 D to +0.25 D, total 0.75 D	-0.75 D to +0.375 D, total 1.125 D

Data obtained by R+D laboratory testing at BAUSCH + LOMB[11]

11. BAUSCH + LOMB data on file: AO Technology_V19-098M_R&D report Sept 2019

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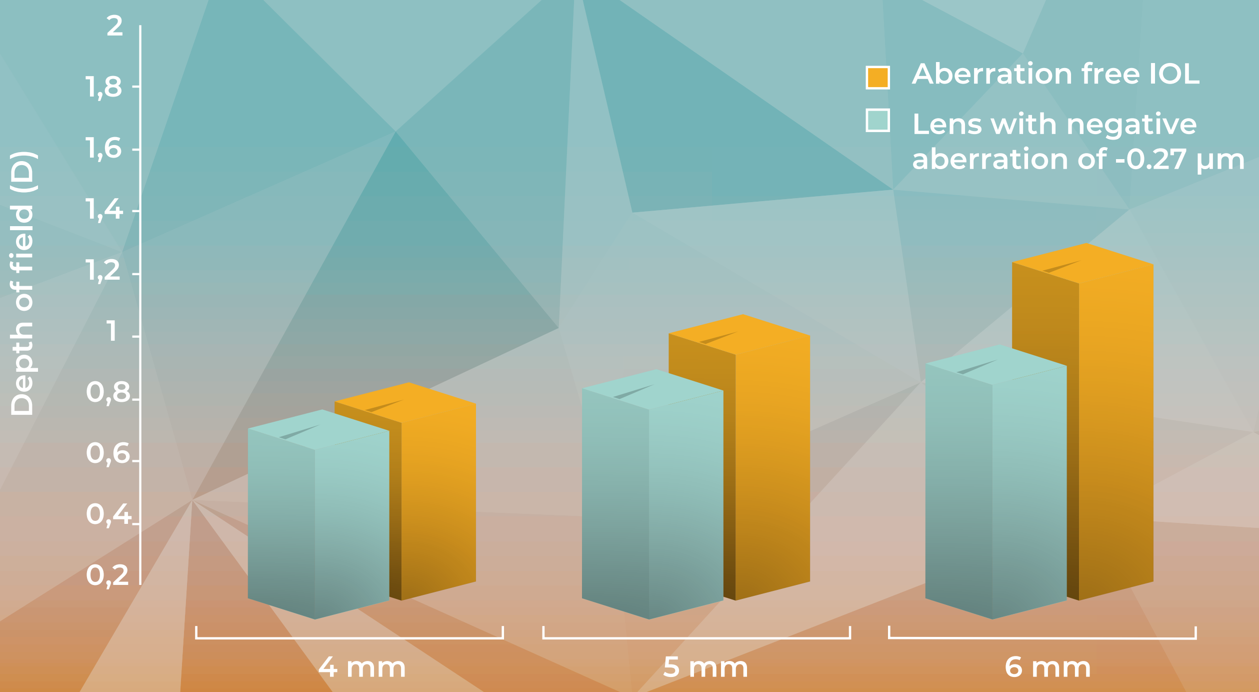
ABERRATION-FREE ASPHERIC OPTIC DESIGN

A multicentre study has shown that aspheric optics with Advanced Optics technology provide greater depth of field than aspheric optics with negative aberration, which could contribute to greater visual quality perception[12]



Graph adapted from Johansson B et al. 2007. Average depth of field assessed by the Strehl ratio (adapted from the original box plot diagram with different pupil sizes)[12]

12. Johansson B, Sundelin S, Wikberg-Matsson A, Unsbo P, Behndig A. Visual and optical performance of the Akreos Adapt Advanced Optics and Tecnis Z9000 intraocular lenses: Swedish multicenter study. J Cataract Refract Surg. 2007. Sep;33(9):1565-72.

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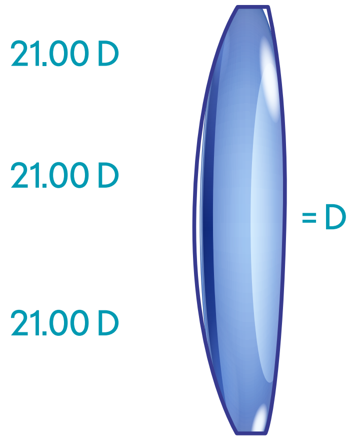
TOLERANCE TO DECENTRATION

