

Shaping the Future of Sight

Proven ZEISS Optic for aspheric IOLs



“Zeissgeist” in optical design

As the world’s leading optics company, Carl Zeiss looks back over a long history of experience in developing aspheric lens concepts and solutions for a variety of products and systems, including spectacles, cameras, telescopes and binoculars, to name just a few. In fact, with many of its innovative developments, Carl Zeiss has managed to literally capture the zeitgeist of a technological era. Consider, for example, such milestones as the first aspheres to correct astigmatism, patented by Ernst Abbe as early as 1899, the invention of spheric and aspheric spectacle lenses, calculated by Moritz von Rohr in 1912, or the introduction of a novel retrofocus type aspheric lens design for high-speed motion picture cameras by Erhard Glatzel in 1975.

For more than a century now, Carl Zeiss has defined high-level quality, unparalleled optical expertise and outstanding innovation in optical technology. It therefore comes as no surprise that Carl Zeiss has now, for the first time, applied this proven technology to a new generation of aspheric IOLs used in cataract surgery. Introducing the first members of the new ZEISS Optic aspheric IOL family: the CT ASPHINA™ 603P and the CT ASPHINA™ 604P.

Market requirements, dedication to technological excellence and an eye for progress are the forces that drive us to meet the highest expectations:

- Precision** for best results
- Performance** for safe, reproducible outcomes
- Patient Care** for a whole new outlook on life



Aspheric/spherical lenses for spectacles to correct astigmatism.



Photo camera objective with aspheric lens.

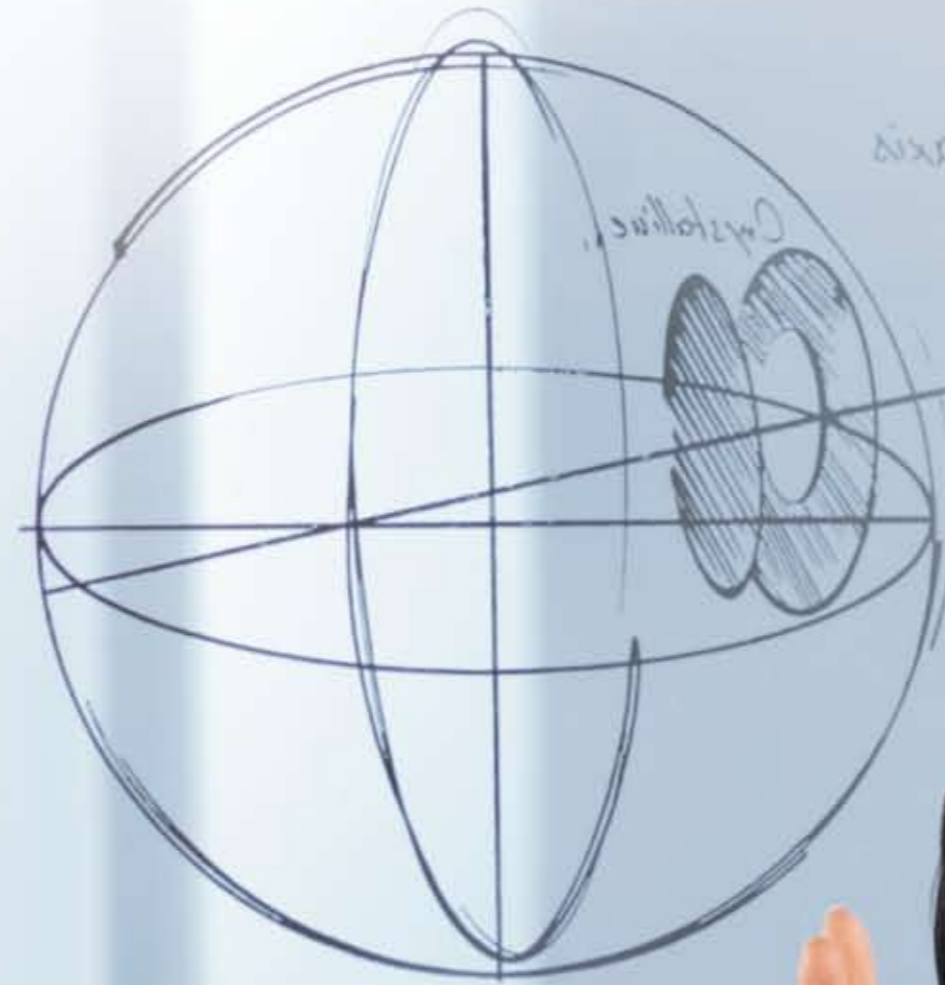


Microscope with aspheric optic design.



