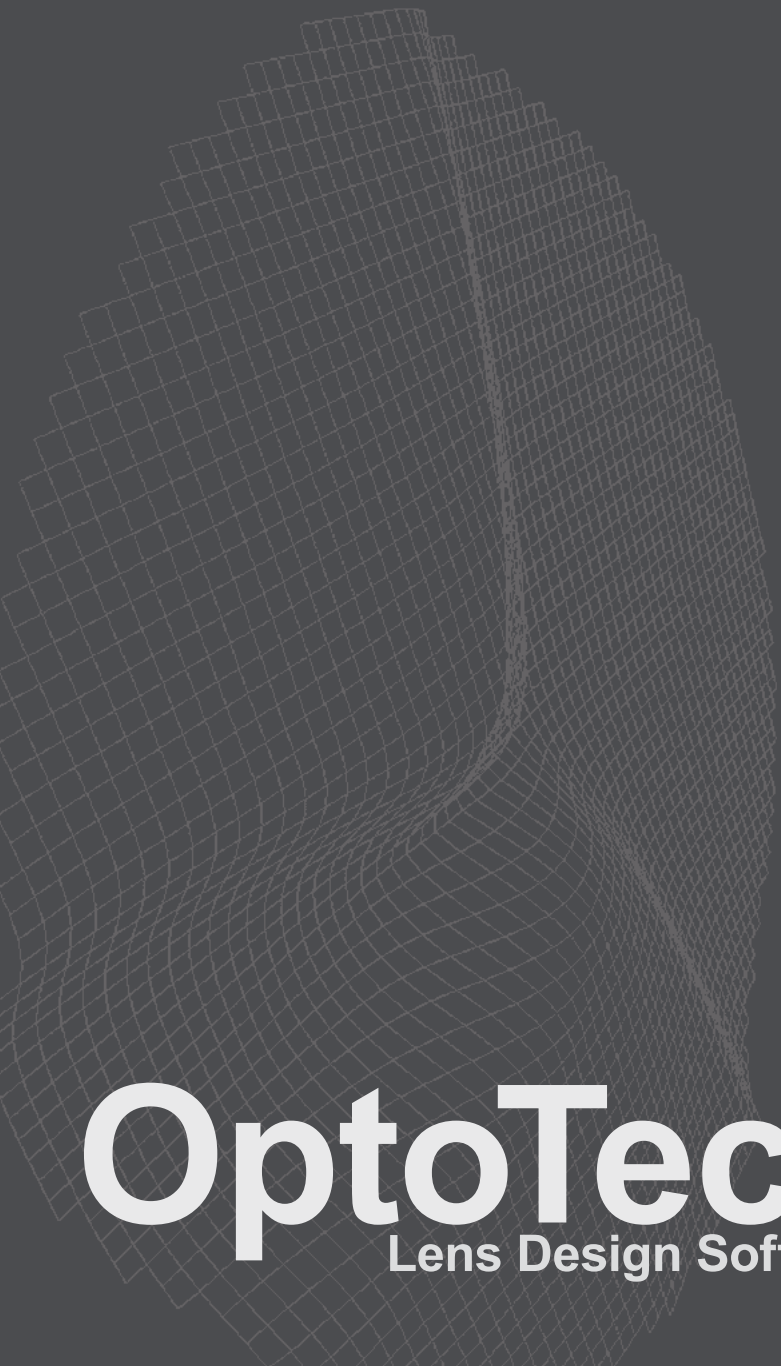


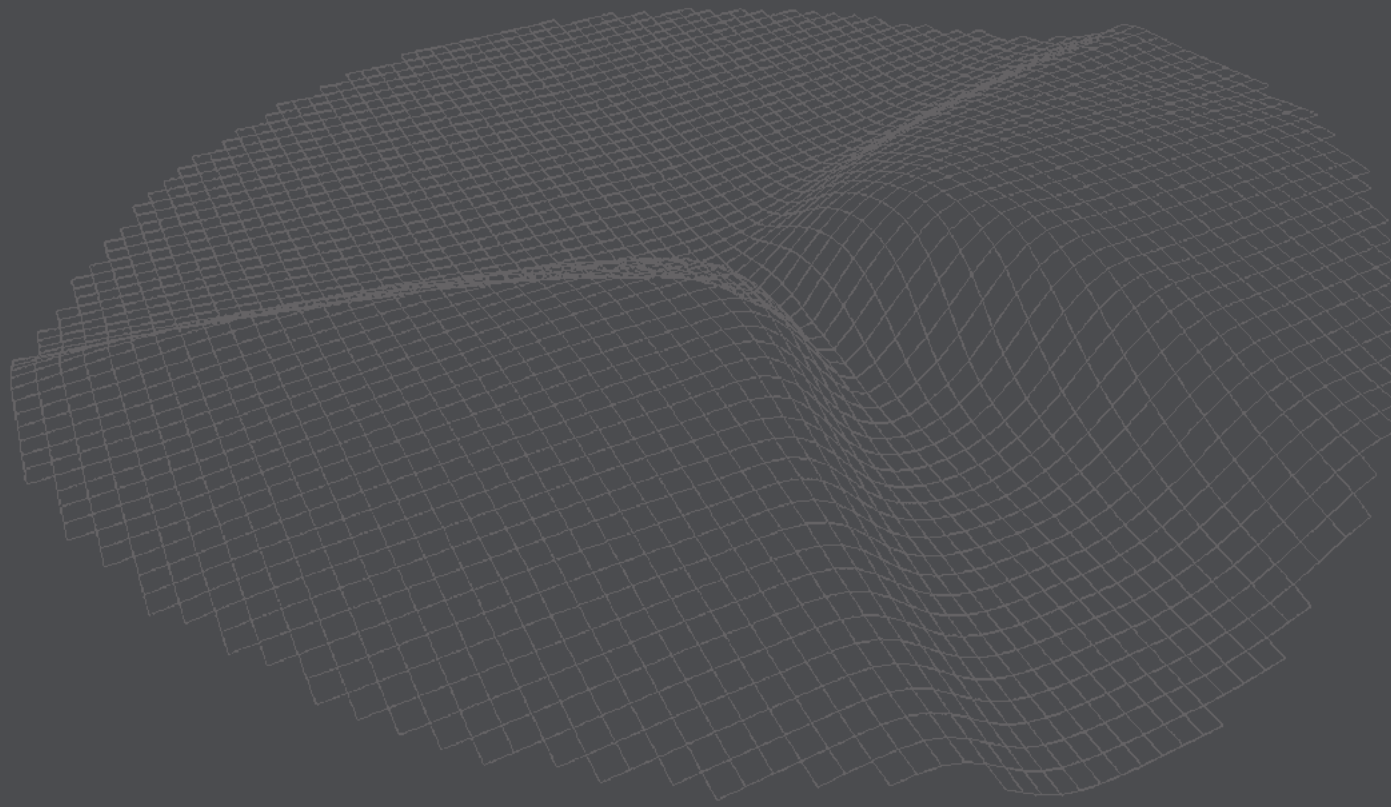
OptoTech

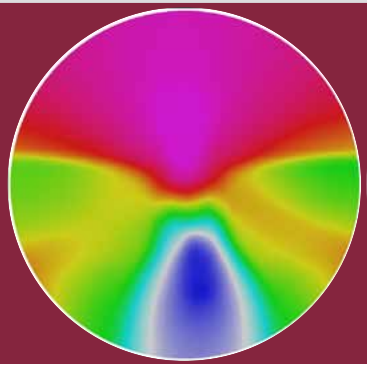
Lens Design Software

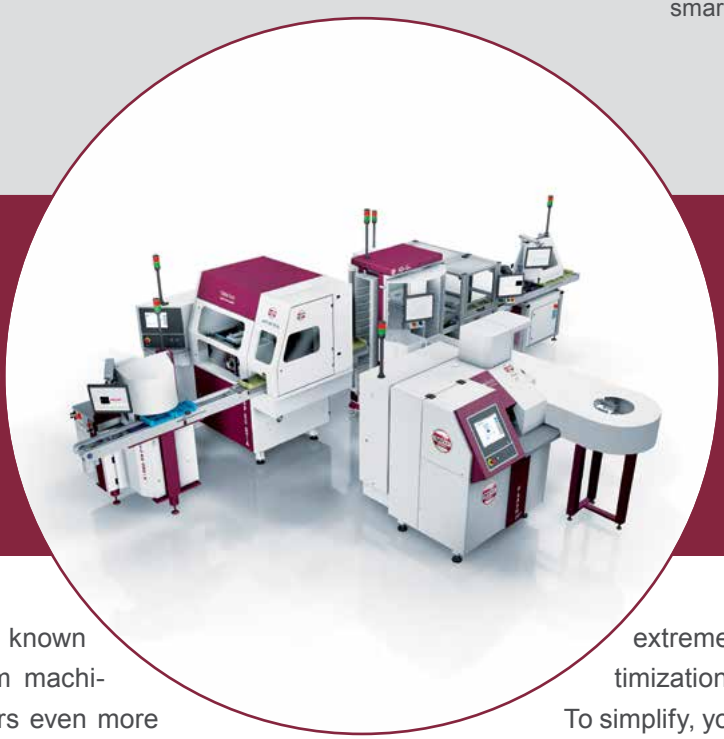
OptoTech GERMANY

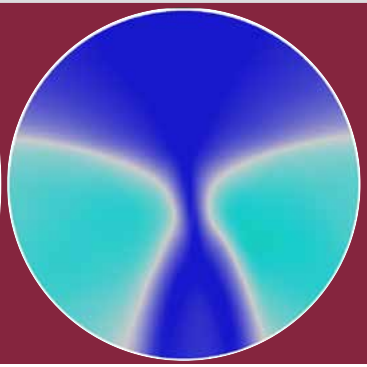

Ziele

Introduction









For many years, OptoTech is known for their expertise in freeform machinery. However OptoTech offers even more than machines. OptoTech wants to transfer the know-how and the philosophy of freeform to the customer, so they are able to give their clients an affordable and optically advanced solution adapted to each Individuals need.

