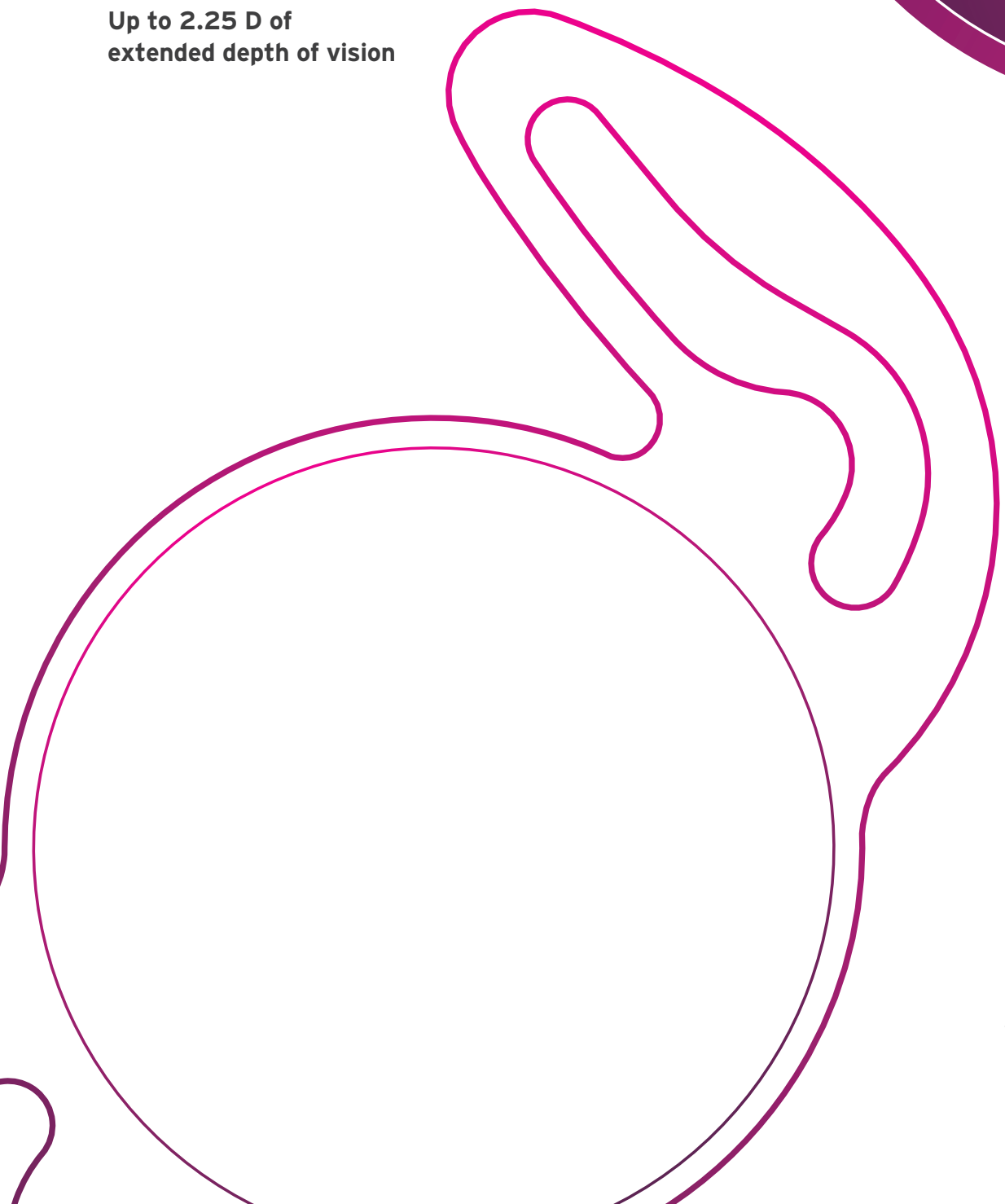
Monovision. Enhanced.

Up to 2.25 D of extended depth of vision



RayOne EMV

Rayner

Monovision. Enhanced*

As a surgeon, you always want to provide your patients with the best possible visual outcomes. However, patients that desire spectacle independence are not always suitable candidates for diffractive trifocal IOLs. To overcome these challenges, many surgeons turn to monovision as an affordable way of delivering some extended depth of vision with reduced dysphotopsia.