Aspheric optic for binoculars.

ZEISS in your eyes



The benchmark among eye models

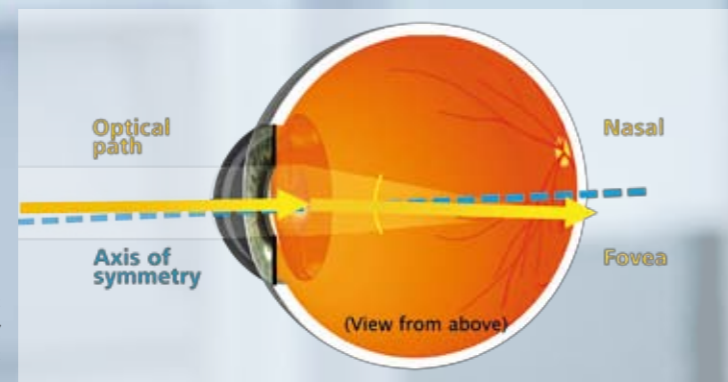
The advanced optic of the ZEISS aspheric lens is, among other aspects, patterned after the Liou & Brennan (LBE) eye model, widely regarded as the most anatomically accurate eye model in ophthalmology today. LBE places the young, phakic human eye into an optical, physiological and realistic environment, using, among other things, the physiological off-axis of the pupil in nasal and the tilt of the visual/optical axis as its basis.

Similarly, the ZEISS Optic/600 concept closely mimics the anatomical and optical imaging properties of the young, natural human eye. Employing advanced optical design techniques, it transfers these to the eye with the IOL.

Superior image quality quantification

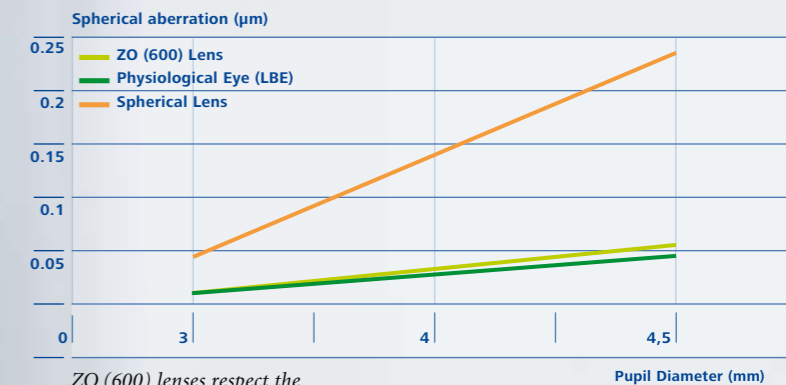
To ensure accurate realization of image quality, the ZEISS Optic/600 concept relies on the Modulation Transfer Function (MTF), the most superior tool for objectively measuring visual performance and contrast sensitivity. MTF is also an extremely sensitive measurement of image degradation, enabling precise quantification of the degree in which an aberration of an optic spoils contrast perception for each spatial frequency.

In developing its aspheric lens concept, Carl Zeiss brought together the best of both worlds in combining the advantages of negative spherical aberrations (SA) lenses and aberration-neutral lenses. The unique ZO (600) lenses enable reduction and control of the spherical aberrations of the eye while, at the same time, showing very low sensitivity to decentration and tilt. The outstanding optic concept compensates for a portion of the positive spherical aberrations of the pseudo-phakic eye, improves the retinal image quality of patients, as well as enhances contrast perception in mesopic conditions. As a result, the unique ZEISS Optic / 600 concept achieves maximum visual quality for the largest range of patients.



