

Trifocal IOLs

When expectations and outcomes align

SULCO**flex**
TRIFOCAL

Ray**One**
TRIFOCAL

Ray**One**
TRIFOCAL
TORIC

 Rayner

Leading the way in ophthalmic innovation

Rayner manufactured the world's first IOL in 1949, and has remained at the forefront of innovation for over 70 years, focused on providing you and your patients with the best IOLs and ophthalmic solutions - always driven by science to improve patient outcomes and safety.

Rayner is the only manufacturer of IOLs in the UK, with its state-of-the-art manufacturing plant and Global Headquarters on the South Coast of England.

1910

Rayner is founded in London, UK.

1949

Rayner makes the world's first IOL.

1979

Rayner has the first IOL approved by the US FDA.

2007

Rayner launches:

- The first multifocal toric IOL
- The first pseudophakic supplementary IOL
- The first FDA approved IOL from a non-American manufacturer in two decades.

2016

- Brand new HQ and state-of-the-art manufacturing facility opens in Worthing, UK.
- RayOne fully preloaded IOL system is unveiled at the 2016 ESCRS congress.
- Rayner acquires Moorfields Pharmaceuticals.

2017

RayOne Trifocal premium preloaded IOL is launched.

2018

- RayOne Hydrophobic and RayOne Toric preloaded IOLs are released.
- Sulcoflex Trifocal, the world's first supplementary trifocal IOL is launched.
- AEON eye drop family is introduced, designed specifically for before and after surgery.

2019

- RayPRO digital platform for patient reported outcomes data is released.
- RayOne Trifocal Toric is launched, completing Rayner's trifocal IOL family.

2020

RayOne Enhanced Monovision preloaded IOL is launched.

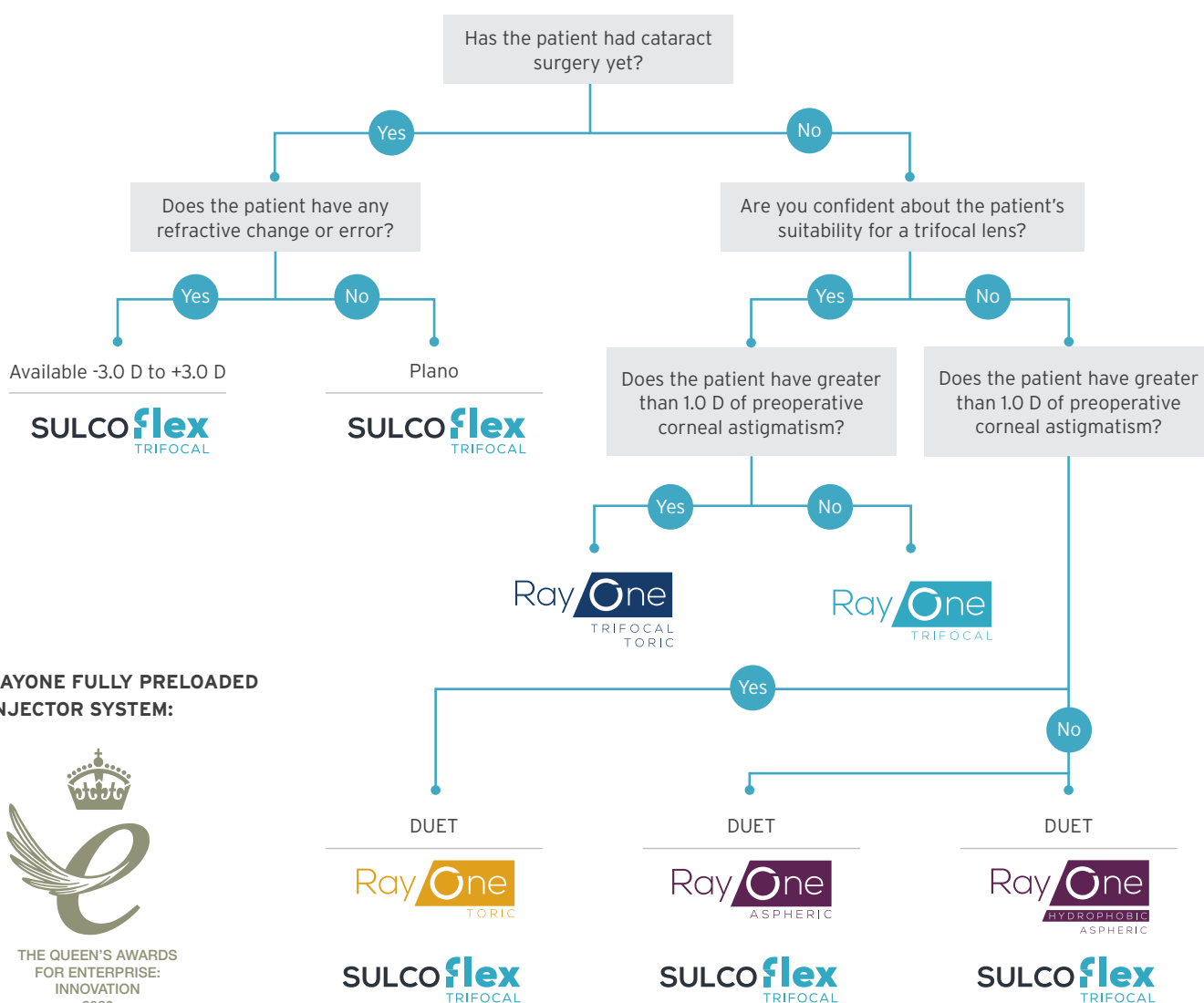


Trifocal IOL solutions for all your patients

Patient expectations from lens surgery are changing, with an increasing desire to be spectacle free as they continue to lead highly active and social lifestyles until much later in life.

Whether your patients are having cataract surgery or visiting you for refractive enhancement, our complete family of trifocal IOLs are clinically proven to provide them with the best visual outcomes.

- **RayOne Trifocal preloaded IOL** - for placement in the capsular bag
- **RayOne Trifocal Toric preloaded IOL** - for placement in the capsular bag and correction of preoperative corneal astigmatism
- **Sulcoflex Trifocal supplementary IOL** - for placement in the ciliary sulcus, with optional correction of refractive change or error



Optimised diffractive design

Our family of trifocal IOLs use Rayner's patented diffractive profile that was designed in partnership with a leading European technology institute.

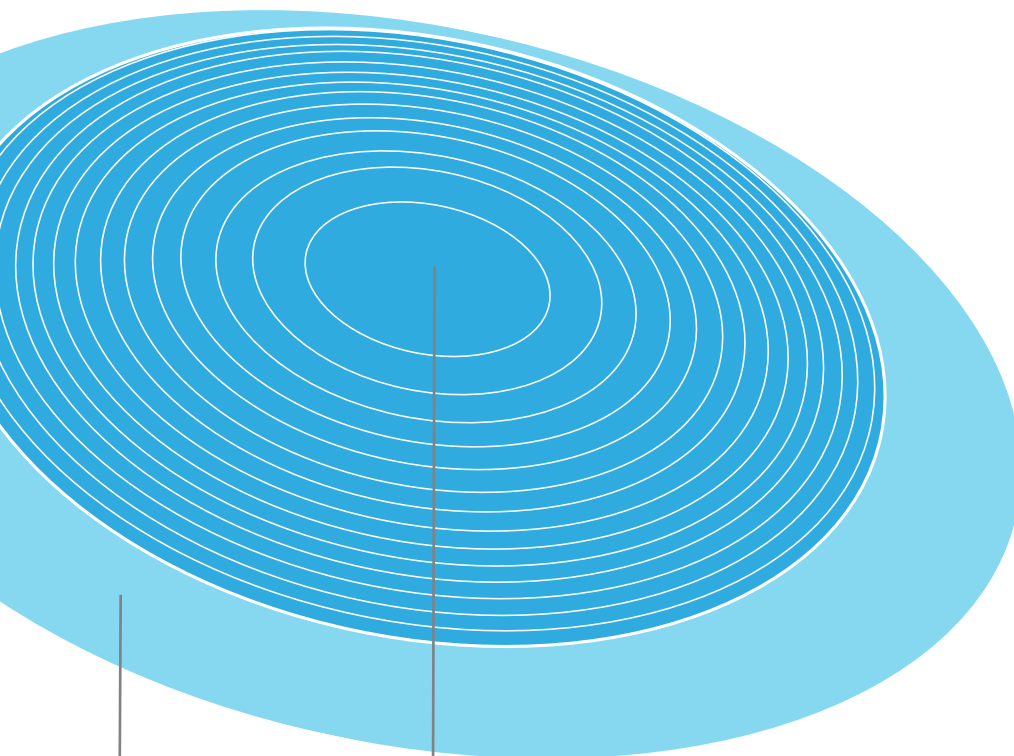
This new design of diffractive technology is the most advanced optic in our history and possibly the most advanced in the industry.

The diffractive surface is a construct of two profiles to form our patented design:



Graphical representations only of diffractive surface pattern.

Rayner's diffractive trifocal design has fewer rings on the optic surface than many trifocal IOLs for **reduced potential visual disturbances and improved night vision.**



>4.5 mm
distance zone

4.5 mm diffractive
trifocal zone

FEATURES

- 16 diffractive rings/steps
- 4.5 mm diffractive zone
- >4.5 mm monofocal, distance

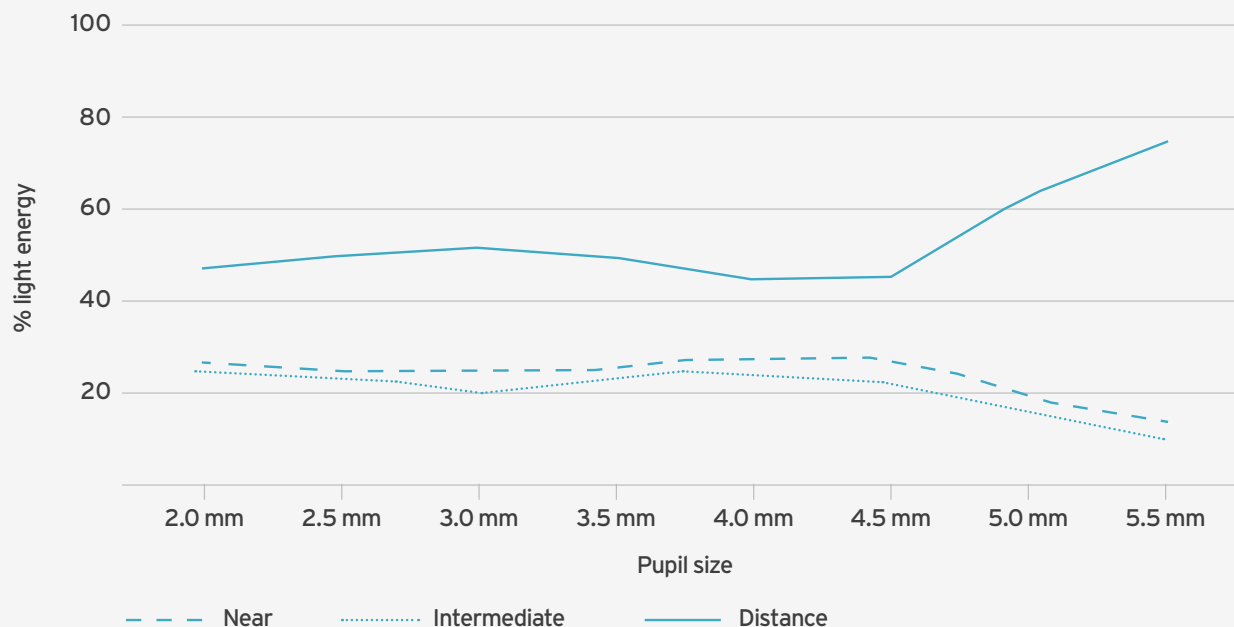
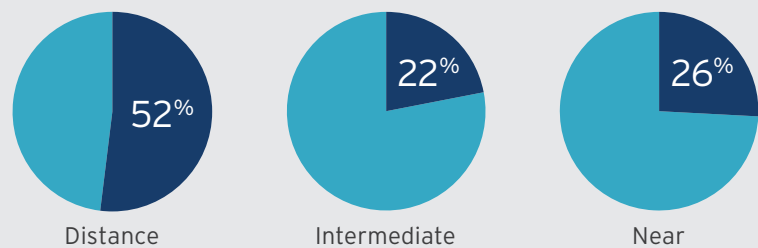
PATIENT BENEFITS

- Reduces visual disturbances
- Developed to be less dependent on pupil size or lighting conditions
- Improves distance vision in mesopic condition

Our patented diffractive step trifocal technology reduces light loss to only 11%

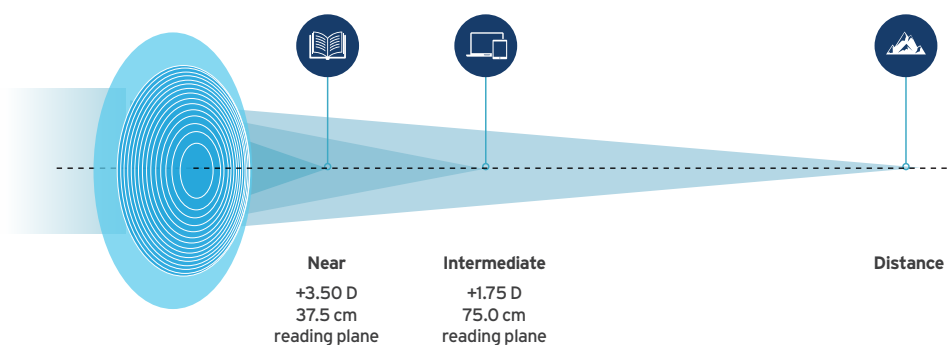
- 89% of light is transmitted to the retina with a pupil of 3.0 mm
- Half the light is allocated for distance
- Remaining light is divided between near and intermediate vision

Light energy split with a 3.0 mm pupil:



Comfortable transition from near to distance activities

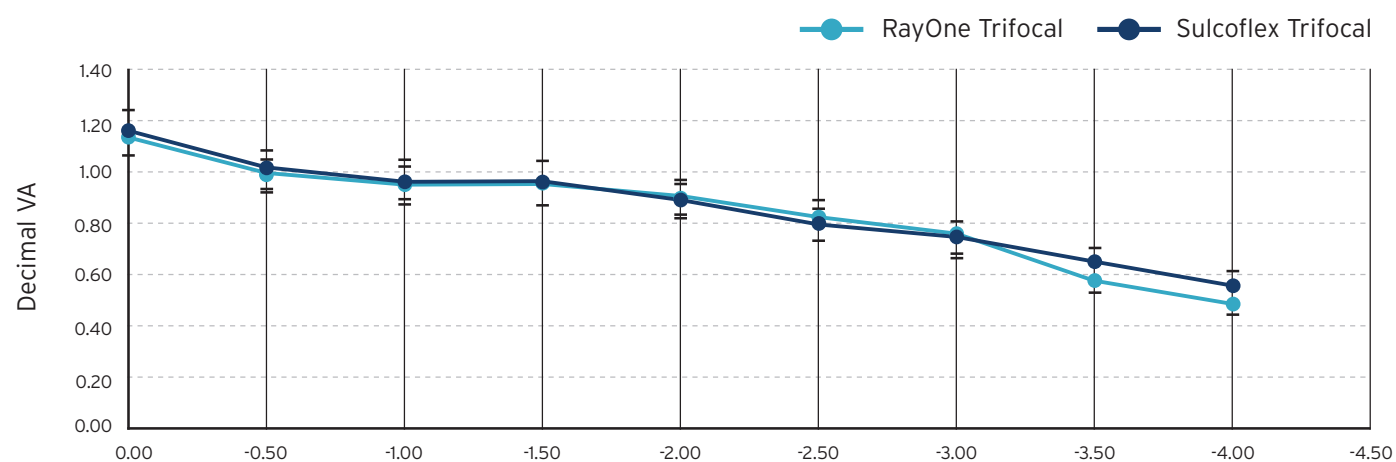
Our trifocal optic improves intermediate visual acuity, enabling patients to feel more comfortable transitioning from near to distance activities



Clinically-proven and industry leading trifocal technology

Comparable outcomes

In a retrospective study of RayOne Trifocal and Sulcoflex Trifocal in 40 eyes, the defocus curve shows comparable visual acuity results and reports similar outcomes.¹

