LESS STEPS – **MORE VISION**

TRIFOCAL
Complete Spectacle Independence

7 RINGS TO PERFECTION
Superior Contrast Sensitivity

LIBERTY®

oertli ophthalmedic®

www.oertli-ophthalmedic.ch

EYE SURGERY ESSENTIALS.

MEDICNTUR

Material. Design. Optics.

liberty-lens.com

LIBERTY®

ENHANCED QUALITY OF VISION

IOL manufacturers eagerly compete for superior intermediate performance or compress the addition towards the intermediate to create some „comfort“. While doing this they disregard the main key of success for multifocal IOLs – SPECTACLE INDEPENDENCE.

Medicontur chooses not to compromise IOL performance.

Liberty equates to spectacle independence without the compromise of reduced image quality or visual acuity at near and far distances.

LIBERTY FOR YOUR PATIENTS

Less Diffractive Steps – More Vision

Light is scattered within an IOL by every diffractive step. Considerable additional light scattering is caused by the manufactured imperfections of these steps on multiple points.

Therefore **not only the quality but also the quantity of the manufactured steps has a great impact on light scattering and loss of light energy.**

The below symbolic figures demonstrate the difference in light scattering and energy loss on two separate diffractive IOL profiles.

Quantity of Scattered Light

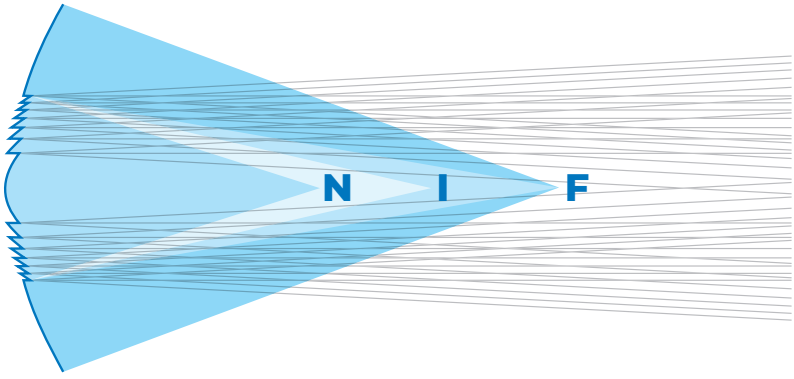


Figure 1a:
LIBERTY optic with
7 diffractive steps
Moderate light
scattering

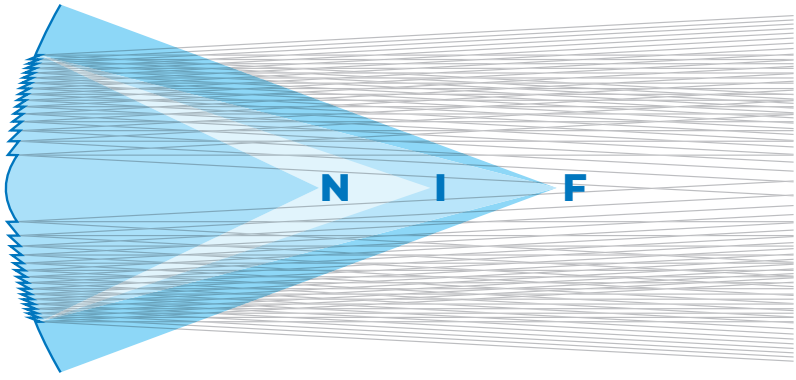


Figure 1b:
Diffractive optic with
2× more diffractive steps
creates minimum
3× more light scattering

What does **LESS STEPS** mean for your patients?

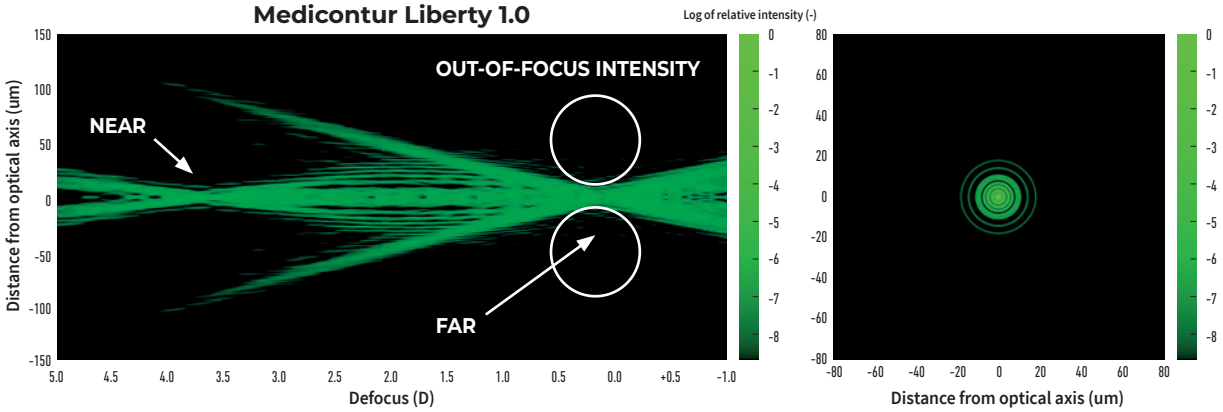
Less light scattering improves vision by