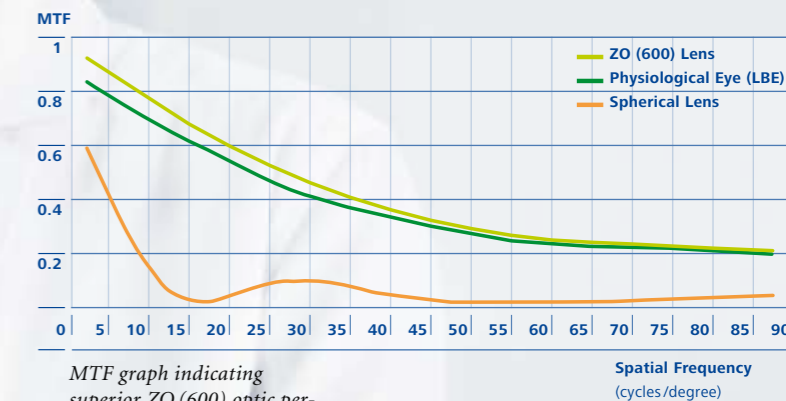
The ZO/600 lens design is based on the widely recognized Liou & Brennan (LBE) eye model.

Zernike SA of lenses in LBE model (4.5mm pupil; 21D)*



ZO (600) lenses respect the natural amount of SA to offer visual performance close to young phakic eyes.

MTF curves of lenses (21D) in LBE model (4.5mm pupil, IOLs centred)*



MTF graph indicating superior ZO (600) optic performance as compared with standard spherical IOL.

* Data on file

Spanning the spectrum of optical excellence

Thanks to their innovative aspheric concept, the ZEISS aspheric lenses (CT ASPHINA™ 603P and 604P) outperform conventional spherical intraocular lenses by improving the quality of the image and restoring high-contrast sensitivity for the largest range of spatial frequencies, even in difficult visual situations such as low light conditions with enlarged pupils and decentration of the lens. The reduction and control of spherical aberrations achieve superior vision quality for pseudophakic patients, also by providing the best image quality that the retina can interpret. In respecting the natural amount of spherical aberration, the ZEISS aspheric optic enables easier and quicker adaptation for the patient, as well as maintaining depth of field.

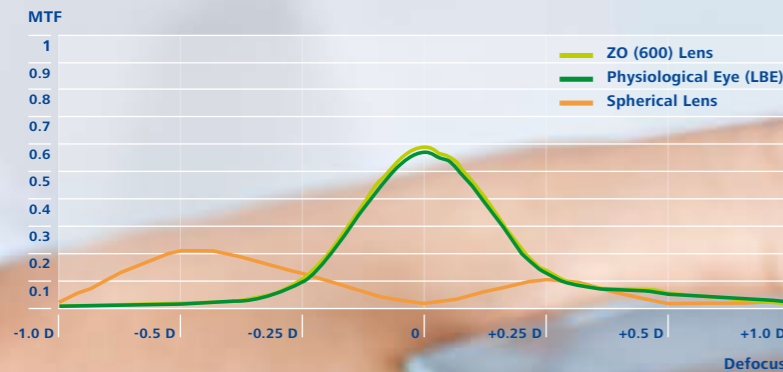


CT ASPHINA™ 603P



CT ASPHINA™ 604P

MTF vs Defocus (4.0mm pupil; 30cpd; 22D IOLs)*



Spherical lens in eye (5mm pupil).



Aspheric lens in eye (5mm pupil).

In terms of MTF, the ZO (600) lens offers a top-quality image with enhanced contrast sensitivity.