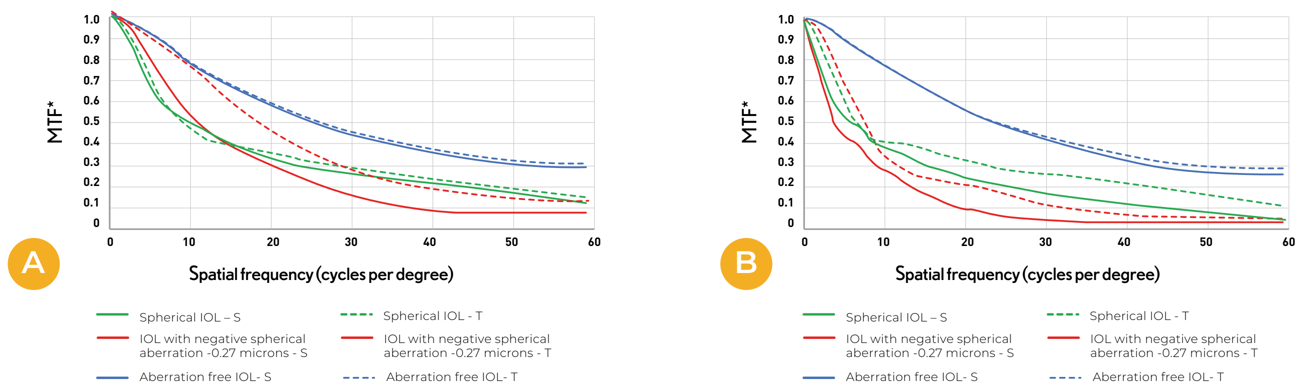
Decentration is much more frequent than one might think

A large series of 395 eyes reported an average IOL decentration after uncomplicated cataract surgery of 0.40 ± 0.2 mm (range 0 to 1.7 mm)[13]

- The neutral aspherical design of both the anterior and posterior optical surfaces of the LuxGood™ lens allows for the constant power of the lens, from the centre to the periphery of its optic.



PERFORMANCE OF DIFFERENT IOLs BASED ON DECENTRATION[14]



A. The IOLs are decentered 0.5 mm. Induction of asymmetrical HOAs degraded the performances of both the spherical IOL and the one inducing negative spherical aberration, causing the MTF curves to droop and separate.

B. The IOLs are decentered 1.0 mm, further degrading performance of the spherical IOL and the one inducing negative spherical aberration IOL but not the aberration-free IOL.

Figure adapted from Altman GE, et al. 2005. for a 4mm pupil diameter. (S= sagittal T= tangential).[14]
*MTF: Modulation Transfer Function

13. Harrer A., Hirnschall N., Tabernero J et al : Variability in angle k and its influence on higher-order aberrations in pseudophakic eyes J Cataract Refract Surg 2017; 43:1015–1019
14. Altmann GE, Nichamin LD, Lane SS, Pepose JS. Optical performance of 3 intraocular lens designs in the presence of decentration. J Cataract Refract Surg. 2005 Mar;31(3):574-85.

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SINGLE STEP FULLY PRELOADED INJECTION

LuxGood™ and LuxGood™ Crystal are only available in preloaded version, taking the advantage of:

- Less risks of IOL damages, cross-contamination and mishandling[15]
- Usage of preloaded injection system, which have been shown to produce faster and more predictable IOL delivery[15] with less wound stretching[16]
- It is thought that during the next several years, use of preloaded disposable injectors is expected to grow and may well represent the industry's future[17]

15. Chung B, Lee H, Choi M, Seo KY, Kim EK, Kim TI. Preloaded and non-preloaded intraocular lens delivery system and characteristics: human and porcine eyes trial. Int J Ophthalmol 2018;11(1):6-11
16. Mencucci R, Favuzza E, Salvatici MC, Spadea L, Allen D. Corneal incision architecture after IOL implantation with three different injectors: an environmental scanning electron microscopy study. Int Ophthalmol. Published online: 01 February 2018. https://doi.org/10.1007/s10792-018-0825-2
17. Marketscope 2019

TECHNICAL SPECIFICATIONS

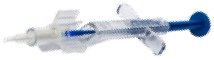
MATERIAL

Material:	Acrylic hydrophobic
Overall diameter:	11.00 mm
Optic diameter:	6.00 mm
Platform design:	Single piece, 4-point fixation haptic design and 360˚continuous square edge
Optical design:	Aberration-free aspheric optic
Haptics angulation:	0˚
Light Filter:	LuxGood™ Crystal: UV filter LuxGood™: UV and violet filters
Diopter range:	From 0.00 D to +10,00 D (1.00 D steps) From +10,00 D to +34.00 D (0.50 D steps)
Refractive index:	1.54 at 35˚
Orientation features:	Top right and bottom left

DELIVERY SYSTEM

Fully preloaded system with push injection: Accuject™ Pro

Recommended incision size: ≥ 2,2 mm
(wound assisted technique)