OptoTech lens design software enables customers to calculate different kinds of lens specialties considering individual needs of the consumer. We offer a wide range of individual lens designs. Different channel lengths combined with various designs maximize the customer value.

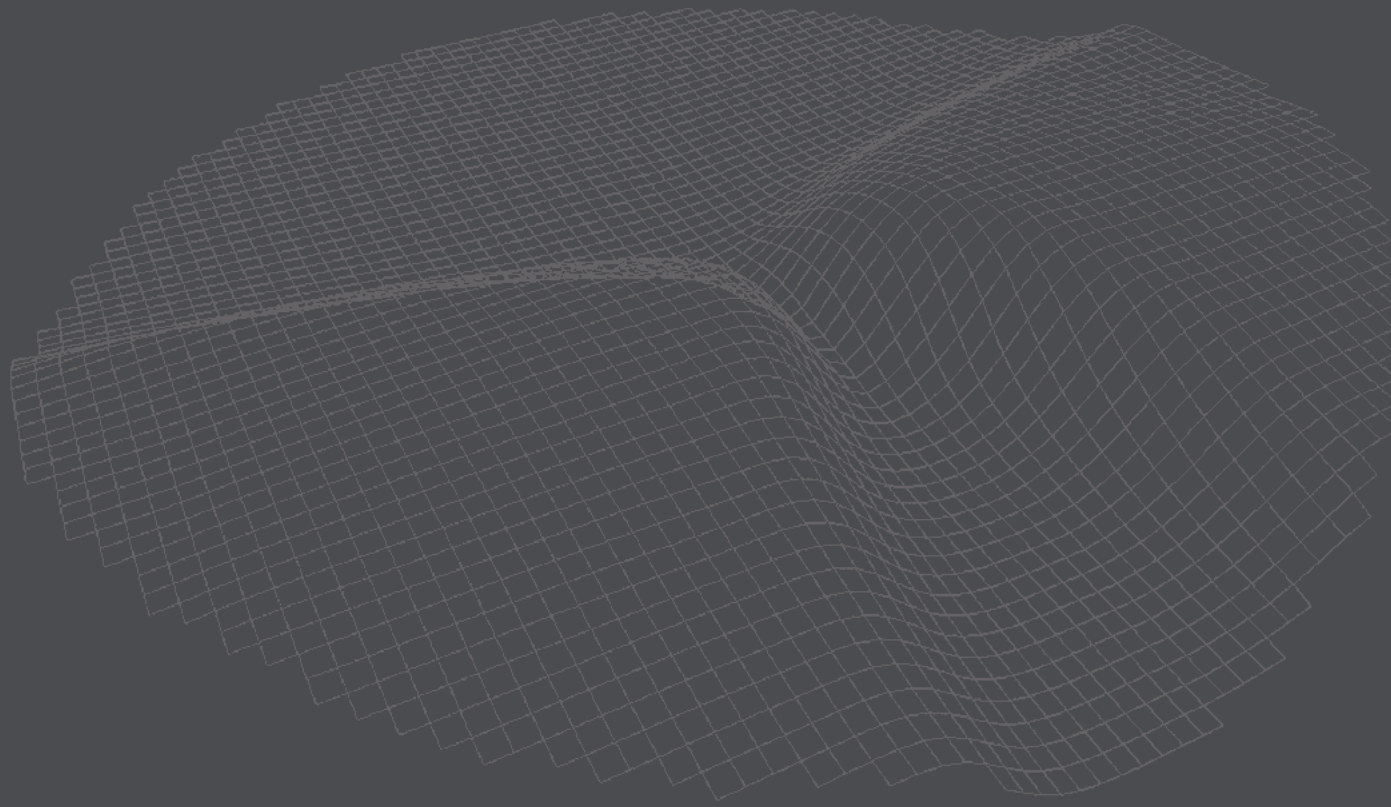
Additionally, OptoTech has designs for special needs such as blended tri-focal, mild add, office lenses, blended high minus (lenticular), or atoric optimization and allows to build a complete product family on a very high level. All designs can be decentrated up to 10 mm to guarantee most thinnest lenses.

To develop a new progressive lens in a high quality level, extreme complex and powerful optimization programs are necessary.

To simplify, you have to imagine that the optimization program looks for a surface which combines two different spherical surfaces (distance and near vision) as even as possible.

It is important, that the areas for distance and near view are developed as comfortable as possible with all required optical properties. Also the transformed areas should be as smooth as possible, that means without big unwanted astigmatism. These easy looking requirements are practically very difficult to solve. A surface has, at a normal size of 80 mm x 80 mm and a point distance of 1 mm, 6400 interpolation points. If now each individual point gets the freedom to move within 1 mm about 1 µm (0.001 mm) for the optimization, with 6400^{1000} you have an incredible high number of possibilities. This complex optimization is based on the ray tracing technology.

Standard Designs

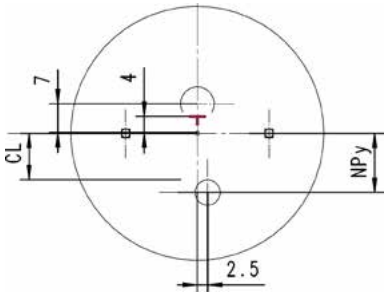


Powermap Cylindermap

HD

The Entry and Drive Design

The OptoTech HD progressive lens design concentrates the unwanted astigmatism into smaller areas of the lens surface, thereby expanding the areas of perfectly clear vision at the expense of higher levels of blur and distortion. Consequently, harder progressive lenses generally exhibit the following characteristics: wider distance zones, narrow near zones, and higher, more rapidly increasing levels of surface astigmatism (closely spaced contours).



Design Characteristics

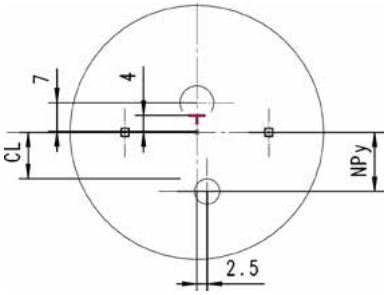
Corridor Length (CL)	9 / 11 / 13 mm
Near Reference Point (NPy)	12 / 14 / 16 mm
Minimum Fitting Height	17 / 19 / 21 mm
Inset	2.5 mm
Decentration	up to 10 mm at max. dia. 80 mm
Default Wrap	5°
Default Tilt	7°
Back Vertex	13 mm
Customize	Yes
Wrap Support	Yes
Atorical Optimization	Yes
Frameselection	Yes
Max. Diameter	80 mm
Addition	0.50 - 5.00 dpt.
Application	Drive; Outdoor

Powermap Cylindermap

MD

The Universal Vision

Modern progressive lenses are seldom absolutely „hard“ or absolutely „soft,“ but rather strive for a balance between the two in order to achieve a better overall utility. A manufacturer may also choose to employ the features of a softer design in the distance periphery in order to improve dynamic peripheral vision, while employing the features of a harder design in the near periphery in order to ensure a wide field of near vision. This „hybrid“-like design is another approach that sensibly combines the best features of both philosophies and is realized in OptoTech‘s MD progressive lens design.