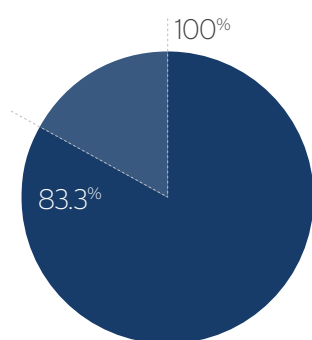


EXCELLENT REFRACTIVE PREDICTABILITY

At three months,

100%

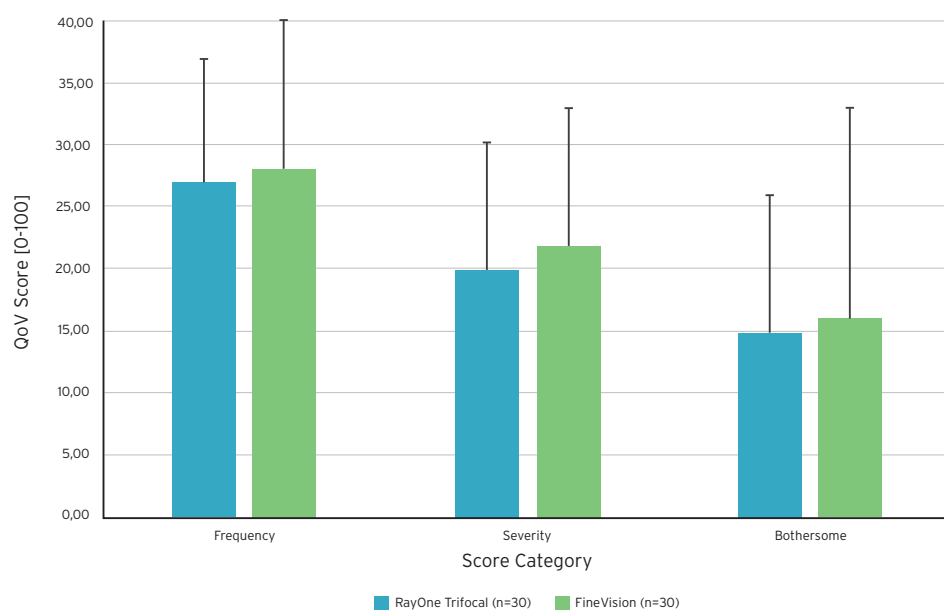
of eyes within $\pm 0.5D$
of the target SEQ²



vs. 83.3% with PhysIOL
FineVision POD F

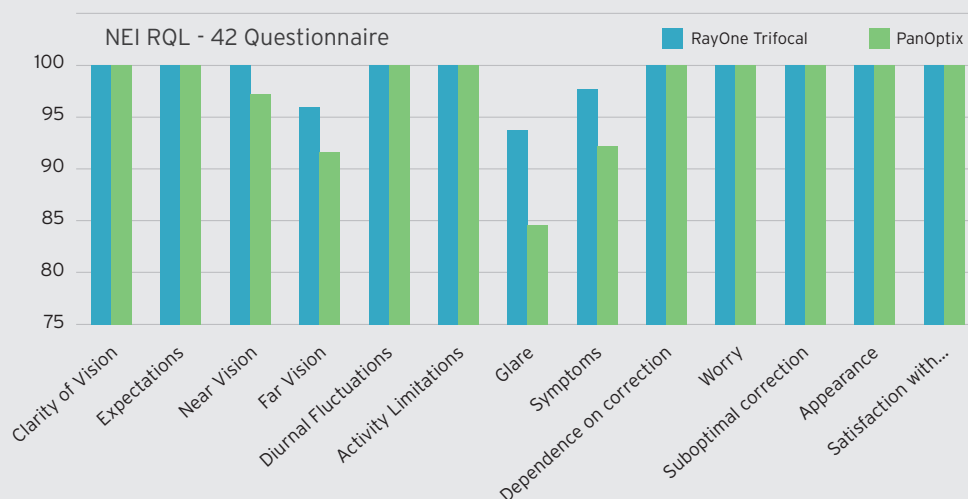
Less photic phenomena

In a prospective study of 60 eyes, a statistically significant difference favouring the RayOne Trifocal versus the FineVision POD F was achieved in an objective evaluation of photic phenomenon.²



Less photic phenomena and increased patient satisfaction

In a prospective comparative study of 64 eyes of 32 patients, the RayOne Trifocal group is associated with better scores for glare, symptoms and near and distance VA against the PanOptix Trifocal group.¹⁵



In a prospective comparative study of 60 eyes²

40% vs. 67%
Glare

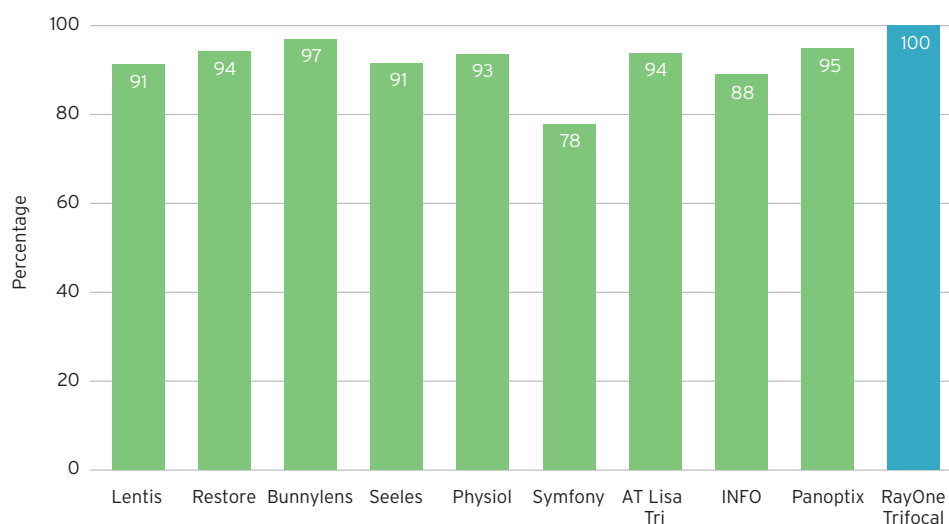
40% vs. 53%
Halos

7% vs. 33%
Difficulties in depth perception

RayOne Trifocal
FineVision POD F

100% spectacle independence

In a prospective study of 16 eyes implanted with RayOne Trifocal, 100% of patients achieved spectacle independence and agreed they would have the operation again at 1 month follow up.³



For me, the most important question for judging patient satisfaction asks...

'Would you repeat the treatment with the same procedure?'

and 100% said

'YES'

- Fernando Llovet-Osuna, MD,
PhD, Medical Director of Clínica
Baviera, Spain¹

RayOne Trifocal



THE QUEEN'S AWARDS
FOR ENTERPRISE:
INNOVATION
2020



STATS

- Industry leading 11% light loss²
- Diffractive +3.5 D near add, +1.75 D intermediate add
- Fully preloaded from 0.0 D to +30.0 D (0.5 D increments)

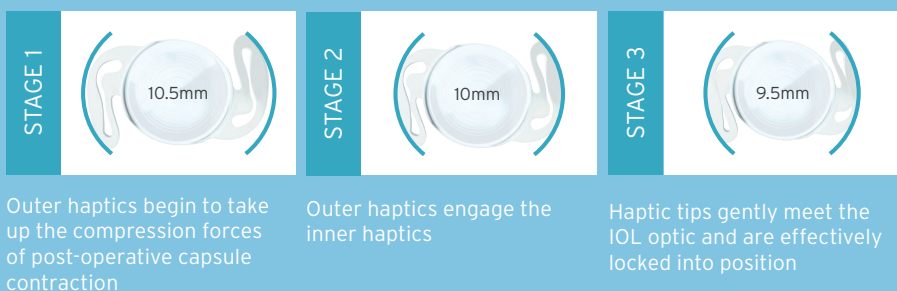
FEATURES & BENEFITS

- Aberration-neutral aspheric optic for visual quality and acuity in all light conditions
- Amon-Apple enhanced square edge for minimal PCO 1.7% at 24 months⁴
- Based on proven haptic technology for excellent stability⁵
- Zero glistenings
- Biocompatible hydrophilic acrylic material with a long safety record - over 7.5 million lenses sold since 2003
- Fully preloaded across the entire power range

Proven haptic technology for excellent stability

Any rotation, tilt or decentration of a multifocal lens could affect patient outcomes and cause photopic disturbances. Our anti-vaulting haptic technology gives proven rotational and centration stability, plus excellent fixation in the capsular bag:

- **Superb centration** - Average offset of only 0.08 mm 3 to 6 months after surgery⁵
- **Excellent rotational and torsional stability** - 1.83° mean IOL rotation 3 to 6 months after surgery⁵



RayOne Trifocal Toric



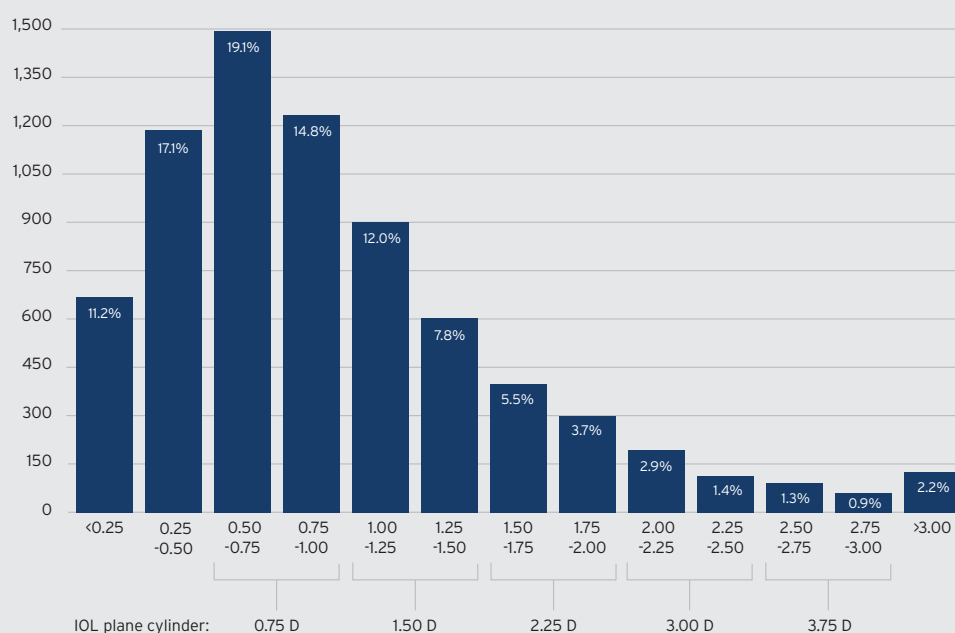
STATS

- 1.83° mean post-operative rotation at 3 to 6 months⁵
- 100% lenses rotated $\leq 5^\circ$ ⁵
- 0.08 mm average centration offset at 3 to 6 months⁵

FEATURES & BENEFITS

- Correct more of your patients, even those with significant corneal astigmatism.
- Proven rotational stability and centration⁵ with predictable, sustainable and accurate visual results
- Aberration-neutral aspheric optic for visual quality and acuity in all light conditions
- Fully preloaded across the entire power range
- Simplified range of IOL plane cylinders:
 - +0.75 D
 - +1.5 D
 - +2.25 D
 - +3.0 D
 - +3.75 D
 - +4.5 D

Prevalence of corneal astigmatism prior to cataract surgery



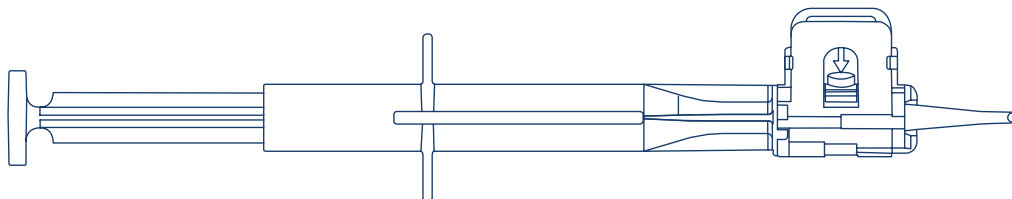
n = 6,000. Warren E. Hill, MD. Keratometry database.

RayOne injector



TWO-STEP SYSTEM

- Easy to use⁶
 - i. Minimal learning curve
 - ii. Minimises error
- Efficient IOL delivery time⁶
 - i. Designed for repeatability
 - ii. Reduces operating time
- **Step 1:** Insert OVD into cartridge via port
- **Step 2:** Lock cartridge ready for implantation



FEATURES & BENEFITS

- 1.65 mm nozzle for sub 2.2 mm incision
- Smallest fully preloaded injector nozzle
 - i. Ease of insertion
 - ii. Enables true micro incision
- Ergonomic design for ease of handling
- Single handed plunger with minimal force required
- Parallel sided for minimal stretch
 - i. Sub 2.2 mm delivery
 - ii. Maintains incision architecture

Unique patented Lock & Roll technology for consistent delivery

- Rolls the lens to under half its size before injection
 - i. Consistent, smoother delivery
 - ii. Reduces insertion forces
- Fully enclosed cartridge with no lens handling
 - i. Reduces the risk of lens damage
 - ii. Minimises chance of contamination

Lock & Roll technology



Consistently locked and rolled to under half its size in one simple action

Sulcoflex Trifocal



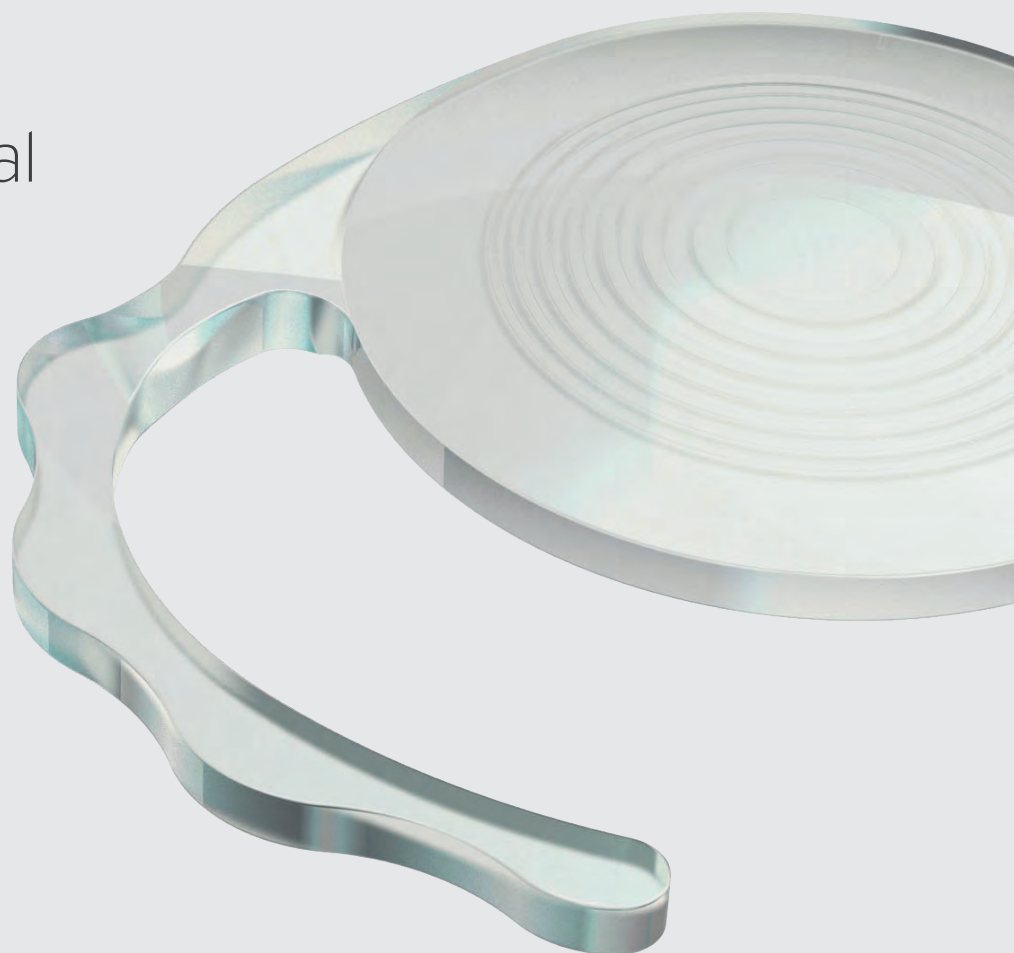
INDICATIONS^{8,12}

- Presbyopia (DUET procedure)
- Pseudophakic presbyopia* (secondary enhancement)
- Post-surgical ametropia
- Patients who have experienced a change in their post-op refraction

FEATURES & BENEFITS

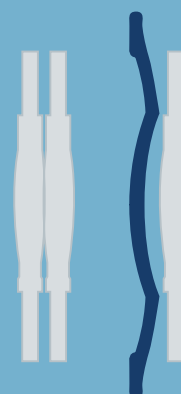
- Large 14.0 mm overall length with undulating haptics, designed for stable fixation in the ciliary sulcus
- Unique undulating round edge haptic design with 10° angulation
- Excellent centration stability compared to capsular bag fixated multifocal IOLs⁷
- Smooth undulating haptics to minimise the risk of adverse tissue reaction in the sulcus

*Contraindicated for implantation into eyes with multifocal capsular bag IOLs.