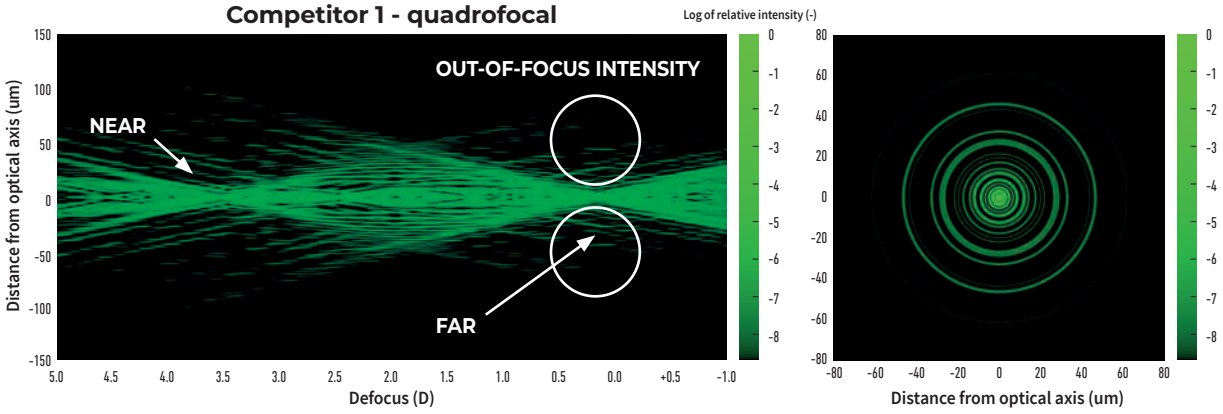
- **Higher Contrast Sensitivity**
- **Less Halos & Glare**

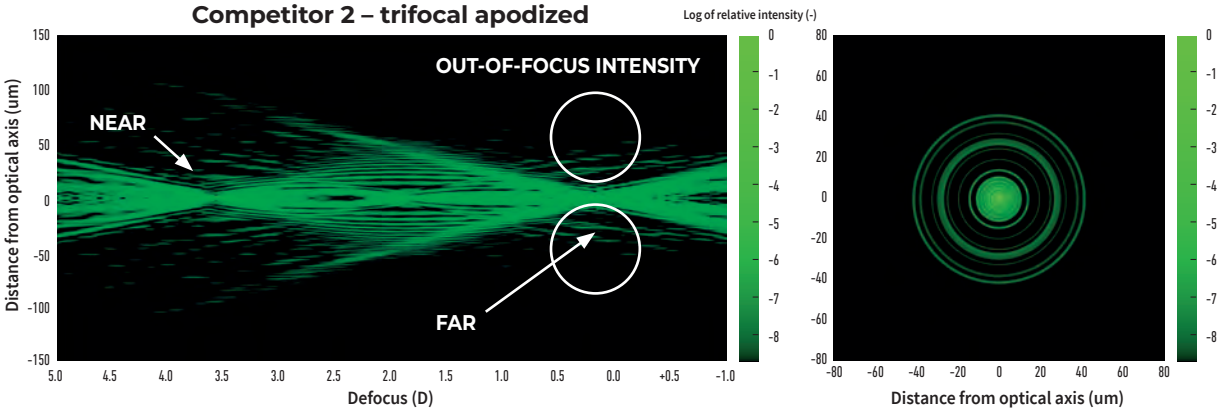
7

Out-Of-Focus Light Intensity Distribution by Visualization of Light Propagation along the Optical Axis

Light Energy Intensity at 4.5 mm Aperture* → **Halos in FAR focal plane**







Which Lens Would You Prefer For Driving At Night?

* Simulated by Zemax extension for calculation of light propagation after custom defined diffractive surfaces.

A TRIFOCAL DESIGN: Elevated Phase Shift * (EPS) technology

Medicontur's proprietary, patented approach to trifocality uses **EPS** in the central part of the optic to generate constructive interference between the 0th (far) and 1st (near) diffractive order. This **revolutionary optical design** generates the 3rd focal point for intermediate vision in a very unique way:

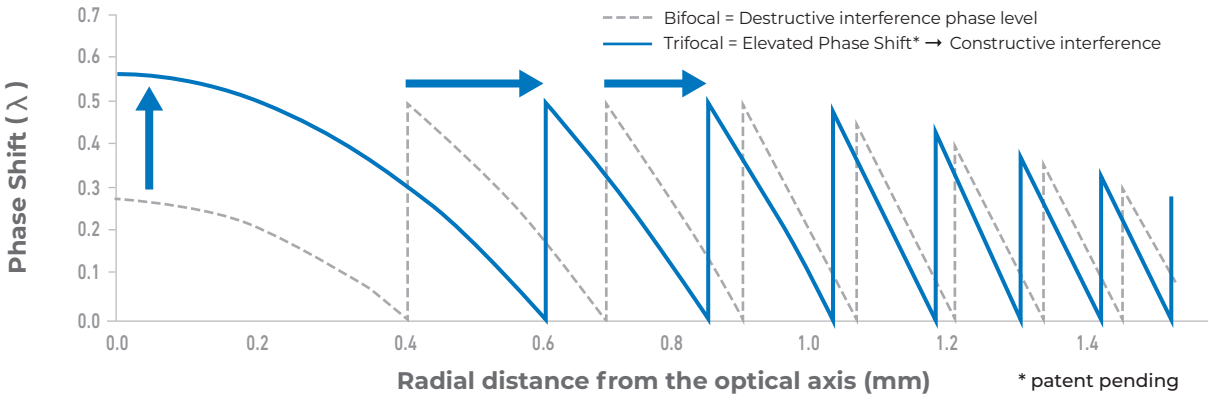


Figure 1: Radial profile with central diffractive phase shift elevated from a destructive level to a constructive interference level.