Design Characteristics

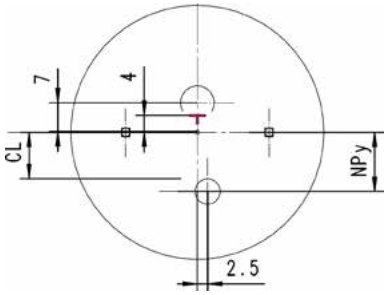
Corridor Length (CL)	9 / 11 / 13 mm
Near Reference Point (NPy)	12 / 14 / 16 mm
Minimum Fitting Height	17 / 19 / 21 mm
Inset	2.5 mm
Decentration	up to 10 mm at max. dia. 80 mm
Default Wrap	5°
Default Tilt	7°
Back Vertex	13 mm
Customize	Yes
Wrap Support	Yes
Atorical Optimization	Yes
Frameselection	Yes
Max. Diameter	80 mm
Addition	0.50 - 5.00 dpt.
Application	Universal

Powermap Cylindermap

SD

Soft Design for an Open View

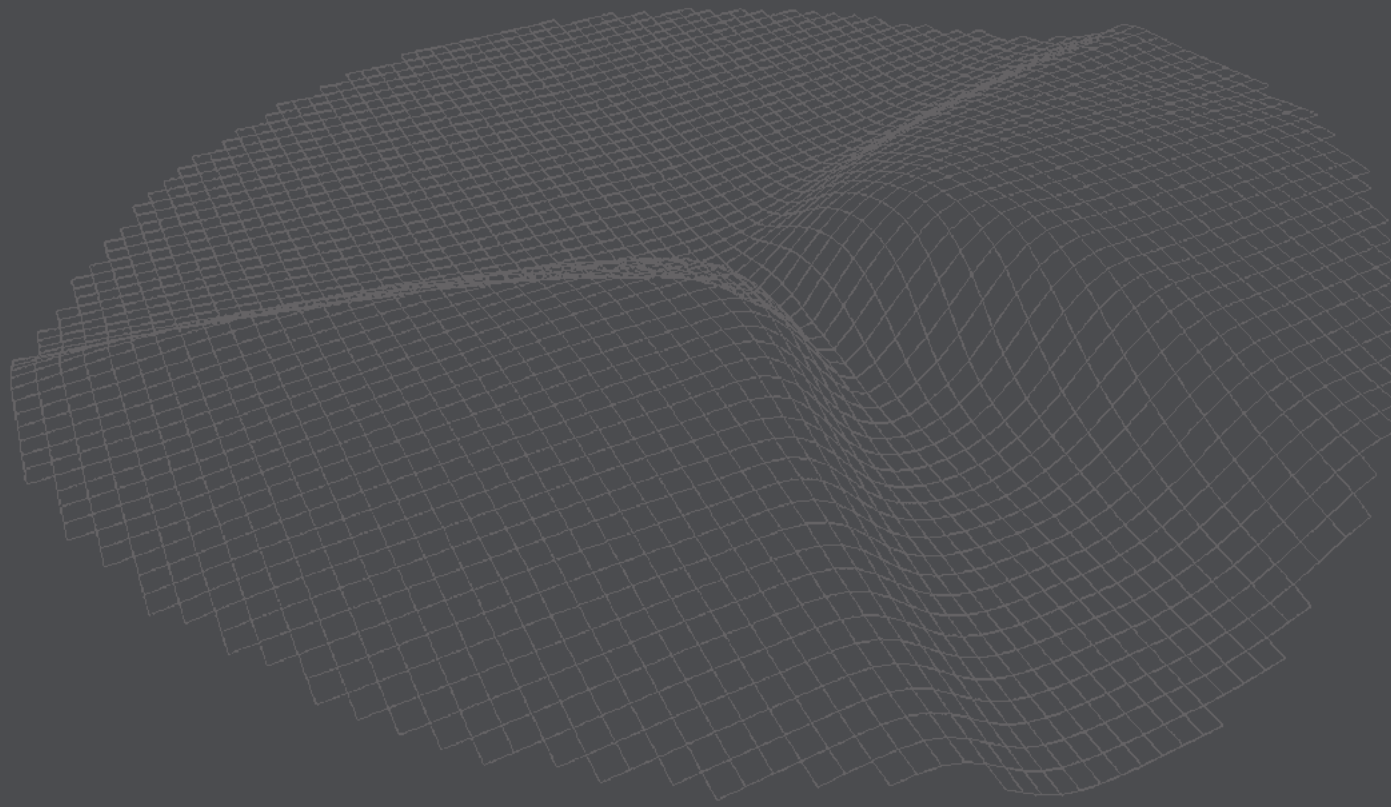
The OptoTech SD progressive lens design spreads the unwanted astigmatism across larger areas of the lens surface, thereby reducing the overall magnitude of blur at the expense of narrowing the zones of perfectly clear vision. The astigmatic error may even affect the distance zone. Consequently, softer progressive lenses generally show the following characteristics: Narrower distance zones, wider near zones, and lower, more slowly increasing levels of astigmatism (widely spaced contours). The max. amount of unwanted astigmatism is reduced to an incredible level of approx. 75% of the addition power.
This design variant is partly applicable for modern working places.



Design Characteristics

Corridor Length (CL)	9 / 11 / 13 mm
Near Reference Point (NPy)	12 / 14 / 16 mm
Minimum Fitting Height	17 / 19 / 21 mm
Inset	2.5 mm
Decentration	up to 10 mm at max. dia. 80 mm
Default Wrap	5°
Default Tilt	7°
Back Vertex	13 mm
Customize	Yes
Wrap Support	Yes
Atorical Optimization	Yes
Frameselection	Yes
Max. Diameter	80 mm
Addition	0.50 - 5.00 dpt.
Application	Indoor

Premium Designs

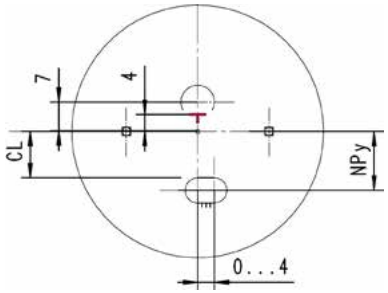


Powermap Cylindermap

HD2

The Premium Entry and Drive Design

The OptoTech Premium HD2 progressive lens design was developed to increase the visual zones with a concentration of unwanted astigmatism into smaller areas of the lens surface. Additionally it is possible to use the inset for the reading as a variable. This is necessary to receive coincidence of the two converging eyes in the near vision zone. This also depends on the dioptric power.



Design Characteristics

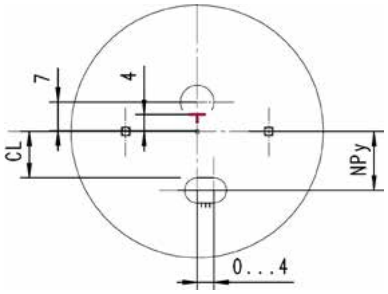
Corridor Length (CL)	7 / 9 / 11 mm
Near Reference Point (NPy)	10 / 12 / 14 mm
Fitting Height	15 / 17 / 19 mm
Inset/Variable	0 - 4 mm
Decentration	up to 10 mm at max. dia. 80 mm
Default Wrap	5°
Default Tilt	7°
Back Vertex	13 mm
Customize	Yes
Wrap Support	Yes
Atorical Optimization	Yes
Frameselection	Yes
Max. Diameter	80 mm
Addition	0.50 - 5.00 dpt.
Application	Drive; Outdoor

Powermap Cylindermap

MD2

The Premium Universal Vision

Our commitment to improve products was the offending object to develop the Premium MD2 design. Increased vision in comparison to our previous MD Design and flexibility with the adjustment of the inset provides an even higher individual performance of the lens for the wearer.



Design Characteristics

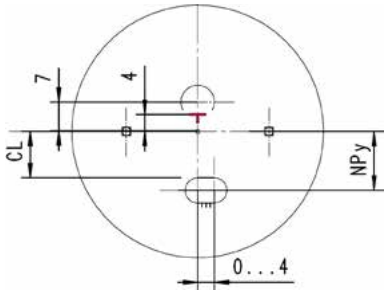
Corridor Length (CL)	7 / 9 / 11 mm
Near Reference Point (NPy)	10 / 12 / 14 mm
Fitting Height	15 / 17 / 19 mm
Inset/Variable	0 - 4 mm
Decentration	up to 10 mm at max. dia. 80 mm
Default Wrap	5°
Default Tilt	7°
Back Vertex	13 mm
Customize	Yes
Wrap Support	Yes
Atorical Optimization	Yes
Frameselection	Yes
Max. Diameter	80 mm
Addition	0.50 - 5.00 dpt.
Application	Universal

