

MULTIFOCAL TORIC HYDROPHOBIC INTRAOCULAR LENSES

PRELOADED



ArtisSymbiose®
BINOCULAR PHASE CONTINUITY

Complementary implants with continuous phase

A technology designed for continuous sharp
binocular vision from 40 to 90 cm without
compromising distance vision

PRELOADED

Two complementary profiles:



MID



PLUS



MADE IN **FRANCE**

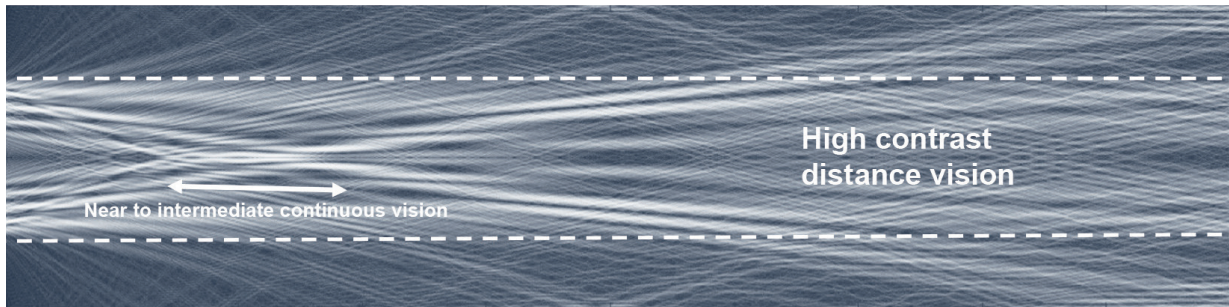
 **CRISTALENS**

CE 0459

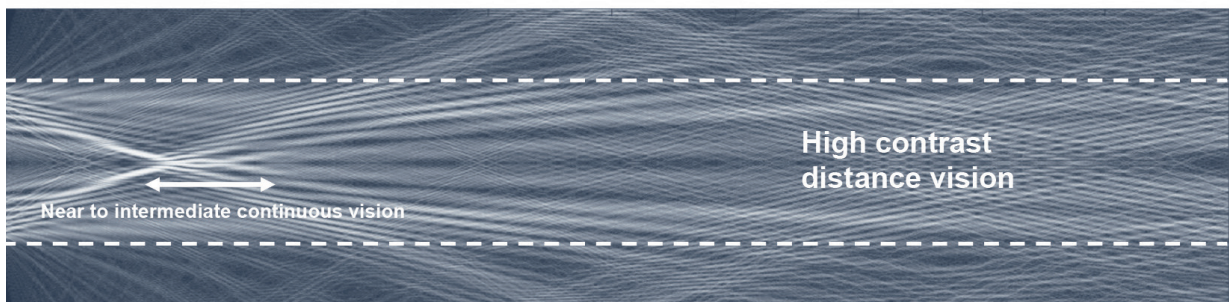
INNOVATIVE BINOCULAR TECHNOLOGY

- Optimized optical profiles, calculated with innovative design and simulation tools developed by Cristalens Industrie for diffractive technology.