RayOne EMV was developed in collaboration with world renowned surgeon, Professor Graham Barrett, to specifically enhance patient outcomes achieved with monovision.

RayOne EMV uniquely extends a patient's range of vision with a patented non-diffractive optic profile, enabling the depth of field of many presbyopia-correcting IOLs but with reduced dysphotopsia, short neuroadaptation, reliable outcomes, high patient satisfaction, and improved affordability.

Offered on a superior hydrophilic optic platform through the RayOne fully preloaded two-step injector, RayOne EMV is an IOL solution unlike any other.

RAYONE FULLY PRELOADED INJECTOR SYSTEM:

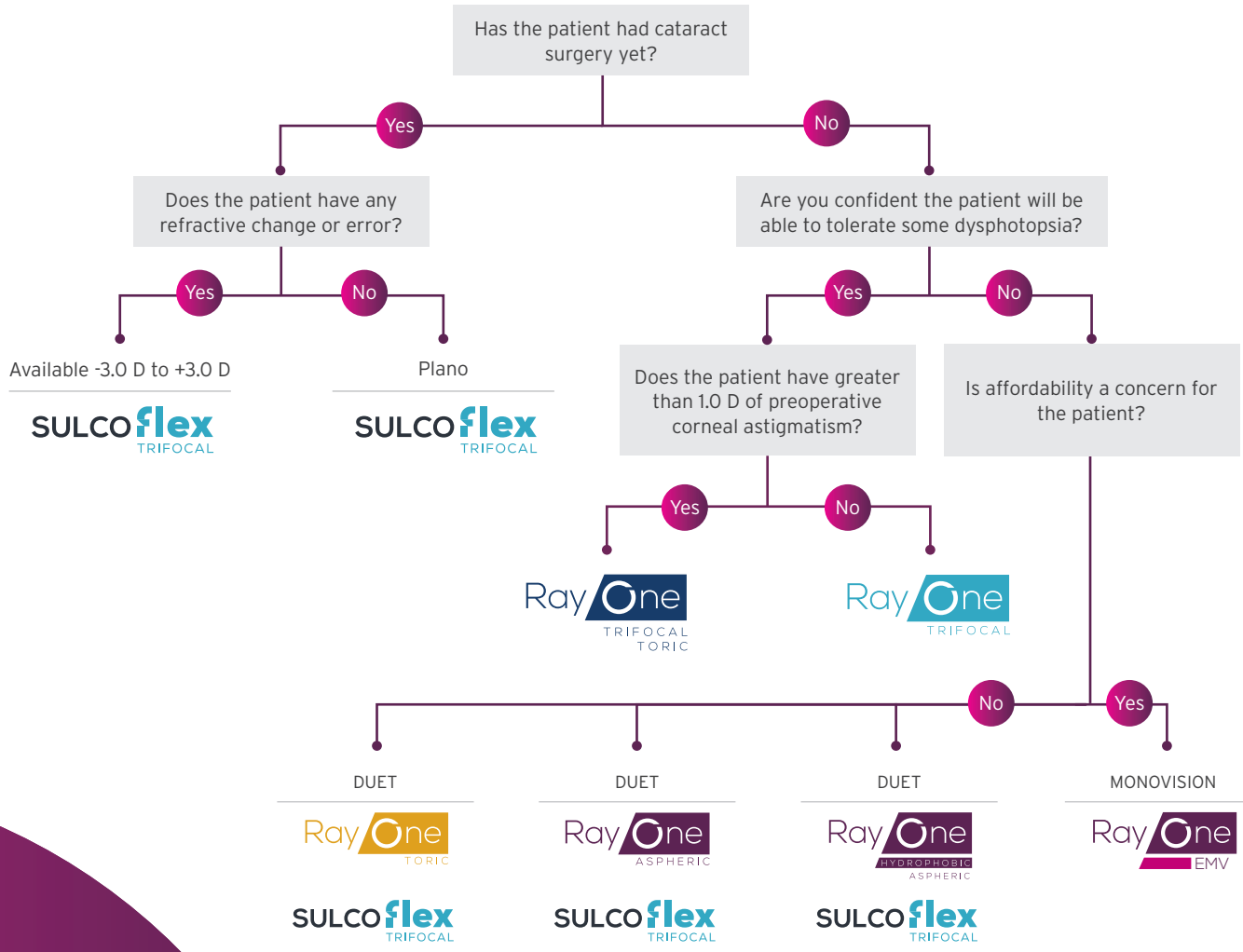
THE QUEEN'S AWARDS FOR ENTERPRISE: INNOVATION 2020