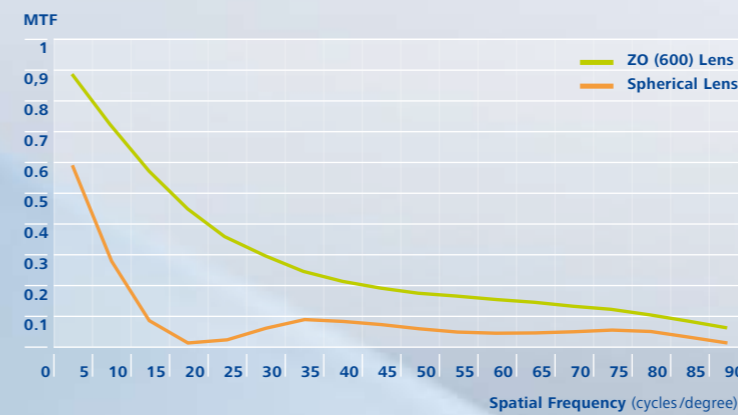
Low sensitivity to tilt and decentration

The shape of the posterior optic is optimized to provide minimum sensitivity of optical performance with respect to decentration and tilt of the implanted IOL. Thus, a high degree of reproducible and precise refractive outcomes is ensured.

Reliable behavior

For more than 10 years already, the hydrophilic acrylic IOLs of Carl Zeiss have successfully demonstrated its excellent long-term behavior on the market in terms of biocompatibility, transparency and stability of the visual function and centration. A foldable and highly adaptable implant for all bag conformations, the ZEISS IOLs display outstanding tensile strength for maximum resistance during insertion, and offer controlled unfolding for fast visual recovery.

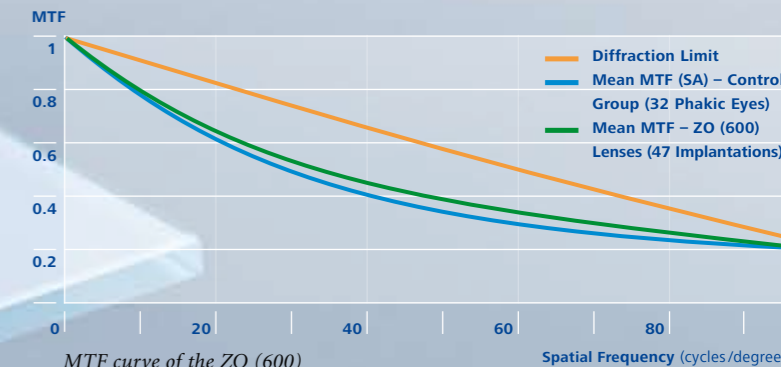
MTF curves of lenses (21D) in LBE eye model (4.5mm pupil, IOLs decentered of 1mm)*



Fixation stability

To optimize the contact surface with the equator of the capsular bag, as well as to secure postoperative stability, the CT ASPHINA™ 603P and CT ASPHINA™ 604P feature a 3- and 4-haptics design respectively. The flexible haptics are optimized to fit bag retraction while securing long-term centration.

SA evaluated using WASCA aberrometer (4.5mm pupil)*



MTF curve of the ZO (600) group is similar to the MTF curve of the phakic eyes control group.

CT ASPHINA™ 603P and CT ASPHINA™ 604P IOLs overview

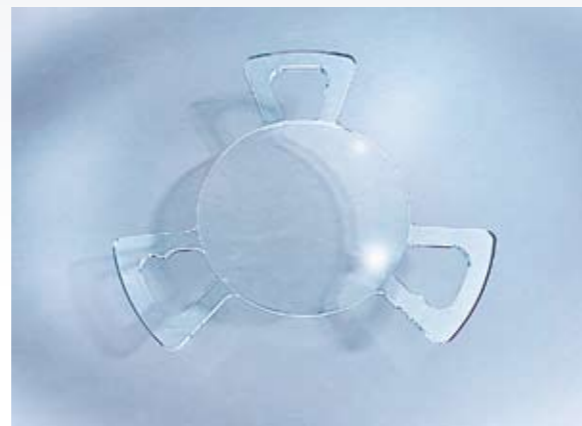
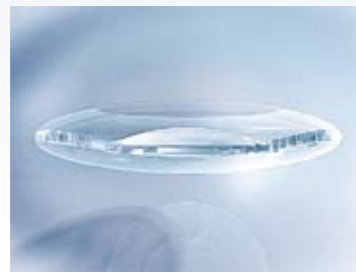
The CT ASPHINA™ 603P and CT ASPHINA™ 604P, the first members of the one-of-a-kind ZEISS aspheric IOL family, are designed to optimize visual quality by combining the advantages of negative SA lenses and aberration-neutral lenses.