EPS* technology uses only **7 rings** within a **3 mm** diameter for complete spectacle independence, improved image quality and excellent performance at near and far.

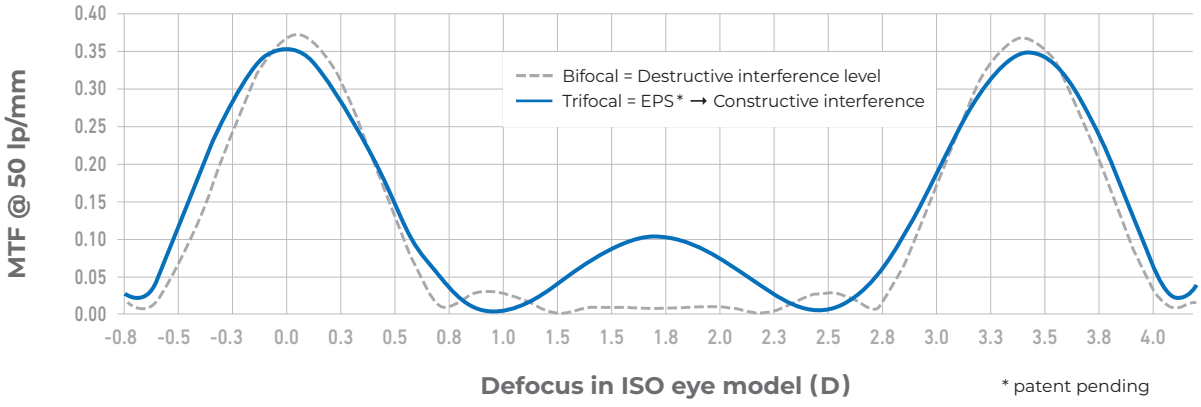


Figure 2: MTF through focus curves with central diffractive phase shifts at a destructive and a constructive interference level resulting in a 3rd focal point for intermediate vision.

