LARAMY-K OPTICAL

AN UNCUT ABOVE THE REST

Phone: (800)525-1274
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www.laramyk.com

Calculation Technologies

Laramy-k is proud to offer the most flexible solution with the possibility to access all the different product levels: from the basic to the latest state-of-the-art customizable lenses existing in the market.

In order to have presence in every segment of the market, IOT offers two different calculation technologies:

Digital Ray Path
Surface Power

	Digital Ray-Path	Surface Power
Power Calculation	**USER**	**NOMINAL**
Lens Personalization	✶✶✶✶✶	✲✲✲✲✲
Oblique aberration optimization	✶✶✶✶✶	✶✶✲✲✲
Base Curve Freedom	✶✶✶✶✶	✶✲✲✲✲
Sport frame performance	✶✶✶✶✶	✶✲✲✲✲
High Prescription Performance	✶✶✶✶✶	✶✶✶✲✲
Automatic Variable Inset	✓	X
Decentering	✓	✓
PARAMETERS		
Prescription Data	✓	✓
Pantoscopic Angle	✓	X
Wrapping Angle	✓	X
Vertex Distance	✓	X
Inter-pupilarity distance	✓	X
Frame Parameters	✓	X
Working Distance	✓	X
Rotation axis of the eye	✓	X

DIGITAL RAY-PATH

Digital Ray-Path patented technology is the state-of-the-art technology based on an accurate simulation of the eye-lens model. Lenses (because the model is fully binocular) are considered in its full complexity. They can have prism, pantoscopic tilt, wrapping angle, any frame shape, and can be located at any distance from the eye. Digital Ray-Path will manage back and front surfaces, not just spherical, torical or standard aspherical or atorical surfaces. For every lens design, each gaze direction is simulated at the distance it will be focusing in the real world. Rays will come from any point of the object space into the retina of the eye. Skew rays are possible, and finite size pupils are considered. Finally, image quality is computed by means of an imaging model taking into account eye and lens characteristics.

In summary this unique calculation method studies all the variables which may have some effect on final vision quality. Due to this accurate calculation the final lens provides the optimum power that the wearer needs in every gaze direction.

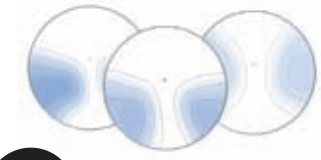
This type of designs represents the highest optical quality and advanced technology in the market. Lenses produced with this technology are top quality products, with a complete personalization.

Advantages:

- Full Field Optimization
- High Performance for high prescription
- High Performance for sport frames
- Oblique Aberrations Optimization
- Variable Object Space
- Totally customized lens
- Freedom in base curve selection

DIGITAL RAY-PATH

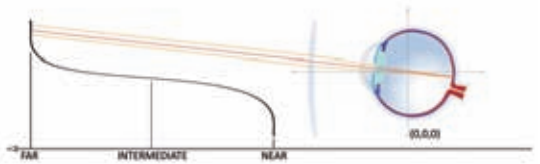
Digital Ray Path process

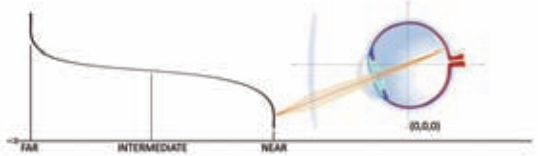


1 Lifestyle Design

1 Prescription & Parameters

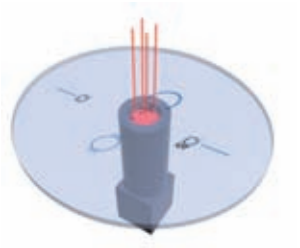
2 Simulation





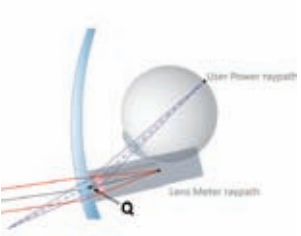
3 Optimized Surface

Understanding **Digital Ray Path**



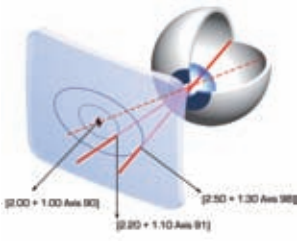
Focimeter measuring a lens

The drawing on the left shows a typical setup for measuring lens power with a lensometer. Notice that the lens surface is placed perpendicular to the ray beam of the instrument. Conventional lenses have been developed to yield the correct power when being measured like this. This type of calculation method is known as nominal power calculation. It assumes that the same design is good for every prescription, what we could call a "static" design.



