MONOPLUS · ENHANCED INTERMEDIATE

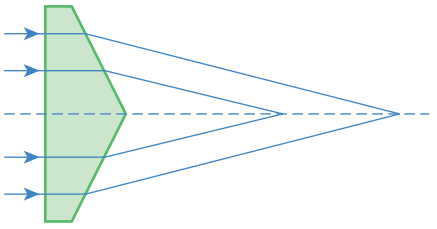
# VISION EXTENDED

## Extend™

**World's First**
**Bessel-Optics Monofocal Plus IOL**

HANITA Lenses

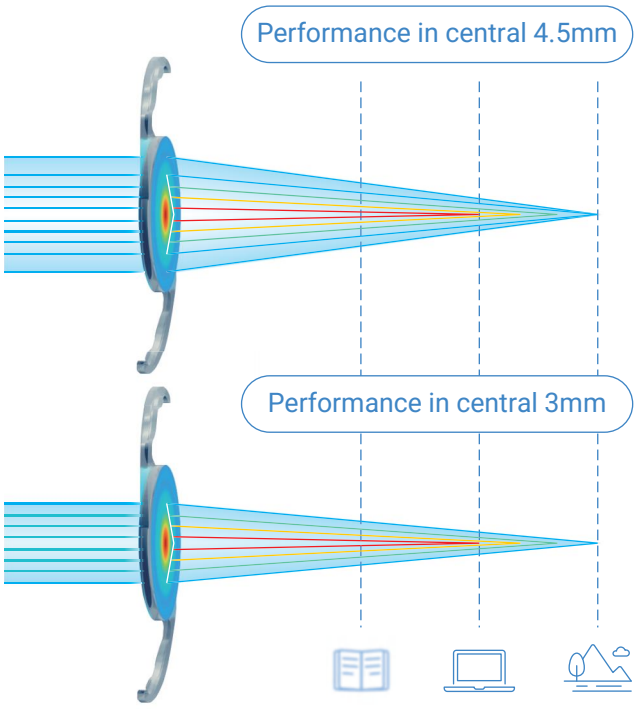
# The Extend™ Monofocal Plus IOL



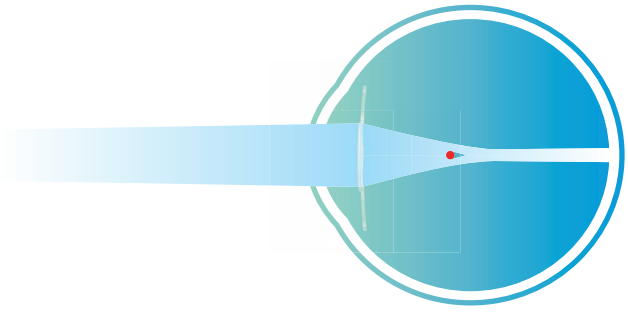
Bessel beams, characterized by their unique non-diffractive propagation, "needle-shaped beam"[1], and self-healing capabilities, are increasingly applied in ophthalmology for high-resolution imaging and enhanced fixation targets[2].

## Clinical Advantages from Bessel Optics

The Extend™ IOL, powered by Bessel optics, delivers an extended depth of focus, rather than a single focal point, to cover both distance and intermediate vision without the complexity of multifocal designs.



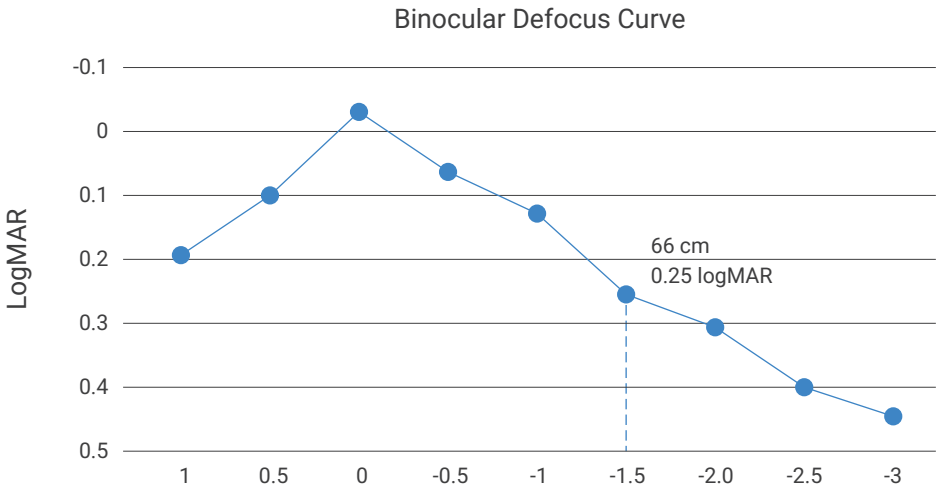

The self-healing mechanism[3] of Bessel beams enables them to restore their structure when partially obstructed, as unblocked wavefronts re-interfere to maintain stable imaging. This suggests the IOL might tolerate optical path obstructions like low-level posterior capsule opacification (PCO) or floaters.