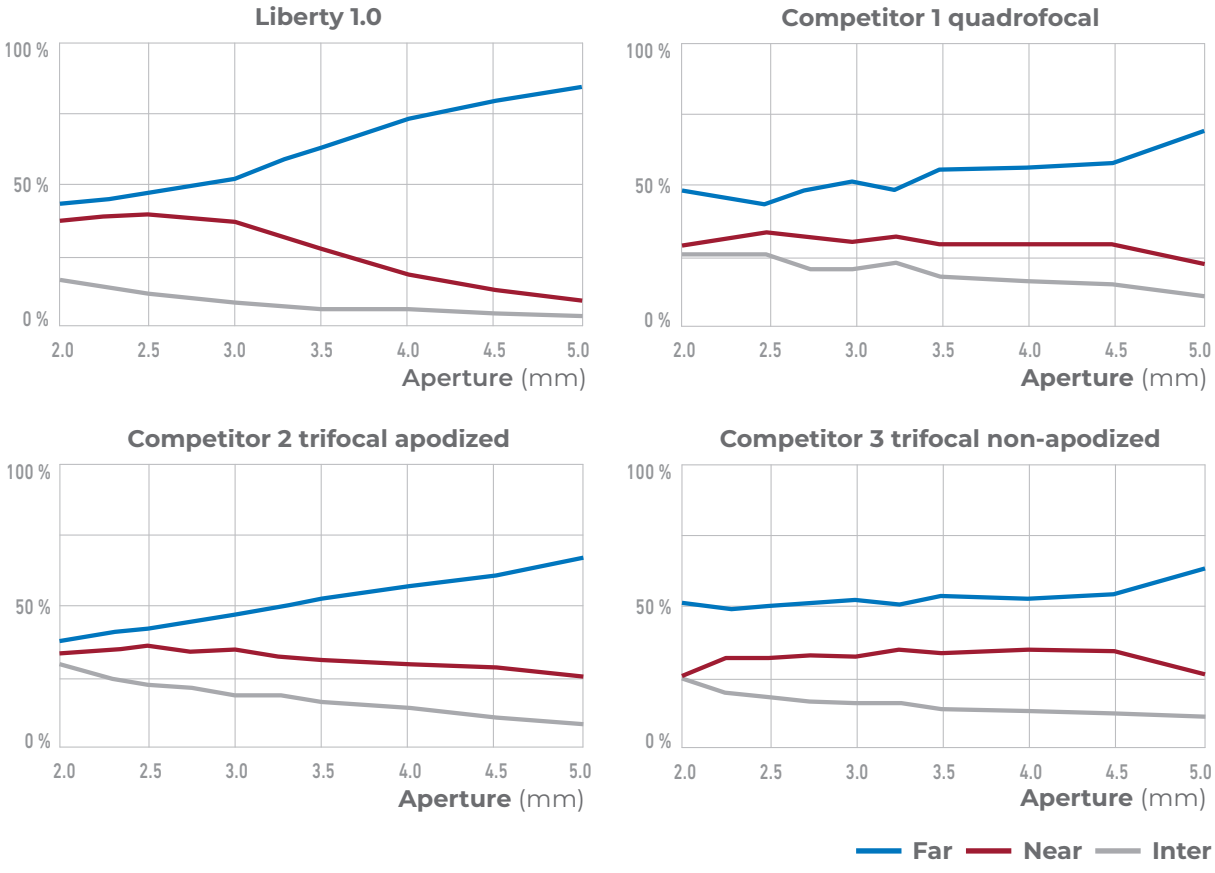
7 steps to Trifocal perfection

LIBERTY IOLs achieve trifocal performance with

- **7 steps** in a precise diffractive array within a
- **3 mm** diameter leaving a
- **75%** refractive lens surface.

LIBERTY IOLs are strongly **pupil dependent** using the **NEAR TRIAD** which implies miosis under accommodation. We believe that too much light distribution into the near focus above 3 mm aperture does not match normal ocular physiology.

The 4 charts below show the **Useful Light Distribution in % of LIBERTY** and 3 competitors depending on the aperture [mm] *. **LIBERTY provides the highest light distribution in the near focus under accommodation and the highest for far vision under scotopic conditions.**



* Based on Zemax simulation results, PMTF calculation method and on Strehl ratio calculated from Zemax simulated MTF values.

LIBERT7®

" The most balanced trifocal IOL on the market."

M. Assouline, MD, PhD
France

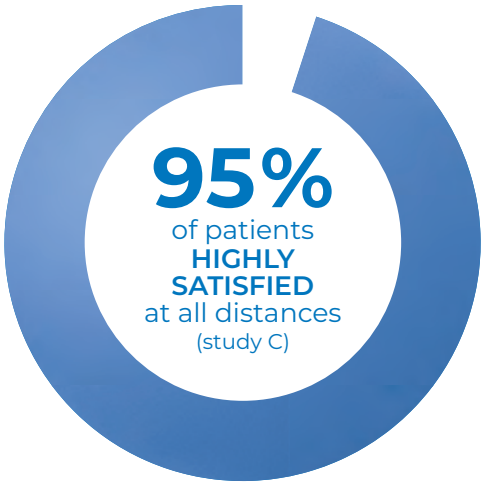
APAO 2018,
Hong Kong

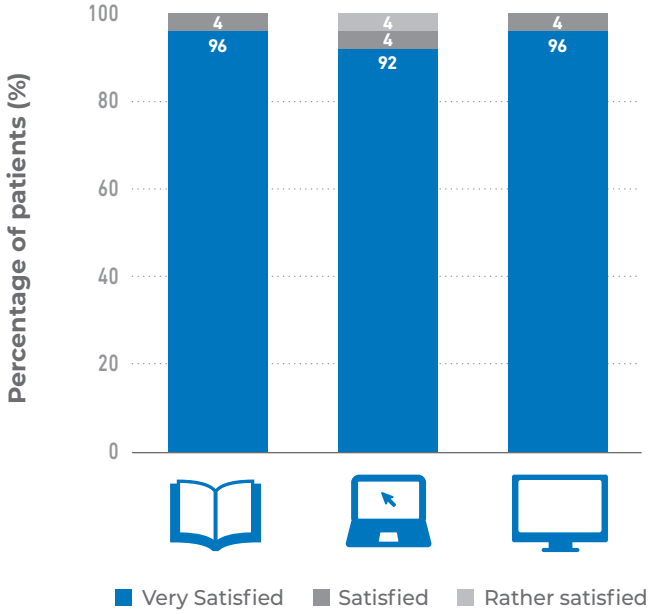
10 CLINICAL STUDIES

IN **12** COUNTRIES

MORE THAN **900** EYES

1. **TRIFOCAL PERFORMANCE ***
2. **COMPLETE SPECTACLE INDEPENDENCE ***
3. **EXCELLENT FAR – NEAR & GOOD INTERMEDIATE VISION ***
4. **REFRACTIVE PREDICTABILITY & LONG TERM STABILITY ***
5. **OUTSTANDING CONTRAST SENSITIVITY ***
6. **EXCELLENT READING SPEED ***
7. **MINIMAL REPORTS OF DYSPHOTOPSIA ***





* Confirmed by studies; see references.