Easy-to-use disposable injector system.

CT ASPHINA™ 603P

- Posterior aspheric optic
- Preloaded lens
- Hydrophilic acrylic (28%)
- Refractive index: 1.46
- Optical \varnothing : 6.0mm
- Total \varnothing : 10.5mm
- Angulation: 10°
- A-Constant (estimated): 118.2
- Biconvex
- ACD: 5.08
- Implantation: capsular bag
- Diopters: + 10.0 to + 30.0 D by 0.5 D increments
- Square edge
- UV filter
- Injectable with the SkyJet® disposable injector



CT ASPHINA™ 604P

- Posterior aspheric optic
- Preloaded lens
- Hydrophilic acrylic (28%)
- Refractive index: 1.46
- Optical \varnothing : 6.0mm
- Total \varnothing : 10.5mm
- Angulation: 0°
- A-Constant (estimated): 118.1
- Biconvex
- ACD: 5.02
- Implantation: capsular bag
- Diopters: + 14.0 to + 30.0 D by 0.5 D increments
- Square edge
- UV filter
- Injectable with the SkyInvent disposable injector



The flexible CT ASPHINA™ 603P and CT ASPHINA™ 604P haptics are optimized to fit bag retraction while securing long-term centration.

An eye for patient well-being

Cataract surgery, as the most commonly performed eye surgery in the world, is a very routine procedure. Nevertheless, when it comes to patient safety and well-being, there is no room for compromise.

The advanced lens concept of the ZEISS Optic (600) is designed to ensure a high degree of reproducible and precise refractive outcomes, allowing for routine use and adaptation to the vast majority of patients.

Moreover, by mimicking the spherical aberration of a young healthy phakic eye with slightly positive aberrations, it delivers superior vision quality and the best image quality the retina can process, while preserving the depth of field.

Great mileage

Thanks to its intelligent design, the ZEISS aspheric lens displays very low sensitivity to tilt and decentration. As a result, patients benefit from secure long-term lens centration and stability, and thus optimized optical performance over a longer period of time.

Preloaded – easy, quick and safe surgical workflow

The CT ASPHINA™ 603P and CT ASPHINA™ 604P lenses are preloaded in their cartridge to allow for easy, sterile and reproducible application. Simply clip the cassette into the disposable injector. The lens is protected at all times to avoid risk of damage, manipulation and cross contamination. Most importantly, patient safety is further reinforced as the complete procedure is greatly simplified. Patients experience a more comfortable operation, while surgeons have more time to devote to the care of their patients.

The ZO (600) lens is designed to ensure highly reproducible and precise refractive outcomes.



Carl Zeiss Meditec: One-stop ophthalmic care

Carl Zeiss offers the complete continuum of product solutions, each representing the highest standards of quality, precision and predictability across the large spectrum of ocular disease. Providing heightened diagnostic insight and superior therapeutic performance, we enhance clinical confidence while consistently ensuring optimal outcomes.

Enhanced surgical outcomes: the IOLMaster®

A state-of-the-art optical biometry tool, the IOLMaster uses a gentle non-contact method to collect all of the data needed to calculate the optimum lens power for patients – in mere seconds. Delivering precise axial length measurements along visual axis, and equipped with an integrated lens constant personalization feature, the IOLMaster is user-independent and easy to delegate. The IOLMaster's measurement profile also includes post-refractive surgery IOL power calculation options, as well as power calculations for angle-supported, iris-fixated and posterior chamber IOLs.



IOLMaster

Seeing farther with the WASCA® Analyzer

High-resolution wavefront aberrometry offers a new dimension in understanding and enhancing common and unique aberrations. Thanks to its innovative, high-resolution technology, the WASCA Analyzer has emerged as a leading diagnostic instrument for analyzing the optical characteristics of the entire eye – both refraction as well as higher order aberrations – in a single measurement.



WASCA Analyzer

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