"For many years I have worked on optimising a lens for monovision, given that it accounts for nearly 30% of all surgeries. I collaborated with Rayner on bringing this lens to market as RayOne EMV, an exciting new product for all surgeons looking to treat presbyopia reliably"

Professor Graham Barrett, president of the Australasian Society of Cataract & Refractive Surgeons

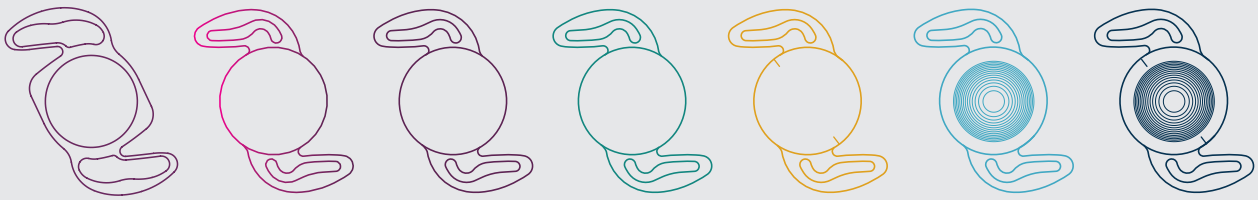
*Data on file, September 2020

Presbyopia-correction patient suitability



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.