Powermap Cylindermap

SD2

Premium Soft Design for an Incredible Open View

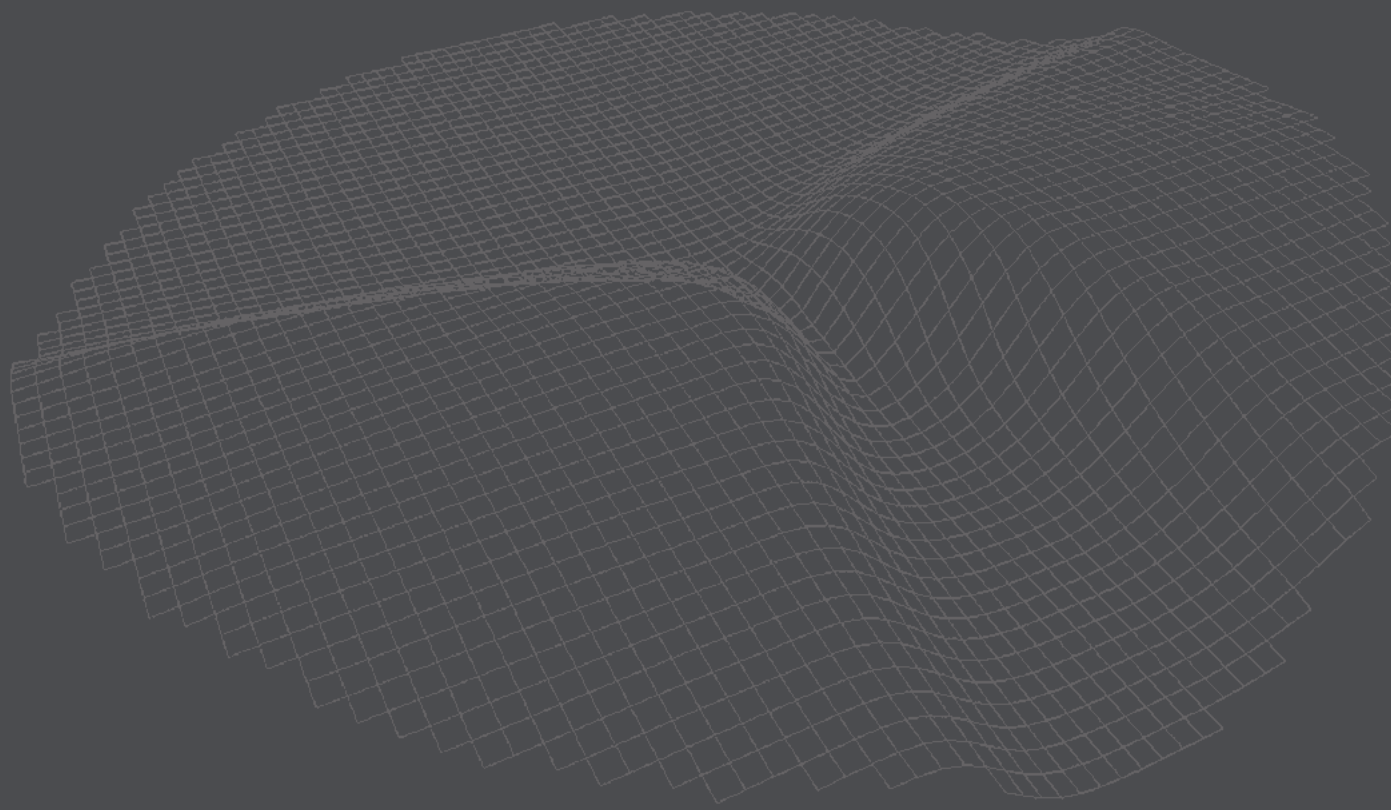
The Premium SD progressive lens design with flexible inset to adjust the reading zone offers a better vision especially for hyperopia. Soft does not necessarily mean a larger reading zone but a softer, less notable peripheral cylinder aberration.

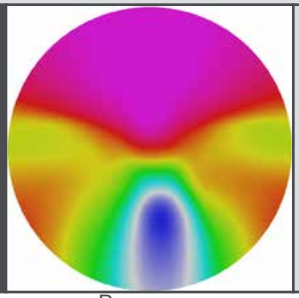


Design Characteristics

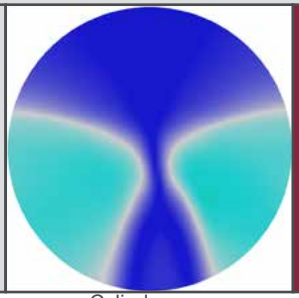
Corridor length (CL)	7 / 9 / 11 mm
Near Refernce Point (NPy)	10 / 12 / 14 mm
Fitting Height	15 / 17 / 19 mm
Inset/Variable	0 - 4 mm
Decentration	up to 10 mm at max. dia. 80 mm
Default Wrap	5°
Default Tilt	7°
Back Vertex	13 mm
Customize	Yes
Wrap Support	Yes
Atorical Optimization	Yes
Frameselection	Yes
Max. Diameter	80 mm
Addition	0.50 - 5.00 dpt.
Application	Indoor

Extended Design





Powermap

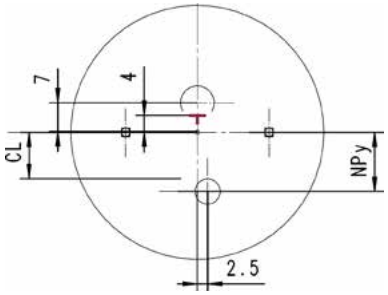


Cylindermap

Extended IXL

Custom Made Performance for the Life of Today

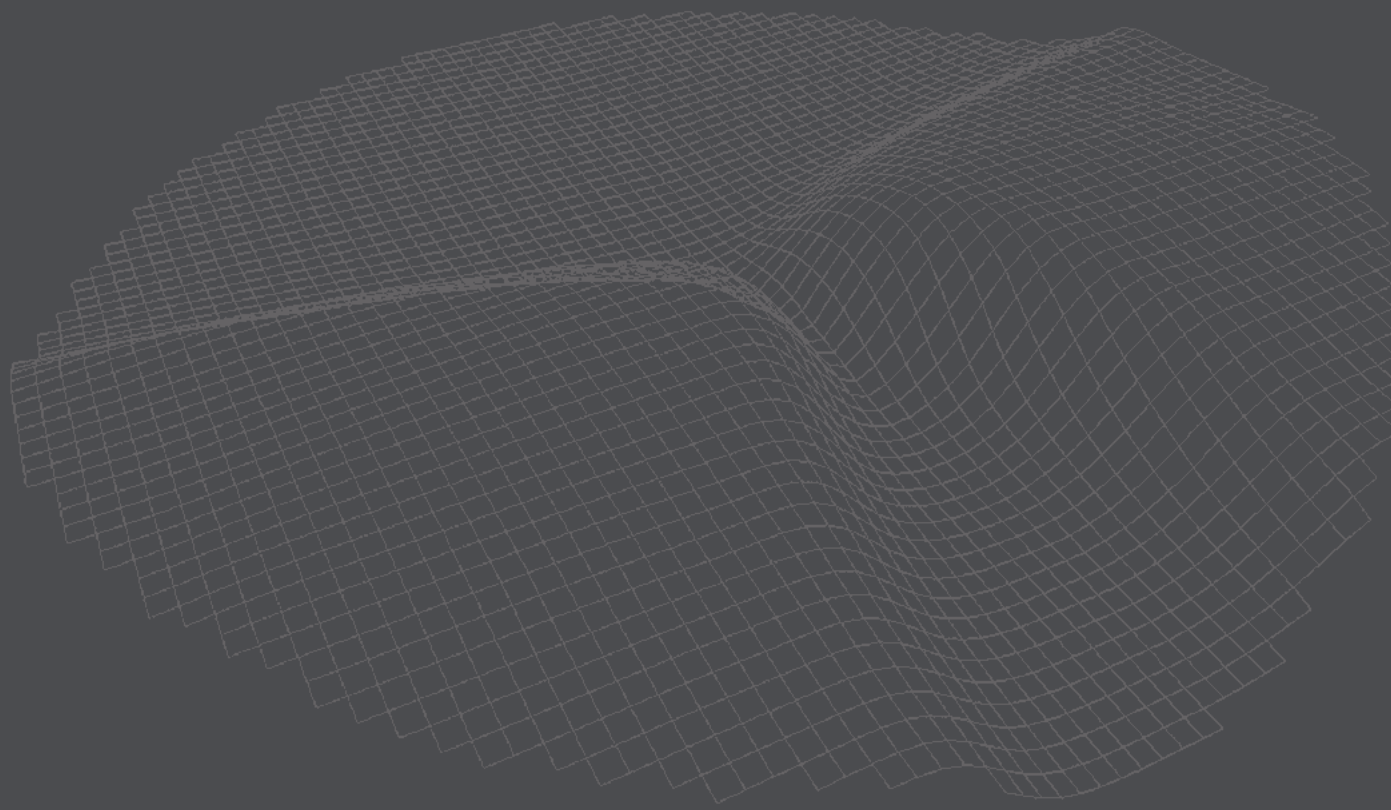
A long day in the office, later on some sports and checking the internet afterwards – modern life has high requirements on our eyes. Life is faster than ever – a lot of digital information is challenging us and cannot be taken away.
We have followed up this change and designed a multifocal lens which is custom-made for today´s lifestyle.
The new Extended Design offers a wide vision for all areas and a comfortable change between near and far vision for an outstanding all around vision. Your view will be really natural and you'll even be able to read small digital information. Independent of the lifestyle, with the Extended-Design you meet highest expectations.