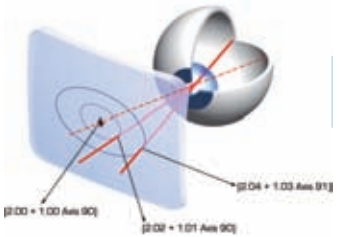
User power vs. lens meter raypaths

But, the eye's optical system is very different from the optical system used to measure a lens, as you can see on the left. The eye rotates around its center, and the light follows an oblique trajectory that affects the power experienced by the wearer.



Oblique errors in a conventional lens

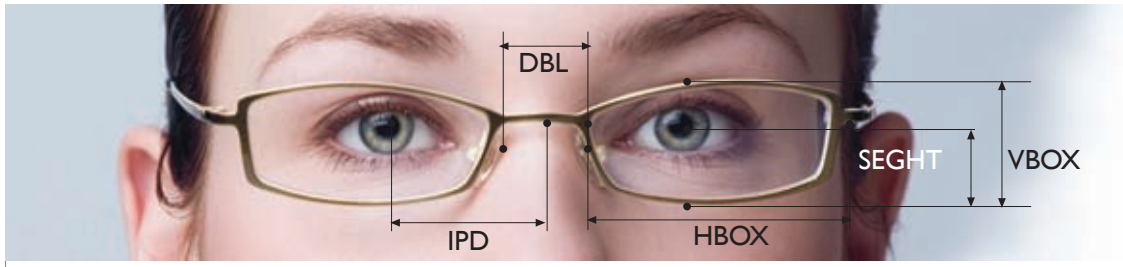
The drawing on the left illustrates the effect described above. This example shows the power experienced by the wearer of a conventional Single Vision lens when looking through various areas of the lens. The difference between power experienced and that actually prescribed can be more than 0.5D for a lateral gaze angle of 30°. This effect is known as oblique aberration, and is the main optical aberration that cannot be resolved by conventional surfacing techniques.



Digital Ray Path performance

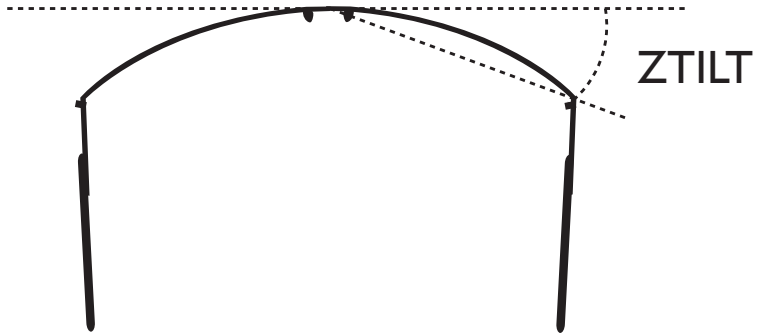
This last drawing shows the effect of a lens with the same prescription, calculated with Digital Ray-Path, ground with Free-form equipment. The Power experienced by the wearer is stable on the whole lens, providing perfect vision for every direction of sight.

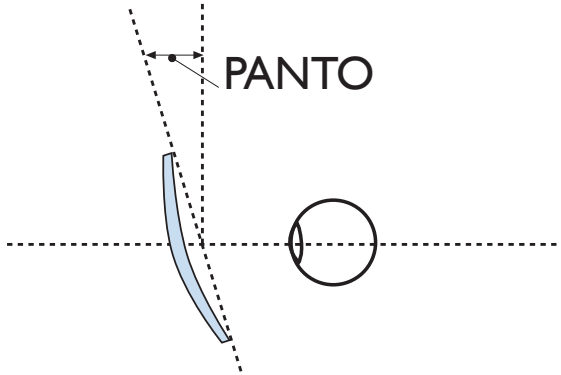
DIGITAL RAY-PATH



Calculation parameters

IPD - Monocular Centration Distance
SEGHT - Vertical P.R.P. height measured from the lower boxed tangent
HBOX - Horizontal Boxed Lens Size of Frame
DBL - Distance Between Lenses
VBOX - Vertical Boxed Lens Size
PANTO - Pantoscopic Angle
ZTILT - Wrapping angle





SURFACE POWER

This is the basic level of technology that only considers a fixed, non-tilted lens, tangential rays, infinitely small pupil and replaces the eye by a constant remote sphere. This method is based on a pure geometrical conception of the lens; mixing curved surfaces the lens will provide final wearers with the power that will correct their ametropy in a central gaze direction. Nevertheless, this technology does not take into account any customization, and as a result, the final lens is not optimized for each wearer. The Power and Addition are what we call Nominal.