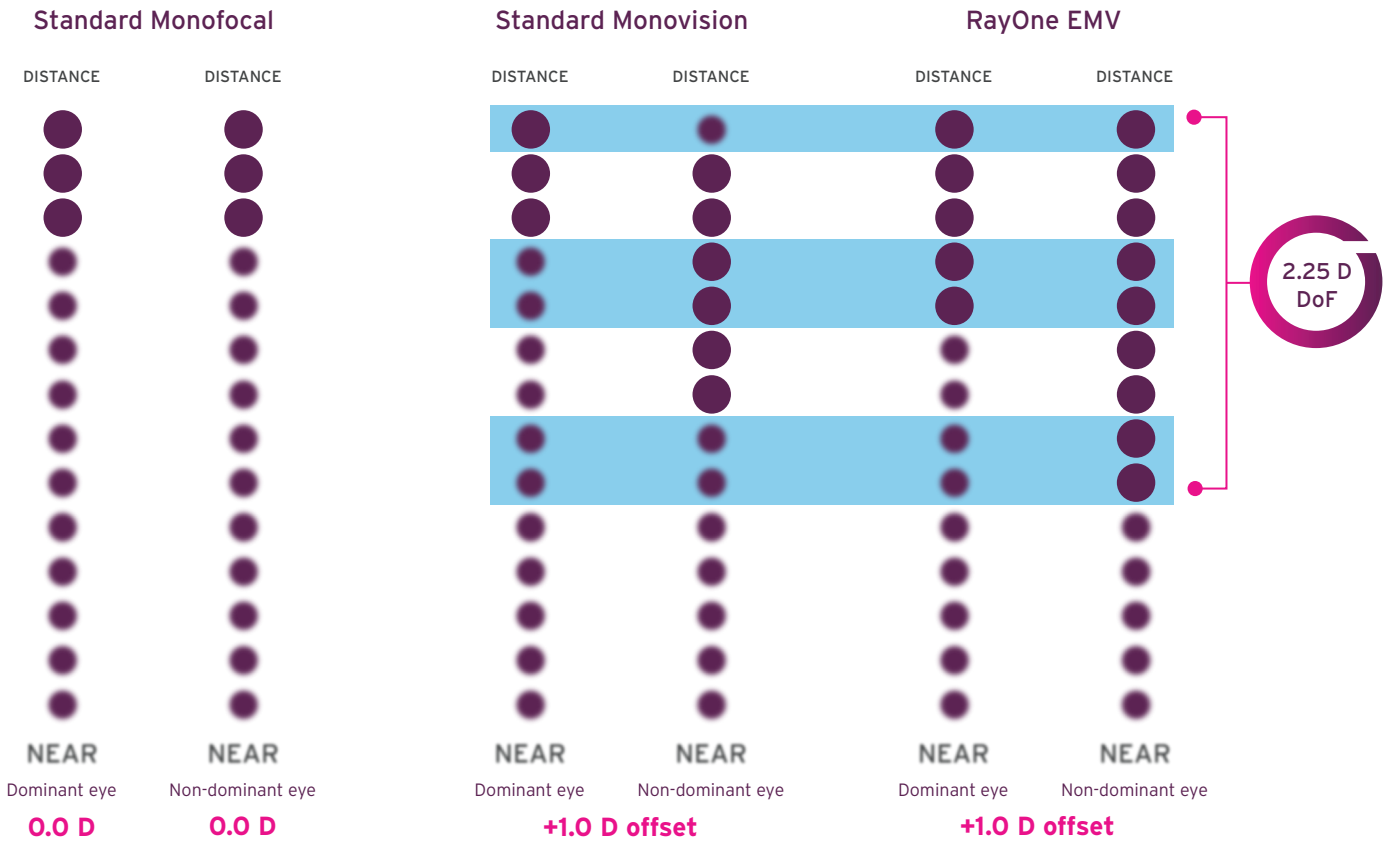


Improve your pseudophakic monovision patient outcomes

RayOne EMV provides a smoother, blended transition between the dominant and non-dominant eyes when compared to monovision achieved with standard monofocals, maintaining binocular stereoacuity and reducing asthenopia.

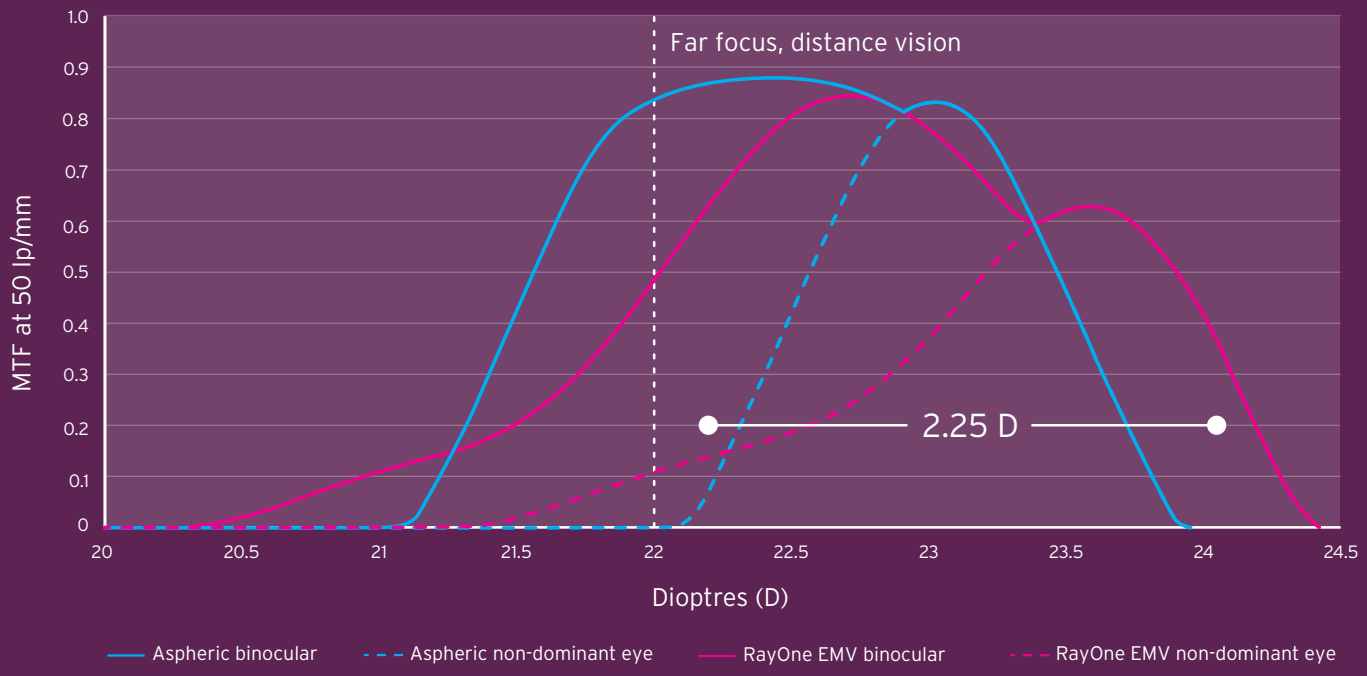
The patented optic provides high quality spectacle-free distance vision as well as reduced pupil dependency for optimised performance under low light conditions.