Design Characteristics

Corridor Length (CL)	7 / 9 / 11 mm
Near Reference Point (NPy)	10 / 12 / 14 mm
Fitting Height	15 / 17 / 19 mm
Inset	2.5 mm
Decentration	up to 10 mm at max. dia. 80 mm
Default Wrap	5°
Default Tilt	7°
Back Vertex	12 mm
Customize	Yes
Wrap Support	Yes
Atorical Optimization	Yes
Frameselection	Yes
Max. Diameter	80 mm
Addition	0.50 - 5.00 dpt.
Application	Universal

Extended Design

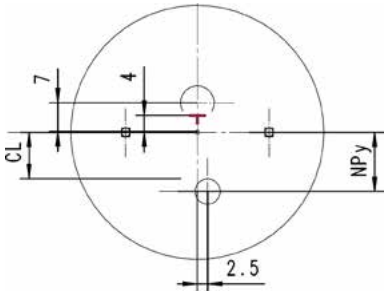


Powermap Cylindermap

Extended IXL 4K

Premium Custom Made Design with Highest Resolution

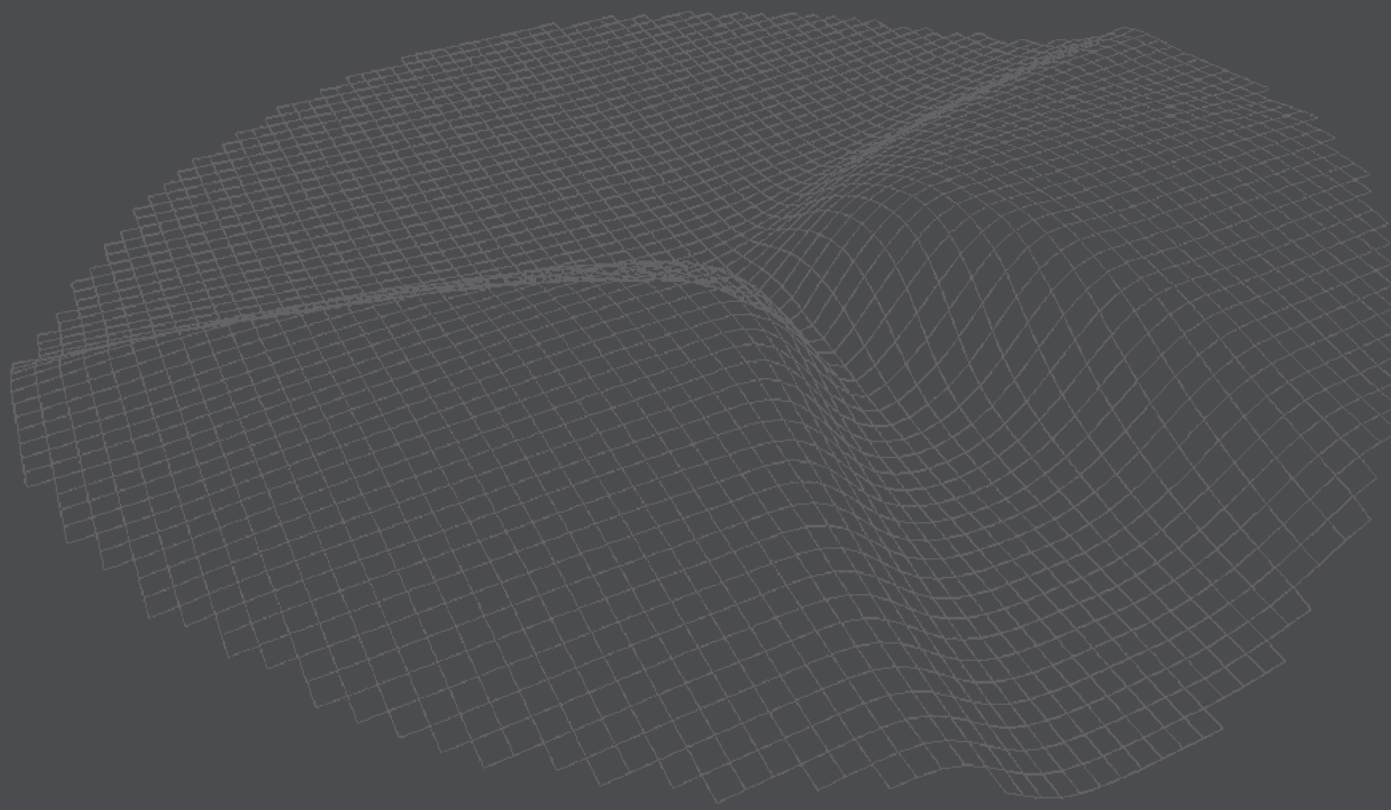
The new IXL 4K Design is a further progress for our customers benefit. As OptoTech is continuously creating new designs, we invented a design with higher resolution that permits an easy adaption for every customer due to a even lower aberration than already known from our previous designs.

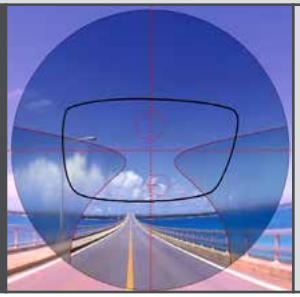


Design Characteristics

Corridor Length (CL)	7 / 9 / 11 mm
Near Reference Point (NPy)	10 / 12 / 14 mm
Fitting Height	15 / 17 / 19 mm
Inset	2.5 mm
Decentration	up to 10 mm at max. dia. 80 mm
Default Wrap	5°
Default Tilt	7°
Back Vertex	12 mm
Customize	Yes
Wrap Support	Yes
Atorical Optimization	Yes
Frameselection	Yes
Max. Diameter	80 mm
Addition	0.50 - 5.00 dpt.
Application	Universal