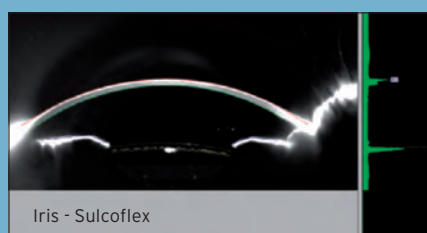


Designed to avoid the potential problems of conventional "piggy-back" IOLs^{8,9,10}

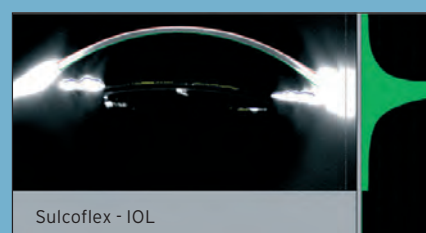
- Unique posterior concave surface minimises the possibility of interaction with the primary IOL
- Reduced likelihood of unwanted photopic effects
- Reduced refractive error with hyperopic defocus



Physical contact between the two IOLs minimised.



Iris - Sulcoflex



Sulcoflex - IOL

Sulcoflex Trifocal DUET procedure

What is a DUET procedure?

The Sulcoflex Trifocal DUET procedure involves the sequential implantation of a primary capsular bag IOL and a supplementary Sulcoflex Trifocal sulcus IOL. This is done as a planned DUET procedure during the initial cataract surgery.

The DUET is an easy procedure, adding little time to the overall cataract surgery, yet offers an elegant and adjustable solution.

How do I perform a DUET procedure?

During the DUET procedure the capsular bag IOL is implanted first and treats the sphere - and where required cylinder - correction power for distance vision.

Then a plano Sulcoflex Trifocal is implanted which features our patented trifocal optics with a +3.50 D add for near vision and +1.75 D add for intermediate vision.

Combining the two lenses provides the patient with an opportunity for a spectacle free solution.

Injector

Implantation of the Sulcoflex Trifocal is made easy with the Medice ACCUJECT 1.80-1 (LP604540) - recommended and provided by Rayner.



MEDICE ACCUJECT

Single handed injector with soft tip plunger. ACCUJECT's 1.8 mm nozzle tip allows for a sub 2.2 mm incision.

A wider patient selection with the Sulcoflex Trifocal DUET procedure

There are several reasons why a patient may not be suitable for a capsular bag multifocal IOL. Through the option of reversibility, the Sulcoflex Trifocal DUET procedure may offer a solution for these patients.

- Works with any monofocal or toric primary capsular bag IOL
- Available in 0.25 D increments from -3.0 to +3.0 D

Exploiting the benefits of reversibility and adjustability

Unlike capsular bag multifocal IOLs or refractive laser treatments, the Sulcoflex Trifocal DUET procedure is easily reversed. Refractive change or surprise cannot be predicted, and nor can a failure to neuroadapt. Through the DUET procedure, the optic system can be easily adjusted with a different Sulcoflex Trifocal or converted back to monofocality in a straightforward procedure.

- Plan for excellence with a simultaneous implantation
- Treat ametropia after cataract surgery
- Reversible – more flexibility for you and your patient

It may seem counter-intuitive to implant a lens in anticipation of its removal, but for premium channel cataract and refractive surgeons, the ability to offer patients the benefits of a specialist lens knowing that the procedure can be reversed at a later date, is highly reassuring.

The Sulcoflex Trifocal DUET procedure empowers surgeons with the ability to offer refractive treatments to their patients without needing to invest in expensive laser equipment. This cost-efficient treatment option can easily be incorporated into any existing cataract surgery environment.

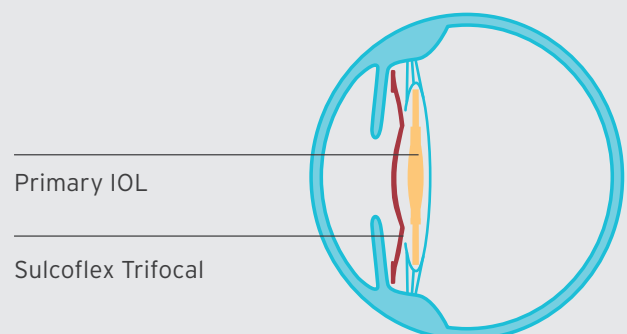
A new opportunity for pseudophakic patients

There are estimated to be 100 million pseudophakic patients globally, with approximately 92% having had a monofocal IOL implanted (Market Scope 2018). Although monofocal IOLs improve distance vision, patients are typically left spectacle dependent for tasks involving near and intermediate vision. With personal technology playing an important role in today's world and cataract patients remaining highly active until later in life, many are demanding the opportunity to become spectacle free.

Cataract patients may have been unaware of the trifocal IOL options available to them at the time of their original surgery. Sulcoflex Trifocal can be implanted any time after cataract surgery, irrespective of the monofocal or toric IOL in the capsular bag, giving pseudophakic patients the opportunity to perform near and intermediate distance tasks without the need for spectacles. Due to its reversibility, Sulcoflex Trifocal also allows patients that were previously deemed potentially unsuitable for trifocal IOLs to be re-evaluated.

Sulcoflex Trifocal creates new surgery opportunities for cataract and refractive surgeons, allowing them to offer a large population of pseudophakic patients the chance to become spectacle free with an adjustable and reversible solution.

For more information, visit the
Sulcoflex Trifocal patient website
www.sulcoflex.com



When considering a solution for presbyopia, what is important to you?

With the Rayner Sulcoflex platform, you can expect the following:

- Exceptional light usage
- Ease of use¹¹
- Efficacy and patient outcomes¹¹
- Versatility to treat a wider range of patients¹²
- An adjustable solution for peace of mind
- Increased accuracy with quarter dioptre steps

Predictability^{7,8,12}

- Proven to provide better centration compared to capsular bag multifocal IOLs
- Predictable refractive outcomes; high visual acuity

High patient satisfaction¹²

- Low complication rate
- Stable long-term refractive results

Reduced surgical risk associated with IOL exchange^{8,9,13}

- Less surgical trauma than primary IOL exchange
- Avoids sometimes difficult removal of fibrosed, fixated primary implant
- Allows for implantation reversibility



"The world's first trifocal supplementary IOL may be used in routine cataract procedures (DUET) or in pseudophakes for presbyopic correction. This IOL concept allows the surgeon to adjust the optical system to any unpredictable situation in the future."

Professor Michael Amon MD, Head of the Department of Ophthalmology at the Academic Teaching Hospital of St John, Vienna, Austria

Support the best visual outcomes with...

AEON

An eye drop family designed specifically to support visual outcomes and patient satisfaction before and after surgery.

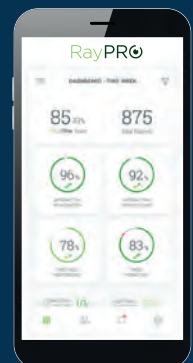
Learn more at
rayner.com/aeon



RayPRO

A free mobile and web-based digital platform that collects insightful Patient Reported Outcomes (PROs) over three years.

Learn more at
rayner.com/raypro



Technical information

Model Name	RayOne Trifocal RAO603F	RayOne Trifocal Toric RAO613Z	Sulcoflex Trifocal IOL703F
Power Range	Trifocal: 0.0 D to +30.0 D (0.5 D increments) Trifocal Toric: Spherical Equivalent: +6.0 D to +30.0 D (0.5 D increments) Cylinders: +0.75 D, +1.5 D, +2.25 D, +3.0 D, +3.75 D, +4.5 D Trifocal, diffractive, +3.5 D near add and +1.75 D intermediate add at the IOL plane		-3.0 D to +3.0 D (0.25 D increments) Trifocal, diffractive, +3.5 D near add and +1.75 D intermediate add at the IOL plane

	RayOne IOLs	Sulcoflex Trifocal IOL
Material	Single piece Rayacryl hydrophilic acrylic	Single piece Rayacryl hydrophilic acrylic
Water Content	26% in equilibrium	26% in equilibrium
UV Protection	Benzophenone UV absorbing agent	Benzophenone UV absorbing agent
UV Light Transmission	UV 10% cut-off is 380 nm	UV 10% cut-off is 380 nm
Refractive Index	1.46	1.46
ABBE	56	56
Overall Diameter	12.5 mm	14 mm
Optic Diameter	6 mm	6.5 mm
Optic Shape	Biconvex (positive powers)	Anterior convex, posterior concave
Asphericity	Aberration-neutral technology	Aberration-neutral technology
Optic Edge Design	Amon-Apple 360° enhanced square edge	
Haptic Angulation	0°, uniplanar	10° Posterior
Haptic Style	Anti-Vaulting Haptic (AVH) technology	Undulating and rounded C-loop haptics
Estimated constant for power calc.		Expected lens position 4.5 mm

	RayOne delivery system	Sulcoflex Trifocal delivery system
Injector Type	Single use, fully preloaded IOL injection system	Medice ACCUJECT 1.80-1 (LP604540)
Incision Size	1.65 mm nozzle for sub 2.2 mm incision	1.8 mm nozzle for sub 2.2 mm incision
Bevel Angle	45°	35°
Lens Delivery	Single handed plunger	Single handed plunger

Estimated Constants for Optical Biometry									
	SRK/T	Haigis			HofferQ	Holladay	Holladay II	Barrett Universal II	
	A-constant	a0	a1	a2	pACD	SF	pACD	LF	DF
RayOne Trifocal & RayOne Trifocal Toric	118.6	1.044	0.40	0.10	5.32	1.56	5.32	1.67	3.5

For Contact Ultrasound, the estimated A-constant is 118.0

Please note that the constants indicated for all Rayner lenses are estimates and are for guidance purposes only. Surgeons must always expect to personalise their own constants based on initial patient outcomes, with further personalisation as the number of eyes increases.

For Sulcoflex Trifocal lens calculations,

visit www.raytrace.rayner.com

References:

1.Eurotimes Supplement Feb 2019. RayOne Trifocal & Sulcoflex Trifocal. 2.Ferreira TB and Ribeiro FJ. J Refract Surg. 2019;35(7):418-425. 3.De Lange J. Ophthalmology Times Europe article March 2019. 4.Mathew RG and Coombes AGA. Ophthalmic Surg Lasers Imaging. 2010 Nov-Dec;41(6):651-5. 5.Bhogal-Bhamra GK et al. Journal of Refractive Surgery. 2019;35(1):48-53. 6.Nanavaty MA and Kubrak-Kisza M. J Cataract Refract Surg. 2017 Apr;43(4):558-563. 7.Prager F et al. J Cataract Refract Surg. 2017;43(5):643-647. 8.Amon MI. Cataract Refract Surg Today Europe. 2009;56-9. 9.Kahraman G and Amon M. J Cataract Refract Surg. 2010 Jul;36(7):1090-4. 10.Manzouri B et al. Asia-Pacific Journal of Ophthalmology. Vol 6, Number 4, July/August 2017. 11.Khan MI, Muhtaseb M. CRSTE June 2010. 12.Claoué et al. CRST Euro Supple. 2009. 13.Amon MI et al. ESCRS Euro Times Supple. 2012;2-3. 14.Khoramnia R et al. J Refract Surg. 2020;36(9):570-577. 15. Data on file, Jan 2021.



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Rayner Intraocular Lenses Limited, 10 Dominion Way, Worthing, West Sussex, BN14 8AQ.
Registered in England: 615539. EC 2021-03 12/21



MADE IN UK



Monofocal IOLs

Designed to deliver without compromise

RayOne
HYDROPHOBIC
BLF

RayOne
HYDROPHOBIC
ASPHERIC

RayOne
ASPHERIC

RayOne
SPHERIC

RayOne
TORIC

SULCOflex
ASPHERIC

SULCOflex
TORIC

Rayner

Leading the way in ophthalmic innovation

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2020

RayOne EMV premium preloaded IOL is launched.

2021

RayOne Hydrophobic BLF is released, Rayner's first blue light filtering IOL.



Monofocal IOL solutions for all your patients

RayOne - for placement in the capsular bag

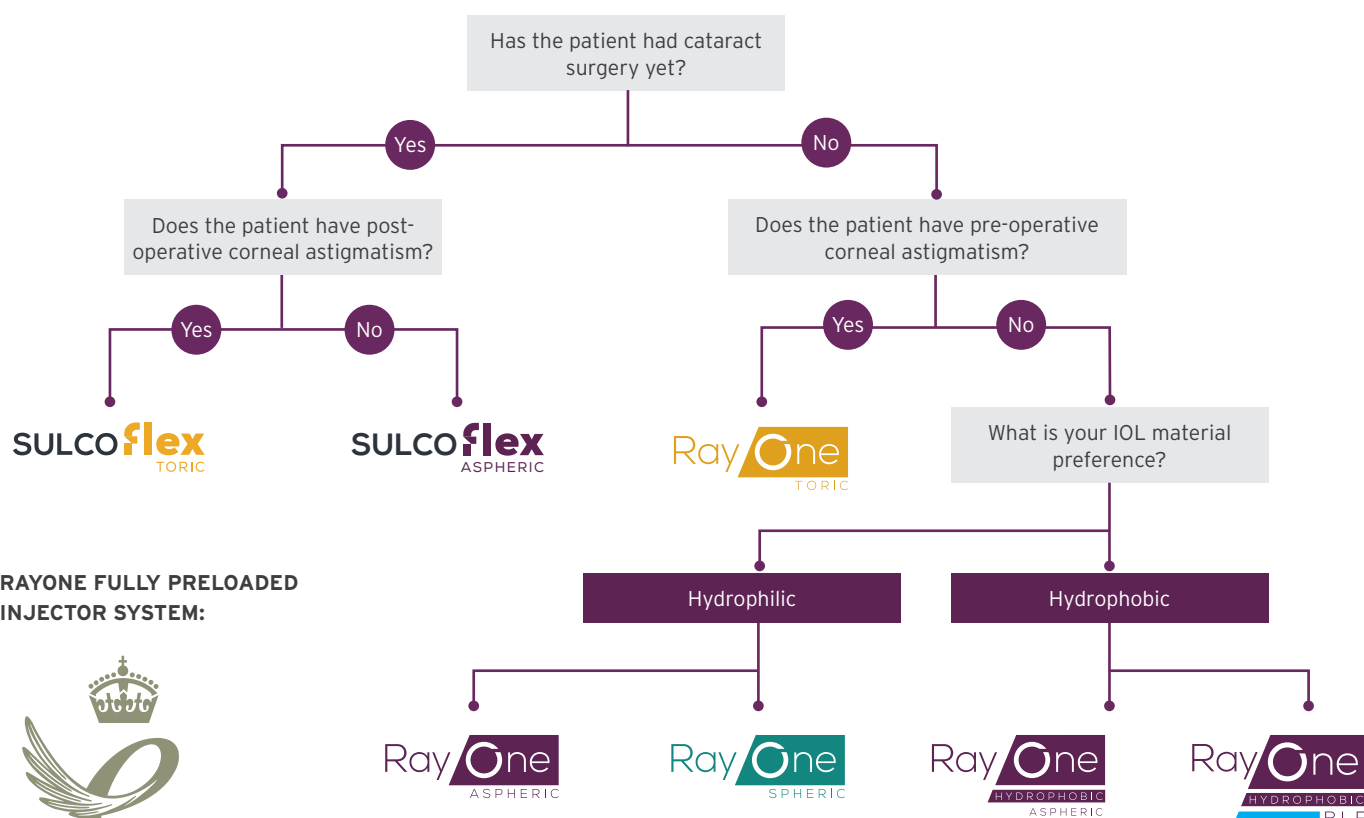
When creating RayOne, we developed our MICS lens and unique patented Lock & Roll technology as part of the same design process; this combination has resulted in the smallest fully preloaded injector available (1.65 mm nozzle) for a 2.2 mm incision.

Our hydrophobic and hydrophilic MICS lenses are born out of a desire to deliver a better operating room experience for surgeons and better visual outcomes for patients, by challenging the current IOL solutions available to them.

Sulcoflex - for placement in the ciliary sulcus

As a cataract and refractive surgeon, achieving the best possible visual results for your patients is paramount. But sometimes even the best patient selection and most accurate work can result in a refractive surprise.

Our Sulcoflex supplementary IOLs are designed to be implanted in the ciliary sulcus to correct residual post-operative refractive errors following the implantation of a conventional IOL in the capsular bag.