MID



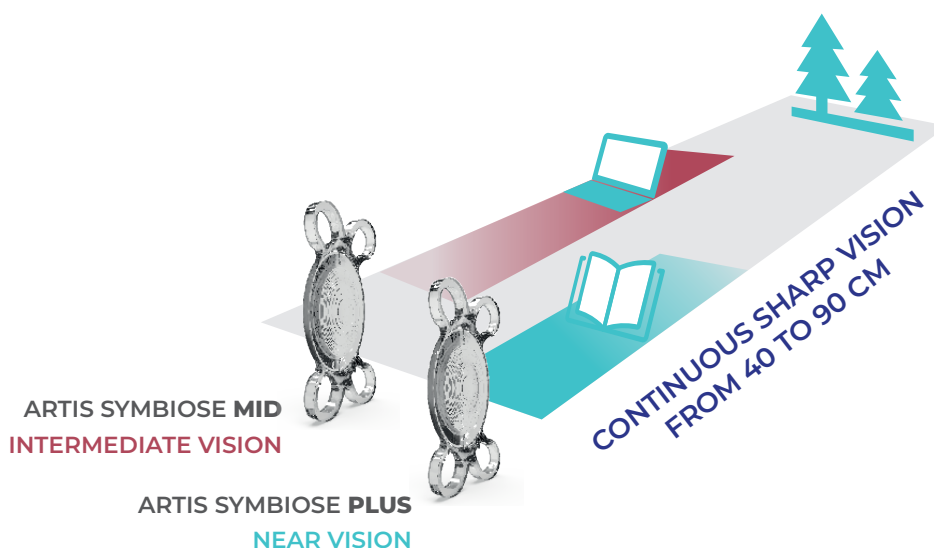
PLUS

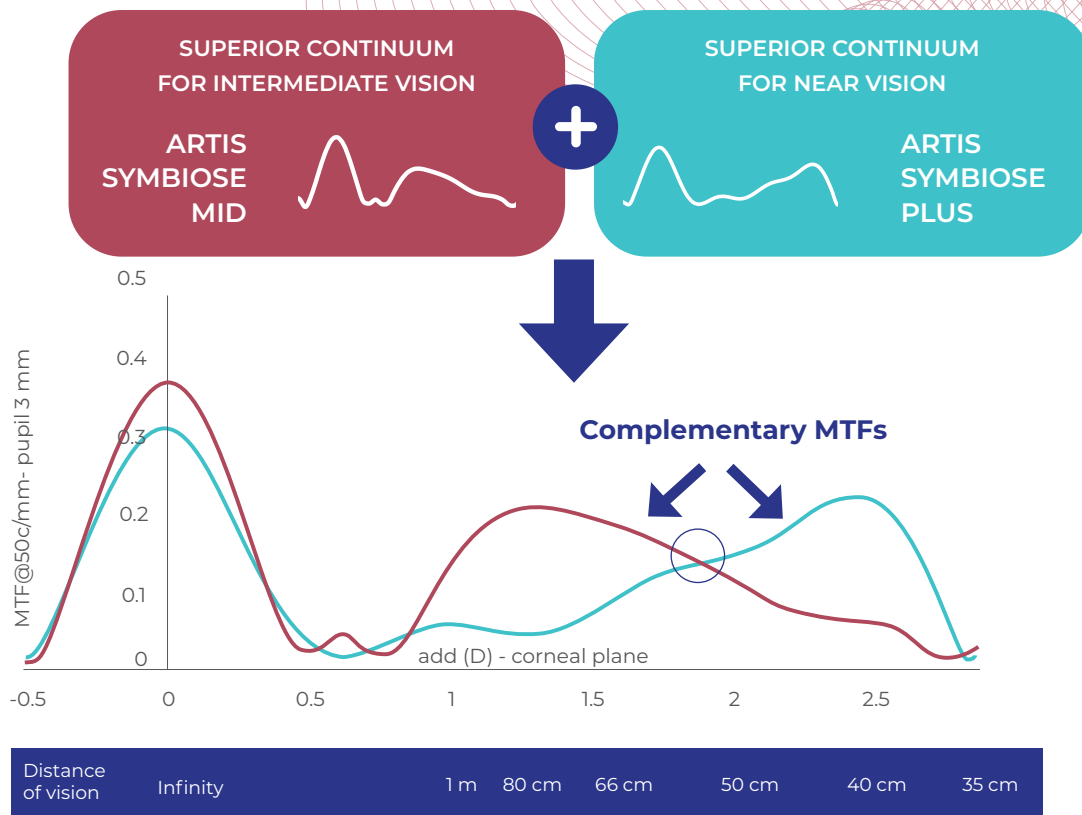


Propagation of optical rays with ARTIS SYMBIOSE MID & PLUS diffractive profiles

IOLs WITH PROGRESSIVE COMPLEMENTARITY

- **ARTIS SYMBIOSE MID** and **PLUS** are designed with progressive depth of field complementary in binocular vision to provide «full focus» vision from 40 to 90 cm without compromising distance vision.