These kinds of designs are basic designs, and according to this, we recommend our customers to position the lenses produced with this technology in the basic segment, as a basic product.

Advantages:

Easy to be understood by opticians

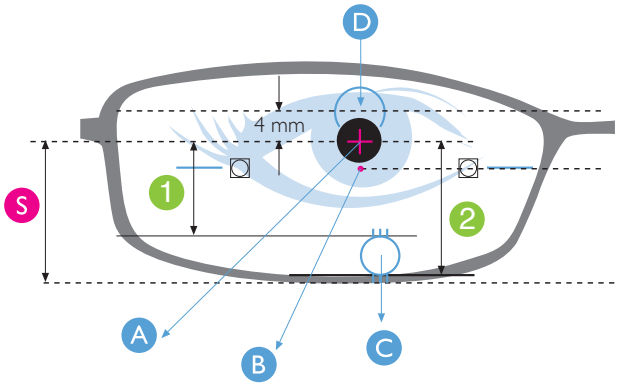
Easy to measure the power and compare to prescription with conventional means

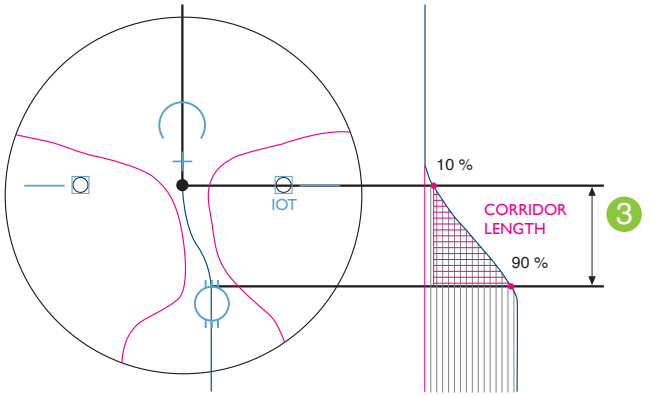
Reference measurement in a **free-form ophthalmic lens**

1 Progression Length:
Vertical distance between the pupil centre and the beginning of the near region (where 90% addition is reached).

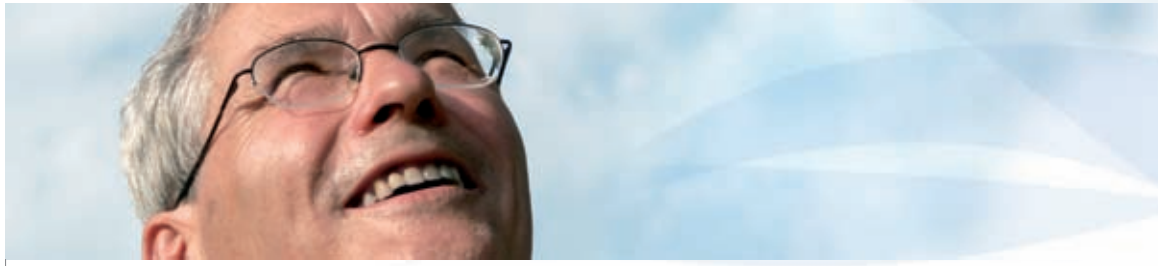
2 Minimum Fitting Height (MFH):
Minimum distance from the pupil centre to the lower border of the frame recommended for the assembly.

3 Corridor length:
Distance between the point starting at 10% of the addition and ending at the point where 90% of the addition is.