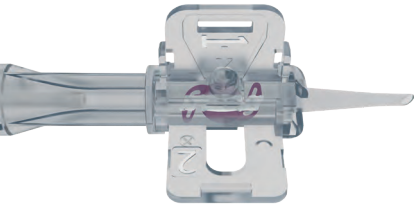


RAYONE FULLY PRELOADED
INJECTOR SYSTEM:



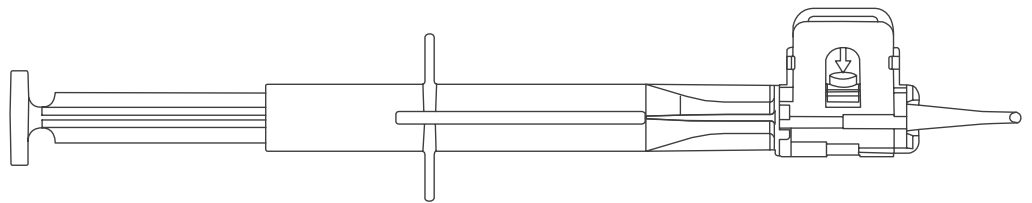
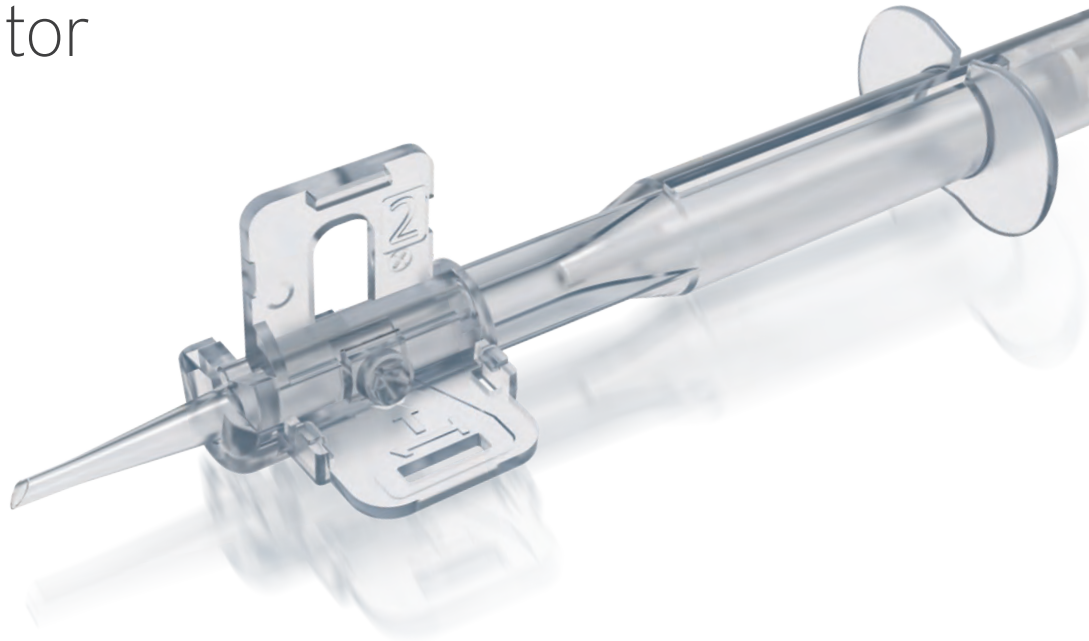
THE QUEEN'S AWARDS
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2020

RayOne injector



TWO-STEP SYSTEM

- **Step 1:** Insert OVD into cartridge via port
- **Step 2:** Lock cartridge ready for implantation
- Easy to use¹⁵
 - Minimal learning curve
 - Minimises error
- Efficient IOL delivery time¹⁵
 - Designed for repeatability
 - Reduces operating time



FEATURES & BENEFITS

- 1.65 mm nozzle for 2.2 mm incision
- Smallest fully preloaded injector nozzle
 - Ease of insertion
 - Enables true micro incision
- Parallel sided for minimal stretch
 - 2.2 mm delivery
 - Maintains incision architecture
- Ergonomic design for ease of handling
- Single handed plunger with minimal force required

Unique patented Lock & Roll technology for consistent delivery

- Rolls the lens to under half its size before injection
 - Consistent, smoother delivery
 - Reduces insertion forces
- Fully enclosed cartridge with no lens handling
 - Reduces the risk of lens damage
 - Minimises chance of contamination

Lock & Roll technology



Consistently locked and rolled to under half its size in one simple action

In a comparative study of six market-leading preloaded delivery systems¹⁵

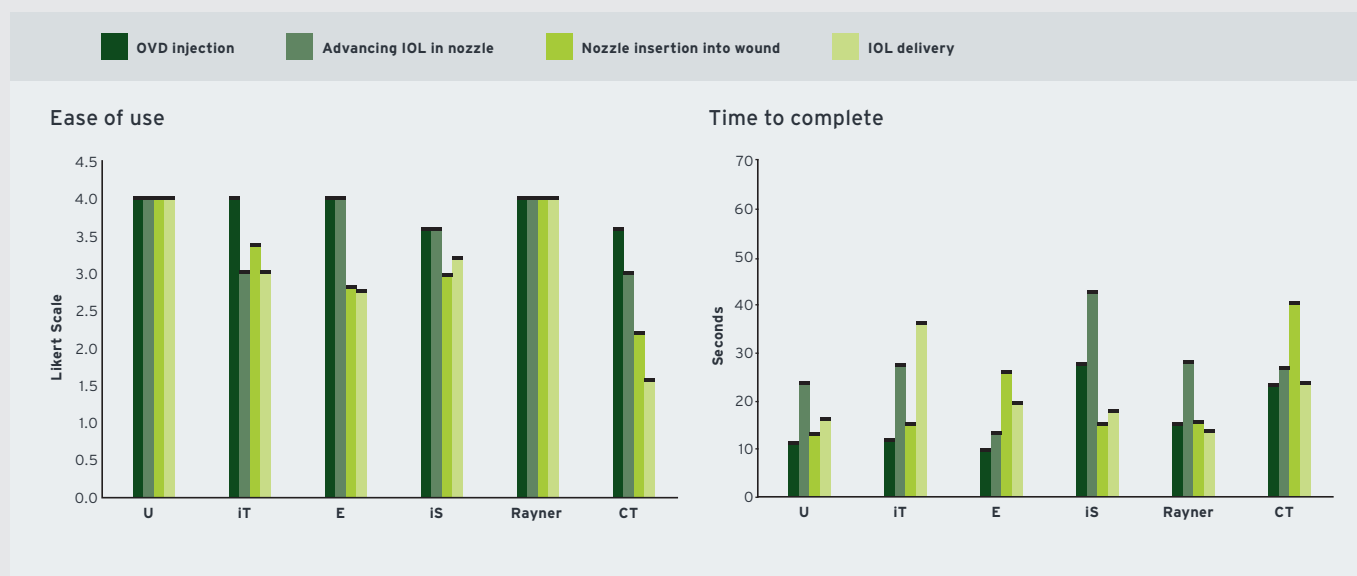
1. RayOne received the maximum score for 'ease of use' for all delivery steps:



2. RayOne was the least time consuming system for delivering the IOL

3. RayOne showed less injector tip damage post-insertion than 50% of the tested delivery systems

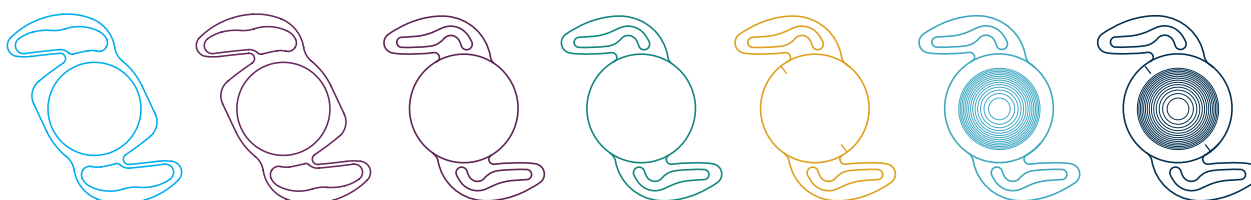
4. RayOne showed minimal wound stretch compared to other tested delivery systems when through a 2.2 mm incision



Ultrasert (U) (Alcon Laboratories, Inc.), iTec (IT) (Abbott Medical Optics, Inc.), Eyecee (E) (Bausch & Lomb, Inc.), iSert (IS) (Hoya Surgical Optics, Inc.), and CT Lucia (CT) (Carl Zeiss Meditec AG). All trademarks are property of their respective owners

One injector for all RayOne IOLs

A single fully preloaded and repeatable injector for all RayOne IOLs reduces training for clinic teams and supports surgeon confidence in the operating room.



RayOne Hydrophobic / Hydrophobic BLF



KEY INFORMATION

- Ultra glistening-free
- Ultra smooth delivery
- Ultra stable positioning
- Fully preloaded across the entire power range



FEATURES & BENEFITS

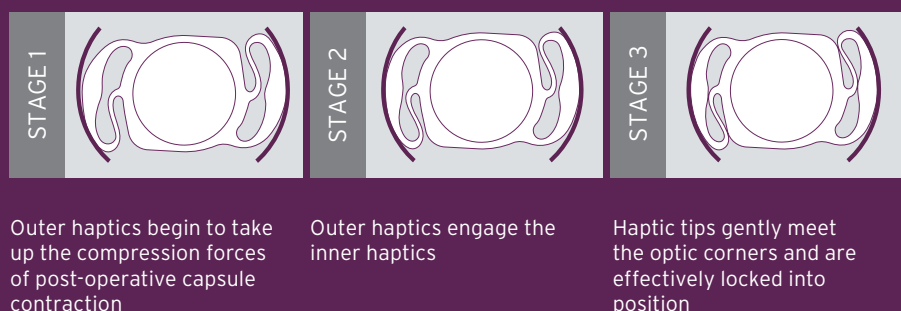
- Aberration-neutral technology for visual quality and acuity in all light conditions.
- Thanks to their Amon-Apple 360° Enhanced Square Edge and natural bioadhesivity, our hydrophobic lenses are designed to minimise the risk of PCO.
- Rayner's anti-vaulting haptics lock against the unique Cornerstone tabs for superb stability
- Our patented Lock & Roll system rolls the lens inside the injector for a single smooth movement into the eye.
- Available with blue light filtering properties.

Cornerstone technology

Our patented Cornerstone lens design ensures the IOL is perfectly balanced as it travels down the injector nozzle. Once in the eye, Rayner's anti-vaulting haptics lock against the unique Cornerstone tabs for superb stability.

In the eye

Combining the Cornerstone tabs with our anti-vaulting haptic technology creates superb stability once inside the capsular bag.



Designed for a better experience than current hydrophobic IOLs

Unwilling to accept the compromises inherent with many hydrophobic lenses, RayOne Hydrophobic and RayOne Hydrophobic BLF are designed to provide patients with the visual outcomes they demand in a high performing preloaded system that supports surgeons in the operating room.

Fully preloaded power range

Only one IOL solution is needed for all your monofocal patients.

- RayOne Hydrophobic -10.0 D to +32.0 D
- RayOne Hydrophobic BLF +0.0 D to +32.0 D

Always ready to implant

Our proprietary material is not dependent on the temperature within the operating theatre, so it arrives ready-to-use with no warming or waiting needed.

Improved performance and quality

All hydrophobic acrylic IOLs absorb water once *in situ* within the eye, causing expansion in size. Our lenses are supplied in 0.9% saline solution so that they are in an equilibrated state and dimensionally stable from manufacture to implantation - reducing the chance of undesirable post-implant lens movement.

RayOne Hydrophobic

Superb stability in the eye:

- ✓ Unique lens design combines our Cornerstone shape with anti-vaulting haptics for stability from the nozzle and into the eye
- ✓ Dimensionally stable

Optimised visual qualities:

- ✓ Ultra glistening-free
- ✓ Aspheric, aberration-neutral design
- ✓ UV protection

Minimised risk of complications:

- ✓ 2.2 mm incision via 1.65 mm injector nozzle
- ✓ Designed to minimise PCO due to Amon-Apple 360° Enhanced Square Edge

Easy to use and manage:

- ✓ Fully preloaded, true 2-step injector system with patented Lock & Roll technology
- ✓ Proprietary hydrophobic material with no warming or waiting required
- ✓ Full power range (-10.0 D to +32.0 D) means only one monofocal solution for all your patients

RayOne Hydrophobic BLF

NEW

All the benefits of our RayOne Hydrophobic fully preloaded aspheric monofocal IOL, also available with a blue light filter.

RayOne Hydrophobic BLF is designed to provide patients with good functional vision following cataract removal with the additional benefit of blue light filtering properties.

- ✓ A small amount of blue light is still transmitted through the lens in order to stimulate the natural circadian rhythm for a healthy sleep-wake cycle.
- ✓ Could help to protect patients' retinas from potentially harmful blue light.
- ✓ Simulates the natural crystalline lens.
- ✓ May be useful in reducing the risk of Age-related Macular Degeneration (AMD) in pseudophakic eyes.



RayOne Hydrophobic / Hydrophobic BLF

LENS DELIVERY

As hydrophobic lenses are made of a naturally stiffer material than their hydrophilic counterparts, they are typically more difficult to compress and fold inside the injector.

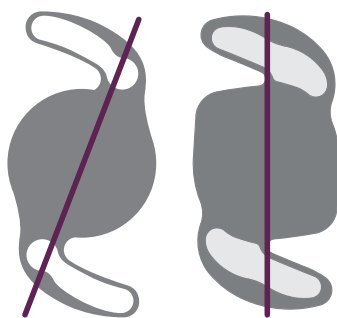
If the IOL is not folded symmetrically then it can exit the injector nozzle unpredictably – for example, in the undesired ‘S’ position.

Our Cornerstone tabs balance the volume of material on both sides of the lens – resulting in:

- Balanced weighting inside the injector
- Controlled haptic orientation
- Controlled speed of exit

HOW IT WORKS

Our Lock & Roll system rolls the hydrophobic lens with improved symmetry, meaning that it travels down the injector nozzle in a more stable and predictable manner, with a controlled exit into a ‘Z’ orientation.



Traditional lens design

RayOne Hydrophobic

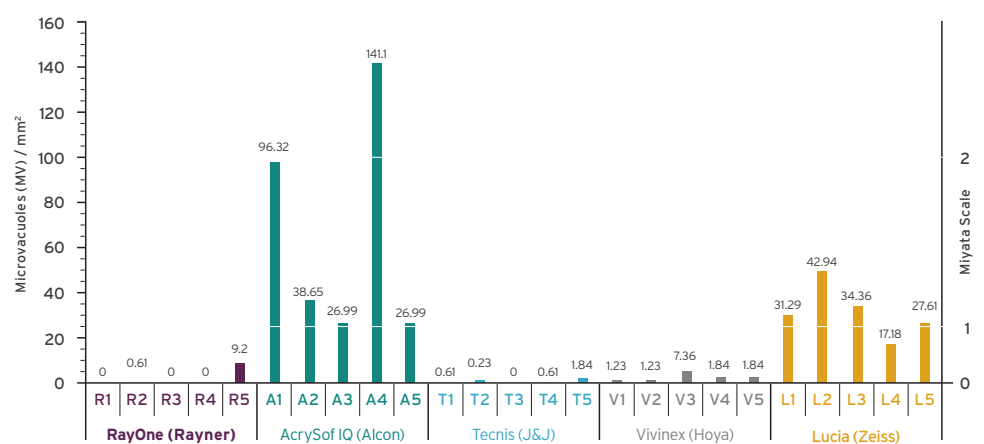
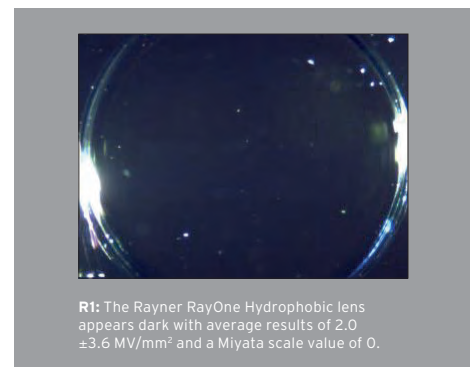
The difference with RayOne Hydrophobic

Glistenings are fluid-filled microvacuoles that form within the matrix of the lens when exposed to an aqueous environment. High levels of glistenings can create disturbances for patients, with the scattering of light impacting their contrast sensitivity and unnecessarily compromising their post-surgery satisfaction.

Independent comparative study

Following an established protocol, RayOne Hydrophobic was tested against four commercially available hydrophobic IOLs. Five IOLs of each model were subjected to an in-vitro aging procedure designed to simulate clinical conditions over time, with the resultant level of glistenings in each IOL material evaluated.

The images below are from an independent study conducted at the University Hospital Heidelberg in Germany. They show the results after glistening induction at 14x magnification.



RayOne Hydrophobic reached ‘significantly lower mean glistening numbers’ compared to the AcrySof IQ (Alcon) and Lucia (Zeiss) IOLs ($P < 0.05$).¹ A score below one on the clinical Miyata scale will not produce any significant visible glistenings on a slit lamp examination and is considered ‘glistening-free’.

The independent study report concludes that RayOne Hydrophobic shows ‘high resistance to microvacuole formation’ and is equivalent or superior to the best hydrophobic IOLs currently available on the market.¹

Clinical outcomes

Dr. Kevin Waltz, Dr. Gabriel Quesada and Dr. Marco Robles performed the World's first RayOne Hydrophobic implantations in El Salvador, Central America.