VARIOfocal Design





EyeWizard

VARIOfocal

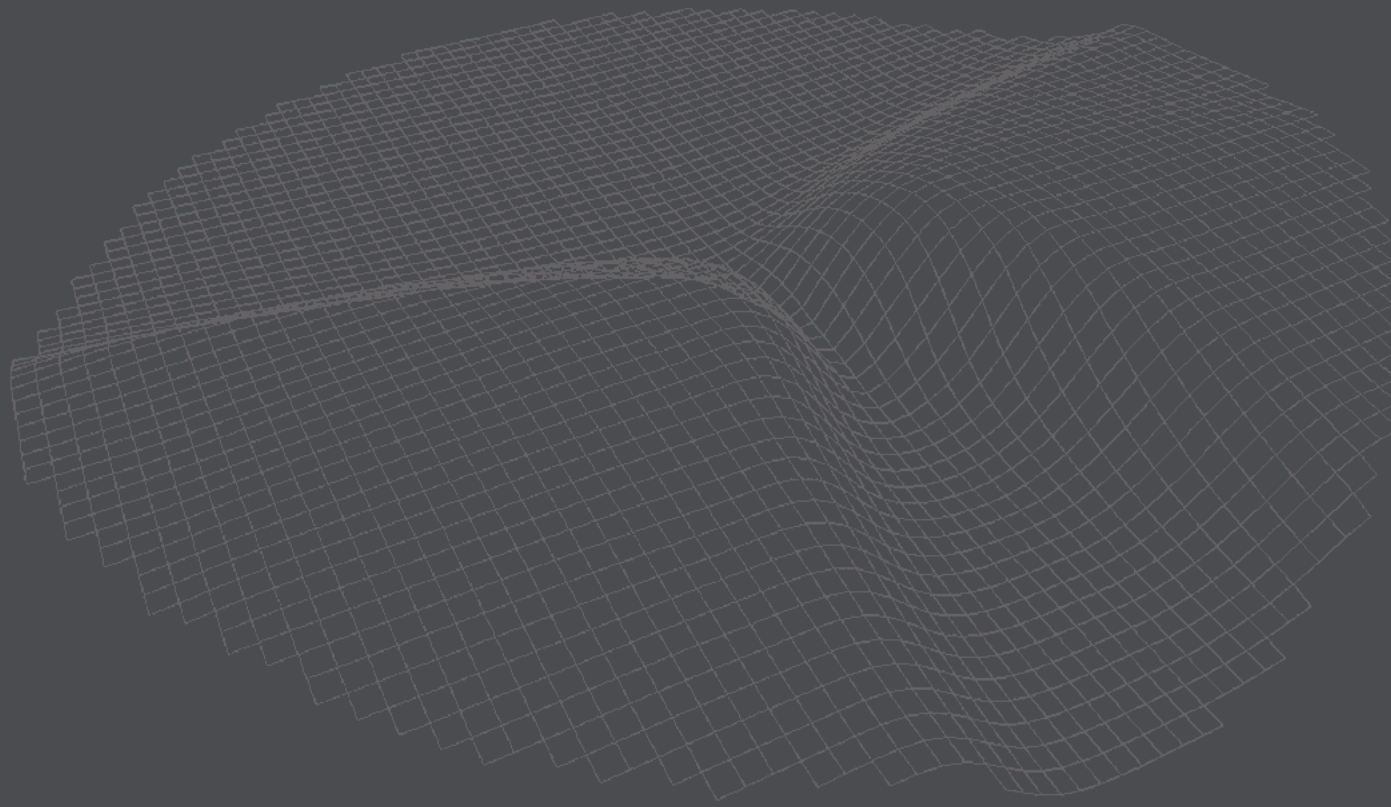
Individual Design with Huge Potential

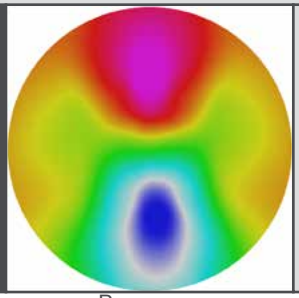
Based on the frame shape, the individual personalized RX data and the lifestyle of the wearer, an optimized design can be created for the patient. With the new VARIOfocal design it is possible to find the most suitable combination of the different design varieties.
Different design types can be fluently merged together. With the help and function of the OptoTech EyeWizard software tool, the benefit of an individual and personalized design can be explained to the customer. With the VARIOfocal design, the freedom of customization reaches a new level.

Design Characteristics

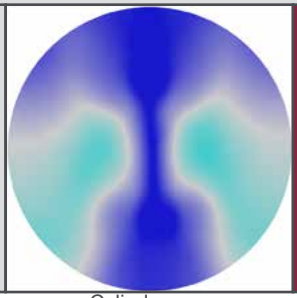
Corridor Length (CL)	7 / 9 / 11 mm
Fitting Height	15 / 17 / 19 mm
Inset/Variable	0 - 4 mm
Decentration	up to 10 mm at max. dia. 80 mm
Default Wrap	5°
Default Tilt	7°
Back Vertex	13 mm
Customize	Yes
Wrap Support	Yes
Atorical Optimization	Yes
Frameselection	Yes
Max. Diameter	80 mm
Addition	0.50 - 5.00 dpt.
Application	Indoor

Lifestyle Designs





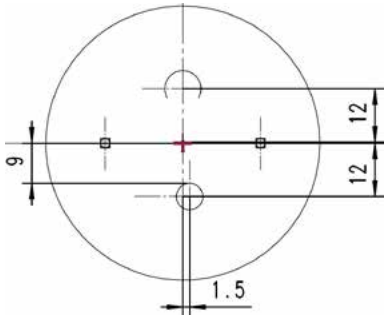
Powermap



Cylindermap

Office 14

Enhanced Intermediate Zones for Different Purposes



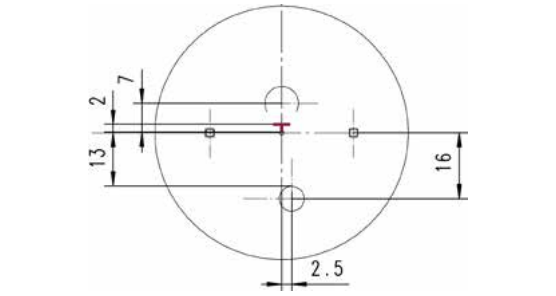
In general, an office lens is an optimized reading lens with the ability to have clear vision also in the middle distance. The useable distance can be controlled by the dynamic power of the office lens. The more dynamic power the lens has, the more it can be used also for the distance.
Single-vision reading glasses only correct the reading distance of 30-40 cm. On computers, with homework or when you play an instrument, also the intermediate distances are important.
Any desired degressive (dynamic) power from 0.5 to 2.75 allows a distance view of 0.80 m up to 4.00 m.
We offer several progressive lenses that are designed specifically for computer and office use. These lenses offer enhanced intermediate and near viewing zones, at the expense of distance utility.

Prescribed	Dynamic Power Office Lens			
Add. Power	-0.75	-1.25	-1.75	-2.25
0.75	Infinity			
1.00	4.00			
1.25	2.00	Infinity		
1.50	1.35	4.00		
1.75	1.00	2.00	Infinity	
2.00	0.80	1.35	4.00	
2.25		1.00	2.00	Infinity
2.50		0.80	1.35	4.00
2.75			1.00	2.00
3.00			0.80	1.35
3.25				1.00
3.50				0.80

Powermap Cylindermap

Mild Add

Young Style Progressives



Different eyeglasses accomplish different effects and no lens is best suited for all activities. If you do spend an extended period of time doing task specific activities, such as reading, desk work or computer work, you may need task specific glasses. Mild add lenses are intended as a primary pair replacement for patients wearing single vision lenses. These lenses are recommended for 18-40 year old myopes experiencing symptoms of tired eyes.

The main benefits are:

- A slight power boost of a low addition in the lower portion of the lens to reduce eyestrain during close up activities
- Greater comfort than standard vision correction lenses due to the accommodative relief in the near vision

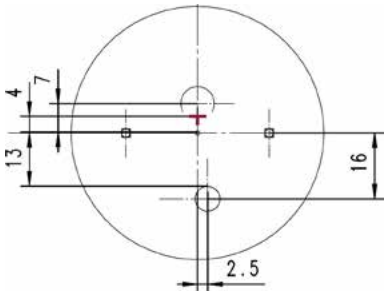
Design Characteristics

Corridor Length (CL)	13 mm
Fitting Height	18 mm
Inset/Variable	-
Decentration	-
Default Wrap	5°
Defualt Tilt	7°
Back Vertex	13 mm
Customize	Yes
Wrap Support	Yes
Atorical Optimization	Yes
Frameselection	Yes
Max. Diameter	79 mm
Addition	0.5 - 0.75 dpt.
Application	Progressive Starters

Powermap Cylindermap

VARIO III

The Real Trifocal of the New Century for Different Activities



The requirements for special lenses are increasing and due to the design technology no longer a problem to realize. OptoTech has created a real trifocal design in modern free form technology.
Target for this kind of lens are optimized focuses on three positions

- Distance view – for an infinite view
- Intermediate view – to focus the target
- Short view – to note or read details

Important is the calculation, including degression and visual angle, to get a peripheral distance view cleared for each individual. The intermediate part has a clear area to focus objects in front of the customer without a variation of power. The reading part is only a little smaller than usual and permits all actions just like a normal progressive lens.

Vario Three is available in **3 different versions**:

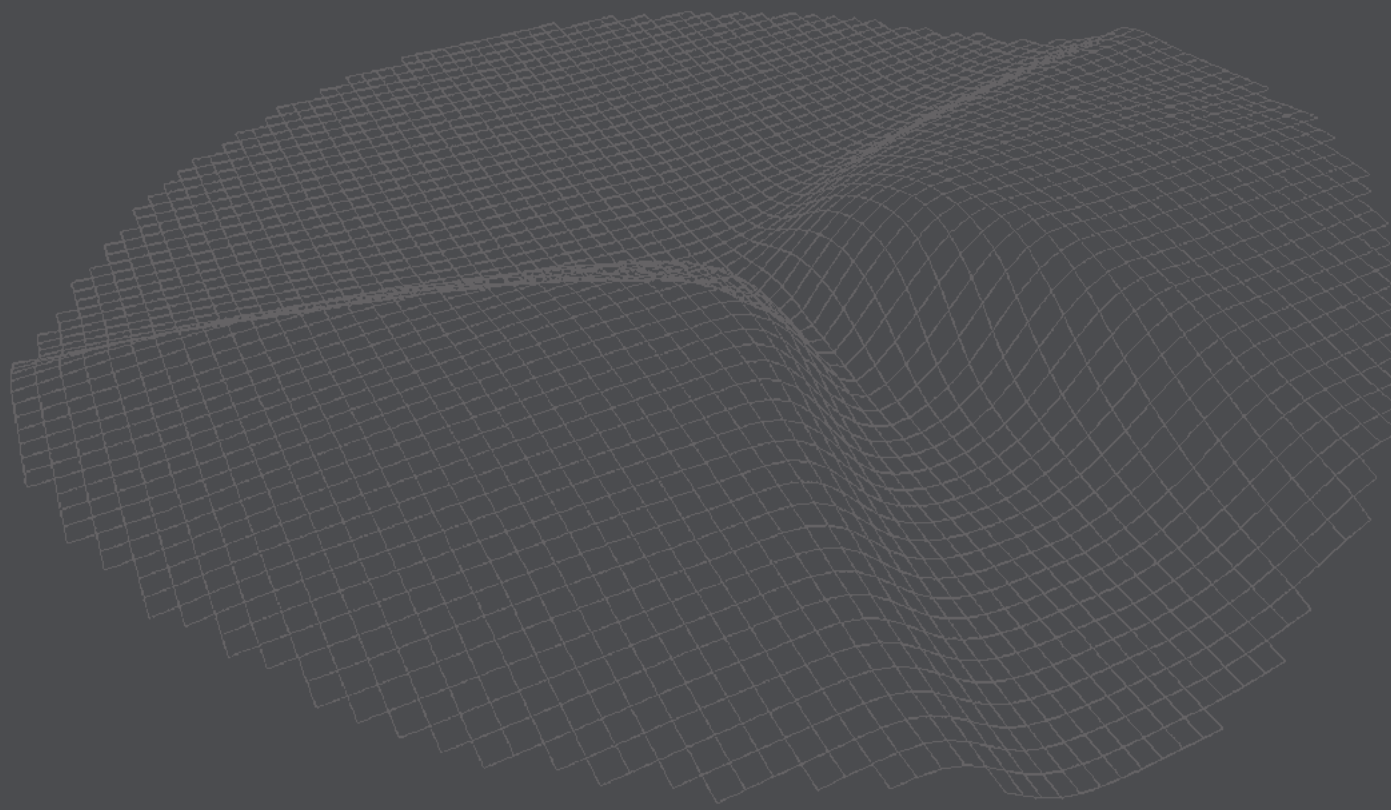
VARIO III 1
- Driving
- Office working place