1. Zhao, J., Winetraub, Y., Du, L., VAN Vleck, A., Ichimura, K., Huang, C., Aasi, S. Z., Sarin, K. Y., & de la Zerda, A. (2022, August 20). Flexible method for generating needle-shaped beams and its application in optical coherence tomography. Optica. https://pmc.ncbi.nlm.nih.gov/articles/PMC10243785/
2. Suchand Sandeep, C. S., Khairyanto, A., Aung, T., & Vadakke Matham, M. (2023). Bessel beams in ophthalmology: A Review. Micromachines, 14(9), 1672. https://doi.org/10.3390/mi14091672
3. Aiello, A. (2014, December). Wave-optics description of self-healing mechanism in Bessel beams. ResearchGate. https://www.researchgate.net/publication/266971869_Wave-optics_description_of_self-healing_mechanism_in_Bessel_beams

# Extend Your Patients' Vivid Moments With Clarity

Distance vision comparable to a standard monofocal IOL, along with functional intermediate vision.




Extend™: Bianchi et al., Highlights of Ophthalmology 2023 Volume 51(2)

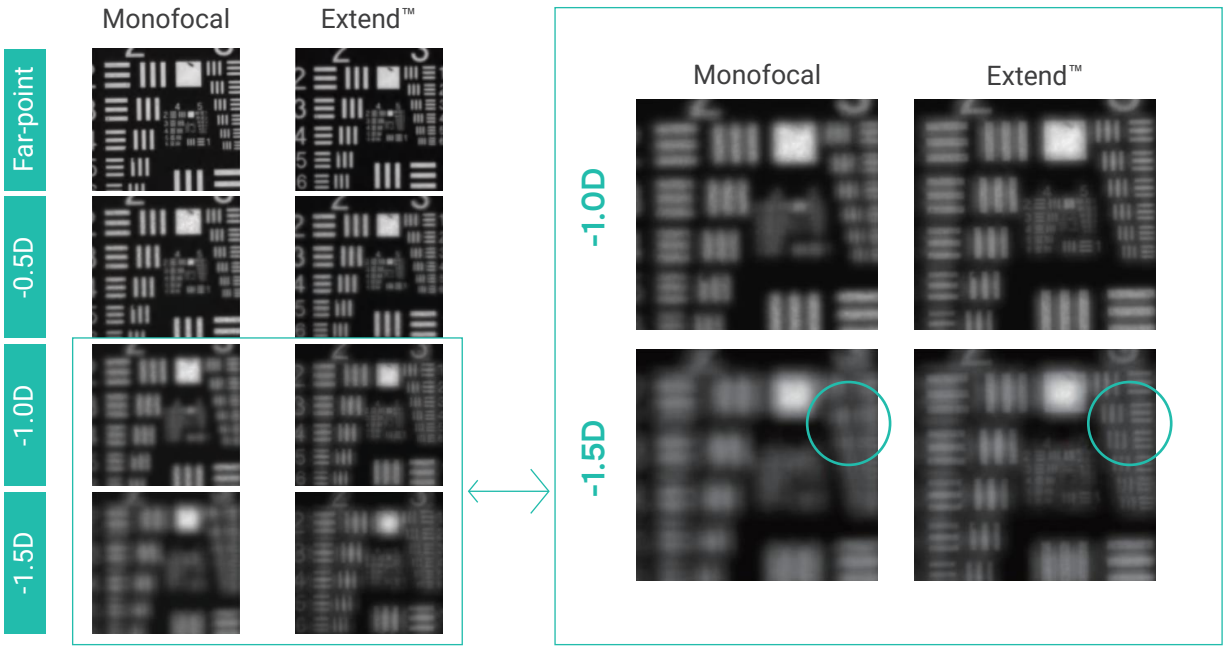
## Full Range Binocular Vision

By using a mini-monovision approach targeting small myopia in the non-dominant eye, a full range of functional vision can potentially be achieved.