- A Layout Reference Point
- B Prism Reference Point
- C Near Reference point **(NRP)**
- D Distance Reference Point **(DRP)**
- S Seg. Height



	Name	Technology	Type	Far	Int	Near	Lenticularization	MFH Available	Short Version
Integrity Indoor Designs	Chill	DRP	Anti-fatigue	-	-	-	Not available	14 mm	Not available
	Office	SP	Indoor	✱✲✲✲✲✲	✱✱✱✱✱✲	✱✱✱✱✱✱	Not available	18 mm	Not available
Integrity Advanced Designs	Rogue	DRP	Hard	✱✱✱✱✲✲	✱✱✱✲✲✲	✱✱✱✱✱✲	Available	16, 18, 20 mm	Available
	Rebel	DRP	Hard	✱✱✱✱✱✲	✱✱✱✲✲✲	✱✱✱✱✲✲	Available	16, 18, 20 mm	Available
	Recruit	DRP	Soft	✱✱✱✱✲✲	✱✱✱✱✲✲	✱✱✱✱✲✲	Available	15, 17, 19 mm	Not available
Integrity Basic Design	Renegade	SP	Hard	✱✱✱✱✲✲	✱✱✱✲✲✲	✱✱✲✲✲✲	Available	16, 18, 20 mm	Available

Chill - Let your eyes rest

An innovative design, that reduces visual fatigue. Let your eyes rest when reading, working with computers or playing video games. Chill is an anti-fatigue design that has been calculated to reduce visual fatigue produced by a continuous accommodation effort.

Ideal wearers for this type of lens are people with ages between 18 and 45 years who, because of their jobs or hobbies, spend much time using near vision. Muscles that surround the crystalline become tired, and this may end in visual fatigue. The most common symptoms are pain, dryness, eyes become red and even headaches.

Chill reduces the weakening process of the mentioned muscles because it provides the wearer with a small touch of addition in the bottom part of the lens.. Chill is available in 0.50D and 0.75D.

Chill 050:

Chill 050 has an addition of 0.50D. It is especially useful for people who spend much time working at a computer. Thanks to this little addition in the bottom part of the lens it is more comfortable to work with computers, and people will notice how their eyes get less tired.

Chill 075:

Chill 075 has an addition of 0.75D. A higher addition than 0.50D helps wearers when reading. Due to the proximity of the object, the eye needs power for focusing and thanks to the 0.75D of addition provided by this design wearers don't need to accommodate so much and visual fatigue gets low.

MFH Available 14 mm

Benefits:

Reduce visual fatigue

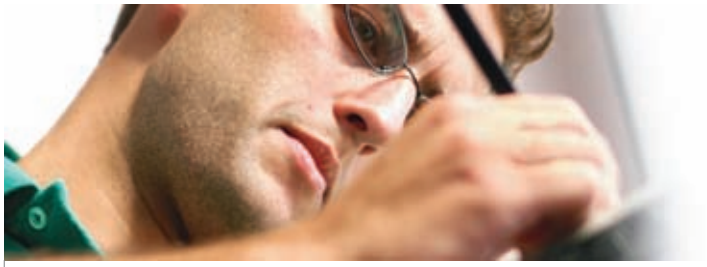
Laramy-k offers this design in two different additions, 0.50D& 0.75D

High quality features in the near zone

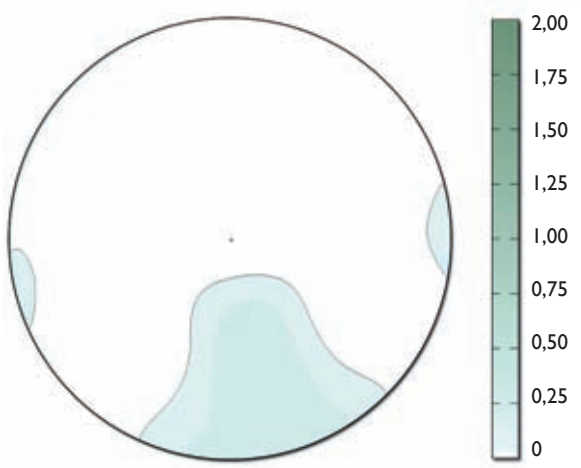
High precision and high personalization due to Digital Ray-Path technology