Patented enhanced zone technology



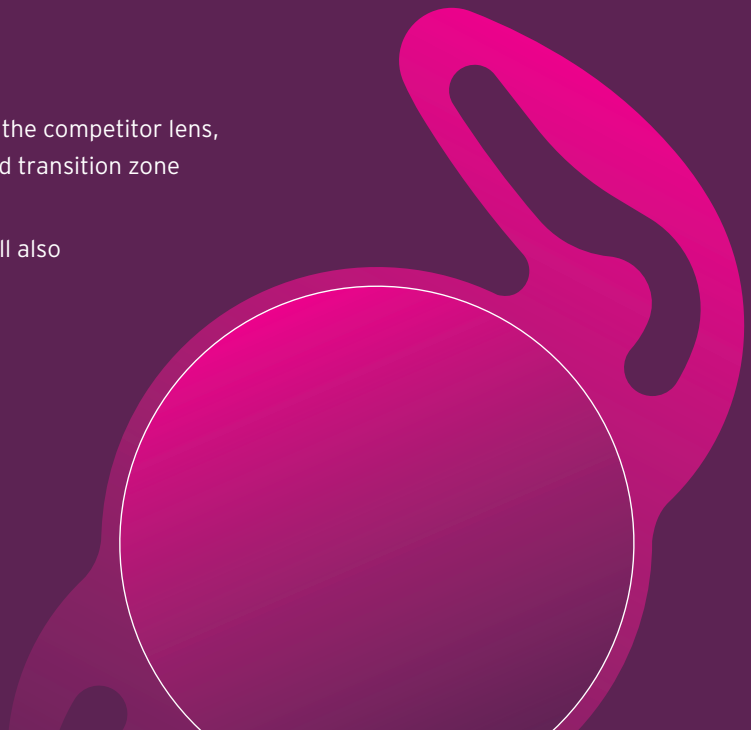
Clinically-proven and industry leading optic technology

The Modulation Transfer Function (MTF) graph below shows the binocular optical performance for RayOne EMV and a competitor's negatively aberrated aspheric IOL, targeted for a monovision offset of +1.0 D.[1]



With distance vision for the simulated patient above being 22.0 D, RayOne EMV offers:

- Good performance at distance
- 2.25 D extended depth of vision with 1.0 D offset
- Greater imaging capability in the non-dominant eye than the competitor lens, providing binocular distance vision and a smooth, blended transition zone between lenses
- Due to the extended depth of vision, the dominant eye will also be more forgiving of post-operative myopic shift when compared to aberration negative aspheric IOLs



RayOne EMV

HYDROPHILIC MATERIAL

KEY INFORMATION

- Up to 2.25 D of extended depth of vision (with 1.0 D offset)
- Superior intermediate vision when compared with standard monofocals
- Fully preloaded across the entire power range