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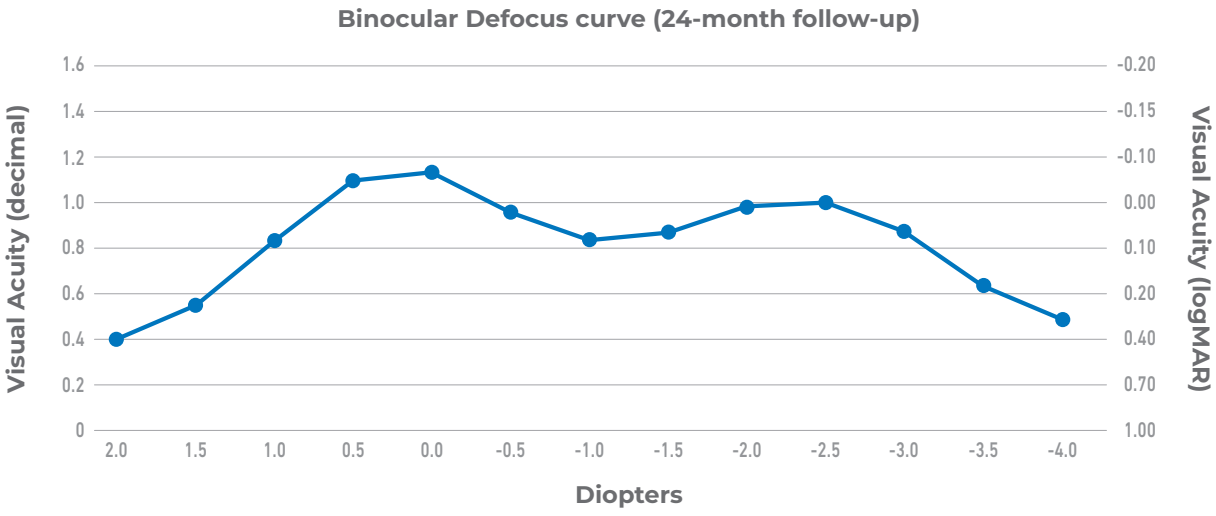
THE MOST BALANCED TRIFOCAL IOL

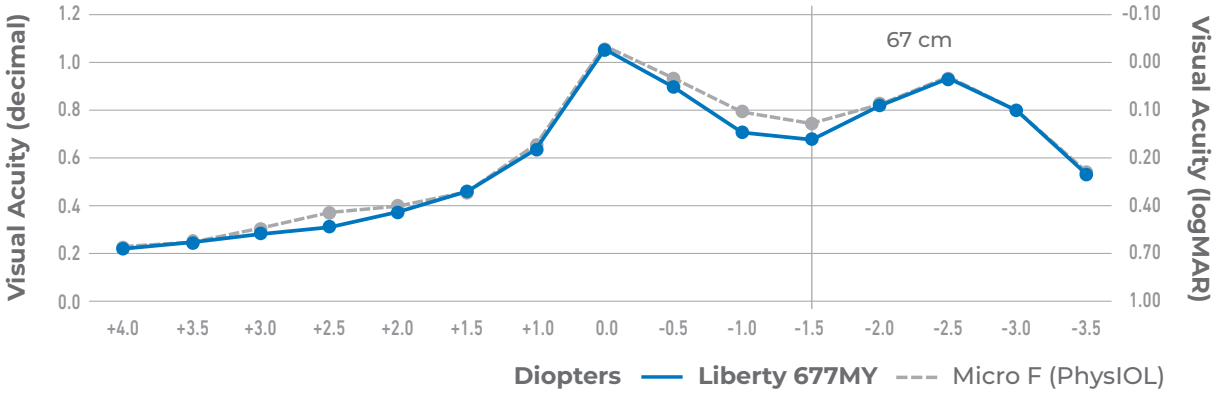
TRIFOCAL performance and Spectacle Independence

Clinical evidence shows excellent far & near, good intermediate vision.

Outstanding Visual Performance for Liberty 677MY (Study C)



Equivalent Clinical Visual Acuity compared to FineVision (PhysIOL) (Study B)