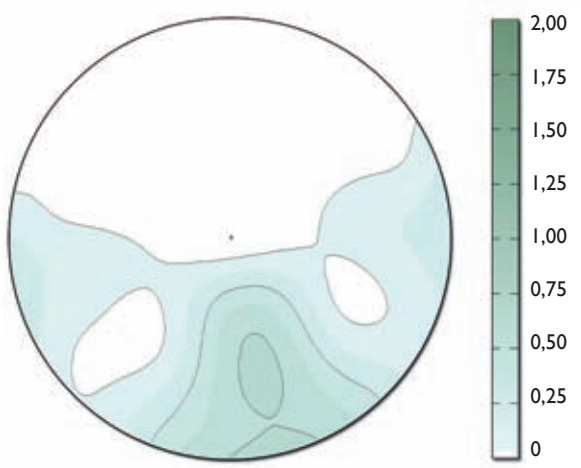
Clear vision in every gaze direction

Oblique astigmatism reduced



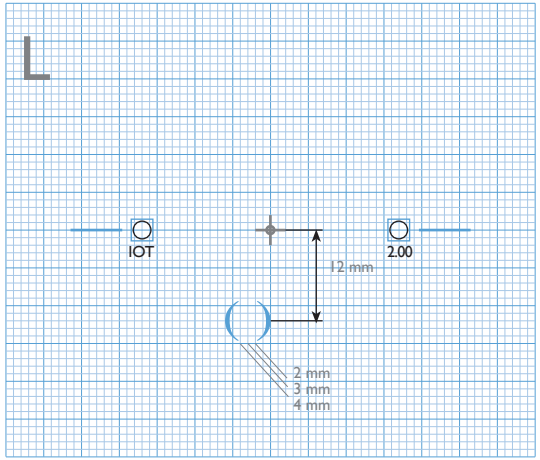
Power Map
050

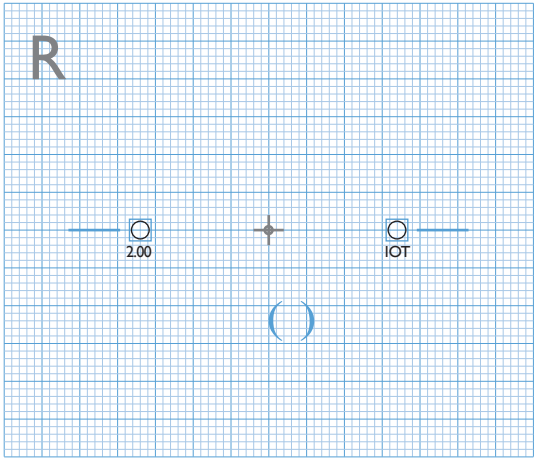




Power Map
075

Stamps





SURFACE POWER

Laramy-k Office

Precision design that appears as a solution for those mid-age professionals who require an intensive use of the near vision and the intermediate.

Seven power degressions of 0.75, 1.00, 1.25, 1.50, 1.75, 200 and 2.25 D guarantee that all wearers will find the best adapted power degression.

Near vision point is held at 14mm below the pupil. Such a long corridor provides an instant feeling of comfort and adaptation, swim effect disappears and distortions caused by lateral astigmatism zones are virtually invisible.

Around 65% of the degression is reached at level pupil position, making it easier for wearers to find the intermediate vision, for example to work with a computer. Due to this studied pupil positioning, head movements are decreased avoiding many neck and shoulder problems.

Professionals in indoor environments like executives, lawyers, doctors, or teachers, will use this new design as their heavy-duty indoor lens.

USERS:

Executives, doctors, lawyers, teachers, shoppers …

Benefits:

Extremely wide near vision region.

Very soft design that eliminates swim effect and perceived lateral distortion

No adaptation issues

Clear vision from reading distance up to 13 feet

Frame Customization

Seven available degressions

MFH Available 18 mm

Laramy-k Office

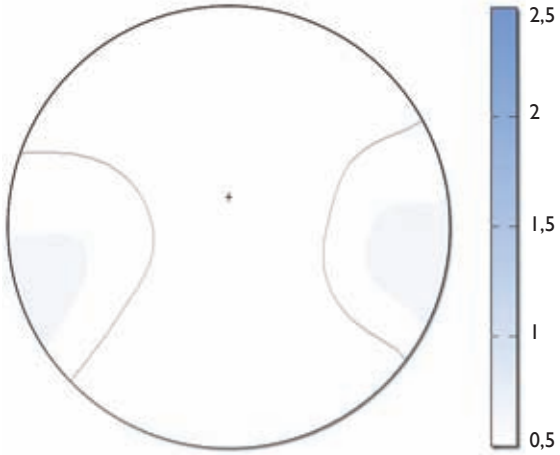
Depth of field of Laramy-k Office compared with single vision