Extract from article in Cataract & Refractive Surgery Today Europe (Nov/Dec 2018 Edition):

Before this series of hydrophobic IOL implantations, all three of us had used the preloaded Rayner RayOne Aspheric hydrophilic IOL and injector to establish a comparative baseline and gain a feel for the system. The hydrophobic IOL and injector system's performance was similar, if not identical, to that of the hydrophilic platform in terms of ease of insertion and refractive predictability.

A total of 50 eyes were implanted over the course of one week in El Salvador. Average patient age was 73 years. The cataracts we encountered, in general, were quite dense (20/200 or worse preoperative visual acuity), often with small pupils that created a challenging surgical environment. The RayOne Hydrophobic IOL and injector platform

performed well in this environment, achieving reliable insertion of the IOL into the capsular bag, even through small pupils.

The data [collected postoperatively] demonstrated predictable, stable refraction and visual acuity over the first three months after implantation. Four eyes were excluded from final data analysis due to macular pathology that was not identified preoperatively due to dense cataract.

The Cornerstone lens shape was developed to improve the consistency of the planar delivery of the IOL. It improves the stability of the IOL as it transits the injector cartridge, ensuring consistent delivery into the capsular bag.

The RayOne Hydrophobic was safe and reliable in this small series with limited follow up. Refractive outcomes were excellent, reflecting stable and predictable effective lens position. There was no variation of visual acuity over the three months of data collection. All surgeons found the IOL easy to use with good stability and centration in all cases.

Postoperative Manifest Refraction and Visual Acuity

No. Eyes	Follow-up visit	SE $\pm$ SD	Sphere $\pm$ SD	Cylinder $\pm$ SD	LogMAR VA
46	Month 1	+0.25 $\pm$ 0.60	+0.72 $\pm$ 0.18	+0.94 $\pm$ 0.53	+0.05 $\pm$ 0.08
46	Month 3	+0.17 $\pm$ 0.55	+0.69 $\pm$ 0.53	+1.04 $\pm$ 0.53	+0.06 $\pm$ 0.10

Abbreviations: No. = number; SE = spherical equivalent; SD = standard deviation; VA = visual acuity

Professor Thomas Kohnen, Chair of the Department of Ophthalmology Goethe University, Frankfurt, Germany implanted the World's first RayOne Hydrophobic IOL post-CE mark in May 2018.

Summary of Professor Kohnen's presentation at the 2018 ESCRS congress in Vienna:

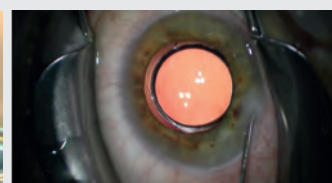
Professor Kohnen commented on the surgery "nice to see in the first implantation there was very smooth delivery of the IOL into the capsular bag" and with regards to the Cornerstone technology he stated this "gives better stability to the IOL. From my perspective, a very nice implantation, very easy to do and very much in the standards of the current monofocals."

Professor Kohnen described the injector system as "simple and intuitive with minimal learning curve", and when

addressing the complete power range of -10.0 D to +32.0 D he stated "this is a very smart move, because if you go into the myopic range, then you can really cover the whole range, many companies unfortunately stop at +10.0 D or +6.0 D."



Professor Kohnen implanting the first RayOne Hydrophobic.



RayOne Hydrophobic centred in the capsular bag.

RayOne Aspheric / Spheric / Toric



KEY INFORMATION

- Amon-Apple enhanced square edge for minimal PCO 1.7% at 24 months²
- Average offset of only 0.08 mm 3 to 6 months after surgery³
- 1.83° mean IOL rotation 3 to 6 months after surgery³

FEATURES & BENEFITS

Available as:

- Spheric
- Aberration-neutral aspheric
- Aberration-neutral aspheric toric

- RayOne Toric is available in an extensive range of sphere and cylinder powers, allowing you to accurately correct more of your patients, even those with significant corneal astigmatism.

Largest fully preloaded power range on the market - one solution for all your patients:

- Aspheric & Spheric
-10.0 D to +34.0 D sphere
- Toric: -9.5 D to +34.5 D SE,
+1.0 D to +11.0 D cylinder

*Of those who expressed a preference



HYDROPHILIC
MATERIAL

When considering an intraocular lens, what's important to you?

RayOne Aspheric and RayOne Toric are designed with an aspheric anterior surface that creates no spherical aberration.

Studies have demonstrated that aberration-neutral technology:

- Offers improved contrast sensitivity compared with spherical IOLs^{4,5}
- Provides better low light level visual acuity than spherical IOLs⁶
- Can offer more depth of field than aberration-negative IOLs by retention of the patient's natural level of corneal spherical aberration⁷
- Are less susceptible to the effects of decentration than aberration-negative IOLs⁸
- Twice as many patients* preferred the aberration-neutral IOL than aberration-negative⁷
- Three times fewer reports of visual disturbances with the aberration-neutral IOL than aberration-negative⁷

Reducing dysphotopsia by design

- Rayner's Enhanced Square Edge Technology shows no general increase in glare from previous models without a square edge²
- Low refractive index (1.46)

VACUOLE FREE MATERIAL FOR A GLISTENING FREE IOL

- Single piece IOL created from a homogeneous material free of microvacuoles⁹
- Compressible material for delivery through a micro incision
- Excellent handling characteristics with controlled unfolding within the capsular bag
- Low silicone oil adherence¹⁰
- Excellent uveal biocompatibility¹¹
- Hydrophilic acrylic material with low inflammatory response¹²

HOW MANY OF YOUR PATIENTS WOULD BENEFIT FROM A RAYONE TORIC IOL?

Prevalence of pre-operative corneal astigmatism in a cross-sectional study of 746 patients (1,230 eyes):¹³

**Over
40%**
presented
with >1.0 D of
astigmatism

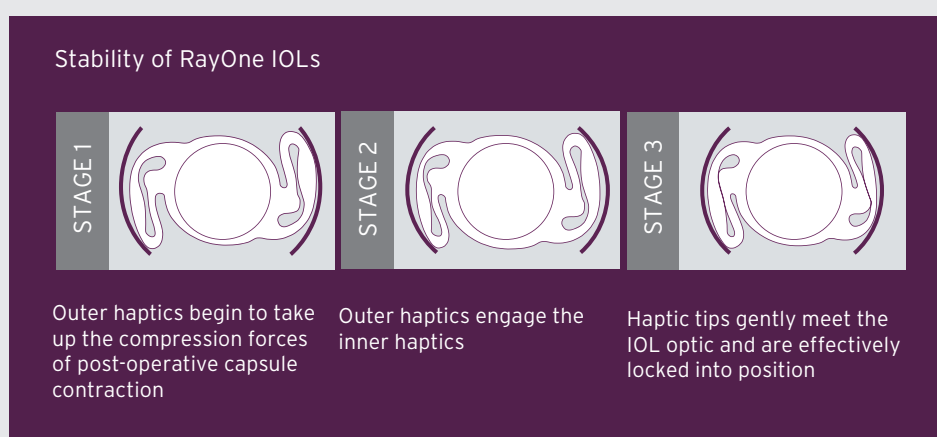
**More than
20%**
presented
with >1.5 D of
astigmatism

360° Optimised Barrier to reduce PCO

Rayner's 360° Amon-Apple Enhanced Square Edge creates an optimum barrier to reduce epithelial cell migration including at the haptic-optic junction.^{2,14}

ND: YAG CAPSULOTOMY RATES ²		MEAN TIME TO ND: YAG CAPSULOTOMY ²
At 12 months	0.6%	9.3 ± 5.5 mths (range 2.6 - 22.7 mths) Follow-up period: 5.3 - 29 mths
At 24 months	1.7%	

Extremely low Nd:YAG capsulotomy rates, comparable with hydrophobic acrylic lenses with square-edge optics.²



Proven rotational stability and centration with predictable, sustainable and accurate visual results

Just one degree of misalignment results in about 3.5% loss of cylindrical correction, two degrees up to about 7%, and 10 degrees more than 34%.

In a prospective study in 66 eyes³:

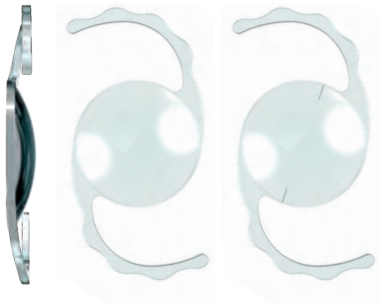
1.83° +/- 1.44°

rotation 3 to 6 months
after surgery

0.08 +/- 0.37mm

decentration 3 to 6 months
after surgery

Sulcoflex Aspheric / Toric



KEY INFORMATION

- Safe, predictable and effective at improving uncorrected Visual Acuity¹⁶
- Enhances post-operative refractive results^{16,23,24}
- Aspheric available in -10.0 D to +10.0 D (0.5 D increments)



HYDROPHILIC
MATERIAL

FEATURES & BENEFITS

Large 6.5 mm round-edged optic, designed to:

- Reduce the risk of pupillary block and photic effects
- Reduce risk of optic-iris capture¹⁸
- Minimise edge glare and associated dysphotopsia¹⁸

Large 14.0 mm overall length:

- Smooth undulating haptics to minimise the risk of adverse tissue reaction in the ciliary sulcus, with 10° angulation
- Excellent centration stability compared to capsular bag fixated IOLs²⁰
- Reduced risk of uveal contact and abrasion¹⁸

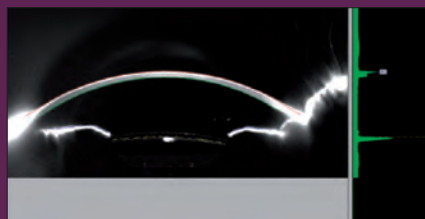
Designed to avoid the potential problems of conventional 'piggy-back' IOLs^{18,21,22}

- Unique posterior concave surface, minimises the possibility of interaction with the primary IOL
- Reduced likelihood of unwanted photopic effects
- Reduced refractive error with hyperopic defocus

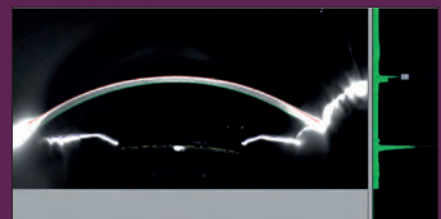


Physical contact between the two IOLs minimised.

Iris - Sulcoflex



Sulcoflex - IOL



An elegant solution for treating refractive surprise - over 12 years of patient data.

Sulcoflex pseudophakic supplementary IOLs are designed to be implanted in the ciliary sulcus to correct residual post-operative refractive errors following the implantation of a conventional IOL in the capsular bag.

The Sulcoflex lens has been demonstrated to be safe, predictable and effective at improving uncorrected Visual Acuity¹⁶ and enhances post-operative refractive results^{16,23,24} with no significant intra- or post-operative complications.²⁴

With the Rayner Sulcoflex platform, you can expect the following:

- Ease of use¹⁹
- Efficacy and patient outcomes¹⁹
- An adjustable solution for peace of mind
- Low capital expenditure
- Designed to avoid the potential problems of conventional "piggy-back" IOLs^{18,21,22}

Predictability^{16,18,20}

- Lack of tilt or decentration
- Predictable refractive outcomes with high visual acuity

High patient satisfaction^{19,25}

- Low complication rate
- Stable long-term refractive results

Reduced surgical risk associated with IOL exchange^{17,18,21}

- Less surgical trauma than primary IOL exchange
- Avoids sometimes difficult removal of fibrosed, fixated primary implant
- Allows for implantation reversibility



"Implantation of the Sulcoflex is safe, easy and it is less traumatic than IOL exchange."

Professor Michael Amon MD, Head of the Department of Ophthalmology at the Academic Teaching Hospital of St John, Vienna, Austria

OPTIC & MATERIAL

Aberration-neutral Aspheric Optics:

- Improved contrast sensitivity and functional visual acuity*

Rayacryl material for:

- Good uveal Biocompatibility⁹
- Superb optical clarity - no vacuoles or glistenings¹¹

* When compared to spherical optics

Injector

Sulcoflex Aspheric and Sulcoflex Toric are fully compatible with the Medical Accuject 1.8 single use injector.



Model Name	RayOne Aspheric RAO600C	RayOne Toric RAO610T	RayOne Hydrophobic Aspheric RAO800C	RayOne Hydrophobic Aspheric BLF RAO850B
	RayOne Spheric RAO100C			
Power Range	-10.0 to +7.0 D (1.0 D increments, inc. plano) +8.0 to +30.0 D (0.5 D increments) +31.0 to +34.0 D (1.0 D increments)	Standard SE +8.0 to +30.0 D (0.5 D increments) Cylinders +1.0 to +6.0 D (0.5 D increments) Made to order SE -9.5 to +34.5 D (0.5 D increments) Cylinders +1.0 to +11.0 D (0.5 D increments) Availability is subject to power combination	-10.0 D to +7.0 D (1.0 D increments, inc. Plano) +8.0 D to +30.0 D (0.5 D increments) +31.0 D to +32.0 D (1.0 D increments)	+0.0 D to +7.0 D (1.0 D increments) +8.0 D to +30.0 D (0.5 D increments) +31.0 D to +32.0 D (1.0 D increments)

Monofocal IOLs	RayOne Aspheric, RayOne Spheric & RayOne Toric		RayOne Hydrophobic & RayOne Hydrophobic BLF
Material	Single piece Rayacryl hydrophilic acrylic		RayOne Hydrophobic Aspheric: Single piece Rayner hydrophobic acrylic RayOne Hydrophobic Aspheric BLF: Single piece Rayner hydrophobic acrylic with blue light filtering chromophore
Water Content	26% in equilibrium		<3%
UV Light Transmission	UV 10% cut-off is 380 nm		UV 10% cut-off is 385 nm
Refractive Index	1.46		1.51
ABBE	56		43
Overall Diameter	12.5 mm		
Optic Diameter	6 mm		
Optic Shape	RayOne Aspheric & RayOne Spheric: Biconvex (positive powers), Biconcave (negative powers) RayOne Toric: Biconvex (positive powers), Convex/Concave posterior surface (negative powers)		Biconvex (positive powers), Plano, concave (negative powers)
Asphericity	RayOne Aspheric: Anterior aspheric surface with aberration-neutral technology RayOne Toric: Posterior aspheric surface with aberration-neutral technology		Posterior aspheric surface with aberration-neutral technology
Optic Edge Design	Amon-Apple 360° enhanced square edge		
Haptics	0° Angulation, uniplanar. Anti-Vaulting Haptic (AVH) technology		Cornerstone lens design with Anti-Vaulting Haptic (AVH) technology

Delivery System	
Injector Type	Single use, fully preloaded IOL injection system
Incision Size	1.65 mm nozzle for 2.2 mm incision
Bevel Angle	45°
Lens Delivery	Single handed plunger

Estimated Constants for Optical Biometry									
	SRK/T	Haigis			HofferQ	Holladay	Holladay II	Barrett Universal II	
	A-constant	a0	a1	a2	pACD	SF	pACD	LF	DF
Aspheric, Spheric, Hydrophobic & Hydrophobic BLF	118.6	1.17	0.40	0.10	5.32	1.56	5.32	1.67	0
Toric	118.6	1.17	0.40	0.10	5.32	1.56	5.32	1.67	4 (SE)

For Contact Ultrasound, the estimated A-constant for Hydrophobic, Hydrophobic BLF, Aspheric, Spheric and Toric is 118.0. Please note that the constants indicated for all Rayner lenses are estimates and are for guidance purposes only. Surgeons must always expect to personalise their own constants based on initial patient outcomes, with further personalisation as the number of eyes increases.

Model Name	Sulcoflex Aspheric IOL700L	Sulcoflex Toric IOL710T
Power Range	Standard -5.0 D to -0.5 D (0.5 D increments) +0.5 D to + 5.0 D (0.5 D increments) Made to order -10.0 D to -5.5 D (0.5 D increments) +5.5 D to + 10.0 D (0.5 D increments)	Standard Spherical Equivalent: -3.0 D to +3.0 D (0.5 D increments) Cylinders: +1.0 D, +2.0 D, +3.0 D Made to order Spherical Equivalent: -7.0 D to +7.0 D (0.5 D increments) Cylinders: +1.0 D to +6.0 D (0.5 D increments)

Sulcoflex IOLs	
Material	Single piece Rayacryl hydrophilic acrylic
Water Content	26% in equilibrium
UV Protection	Benzophenone UV absorbing agent
UV Light Transmission	UV 10% cut-off is 380 nm
Refractive Index	1.46
ABBE	56
Overall Diameter	14 mm
Optic Diameter	6.5 mm
Optic Shape	Anterior convex, posterior concave
Asphericity	Aberration-neutral technology
Haptic Angulation	10°
Haptic Style	Undulating and rounded C-loop haptics
Estimated constant for power calc.	Expected lens position 4.5 mm
Sulcoflex delivery system	
Injector Type	Medicel ACCUJECT 1.80-1 (LP604540)
Incision Size	1.8 mm nozzle for 2.2 mm incision
Bevel Angle	35°
Lens Delivery	Single handed plunger

For toric and supplementary lens calculations,
visit www.raytrace.rayner.com

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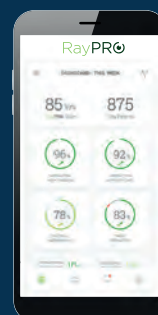
An eye drop family designed specifically to support visual outcomes and patient satisfaction before and after surgery.



rayner.com/aeon

RayPRO

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Distributor in UP and Tamilnadu



MADE IN UK



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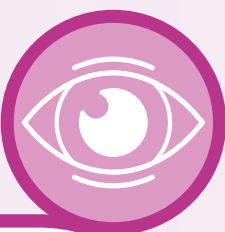


GO BEYOND WHAT YOU
THOUGHT WAS POSSIBLE



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HIGH-QUALITY VISION, WITHOUT GLASSES.