CONSTANTS*

OPTICAL CONSTANT

SRK/T A Constant: 119.2

pACD: 5.67

Surgeon factor: 1.90

Haigis: a_0: 2.027 / a_1: 0.4 / a_2: 0.1

ULTRASONIC CONSTANT

SRK/T A Constant: 118.8

pACD: 5.43

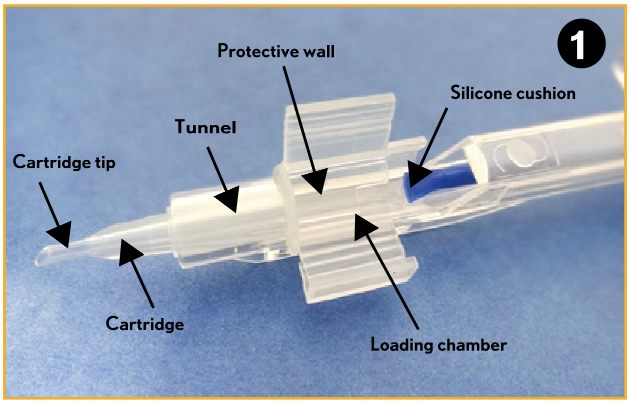
Surgeon factor: 1.68

Haigis: a_0: 1.777 / a_1: 0.4 / a_2: 0.1

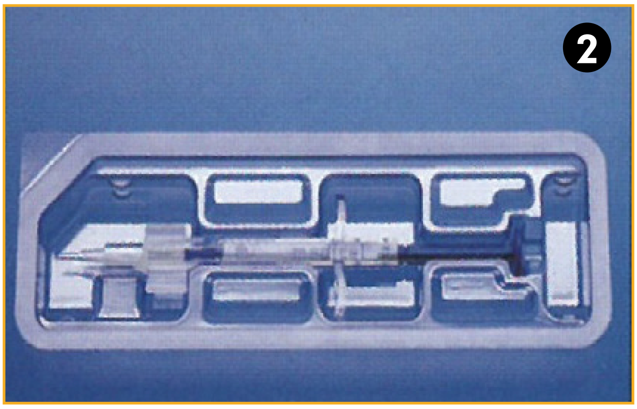
*Constants are estimates only. It is recommended that each surgeon develops their own values.

LOADING GUIDE

for Preloaded IOL Injector Accuject™ Pro with LuxGood™ and LuxGood Crystal™



The Accuject™ Pro is a push-type fully preloaded single use injection system



Open the blister and transfer the injection system onto the sterile field.

Rinse the lens by slowly injecting BSS* from the tip of the cartridge inclined upwards.

Then, rinse the lens from the back of the cartridge inclined downwards by positioning the cannula near the silicone tip under the protective wall. The cartridge and the loading chamber both contain a coating that is activated when hydrated by the addition of BSS*. The coating fixes a layer of fluid that ensures lubrication. Full hydration of all the parts is mandatory.

*BSS: Balanced Salt Solution

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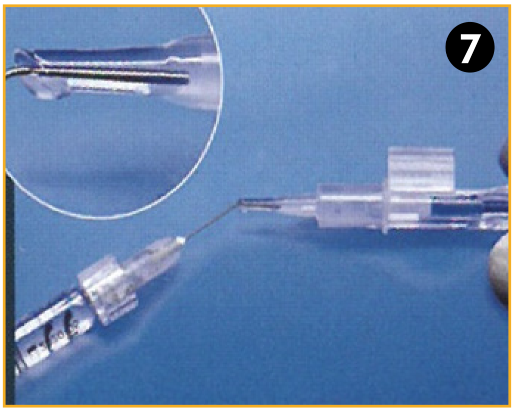
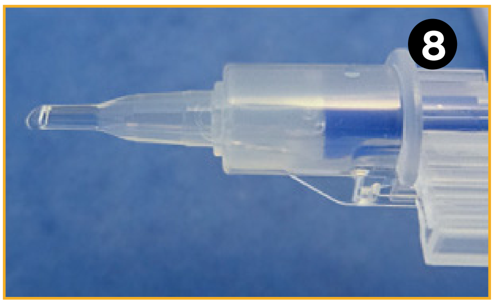
Wait for 30 seconds

Close the wings of the cartridge until you hear a “click”.

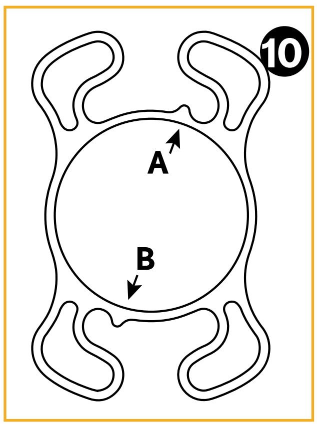


Apply a viscoelastic solution** through the tip of the cartridge to entirely fill the cartridge and the tunnel. The system is ready for injection (do not advance the lens into the tunnel).



For the implantation, remove the excess viscoelastic** by advancing the plunger slowly and continuously until it reaches halfway along the tunnel.

Check that the trailing haptics are not covering the optic. Then, insert the cartridge tip into the incision and slowly and continuously push the plunger until the lens is delivered. It is very important not to stop during the pushing process.



Once implanted, the orientation features of the lens must be oriented at the top right (A) and at the bottom left (B)

**Amvisc® Plus, OcuCoat® and EyeFill® C.

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For healthcare professionals only, please refer to the instructions for use.
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