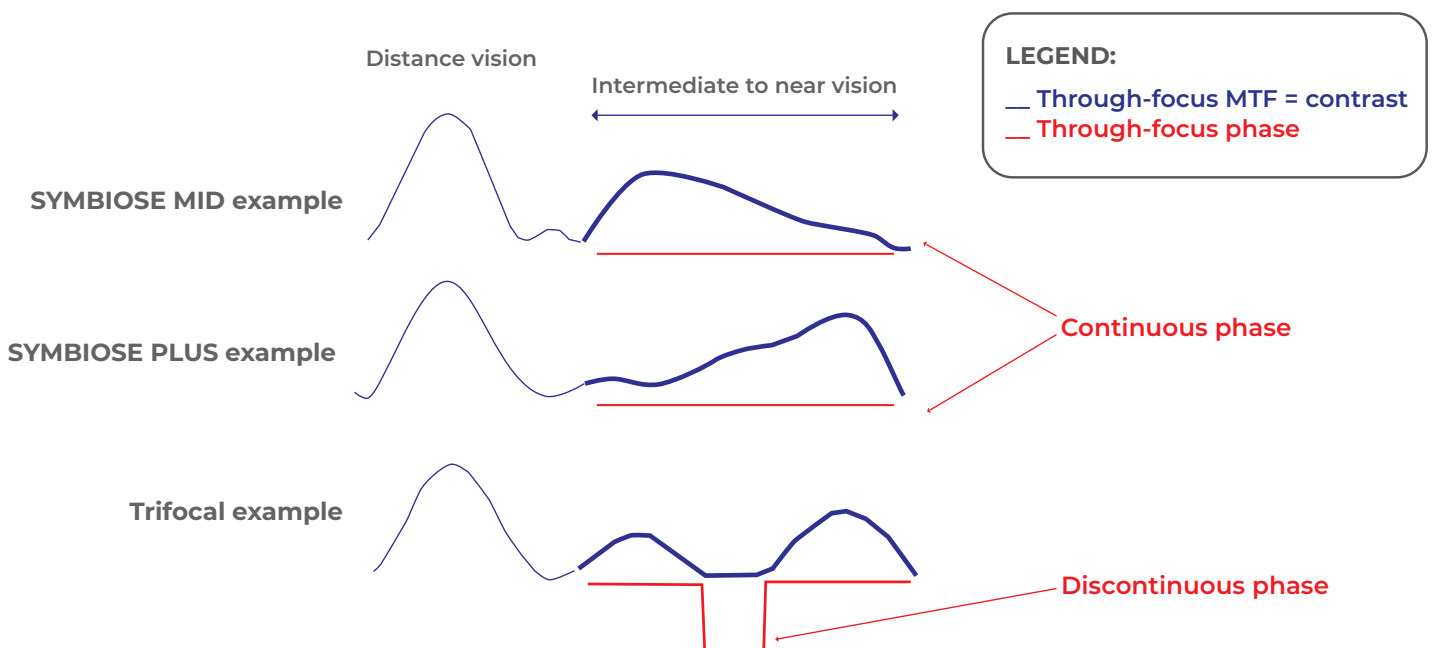




MTFs' complementarity ^{1 2 3}

IOLs WITH PHASE CONTINUITY

► The through-focus continuous phase insures image sharpness throughout depth of field from intermediate to near vision.⁴



Theoretical diagram: MTF & PTF @50c/mm – Pupil 3 mm

ARTIS SYMBIOSE®: IMAGE SIMULATION

Distance	EDOF	TRIFOCAL	SYMBIOSE	MID	PLUS
5 m	EDOF	TRIFOCAL	SYMBIOSE	MID	PLUS
90 cm	EDOF	TRIFOCAL	SYMBIOSE	MID	PLUS
80 cm	EDOF	TRIFOCAL	SYMBIOSE	MID	PLUS
70 cm	EDOF	TRIFOCAL	SYMBIOSE	MID	PLUS
60 cm	EDOF	TRIFOCAL	SYMBIOSE	MID	PLUS
50 cm	EDOF	TRIFOCAL	SYMBIOSE	MID	PLUS
40 cm	EDOF	TRIFOCAL	SYMBIOSE	MID	PLUS
37 cm	EDOF	TRIFOCAL	SYMBIOSE	MID	PLUS

Simulation of optotypes from distance to near vision for a 3 mm pupil²

RESULTS

SHARP & CONTINUOUS BINOCULAR VISION FROM 40 TO 90 CM

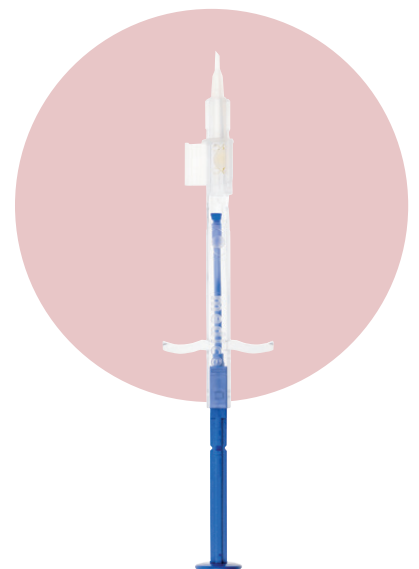
OPTIMIZED PRELOADED SYSTEM

Preloaded system personalized for Cristalens Industrie's hydrophobic IOLs:
2 mm incision size.