MINI WELL® IS AN EXTENDED DEPTH OF FOCUS INTRAOCULAR LENS THAT PROVIDES UNINTERRUPTED HIGH-QUALITY VISION AT ALL DISTANCES



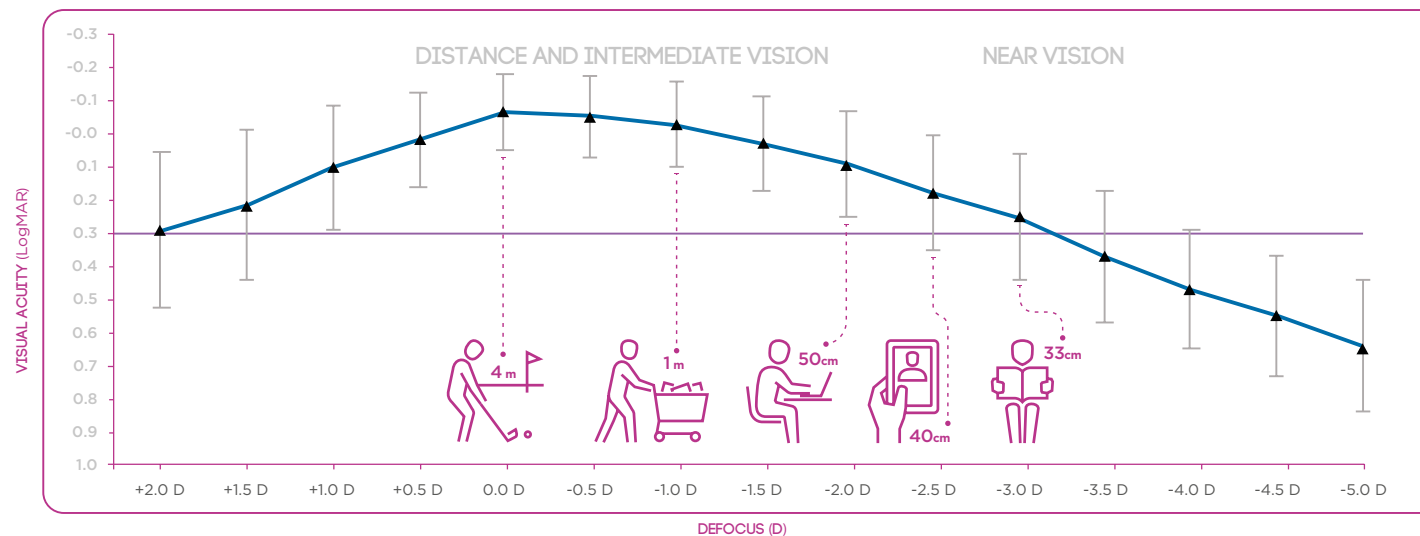
In presbyopia, performing daily tasks such as reading on electronic devices or reading paper pages are tasks made more difficult by having poor visual acuity. Presbyopia affects quality of life as it creates a dependence on spectacles to perform near vision activities.

Multifocal intraocular lenses (IOLs) after cataract surgery have been reported to improve near vision and quality of life.¹ However, these lenses are characterised by several disadvantages related to poor vision between foci and photic phenomena.¹⁻³

MINI WELL® (WAVEFRONT ENGINEERING LEADING LENS) PROVIDES EXCELLENT DISTANCE AND INTERMEDIATE VISUAL ACUITY WITH GOOD FUNCTIONAL NEAR VISION.

At visual acuity equal or better than 0.3 logMAR, Mini WELL® offers an extended depth of focus (EDOF) of up to -3.0D. The defocus curve is progressive with no peaks or gaps in intermediate distances.⁴

DEFOCUS CURVE



Clinical Study Report, Focus study, 2018⁴

Unlike multifocal IOLs, Mini WELL® is not associated with reduced visual acuity between foci and does not require prolonged neuroadaptation time.⁵

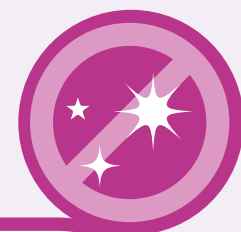
Reading fluency (>80 wpm) without correction

95% at 0.5 LogRAD⁴ (i.e. A5 booklet)

Patients performing near activities without spectacles

74% Reading a newspaper⁴

MINI WELL® IS ASSOCIATED WITH NEGLIGIBLE HALOS AND GLARE



Mini WELL® is associated with a significantly lower risk of halos and glare compared to a multifocal IOL and shows no significant difference compared to the gold standard monofocal IOLs.⁶⁻⁸

MEAN VALUES OF MOST FREQUENT HALO AND GLARE PHENOMENA FOR A VARIETY OF IOLs

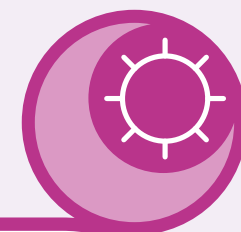


**Figures courtesy of Gerd Auffarth*

The Halo and Glare simulator can be used to model the photic phenomena experienced by patients implanted with different IOLs.

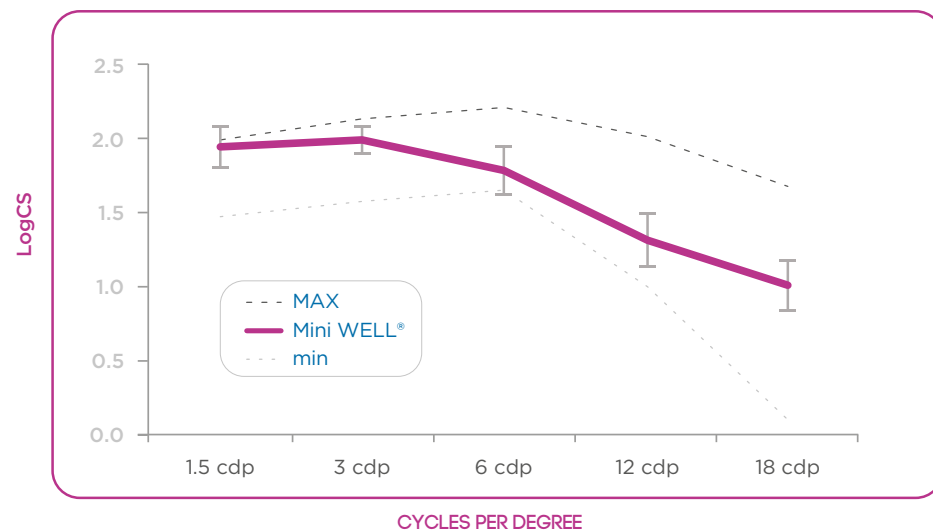
With Mini WELL®, halos had a smaller mean size and lower mean intensity compared to a distance-dominant diffractive multifocal IOL (mean size: 34.8 ± 22.08 vs 53.57 ± 23.67 respectively, $p = 0.439$; mean intensity: 38.50 ± 16.47 vs 54.76 ± 20.53 respectively, $p = 0.0222$).⁶

MINI WELL® PROVIDES EXCELLENT CONTRAST SENSITIVITY EVEN UNDER MIXED LIGHTING CONDITIONS



CONTRAST SENSITIVITY - MINI WELL®

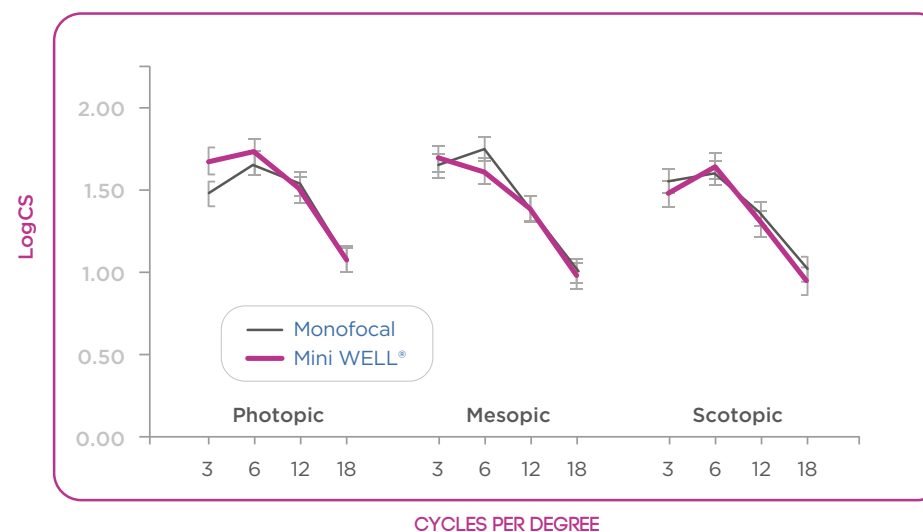
High-quality vision and good contrast sensitivity within normal limits at all spatial frequencies.⁸



Adapted from Savini G, et al. Eye (Lond). 2019⁸

CONTRAST SENSITIVITY UNDER DIFFERENT LIGHT CONDITIONS: MINI WELL® VS MONOFOCAL MINI IOL

Excellent contrast sensitivity in all light conditions.



Adapted from Pedrotti E, et al. J Refract Surg. 2020¹⁰

When comparing Mini WELL® vs a monofocal Mini IOL under scotopic, mesopic, and photopic light conditions, no significant differences in contrast sensitivity were found between the two lenses.¹⁰

MINI WELL® PROVIDES HIGH PATIENT SATISFACTION RATES:

93%

Could perform their daily routine activities after surgery⁴



90%

Would recommend this surgery and lens to a relative or a friend⁴



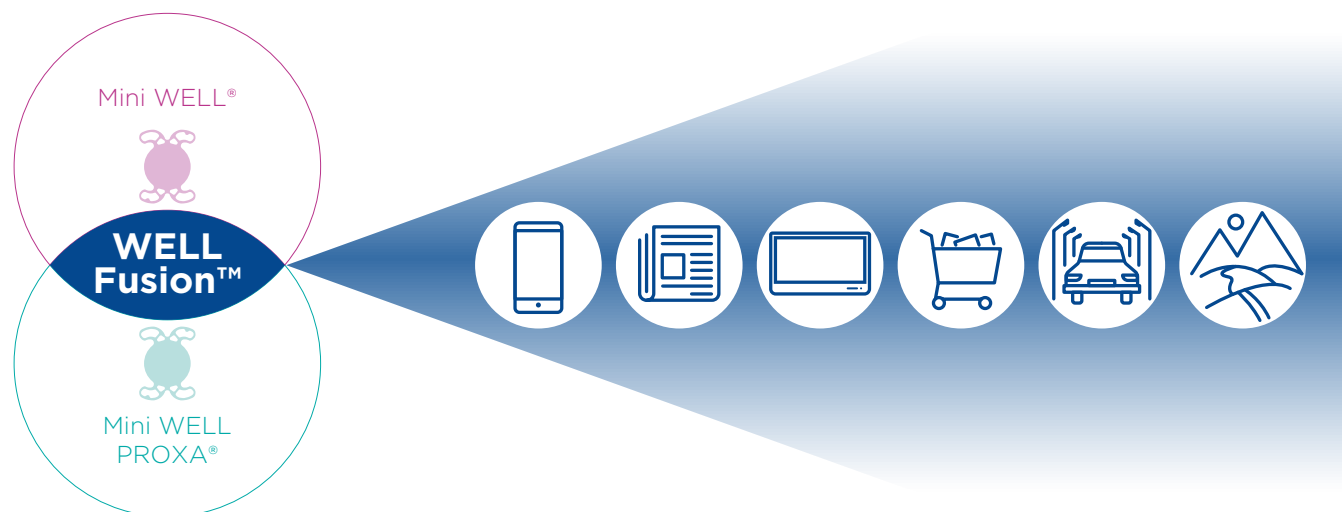
MINI WELL PROXA® IMPLANTED ALONGSIDE MINI WELL® WILL HELP IMPROVE NEAR VISION AND REMOVE THE NEED FOR GLASSES



For patients wishing high quality of vision without glasses, Mini WELL® can be implanted alongside Mini WELL PROXA®.

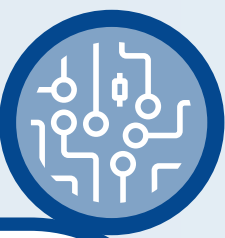
- Mini WELL PROXA® is a new EDOF IOL designed to bridge the gap in near vision (30–35 cm) and reduce spectacle dependence for all patients.
- Developed as an extension of Mini WELL®, this new EDOF IOL, implanted together with Mini WELL®, will secure full presbyopia correction along with uninterrupted high-quality vision at all distances and in all light conditions.

THE TWO LENSES JOINTLY CREATE THE **WELL FUSION™**,
A **UNIQUE OPTICAL SYSTEM** BASED ON A COMPLEMENTARY OPTICS
DESIGN USING THE SAME WAVEFRONT ENGINEERING TECHNOLOGY.^{5,11}



**THE WELL FUSION™ HAS BEEN DESIGNED TO ENSURE A
CONTINUOUS VISION FROM FAR THROUGH NEAR (33 CM).**

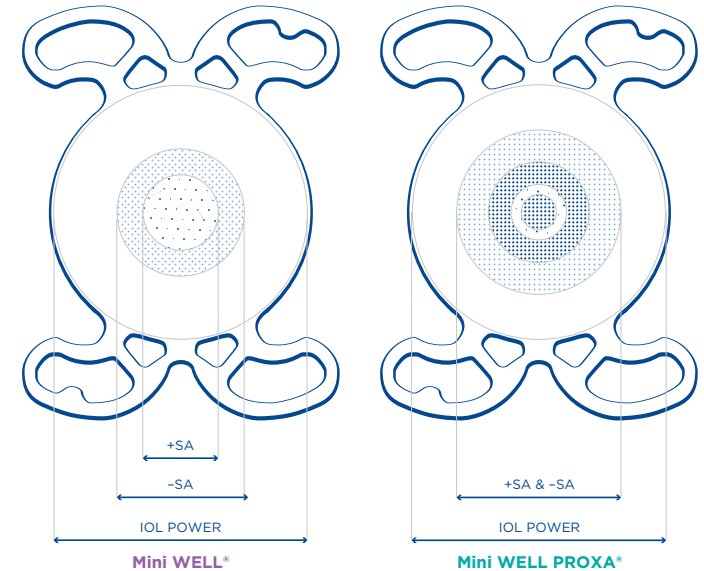
WELL FUSION™ WILL DELIVER SPECTACLE INDEPENDENCE THROUGH ITS PROPRIETARY AND PATENTED TECHNOLOGY



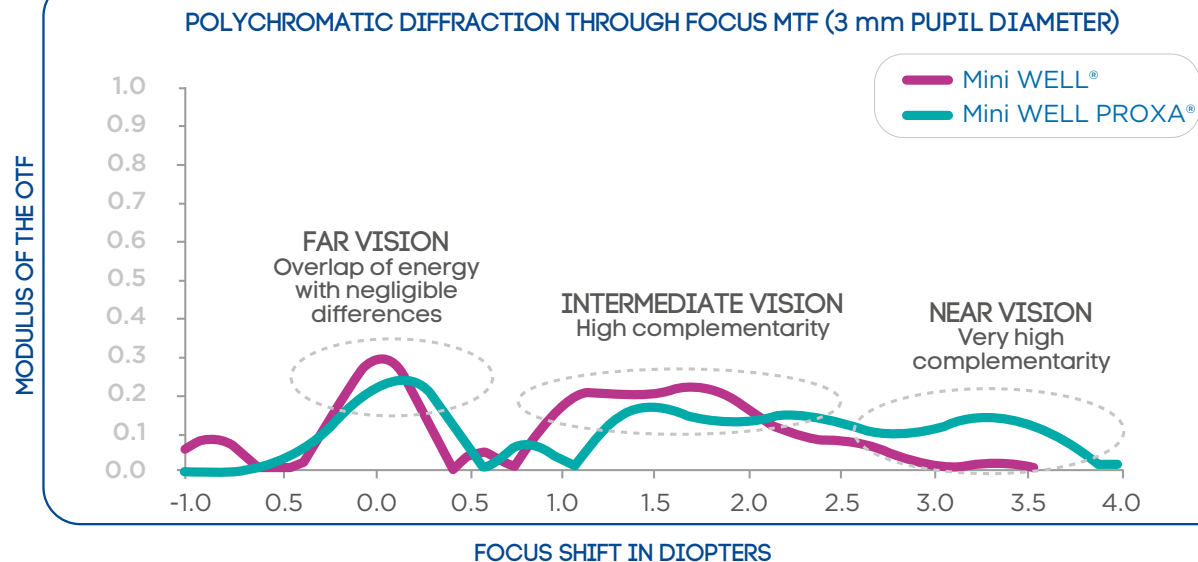
Mini WELL® and Mini WELL PROXA® IOLs share the same EDOF non-diffractive platform which creates one continuous, extended focus without dividing the light beam.^{5,11}