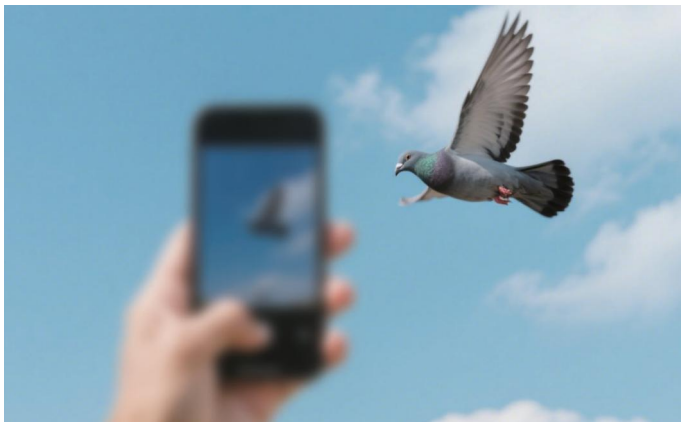
One eye: **emmetropia**

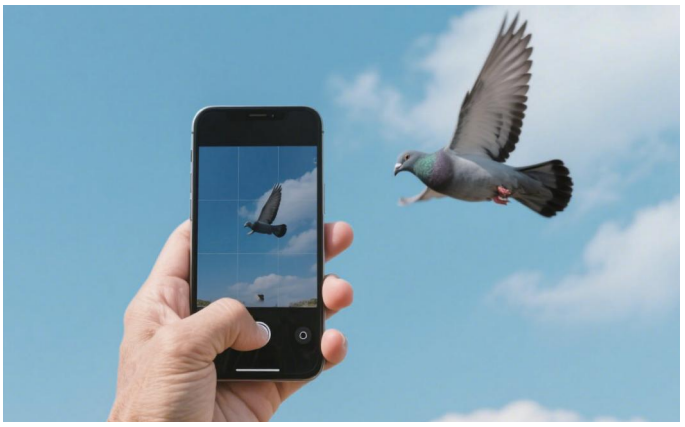
The other eye: **mild myopia**

# Extend™: Bessel-Powered Monofocal Reinvented

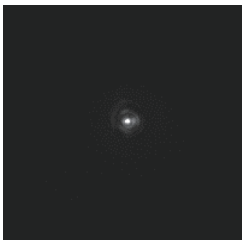



When tested with USAF target images, monofocal IOLs are sharp only at their preset focal point (e.g., distance "far-point" row), with marked blurring at off-focus states (-1.0D to -1.5D). In contrast, Extend™ IOL, using Bessel-powered extended focus technology, maintains discernible target clarity across all tested refractive states, enabling continuous distance-to-intermediate vision and outperforming monofocal designs.





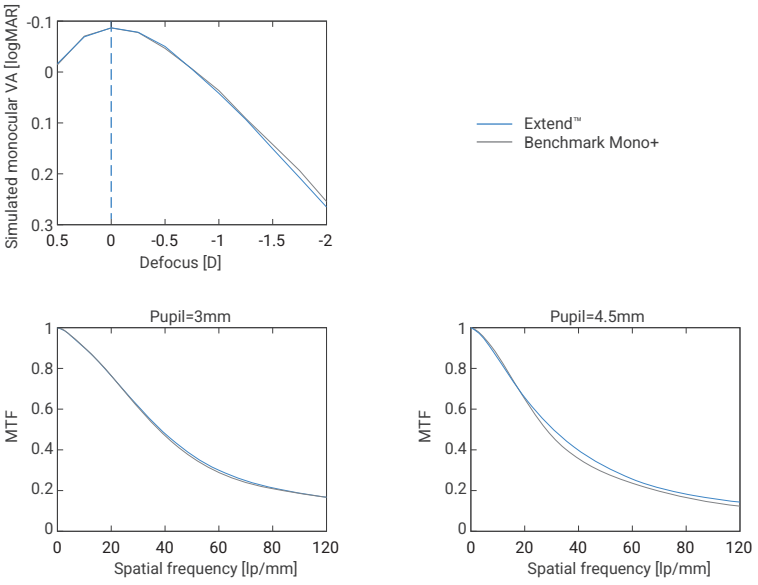
DAVID J APPLE LABORATORY

| IOL Model | Benchmark Mono+ | Extend™ |
|---|---|---|
| Optimally saturated |  |  |

Polychromatic PSF images taken at optimal saturation with a pupil diameter of 4.5 mm. Both IOLs showed comparable light distribution with a speckle-like pattern outside the PSF core.

Simulated VA demonstrated that at far focus, the Extend™ IOL achieves a high-acuity logMAR of -0.09, with stable vision maintained across a broad defocus range, enabling clear sight from far to intermediate distances.