Preloaded IOLs tend to reduce endophthalmitis⁵ due to the absence of manipulation of the intraocular lens.

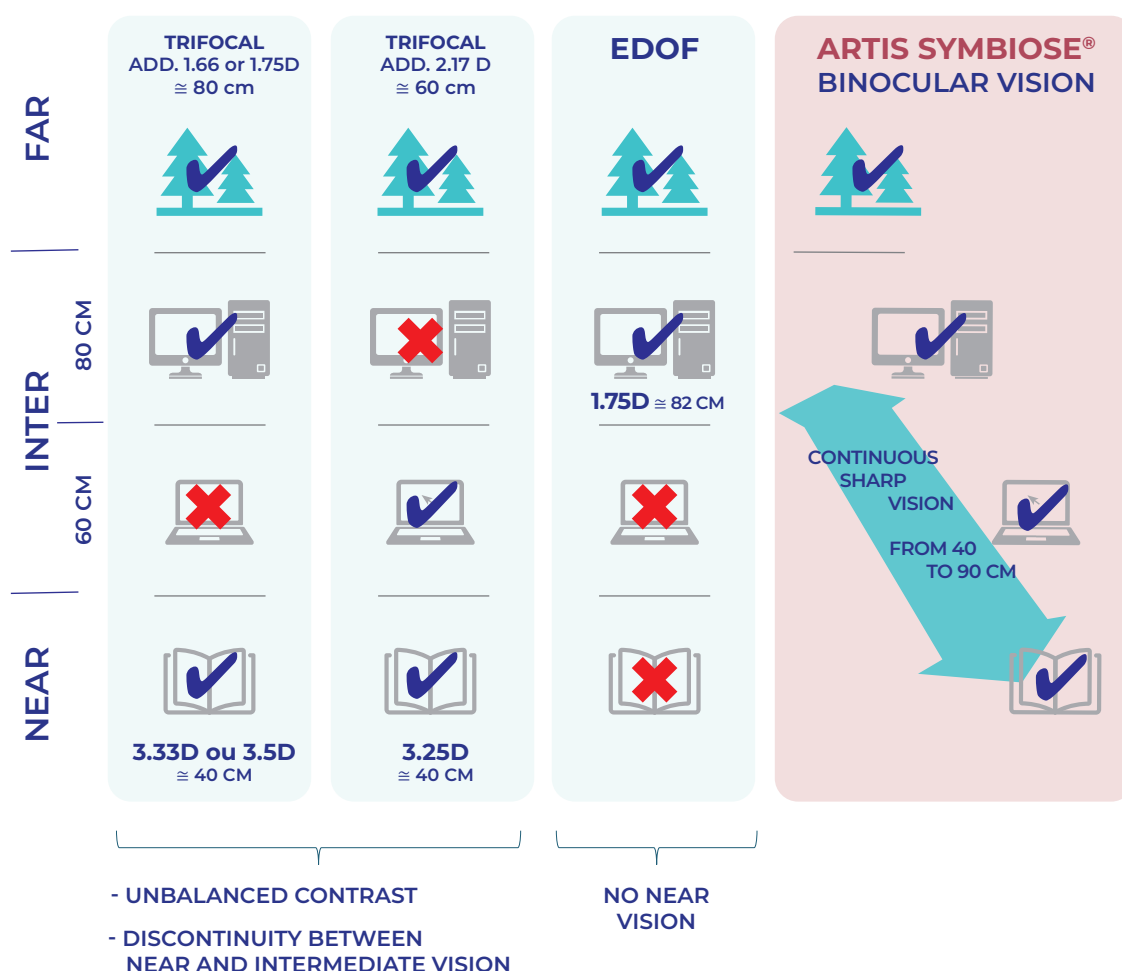
Remove the lens holder, hydrate for 1 minute, protect your IOL with viscoelastic product, clip the cartridge and everything is ready for injection:

- IOL inspection possible before injection,
- Easy to use,
- No need for help,
- IOL stays hydrated,
- One of your hands is free (unlike a screw loading system).