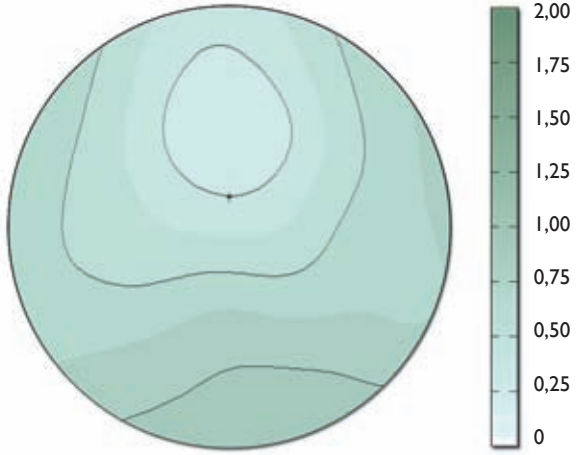
Addition	Degression	Range with single vision	Range with Reader
+ 1,00 D	+ 0,75 D	from 13 in. to 35 in.	from 13 in. to 13 ft.
+ 1,25 D	+ 0,75 D	from 13 in. to 31 in.	from 13 in. to 6 ft.
	+ 1,00 D	from 13 in. to 31 in.	from 13 in. to 13 ft.
+ 1,50 D	+ 0,75 D	from 13 in. to 25 in.	from 13 in. to 4 ft.
	+ 1,00 D	from 13 in. to 25 in.	from 13 in. to 6 ft.
	+ 1,25 D	from 13 in. to 25 in.	from 13 in. to 13 ft.
+ 1,75 D	+ 1,00 D	from 13 in. to 23 in.	from 13 in. to 4 ft.
	+ 1,25 D	from 13 in. to 23 in.	from 13 in. to 6 ft.
	+ 1,50 D	from 13 in. to 23 in.	from 13 in. to 13 ft.
+ 2,00 D	+ 1,25 D	from 13 in. to 20 in.	from 13 in. to 4 ft.
	+ 1,50 D	from 13 in. to 20 in.	from 13 in. to 6 ft.
	+ 1,75 D	from 13 in. to 20 in.	from 13 in. to 13 ft.
+ 2,25 D	+ 1,50 D	from 13 in. to 19 in.	from 13 in. to 4 ft.
	+ 1,75 D	from 13 in. to 19 in.	from 13 in. to 6 ft.
	+ 2,00 D	from 13 in. to 19 in.	from 13 in. to 13 ft.
+ 2,50 D	+ 1,75 D	from 13 in. to 17 in.	from 13 in. to 4 ft.
	+ 2,00 D	from 13 in. to 17 in.	from 13 in. to 6 ft.
	+ 2,25 D	from 13 in. to 17 in.	from 13 in. to 13 ft.
+ 2,75 D	+ 2,00 D	from 13 in. to 16 in.	from 13 in. to 4 ft.
	+ 2,25 D	from 13 in. to 16 in.	from 13 in. to 6 ft.
+ 3,00 D	+ 2,25 D	from 13 in. to 15 in.	from 13 in. to 4 ft.