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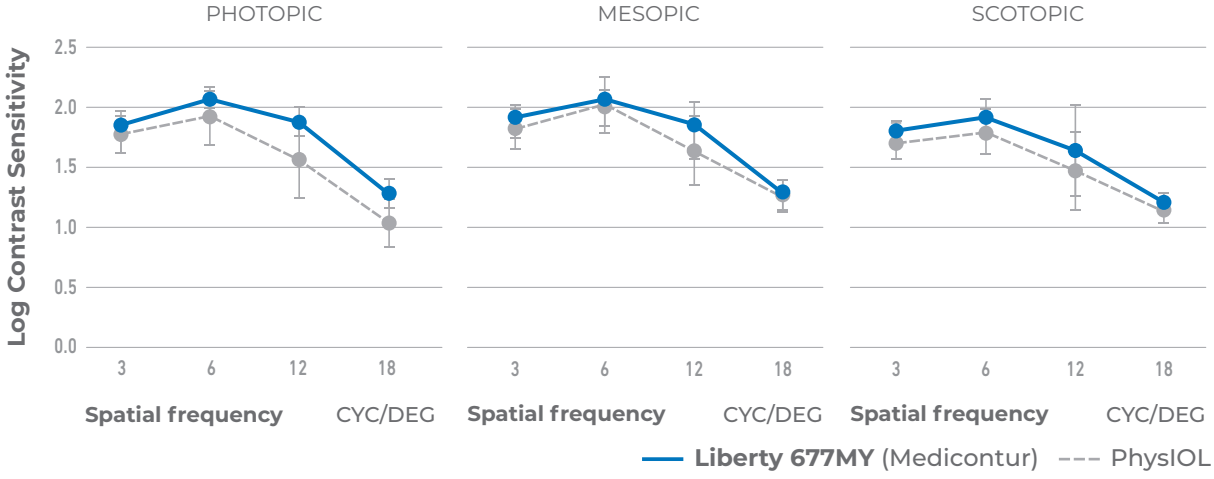
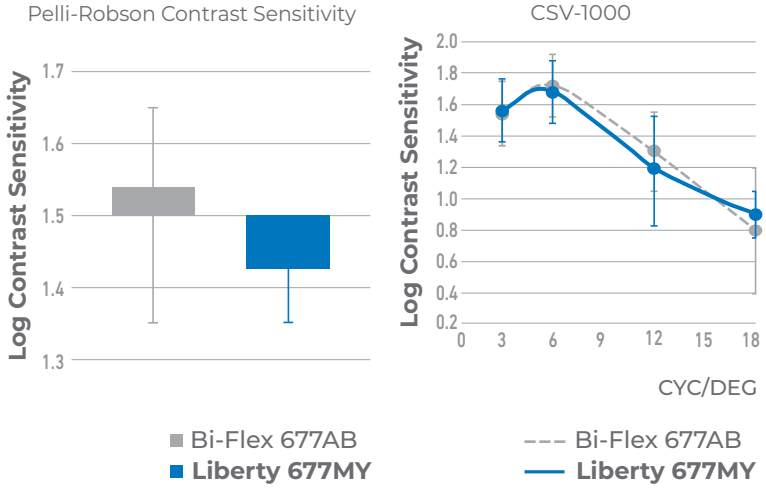
THE MOST BALANCED TRIFOCAL IOL

High Image QUALITY

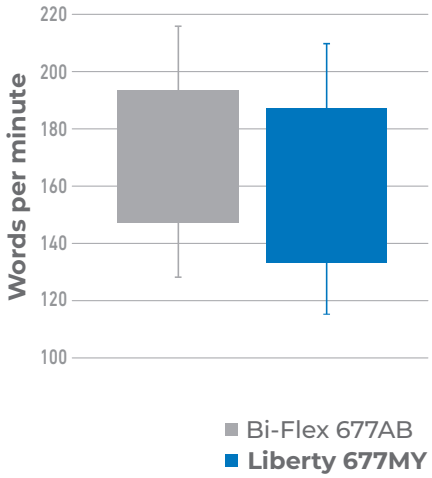
Superior Contrast Sensitivity compared to FineVision (PhysIOL) in different light conditions. (Study B, C)



Equivalent Contrast Sensitivity to Bi-Flex Monofocal IOL (Study E)



Equivalent Reading Speed to Bi-Flex Monofocal IOL (Study E)

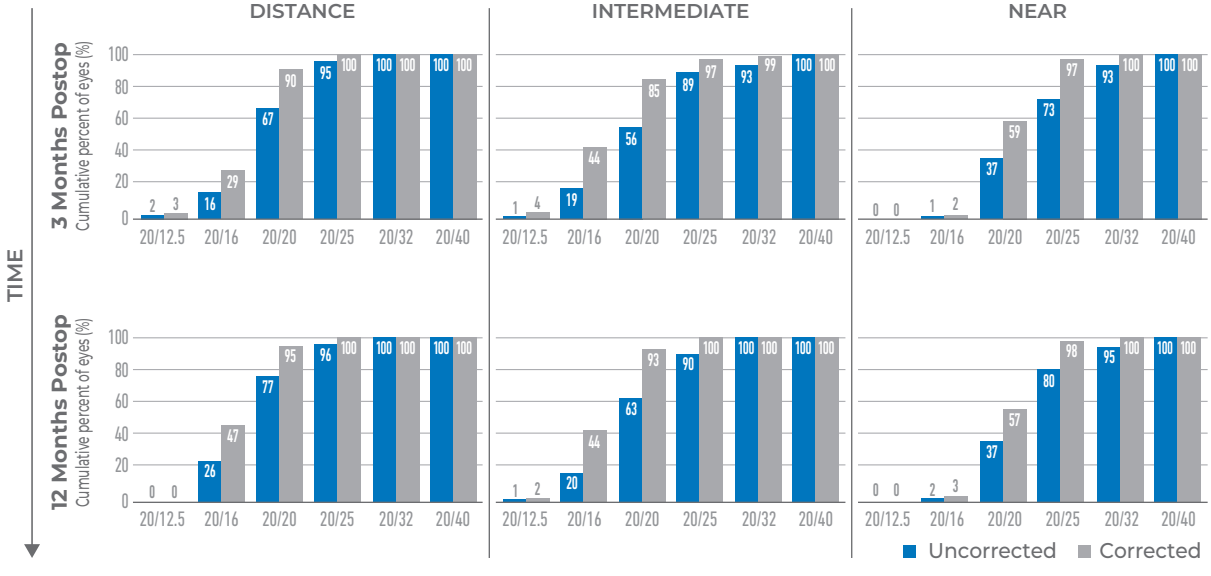


„After over 100 implantations trifocal performance is evident. Less halos & glare, better contrast sensitivity. All my patients implanted with Liberty are spectacle independent.“ **J. Győry, MD, Hungary › ESCRS 2017, Lisbon**