COMPARISON WITH EXISTING TECHNOLOGIES

- Constant contrast
- Vision continuity at all intermediate to near distances



¹ Castignoles F, New EDOF IOL set, 36th ESCRS congress, Vienna, Austria, September 22-28 2018.

² Castignoles F, Lamy S, New set of complementary extended-depth-of-focus IOL: comparison with the state-of-the-art, ARVO meeting, Vancouver, Canada, April 28- May 2 2019.

³ Philippaki E, Gobin L, Mandola J, Lamy S, Castignoles F. Optical evaluation of new-design multifocal IOLs with extended depth of focus. J Opt Soc Am A Opt Image Sci Vis. 2019 May 1;36(5):759-767.

⁴ Mandola J, Castignoles F, Philippaki E. Optical evaluation of new-design multifocal IOLs with extended depth of focus, VPO conference, Athens, Greece, August 29-31 2018.

⁵ K Weston, R Nicholson, C Bunce... An 8-year retrospective study of cataract surgery and postoperative endophthalmitis: injectable intraocular lenses may reduce the incidence of postoperative endophthalmitis. Br J Ophthalmol. 2015 Oct;99(10):1377-80.

TECHNICAL SPECIFICATIONS

• MULTIFOCAL •

Lens type	For implantation in the capsular bag
Optic diameter	6.00 mm
Overall diameter	10.79 mm
Design	One-piece square edge on 360°
Optic design	Diffractive multifocal extended depth of focus, with binocular complementarity Aspherical with negative spherical aberration to partly correct corneal spherical aberration Diffractive pattern on the anterior face, biconvex
Angulation	5°
Material	Hydrophobic CBK 1.8 from Cristalens
Dioptric powers	From +10.0D to +35.0D by 0.5D
Additions (at IOL plane)	MID: Superior intermediate vision - PLUS: Superior near vision
Estimated A-Constant (SRK-T)	119.3 Ultrasound biometry 119.7 Interference laser biometry
Suggested Anterior Chamber Depth (ACD)	5.77 mm Ultrasound biometry 6.03 mm Interference laser biometry
Refractive index	1.54
Sterilization	Ethylene oxide
Injection system	Preloaded system
Recommended incision size	2.0 mm

• TORIC MULTIFOCAL •

Also available in TORIC version to correct corneal astigmatism for astigmatic patients:

Optic design	Diffractive multifocal extended depth of focus, with binocular complementarity and variable toricity Aspherical with negative spherical aberration to partly correct corneal spherical aberration Diffractive pattern on the anterior face, toricity and marks on the posterior face, biconvex
Dioptric powers (spherical equivalent)	From +10.0D to +35.0D by 0.5D
Additions (at IOL plane)	MID: Superior intermediate vision - PLUS: Superior near vision
Cylinder powers	+0.75D / +1.50D (+2.25D / +3.00D / +3.75D on request)

ARTIS SYMBIOSE[®] CALCULATOR

Eye selection

☐ RIGHT EYE (OD)

☐ LEFT EYE (OS)

Pre-operative information

IOL spherical power (SEQ)

.... ▼ D

Keratometry data in

☐ Diopter (D)

☐ Millimeter (mm)

Flat axis:

K1 30.00 ▼ D

Steep axis:

K2 30.00 ▼ D @ 90 ▼

Pre-operative astigmatism:

0.00 D x 90°

Crossed cylinder (at corneal plane):

0.00 D x 90°

☐ *Include posterior corneal astigmatism*

Calculation

Print

New calculation

Computed toric iol

Recommended cylindrical power*:

IOL axis of placement:

** I want to select a different cylindrical power than the one suggested*

.... ▼

Post-operative predictions

Cristalens toric IOL:

MID

Estimated residual astigmatism:

x



www.cristalens.fr



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No [960783]



4 rue Louis de Broglie - 22300 Lannion - FRANCE
Tel +33 (0)2 96 48 92 92 - Fax +33 (0)2 96 48 97 87