Laramy-k Office

Degression 075

Cilinder Map
MFH =18mm

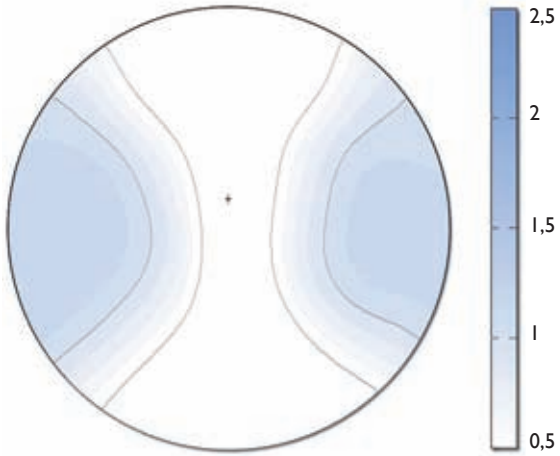


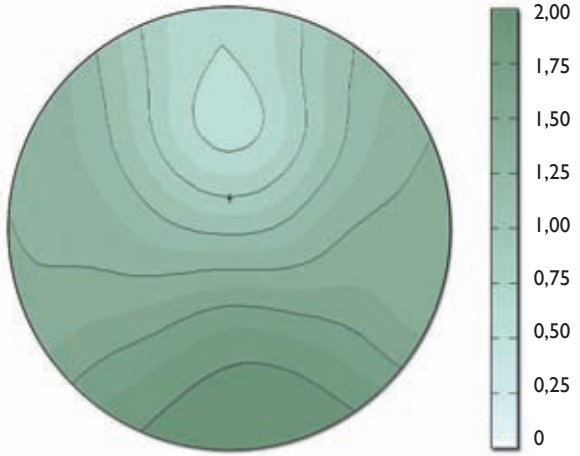


Power Map
MFH =18mm

Degression 150

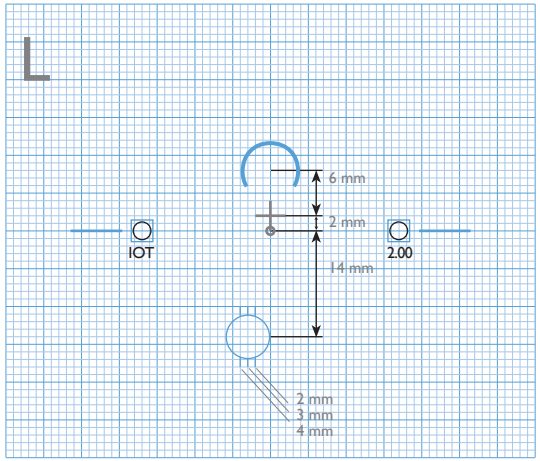
Cilinder Map
MFH =18mm

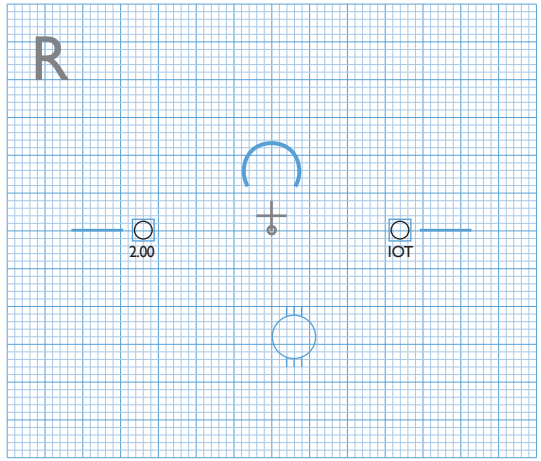




Power Map
MFH =18mm

Stamps
MFH = 18mm





Rogue - Near Precision

One of the most important goals when developing a PAL design is to provide it with a good near vision zone. Laramy-k's Rogue has been developed to provide wearers with a high quality lens with a very good near zone.

Near region has been extended to allow wearers to have very good proximity view. Astigmatism around near field has been also reduced to improve feelings of comfort when using near vision. This combination of features produces a final lens with high definition in near with a good and clear far vision.

Need a good near solution? Expand your product line with Laramy-k's Rogue.

Performance at each distance:

FAR	★★★★☆☆
INTERMEDIATE	★★★☆☆☆
NEAR	★★★★★☆

Positioning:

Near sight quality, high resolution.

Target:

Wearers with an intensive use of near vision, like book reading. Target wearer for this lens is an experienced PAL user, which has worn progressives before and knows what he is looking for. Wearers over 50.

Benefits:

- Wider Near Visual field
- Good balance between far and near
- Reduction of neck stress for near tasks
- Available in three progression lengths
- Short version available
- High precision and high personalization due to Digital Ray-Path technology
- Clear vision in every gaze direction
- Oblique astigmatism minimized

MFH Available	16, 18, 20 mm
Progression Length	12, 14, 16 mm
Corridor Length	8, 10, 12 mm