FEATURES & BENEFITS

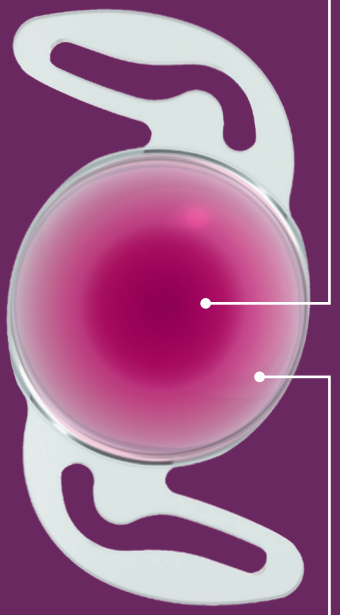
- Smoother, blended transition between the dominant and non-dominant eyes when compared with standard monofocals, maintaining binocular stereoacuity and reducing asthenopia.
- High quality spectacle-free distance vision.
- Reduced pupil dependency, for optimised performance under low light conditions.
- Reduced sensitivity due to to decentration and tilt compared to other IOL designs.
- Complements the eye's natural positive spherical aberration.

When considering a presbyopia-correcting solution, what's important to you?

- Increased range of functional vision
- Minimal dysphotopsia
- High patient satisfaction

RayOne EMV is designed with an aspheric anterior surface and unique inner optic zone which induces controlled positive spherical aberration to extend depth of field without compromising visual acuity under low-light conditions.

RayOne EMV provides up to 2.25 D of extended depth of vision with a 1.0 D offset, improving intermediate vision compared to monovision achieved with standard monofocals and reducing dysphotopsia compared to diffractive IOL designs.



VACUOLE FREE MATERIAL FOR A GLISTENING FREE IOL

- Single piece IOL created from a homogeneous material free of microvacuoles[3]
- Compressible material for delivery through a micro incision
- Excellent handling characteristics with controlled unfolding within the capsular bag
- Low silicone oil adherence[4]
- Excellent uveal biocompatibility[5]
- Hydrophilic acrylic material with low inflammatory response[6]

A PREDICTABLE AND DEPENDABLE PRELOADED IOL

- Amon-Apple enhanced square edge for minimal PCO 1.7% at 24 months[7]
- Average offset of only 0.08 mm 3 to 6 months after surgery[8]
- 1.83° mean IOL rotation 3 to 6 months after surgery[8]
- Fully preloaded from +10.0 D to +30.0 D, in 0.5 D increments

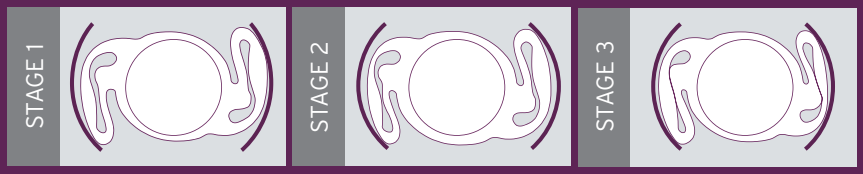
360° Optimised barrier to reduce PCO

Rayner's 360° Amon-Apple Enhanced Square Edge creates an optimum barrier to reduce epithelial cell migration including at the haptic-optic junction.[7,9]

ND: YAG CAPSULOTOMY RATES[7]		MEAN TIME TO ND: YAG CAPSULOTOMY[7]
At 12 months	0.6%	9.3 ± 5.5 mths (range 2.6 - 22.7 mths)
At 24 months	1.7%	Follow-up period: 5.3 - 29 mths

Extremely low Nd:YAG capsulotomy rates, comparable with hydrophobic acrylic lenses with square-edge optics.[7]

Stability of RayOne IOLs



Outer haptics begin to take up the compression forces of post-operative capsule contraction

Outer haptics engage the inner haptics

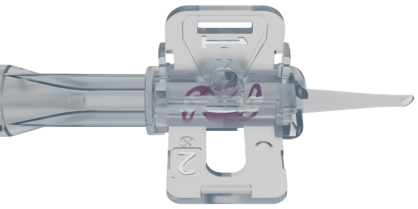
Haptic tips gently meet the IOL optic and are effectively locked into position