The extended depth of focus is created by inducing targeted amounts of spherical aberration in concentric optical zones in the central part of the optics. This generates an extended continuous focal point.^{5,11}

Mini WELL PROXA® has a number of zones higher than Mini WELL®, allowing the range of vision to extend up to 3.0 D (33 cm).¹¹



WELL Fusion™ MTF complementarity

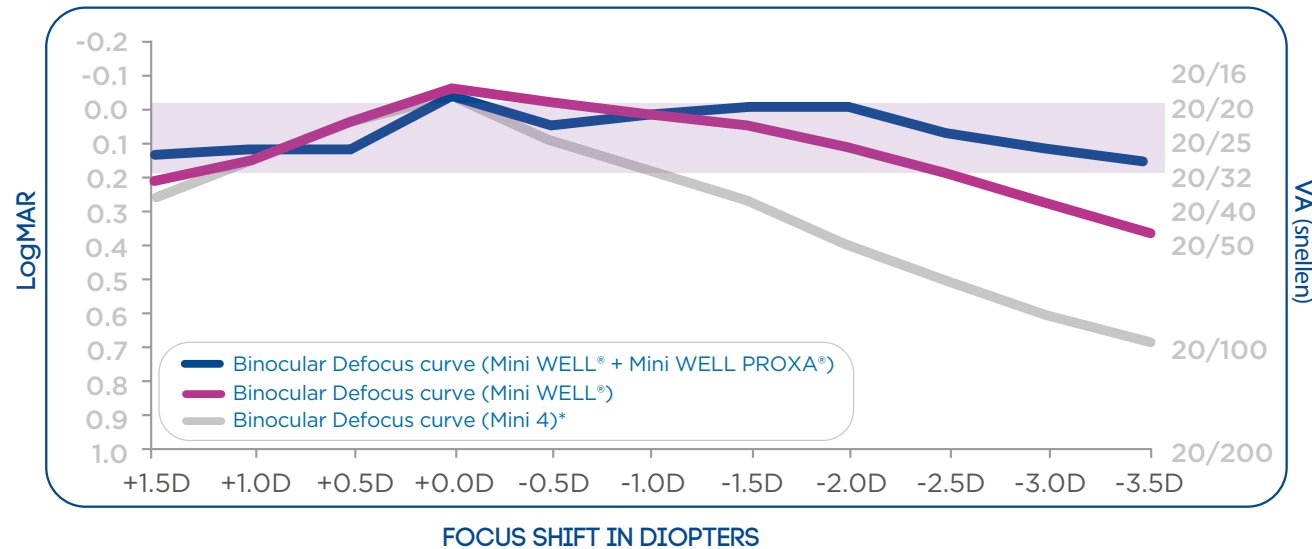


The optical system is characterised by highly complementary optic profiles at near and intermediate vision which will ensure a continuous vision at all distances.¹¹

WELL FUSION™ WILL PROVIDE UNINTERRUPTED HIGH-QUALITY VISION AT ALL DISTANCES AND IN ALL LIGHT CONDITIONS



Defocus curve of the WELL Fusion™ optical system



Courtesy of E. Pedrotti

Extended depth of focus of 5.0D in the high-vision zone[†] with excellent near visual performances at 33 cm.¹²

- Greater continuous visual performance of 2.5D in the high-vision zone compared to the monofocal IOL.
- Enlarged depth of focus of 1.0D in the high-vision zone compared to the Mini WELL® IOL.

[†]The high-vision zone: area of visual performance between 20/20 and 20/32 (Snellen)

*Mini WELL® and Mini 4 defocus curves are available from Pedrotti E, et al. J Refract Surg. 2020¹⁰

Bilateral implantation of Mini WELL® in the dominant eye and Mini WELL PROXA® in the non-dominant eye (defocus curve, 3 months. Mean values $\pm$ SE).¹²

THE WELL FUSION™ UNIQUE OPTICAL SYSTEM HAS BEEN DESIGNED TO PROVIDE PATIENTS WITH:

- Spectacle independence and high-quality vision at all distances
- Negligible photic phenomena
- Improved near vision vs a standard EDOF IOL
- Good contrast sensitivity

MINI WELL® AND MINI WELL PROXA® SHARE THE SAME TECHNICAL CHARACTERISTICS

Lens model	Mini WELL® - Mini WELL PROXA®
Positioning	Capsular bag
Optics diameter	6.0 mm
Total diameter	10.75 mm
Vaulting	5°
Optics design	Biconvex progressive - EDOF aspherical
Square edge	Double on 360°
Material	Copolymer
Dioptric powers	0D to +30D (0D to +10D incr. 1D; +10D to +30D incr. 0.5D)
Estimated Anterior Chamber Depth (ACD)	5.32 mm
Suggested A-Constant	118.6 (Ultrasound biometry)
Injection system	Preloaded IOLs
Recommended incision size	1.8 mm (wound-assisted); 2.0 mm (into-the-wound); 2.2 mm (into-the-bag)

OPTICAL BIOMETRY DEVICES	SUGGESTED CONSTANTS						
	HAIGIS	HOFFER Q	HOLLADAY I	SRK/T	BARRETT	OLSEN	KANE
	a0 = -2.796 a1 = 0.306 a2 = 0.286	pACD = 5.45	SF = 1.67	A = 118.82	LF = 1.75 DF = -1	C Constant = 0.39 ACD = 4.62	A = 118.72

SIFI - MASTERS IN EXTENDED DEPTH OF FOCUS WAVEFRONT ENGINEERING ACROSS DISTANCES

Abbreviations:

DF: Design Factor, **EDOF:** extended depth of focus, **IOL:** intraocular lens, **LF:** Lens Factor, **MTF:** modulation transfer function, **SA:** spherical aberration, **SF:** Surgeon Factor, **VA:** visual acuity, **WELL:** Wavefront Engineering Leading Lens.

References:

1. Dominiguez-Vincent et al. In vitro optical quality comparison between the Mini WELL Ready progressive multifocal and the TECNIS Symfony. Graefes Arch Clin Exp Ophthalmol. 2016;254(7):1387-97. 2. de Vries NE, Nuijts RM. Multifocal intraocular lenses in cataract surgery: literature review of benefits and side effects. J Cataract Refract Surg. 2013;39(2):268-78. 3. Wang SY, et al. Patient-centered and visual quality outcomes of premium cataract surgery: a systematic review. Eur J Ophthalmol. 2017;27(4):387-401. 4. Clinical Study Report, Focus study, 12th of January 2018. SIFI. The results of the Focus study have been published in Auffarth GU, et al. European, Multicenter, Prospective, Non-comparative Clinical Evaluation of an Extended Depth of Focus Intraocular Lens. J Refract Surg. 2020;36(7):426-434. 5. Bellucci R, Curatolo MC. A new extended depth of focus intraocular lens based on spherical aberration. J Refract Surg. 2017;33(6):389-94. 6. Savini G, et al. Visual performance of a new extended depth-of-focus intraocular lens compared to a distance-dominant diffractive multifocal intraocular lens. J Refract Surg. 2018;34(4):228-35. 7. Bellucci R, et al. Clinical and aberrometric evaluation of a new extended depth-of-focus intraocular lens based on spherical aberration. J Cataract Refract Surg. 2019;45(7):919-26. 8. Savini G, et al. Functional assessment of a new extended depth-of-focus intraocular lens. Eye (Lond). 2019 Mar;33(3):404-10. 9. Auffarth GU, et al. Visual Performance and Perceived Photopic Phenomena with a New Extended Depth of Focus IOL. ASCRS ASOA symposium & congress. USA. 2017. 10. Pedrotti E, et al. Extended Depth of Focus Versus Monofocal IOLs: Objective and Subjective Visual Outcomes. J Refract Surg. 2020;36(4):214-222. 11. SIFI internal data. 12. Pedrotti E. First clinical experience with the optical system WELL Fusion™ (Mini WELL® + Mini WELL PROXA®), webinar "A new dimension in the correction of presbyopia", 12th of December 2020.



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Zydus/Occuvia/MWP/VA/2021/1



**Zydus
Occuvia**

THE NEW STANDARD OF CARE WITH EXTENDED DEPTH OF FOCUS IN MONOFOCAL IOLs



LIFE IS WORTH LIVING MORE DEEPLY

EVOLUX extended monofocal IOL, a true step forward for you and your patients.
Innovative hydrophobic acrylic IOL providing enhanced intermediate vision and similar distance performance and photic phenomena to a standard monofocal IOL.

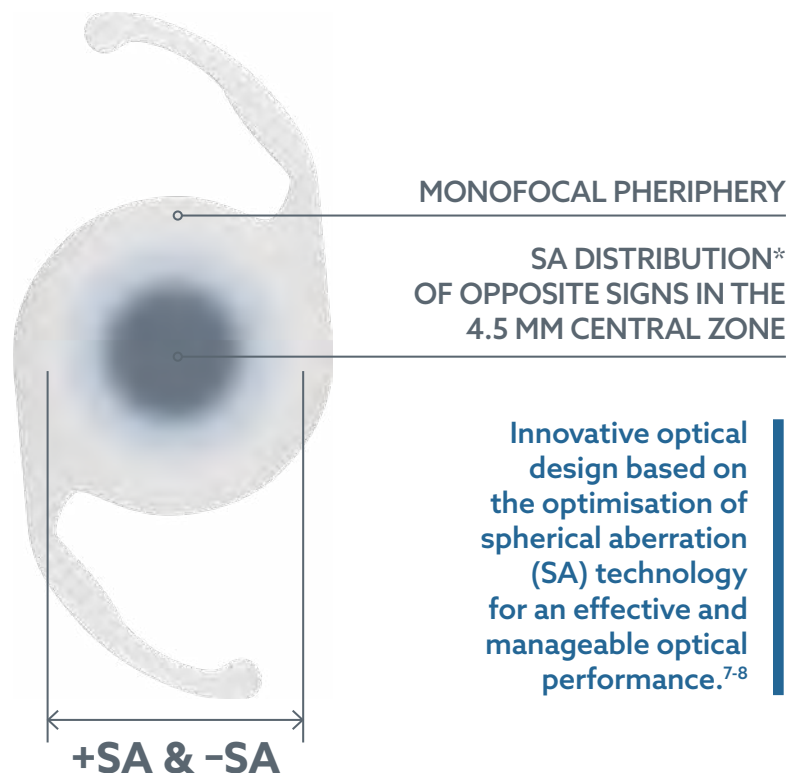
e v o l u x
MORE FOR MORE PEOPLE

EVOLUX, the new standard of care with extended depth of focus in monofocal intraocular lenses (IOLs)

EVOLUX IS AN EXTENDED MONOFOCAL IOL WITH A NON-DIFFRACTIVE OPTICAL PROFILE DESIGNED TO IMPROVE INTERMEDIATE VISION AND TO PROVIDE COMPARABLE DISTANCE VISION TO A STANDARD MONOFOCAL IOL

Visual needs have evolved in the recent decades. Nowadays, many **older adults** work beyond retirement age and **live a more active life** than in the past, **spending several hours per day on activities requiring good intermediate vision**¹⁻⁴

Conventional monofocal IOLs only allow a restoration of distance vision and limit visual performance at intermediate distances.^{2,5} **Implantation of an IOL should be performed according to the patients' lifestyle needs, to deliver high-quality distance vision and obtain satisfactory intermediate vision** (the range of vision needed for most social interaction).



**EFFECTIVE
OPTICAL PERFORMANCE**

**SAFE AS A
MONOFOCAL IOL**



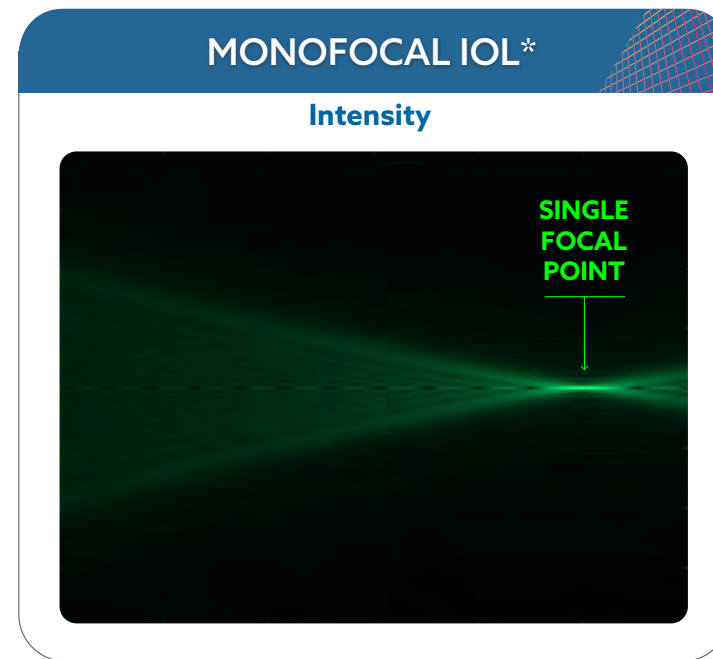
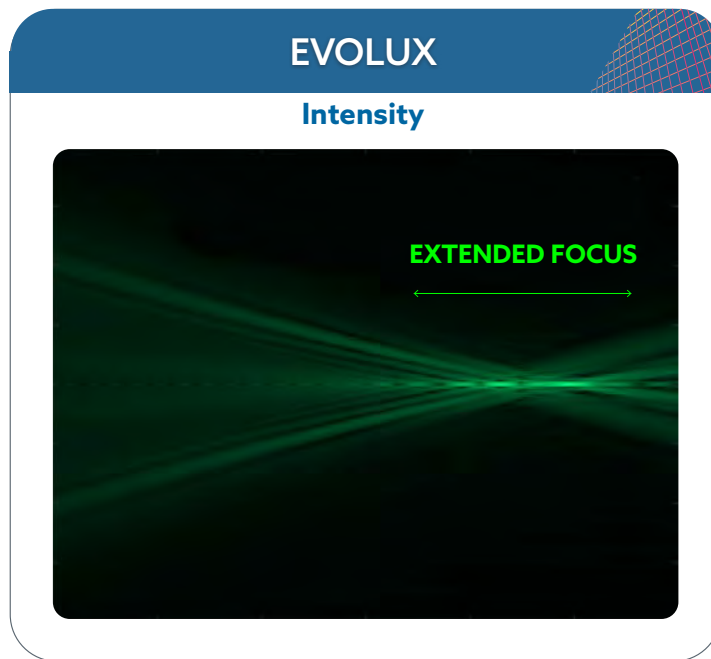
*Front optical design: extended aspheric monofocal. Back optical design: spherical monofocal.⁶

Extended depth of focus in monofocal intraocular lenses IOLs

EVOLUX IS DESIGNED TO CREATE AN ELONGATED SINGLE-FOCUS AREA
FROM FAR TO INTERMEDIATE DISTANCES

The single **elongated focal point** enhances depth-of-focus, unlike monofocal IOLs in which light is focused on one single point.⁶

LIGHT-PATHWAYS VISUALISATION



*Monofocal IOL with the same technical specifications and material properties as EVOLUX.

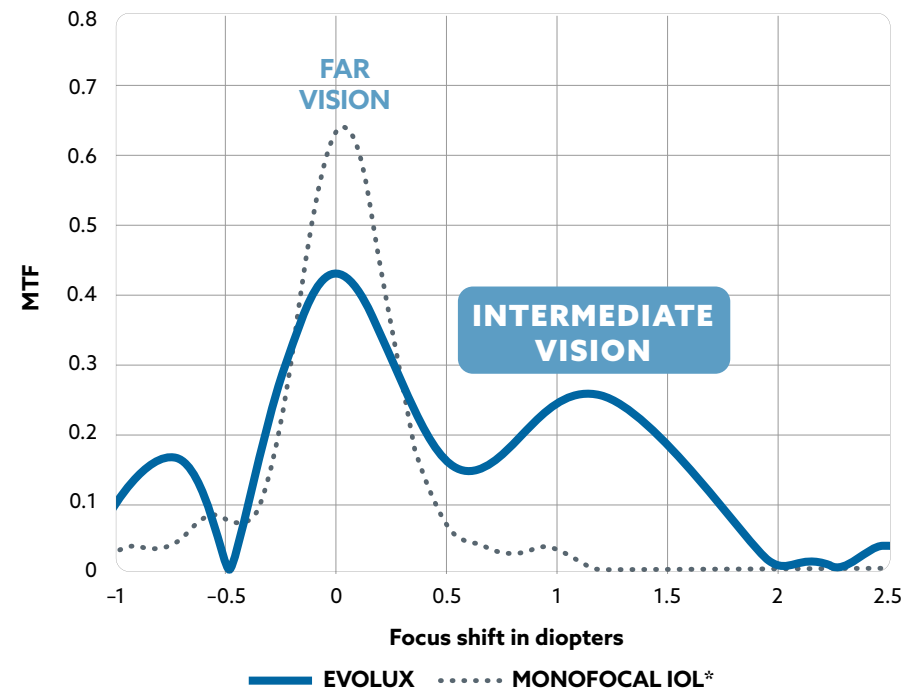


EVOLUX: effective optical performance

THE PERFORMANCE AND OPTICAL QUALITY OF EVOLUX CAN BE MEASURED THROUGH THE MODULATION TRANSFER FUNCTION (MTF)

- The MTF peak value for intermediate vision reveals an **improvement in the depth of focus** compared to a standard monofocal IOL and the peak value for far vision allows to maintain a good distance vision.⁶
- **No noticeable impact of pupil dimensions** on MTF values for both far and intermediate distances.⁶

POLYCHROMATIC DIFFRACTION THROUGH FOCUS MTF



*Monofocal IOL with the same technical specifications and material properties as EVOLUX.