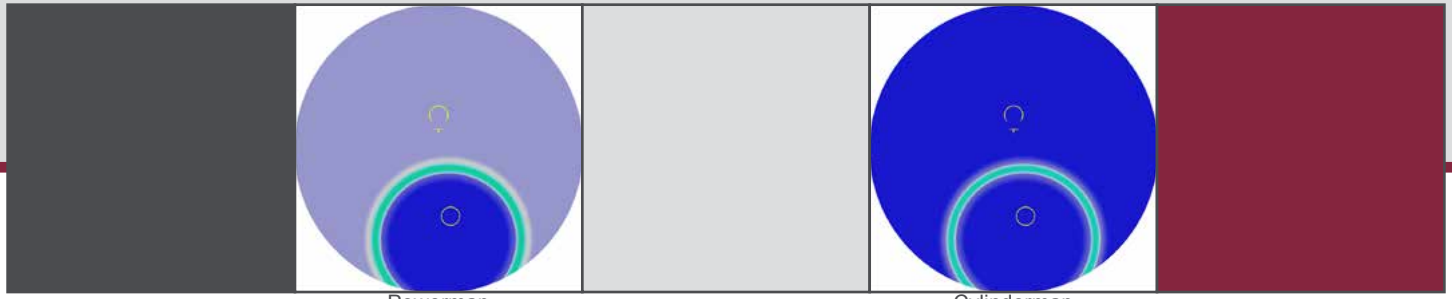
VARIO III 2
- Golf
- Tennis
- Jogging

VARIO III 3
- Doctor - Patient
- Conversation with customers

VARIO III has only minimum limitations on the technical side:
- Minimum fitting height: 19 mm
- Maximum lens diameter: 78 mm

Bifocal Design





Powermap Cylindermap

Invisible Bifocal

Natural Viewing for Multifocal Wearers

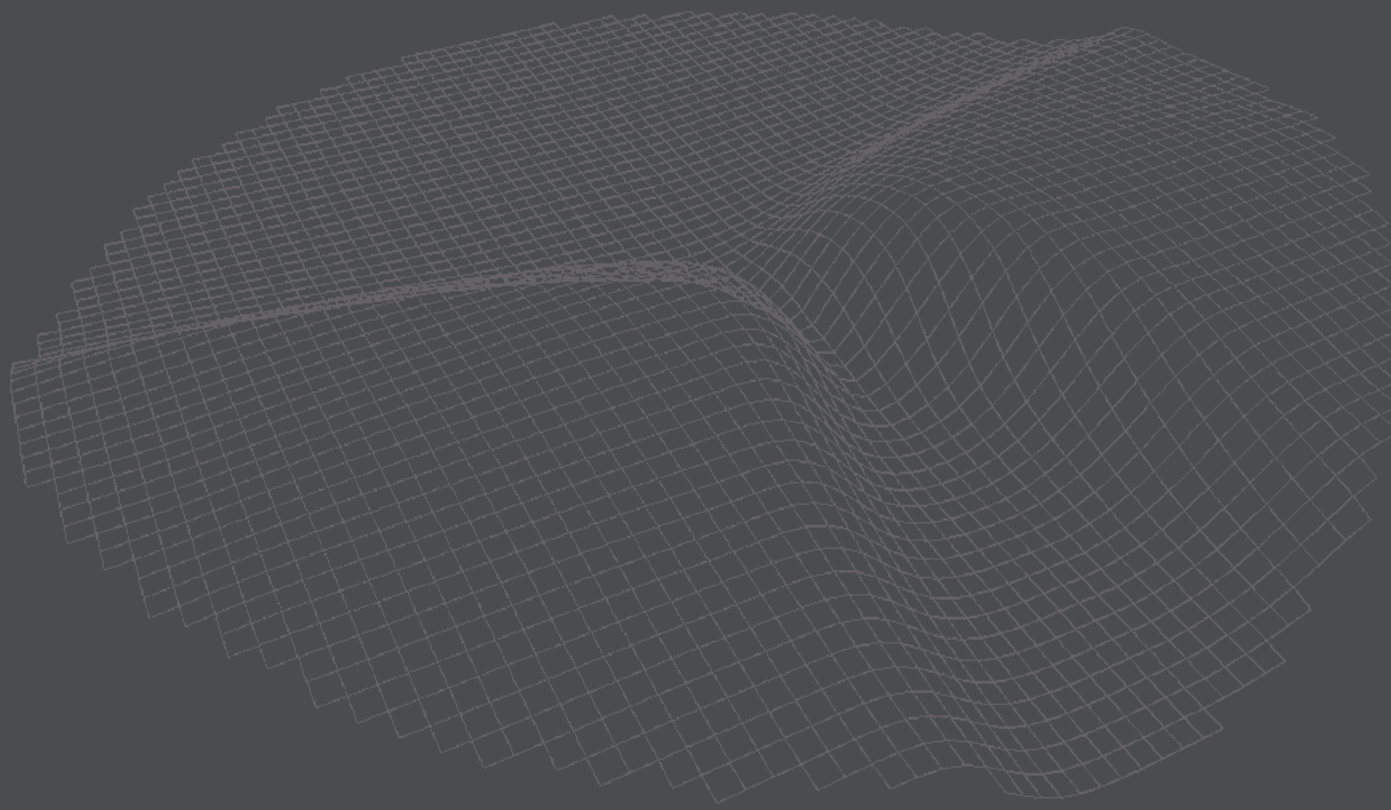
With a nearly invisible power segment and a better cosmetic, the new Invisible Bifocal is characterized by a wider area of clear vision and more natural viewing for multifocal wearers who are accustomed to greater visual disruption. The embedded power segment is semi-visible when looking through the back surface of the lens, but virtually invisible to those looking at your customer. It looks completely clear and contemporary. So bifocal wearers enjoy significantly better cosmetics without a difficult transition due to a completely new type of lens.

The variety is also much higher. Besides the definition of the diameter up to an executive lens you can now manufacture a 1.67 Index in photochromatic or polarized lens material.

Design Characteristics

Corridor Length (CL)	10 mm
Near Reference Point (NPy)	6 mm
Fitting Height	17 mm
Diameter Segment	variable from 25 – 60 mm
Decentration	up to 5 mm at max. dia. 80 mm
Back Vertex	12 mm
Customize	No
Wrap Support	No
Atorical Optimization	No
Frameselection	No
Max. Diameter	80 mm
Addition	0.50 - 5.00 dpt.
Application	Multifocal Wearers

Drive Design



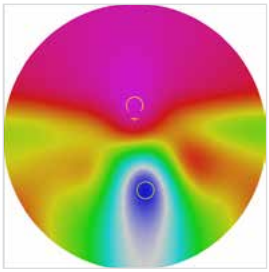
without ProDrive | with ProDrive

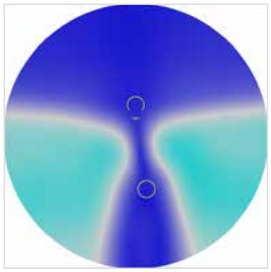
ProDrive

Special Design for Relaxed and Safe Driving Experience

When driving a car, there are two main effects that impact the vision at night, fog, rain and a damp track: The glare of coming vehicles, and the rapid change of light from bright to dark and vice versa. Due to the fact of filtering out important visual information out of all influences, it demands high concentration from the driver which sometimes causes headaches and reduces the driving experience.