The Extend™ IOL delivers strong MTF performance: high detail retention at 50 lp/mm (0.32) with a 4.5-mm pupil for low-light clarity, and reliable contrast in bright 3-mm pupil scenarios.[1]




1. Łabuz, G., Yan, W., & Munro, D. J. (2021). The optical-quality assessment of the Hanita mono-EDoF intraocular lens versus a competitor model [Unpublished report]. David J Apple International Laboratory for Ocular Pathology, University of Heidelberg.


By addressing three key aspects—light-spot focusing, vision stability, and detail recognition in both day and night conditions, data show that the Hanita Lenses Extend™ IOL provides sharp distance vision, covers intermediate viewing ranges, and maintains clarity in low-light environments. This makes it particularly beneficial for patients who require high-quality postoperative vision, such as for night driving.

# Hanita Lenses Extend™ SL

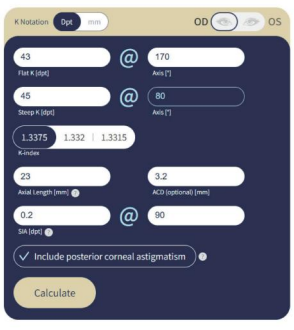
| OPTIC CHARACTERISTICS | |
|---|---|
| Diopter range (SE) | +5.0 to +34.0 D |
| Diopter increment | 0.5 D (+5.0 to +30.0 D)<br>1.0 D (+30.0 to +34.0 D) |
| Optical design | Modified high-order aspheric for extension of the depth of focus |
| **GEOMETRIES** | |
| Optic diameter | 6.0 mm |
| Total diameter | 13.0 mm |
| Haptic configuration | C-loop |
| Edge design | Square edge |
| Haptic angulation | 5° |
| **MATERIAL SPECIFICATIONS** | |
| Material | Hydrophobic acrylic with bonded UV absorber and violet light filter |
| Refractive index | 1.48 (@ 35 °C) |
| Abbe number | 49 |
| Filtration | UV and violet light |
| **OPTICAL BIOMETRY** | |
| SRK/T: A-constant | 119 |
| Holladay II: ACD | 5.549 |
| **CONTACT ULTRASOUND BIOMETRY** | |
| SRK/T: A-constant | 118.5 |
| Holladay II: ACD | 5.257 |
| **RECOMMENDED DELIVERY SYSTEM** | |

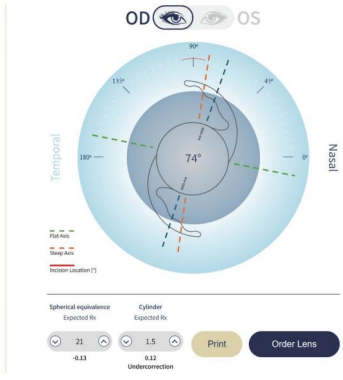

Preloaded
Injector: Accuject 2.2

# Hanita Lenses Extend™ SL Toric

| OPTIC CHARACTERISTICS | |
|---|---|
| Diopter range (SE) | +5.0 to +34.0 D |
| Diopter increment | 0.5 D (+5.0 to +30.0 D)<br>1.0 D (+30.0 to +34.0 D) |
| Cylinder range | 1.0, 1.5, 2.25, 3.0, 3.75, 4.5 D |
| Optical design | Modified high-order aspheric for extension of the depth of focus |
| **GEOMETRIES** | |
| Optic diameter | 6.0 mm |
| Total diameter | 13.0 mm |
| Haptic configuration | C-loop |
| Edge design | Square edge |
| Haptic angulation | 5° |
| **MATERIAL SPECIFICATIONS** | |
| Material | Hydrophobic acrylic with bonded UV absorber and violet light filter |
| Refractive index | 1.48 (@ 35 °C) |
| Abbe number | 49 |
| Filtration | UV and violet light |
| **OPTICAL BIOMETRY** | |
| SRK/T: A-constant | 119 |
| Holladay II: ACD | 5.549 |
| **CONTACT ULTRASOUND BIOMETRY** | |
| SRK/T: A-constant | 118.5 |
| Holladay II: ACD | 5.257 |

**CALCULATOR**




**RECOMMENDED DELIVERY SYSTEM**

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Injector: Accuject 2.2

# Extend™ IOL by Hanita Lenses

## Pioneering a new era of monofocal IOL technology.

- Distance vision comparable to standard monofocal IOLs
- Functional intermediate vision
- Excels in low light
- More tolerant of visual disturbances
- Overall performance comparable to the industry benchmark


For healthcare professionals only.

Please read the Instruction for Use for important safety information and consult our specialists if you have any questions.

HANITA Lenses Extend™



GRA-0000770 Rev. 3.0