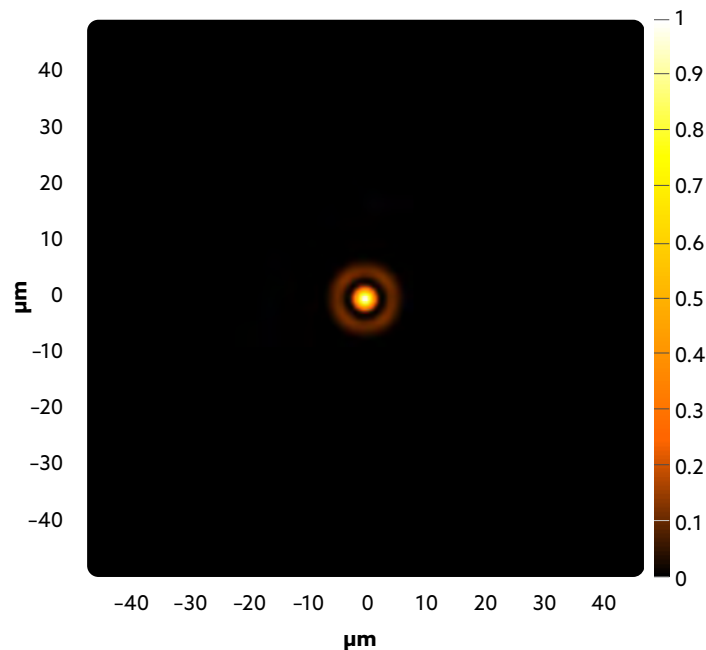


EVOLUX: safe as a monofocal IOL

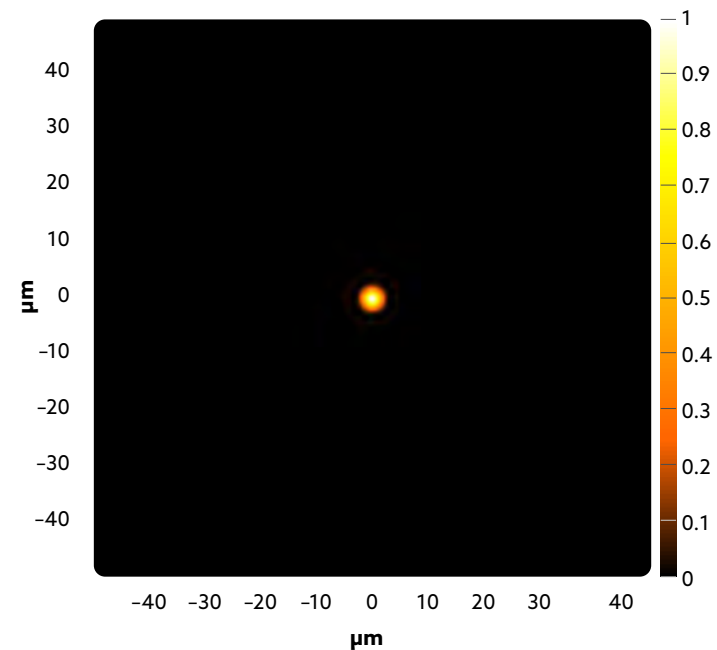
EVOLUX IS DESIGNED TO PROVIDE A SIMILAR PHOTIC PHENOMENA PROFILE TO A STANDARD ASPHERIC MONOFOCAL IOL

- **99% of light falls within a spot of 20 μm** , similarly to a standard monofocal IOL (analysis of light distribution through the lens using the Point Spread Function, PSF). **No scattered light causing reduced image contrast.**⁹
- The PSF of EVOLUX differs from the PSF of a standard monofocal IOL only for the presence of **two additional lower side peaks**, which indicate the presence of **extended depth of focus**.⁹

EVOLUX
POINT SPREAD FUNCTION



MONOFOCAL*
POINT SPREAD FUNCTION



⁹Monofocal IOL with the same technical specifications and material properties as EVOLUX.



EVOLUX: safe as a monofocal IOL

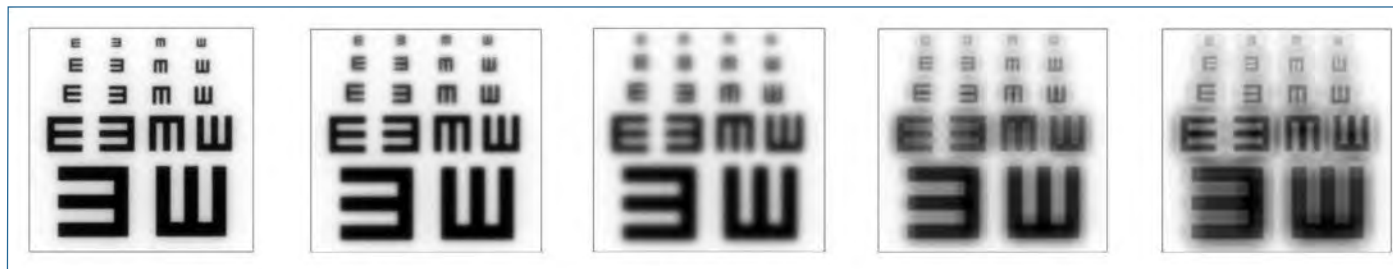
EVOLUX IS DESIGNED TO HAVE A GOOD TOLERANCE
TO UNEXPECTED RESIDUAL REFRACTIVE ERRORS, TILT AND DECENTRATION

- A model eye bench simulator using the retinal charts demonstrates that EVOLUX is **tolerant to slight myopic and hyperopic shifts.**⁶
- By decentring the IOL of +/- 0.5 mm or inducing a tilt of 5 degrees there is **no noticeable reduction or change in the MTF values** at both far and intermediate distances.⁶

OPTICAL CHART-RETINAL IMAGES 3.00mm

0D = FAR VISION	0.25D = 4m	0.50D = 2m	0.75D = 1.33m	1D = 1m
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EVOLUX



MONOFOCAL*



*Simulated IOL monofocal model with the same material properties as EVOLUX.

Minimal glistening for improved optical quality

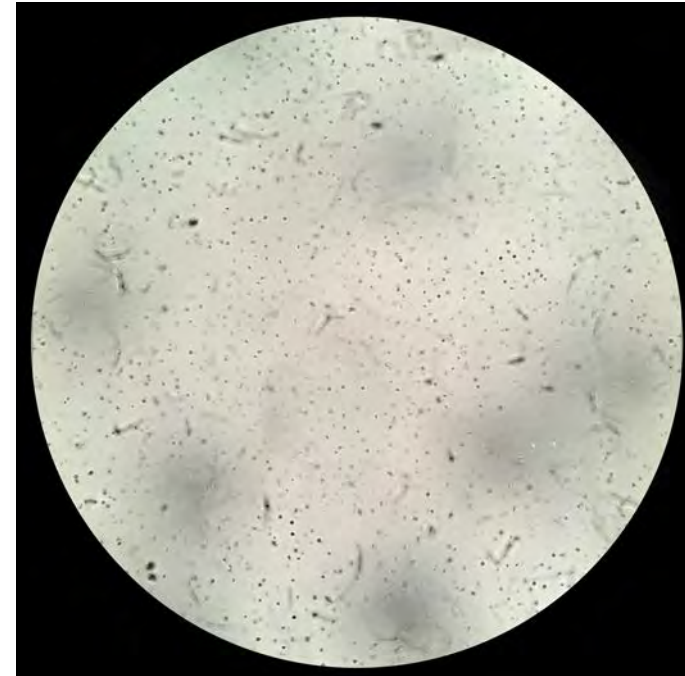
EVOLUX

EVOLUX is composed of a hydrophobic material with **minimal glistening**, which ensures **clarity of the optics**.^{*10-12}



HYDROPHOBIC IOL

Hydrophobic IOL with high glistening.^{*14,15}



^{*}Glistening analysis performed according to a validated method.¹³

PRODUCT CHARACTERISTICS

Material	UV-blocking hydrophobic acrylic
Refractive index	1.48 at 35°C
Positioning	Capsular bag
Optics diameter	6.0 mm
Total diameter	13.0 mm
Vaulting	0°
Optics design	Biconvex-enhanced monofocal aspheric anterior surface
Square edge	available
Dioptric powers	5D to +30D (5D to +10D incr. 1D; +10.5D to +30D incr. 0.5D)
Estimated Anterior Chamber Depth (ACD)	4.97 mm
Suggested A-Constant (SRK/T)	118.0 (Ultrasound biometry)
Injection system	Fully preloaded IOLs
Recommended incision size	1.9–2.0 mm (wound-assisted); 2.2 mm (into-the-wound); 2.5 mm (into-the-bag)

References

1. Khiang AKK. Keep Up With the Changing Visual Needs of Younger Patients. Cover Focus. 2015. Available at: <https://crstodayeurope.com/articles/2015-sep/keep-up-with-the-changing-visual-needs-of-younger-patients/> (Accessed: September 2021). **2.** Ribeiro F, et al. Definition and clinical relevance of the concept of functional vision in cataract surgery ESCRS Position Statement on Intermediate Vision: ESCRS Functional Vision Working Group. J Cataract Refract Surg. 2020;46 Suppl 1:S1-S3. **3.** Office for National Statistics Leisure time in the UK: 2015. Available at: <https://www.ons.gov.uk/economy/nationalaccounts/satelliteaccounts/articles/leisuretimeintheuk/2015> (Accessed: September 2021). **4.** Elliott DB, et al. Intermediate addition multifocals provide safe stair ambulation with adequate "shortterm" reading. Ophthalmic Physiol Opt. 2016;36:60-8. **5.** Iancu R, Corbu C. Premium intraocular lenses use in patients with cataract and concurrent glaucoma: a review. Maedica (Bucur). 2013;8(3):290-6. **6.** SIFI Internal data. **7.** EP 2 211 747. Filed: 28.10.2008. **8.** Bellucci R, Curatolo MC. A new extended depth of focus intraocular lens based on spherical aberration. J Refract Surg. 2017;33(6):389-94. **9.** Goodman JW. Introduction to Fourier Optics. Publisher: Freeman WH. Fourth edition, May 2017. **10.** SIFI internal data. Comparative glistening analysis of SIFI IOL vs Market player IOL (Alcon). **11.** Werner L, et al. Evaluation of clarity characteristics in a new hydrophobic acrylic IOL in comparison to commercially available IOLs. J Cataract Refract Surg. 2019;45(10):1490-1497 **12.** Yildirim TM, et al. Quantitative evaluation of microvacuole formation in five intraocular lens models made of different hydrophobic materials. PLoS One. 2021;16(4):e0250860. **13.** Thomes BE, Callaghan TA. Evaluation of in vitro glistening formation in hydrophobic acrylic intraocular lenses. Clin Ophthalmol. 2013;7:1529-34. **14.** Christiansen G, et al. Glistenings in the AcrySof intraocular lens: pilot study. J Cataract Refract Surg. 2001;27(5):728-33. **15.** Werner L, et al. Light scattering, straylight, and optical quality in hydrophobic acrylic intraocular lenses with subsurface nanoglistenings. J Cataract Refract Surg. 2016;42(1):148-56.

Abbreviations

IOL: intraocular lens; **MTF:** modulation transfer function; **PSF:** point spread function; **SA:** spherical aberration.



**LABOMED SLX-45
SLIT LAMP**



**LABOMED SLX-40
SLIT LAMP**



**LABOMED EVO 350
SLIT LAMP**



**UNICOS (3-STEP)
SLIT LAMP**



VENUS MEDITECH

Covai
Meditech



AUTO REFRACTOMETER Q30+



A-SCAN MATRONIX



AUTO LENS EDGER
I-TRONIX



LENSOMETER
SLK-5600



VENUS MEDITECH

Covai
Meditech



Welch Allyn

**COMBO SET WELCH ALLYN
USA**



Keeler

**COMBO SET HEINE GERMANY
RETINOSCOPE**



Keeler

**HEINE BETA 200 LED
RETINOSCOPE**



Keeler

**HEINE BETA 200
OPHTHALMOSCOPE**



VENUS MEDITECH

Covai
Meditech



Keeler

APPLANATION TONOMETER
D KAT



Keeler

INDIRECT OPHTHALMOSCOPE
VANTAGE PLUS



Keeler

TONOCARE WIRELESS
NON CONTACT TONOMETER



Keeler

NON CONTACT TONONETER
PLSAIRDESKTOP



VENUS MEDITECH

Covai
Meditech



**TRIAL LENS SET
GOLDEN & SILVER**



**TRIAL LENS SET
RED & BLUE**



**TRIAL LENS SET
IMPORTED**



**PROGRESSIVE TRIAL LENS SET
IMPOTENT (STEEL)**



VENUS MEDITECH

Covai
Meditech



78D LENS



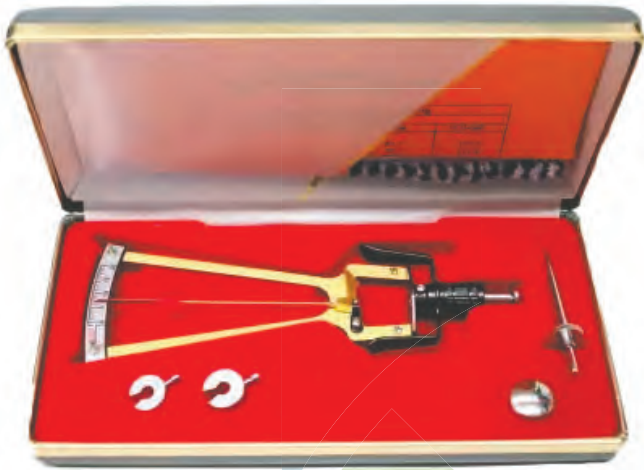
20D LENS



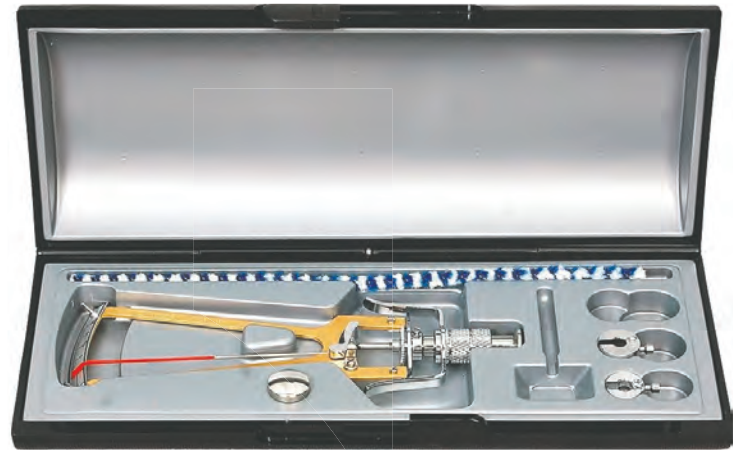
90D LENS



ALL LENS



TONOMETER SCHIOTZ
GERMAN



SCHIOTZ TONOMETER
REISTER



DIGITAL PHOROPTER



MANUAL PHOROPTER



APPLANTION TONOMETER
D KAT KEELER



APPLANTAION
TONOMETER



LED VISION CHART
(24 INCH)



LED CHART VISION
(20 INCH AND 18.5 INCH)



DOCTOR MODEL
CHAIR UNIT



OPTICAL REFRACTION UNIT



O.T -TABLE



MOTORIZED TABLE
(WITH DRAWER)



DIGITAL PD RULER



PD-METER



HANDED AUTO REFRACTOMETER
MOBILE CLINIC KIT



SUPRA GROOVER



LABOMED MICROSCOPE



KEELER KSL-H3



A SCAN LAPTOP (KEELER)



INDIRECT OPHTHALMOSCOPE