Refractive Stability and Predictability

Excellent Long Term Refractive Stability and Visual Outcomes. (Study C)

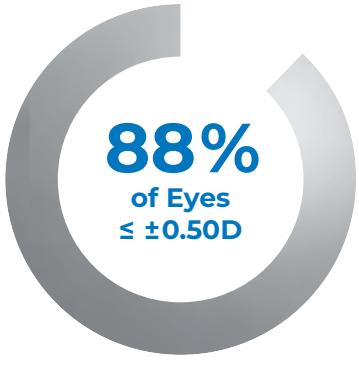
UCVA vs BCVA



Cumulative Snell Visual Acuity (20/40 or better)

ACCURACY & PREDICTABILITY

Mean spherical equivalent residual error of -0.15D (± 0.33D) (Based on studies A, C, D)



Accuracy of refractive outcome of Liberty overshadow distinctively literature average = ±0.5 D: 75.1%.

Cooke DL, Cooke TL. J Cataract Refract Surg. 2016;42(8):1157-1164

LIBERTY®

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Material. Design. Optics.

PREMIUM MATERIAL & ADVANCED MANUFACTURING TECHNOLOGY

SAFETY RECORDS

- 20 years on the market (since 2010 for trifocal IOLs)

IMAGE QUALITY

- Highest ABBE no. (58) for the lowest chromatic aberration

PCO protection

- Low ionicity surface for less cell adhesion

RETINA PROTECTION

- UV blocker
- Violet light filtering

A LEADING HAPTIC DESIGN FOR ROTATIONAL STABILITY

PCO PROTECTION

- 360° posterior optic edge (≤ 10 um edge radius)

ROTATIONAL STABILITY

- Ergonomic-adaptive fit with optimal balance in haptic force – DOUBLE LOOP HAPTIC
- 180° contact angle between haptic and the capsular bag equator at 9 mm Ø

TRIFOCAL PERFORMANCE – SPECTACLE INDEPENDENCE

HIGH QUALITY OF VISION

- 7 steps in a precise diffractive array with a
- 3 mm diameter leaving a
- 75% refractive lens surface
- Minimal dysphotopic phenomena
- Superior contrast sensitivity
- Uncompromised near vision
- PUPIL DEPENDENT using physiological NEAR TRIAD

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Liberty 677PMY Technical Specification

Type	Single-piece hydrophilic intraocular lens for implantation into the capsular bag
Material	25% water content with UV absorber + blue light filter; Refractive Index 1.46; ABBE number 58
Optic design	Biconvex, aspheric, diffractive-refractive, apodized
Powers available*	8.0 D ⟶ +35.0 D · (increment: 0.5 D)*
Diffractive zone	EPS technology**, anterior surface, Ø 3.0 mm
Addition	+3.5 D (near); +1.75 D (intermediate)
A-constant***	118.9 (SRK/T)***
Dimensions	Overall length 13.0 mm; optic Ø 6.0 mm
PCO protection	360° Special Square Edge (patented)
Haptic angulation	0° – asymmetrical design with posterior vaulting
Sterilization	Steam (shelf life 5 years after sterilization)
Storage conditions	at +15 °C – +35 °C (15% – 50% humidity)

* Other powers upon request
** Patent pending
*** It is recommended that surgeons personalize the constants they use.

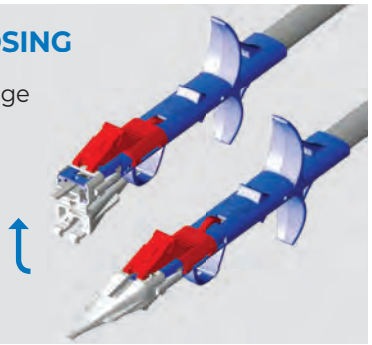
Single use injection system for Liberty 677PMY preloaded IOLs

1st CLICK **LOADING**

Put a drop of visco in the lens holder and insert the injector to the wet container.