The OptoTech ProDrive lens is a new progressive lens design in combination with a special coating. It significantly reduces glares and offers wide fields of vision, especially in the far and intermediate zones (street, dashboard, navigation system and side mirrors).
The lens can be used as a normal daily progressive with special features for a safe and relaxing car driving experience.

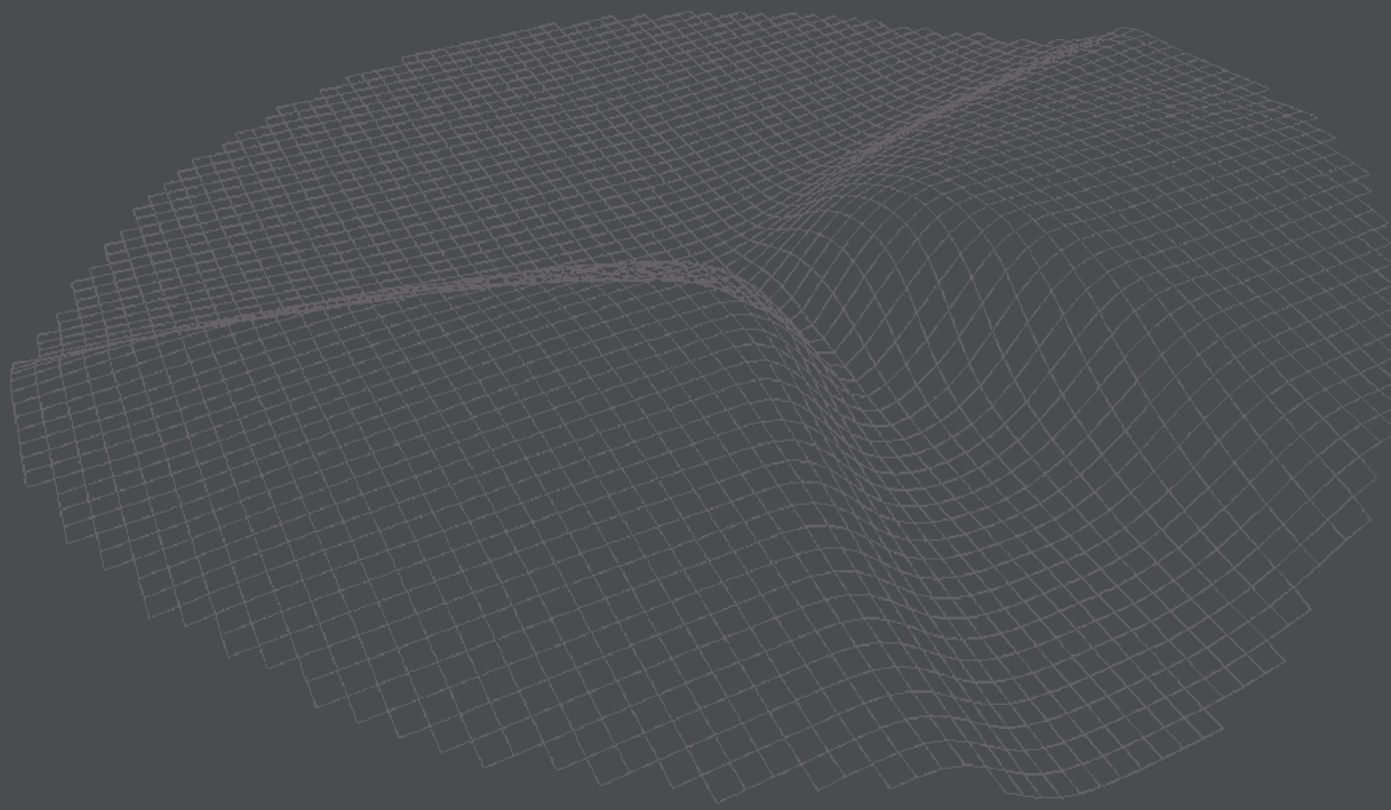




Design Characteristics

Corridor Length (CL)	11 mm
Near Reference Point (NPy)	-14 mm
Fitting Height	4 mm
Decentration	up to 5 mm at max. dia. 80 mm
Back Vertex	12 mm
Customize	yes
Wrap Support	yes
Atorical Optimization	yes
Frameselection	yes
Max. Diameter	80 mm
Addition	0.50 - 4.00 dpt.
Application	Driving and daily use

Software Specials

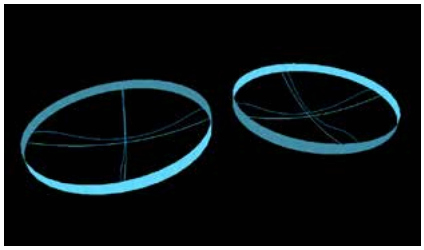


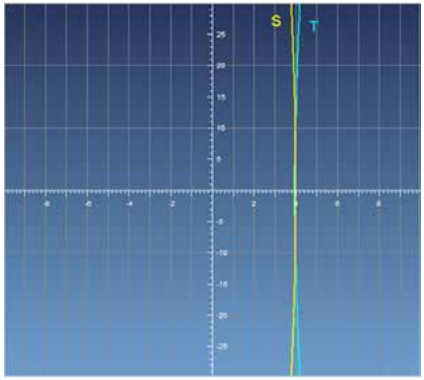
Cylindermap **without** atorical optimization

Cylindermap **with** atorical optimization

Atorical Optimization

Personalized Ray Trace Method for an Outstanding Vision





With a complex ray tracing method, the optical paths through the lens into the eye were analyzed from different angles and then optimized.
For MD (multi-directional) optimized lenses, up to 6400 different visual angles were analyzed with modern computer technology and optimized for the human eye.
As a result, the recognized visual performance of the eye will be significantly increased. The main problems on claimed progressives lenses mentioned by customers, such as tunnel view or un-sharp visuality at the edge, swim/sway effects, can be nearly eliminated. Additionally to that, MD optimized lenses are, depending on the power, up to 10 % thinner and lighter in comparison to conventional products made out of the same material.

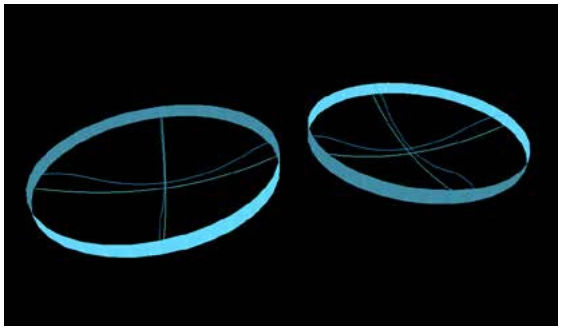
Picture 1
Saggital and tangential light beam passing through a standard single vision spherical lens in different angles. When the eye rotates and looks through the lens, the power is changing and an unwanted astigmatism occurs.

Picture 2
Aspheric lens with optimized S and T. The power is stable in all viewing directions and also the oblique astigmatism is significantly reduced. As a result, the patient has a much wider and clearer view without distortion.

Cylindermap

Blended Design / Sport Optics

Aesthetic Design Solutions for Optimal Wear of High Powered Sport Frames



FRAMEblending®

The FRAMEblending® technology enables the optimization of high plus or minus powered lenses. While putting the frame shape already into the round lens, on a positive lens, the center thickness can be reduced between 5 and 15 %. Minus lenses can be blended at the frame edge, so that you can define the edge thickness pretty exact. A further advantage of this technology is that there is no need for special protection in the coating domes. Frame data can be sent directly from any OMA compatible form tracer.

Lenticular blending

By using double aspheric designs as your primary dispensed single-vision lenses, you can give your patients a better-looking pair of glasses while delivering improved optics, even for high prescriptions. Optimized lenses with the same power using aspherical blended shapes, allow significant reduced edge thicknesses.
The desired power is provided by a convex „bowl“ - or aperture - with a lenticular design. This bowl is often around 40– 45 mm in diameter, and protrudes from a much flatter carrier curve.

Cylindermap

Blended Design / Sport Optics

Aesthetic Design Solutions for Optimal Wear of High Powered Sport Frames

Sports Optics

This design enables also the production of sunglass lenses with high base curve and minus progression. Sports are a very important part in the modern society. People, who want to exercise, need to see things clear and sharp. Sport lenses can be adapted to individual needs of the wearer, contribute to their natural vision and help to perform better.
It is possible to use all the features of our designs mentioned before also for highly individualized sport optics. Moreover, all features of lenticular blending can be realized.

As the difficulties of Hi-Wrap frames are known now throughout the years, OptoTech developed a new calculation method to attract the field of vision to the maximum. This procedure plus the more exact blending at the frame shape results in a much better lens quality for your customers.

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Date: 02-01-2017, Subject to change

OptoTech

Lens Design Software