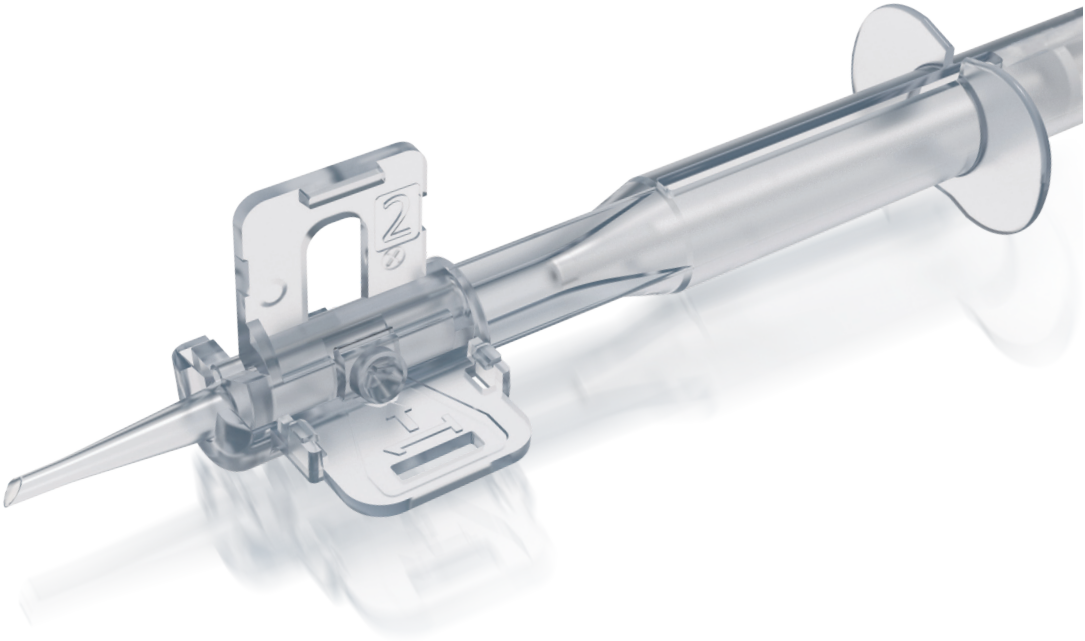
Comparison of preloaded IOLs

Company	Rayner	Alcon	J&J
Lens platform	200E	Acrysof IQ	Tecnis1
Injector	RayOne	UltraSert	iTec
Nd:YAG rate	1.7%[1]	7.47%[7]	3.75%[7]
Miyata grade (glistenings)	0[2] (None)	3[8] (High)	0[12] (None)
Abbe value	56[2]	37[9]	55[9]
Refractive index	1.46[3]	1.55[10]	1.47[12]
Mean decentration	0.08 mm[4]	0.78 mm[11]	0.27 mm[13]
Nozzle diameter	1.65 mm[5]	2.08 mm[5]	1.86 mm[5]
Injector preparation steps	2[6]	3[10]	4[12]

1. Mathew RG and Coombes AGA. Ophthalmic Surg Lasers Imaging. 2010 Nov-Dec; 41(6):651-5. 2. Rayner. Data on File. White paper. 3. Ferreira T et al. J of Refract Surg. 2019; 35(7): 418-25 4. Bhogal-Bhamra GK et al. Journal of Refractive Surgery. 2019;35(1):48-53. 5. Nanavaty MA et al. J Cataract Refract Surg. 2009; 35:663-671. 6. www.rayner.com 7. Cullin F et al. Acta Ophthalmol. 2014; 92(2): 179-83 8. Werner L. J of Refract Surg. 2010; 36(8): 1398-1420 9. Zhao H et al. Br J Ophthalmol. 2007; 91(9): 1225-29 10. www.myalcon.com 11. Humbert G et al. FR J Ophthalmol. 2013; 36(4): 352-61 12. jnjvisionpro.com 13. Baumeister M et al. J of Refract Surg. 2009; 35(6): 1006-12

RayOne injector





TWO-STEP SYSTEM

- Easy to use[10]
  - i. Minimal learning curve
  - ii. Minimises error
- Efficient IOL delivery time[10]
  - 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
- Parallel sided for minimal stretch
  - i. Sub 2.2 mm delivery
  - ii. 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
  - 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

In a comparative study of six market-leading preloaded delivery systems[10]

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

OVD priming → Advancing OVD in the nozzle → Nozzle insertion into the wound → IOL delivery