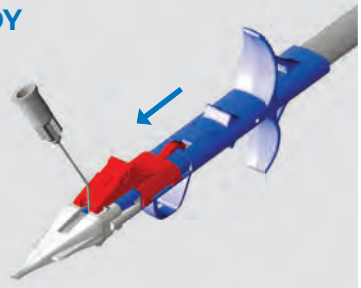
2nd CLICK **CLOSING**

Fold up the cartridge nozzle



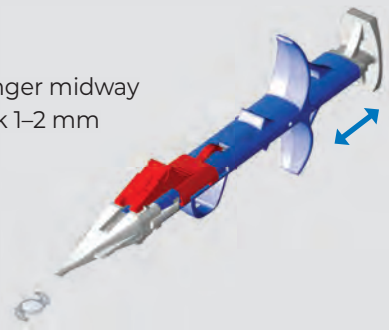
3rd CLICK **READY**

Push the red stopper forward to the end position and fill visco



INJECTION

Push the plunger midway then pull back 1–2 mm and continue pushing



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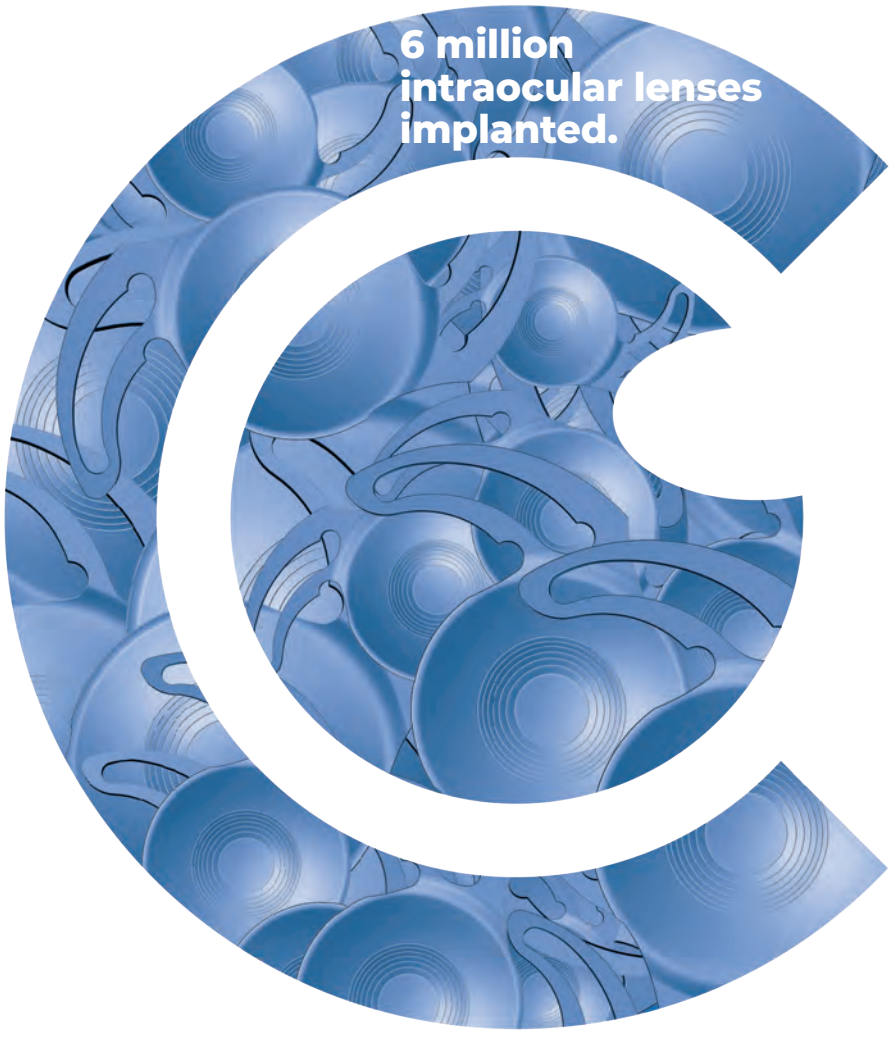
A. AF, Dunai et al. (Hungary) *Comparison of two multifocal IOL Types (50 Bi-Flex M &50 Acrysof IQ) – long term visual outcome*. ESCRS 2016, 2017. **B.** E. Van Acker, MD, (Belgium) *Comparison of clinical outcomes and patient satisfaction after implantation of two different types of diffractive apodized IOLs: 40 Bi-Flex M (based on PAD technology) 40 Finevision (Micro F) trifocal diffractive IOL. Prospective, randomized, observational study*. ESCRS 2017. **C.** J. György (Hungary) *Long term functional and morphological outcomes and patient satisfaction after cataract surgery with 100 BiFlex M implantation with/without posterior central circular capsulorhexis (PCCC)*. ESCRS 2016, 2017. **D.** J. Fernandez MD, PhD, (Spain) *Visual performance of patients implanted with progressive PAD Bi-Flex M analyzed by the Qvision iPAD Multifocal LensAnalyzer*. ESCRS 2017. **E.** E. Law et al. (UK) *Randomised clinical trial of the Bi-Flex M multifocal intraocular lens*. ESCRS 2017. **F.** A Dexl. (Austria) *Visual Outcome, Patient Satisfaction and Spectacle Independency after Implantation of 50 eyes with Progressive Bi-Flex M. Final Result of a Multicentric Trial with 50 Conscecutive Patients*. ESCRS 2015. **G.** C. Naval. (Philippines) *Evolution of multifocal practice*. ESCRS 2014. **H.** N. Meijide (Argentina) *Visual Outcomes After Bilateral Implantation of a New Progressive Apodized Diffractive Trifocal IOL*. Clinical outcome ASCRS 2018 ID 42517. **I.** J. García-Bella et al. (Spain) *Visual outcomes after progressive apodized diffractive intraocular lens implantation*. Eur J Ophthalmol. 2017 Sep. **J.** M. Assouline MD, PhD, (France) *Comparative Outcome of Four Multifocal Intraocular Lens*. ESCRS 2015.

FOCUS
on the patients vision since 1989

Medicontur stands
for consistent high quality,
proven by more than



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