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 inserted 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

RAYONE FULLY PRELOADED INJECTOR SYSTEM:

THE QUEEN'S AWARDS
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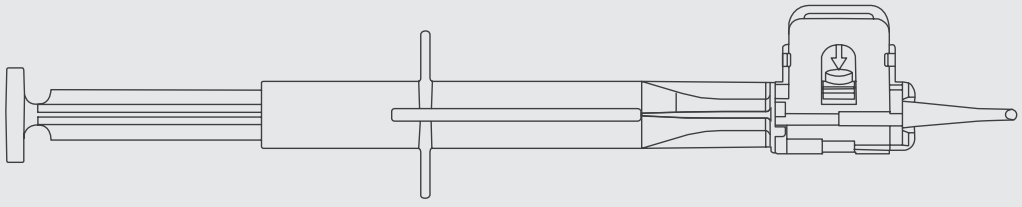
2020



Technical information

Model Name	RayOne EMV
Model Number	RAO200E
Power Range	+10.0 to +30.0 D (0.5 D increments)
Delivery System Type	Fully preloaded IOL injection system
Incision Size	Sub 2.2 mm

Delivery System	
Injector Type	Single use, fully preloaded IOL injection system
Nozzle Size	1.65 mm
Bevel Angle	45°
Lens Delivery	Single handed plunger

Aspheric Monofocal IOL	
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	12.50 mm
Optic Diameter	6.00 mm
Optic Shape	Biconvex (positive powers)
Asphericity	Aspheric anterior surface
Optic Edge Design	Amon-Apple 360° enhanced square edge
Haptic Angulation	0°, uniplanar
Haptic style	Closed loop with anti-vaulting haptic (AVH) technology

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
118.6	1.17	0.40	0.10	5.32	1.56	5.32	1.67	0

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.

RayPRO

Real-time patient feedback data

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

- **New insightful trends**
- Promote your services to new patients, with easy-to-understand metrics.
- Supports appraisals, recertification and auditing.

- **Fast and simple**
- Patients are registered in seconds.
- Only value-adding data is collected.
- Access metrics anytime from your smartphone (iOS and Android).

- **Automated collection of PROs**
- Patients provide their feedback in just a couple of minutes.
- Responses are anonymous to encourage patient honesty.
- Reports are always live, with no data analysis needed.
- Use product and patient trends to improve your service.

- **Secure cloud-based platform**
- Designed for data security and to be GDPR and HIPAA compliant.
- Only you can see your personal RayPRO reports and metrics.
- Questionnaire responses are non-identifiable to protect patients' data privacy.

GET IT ON Google Play

Download on the App Store

RayPRO is FREE for users of Rayner IOLs. rayner.com/raypro

RayOne EMV References:

1. Rayner data on file. 2. Zhang F, Sugar A, Barrett G. Pseudophakic monovision: A clinical guide. Thieme. 2018. 3. Rayner. Data on File (RDTR 1937). 4. McLoone E, Mahon G, Archer D, Best R. Br J Ophthalmol. 2001; 85:543-545. 5. Tomlins PJ, Sivaraj RR, Rauz S, Denniston AK, Murray PI. J Cataract Refract Surg. 2014; 40:618-625. 6. Rayner. Data on File. 7. Mathew RG, Coombes AGA. Ophthalmic Surg Lasers Imaging. 2010 Nov-Dec; 41(6):651-5. 8. Bhogal-Bhamra GK, Sheppard AL, Kolli S, Wolffsohn JS. J Refract Surg. 2019;35(1):48-53. 9. Vyas AV, Narendran R, Bacon PJ, Apple DJ. J Cataract Refract Surg 2007; 33:81-87. 10. Nanavaty MA and Kubrak-Kisza M. J Cataract Refract Surg 2017; 43:558-563.

Support the best visual outcomes with...

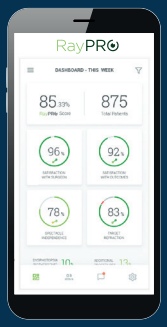
AEON

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

rayner.com/aeon

RayPRO

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



rayner.com/raypro

Rayner

RayOne EMV is not approved by the US FDA

MADE IN UK