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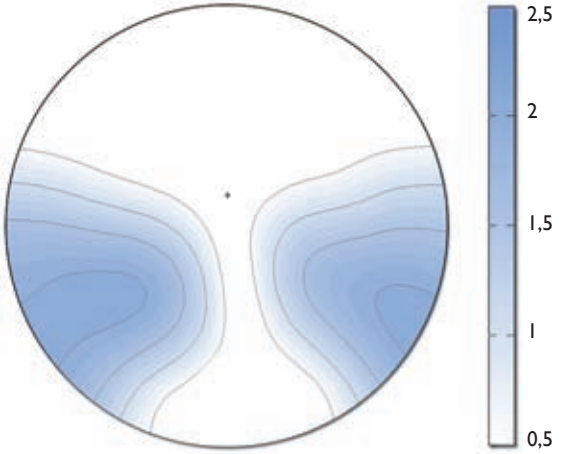
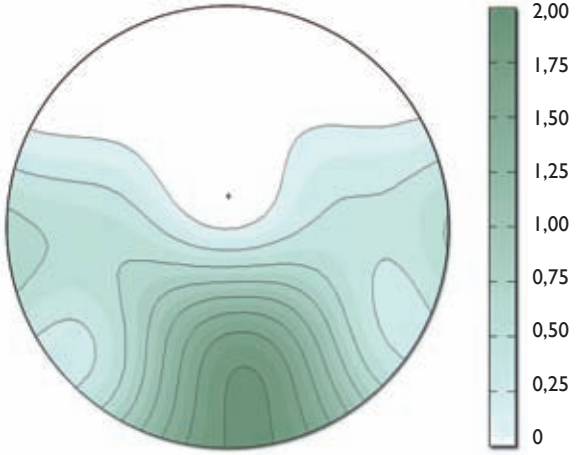
Rogue

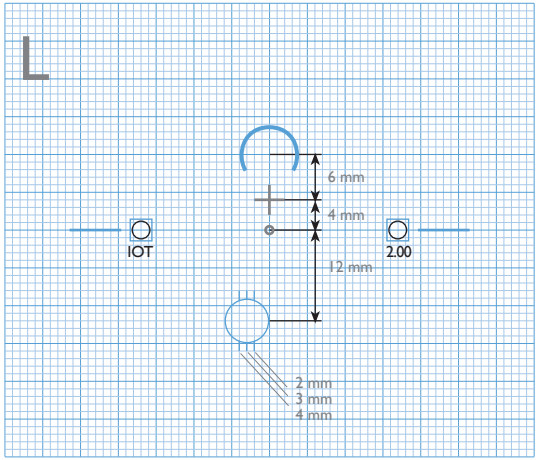
Cilinder Map
MFH =18mm

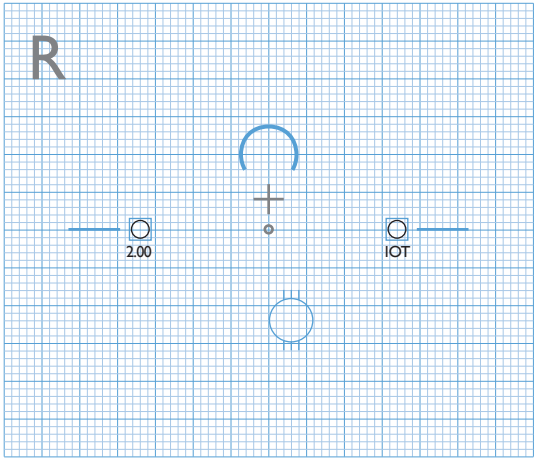




Power Map
MFH =18mm

Stamps
MFH =18mm





Rebel - Superior far vision

Enjoying landscapes, great buildings, movies in the cinema, etc. requires a wide, clear far field. Laramy-k's Rebel appears as the appropriate solution for people who spend large times outdoors, people that need a very good far vision.

Developing this design has involved a new challenge, improving far vision while maintaining near and intermediate vision quality. As a result users will find a wide 180° visual field above pupil.

Also near view field is wide enough to allow users to use this lens to do everyday near activities.

Take a look at the world around you; ask for Laramy-k's Rebel.

Performance at each distance:

FAR	✶✶✶✶✶✵
INTERMEDIATE	✶✶✶✵✵✵
NEAR	✶✶✶✶✵✵

Positioning:

Superior far vision, it is still a general use PAL, but ideal for outdoor activities

Target:

Experienced PAL wearers that have a preference for outdoor activities. The ideal lens for week-ends, travelling, or enjoying a nice sunset.

MFH Available	16, 18, 20 mm
Progression Length	12, 14, 16 mm
Corridor Length	8, 10, 12 mm

Benefits:

- Extra wide far visual zone
- Good balance between far and near
- Available in three progression lengths
- Short version available
- High precision and high personalization due to Digital Ray-Path technology
- Clear vision in every gaze direction
- Oblique astigmatism minimized

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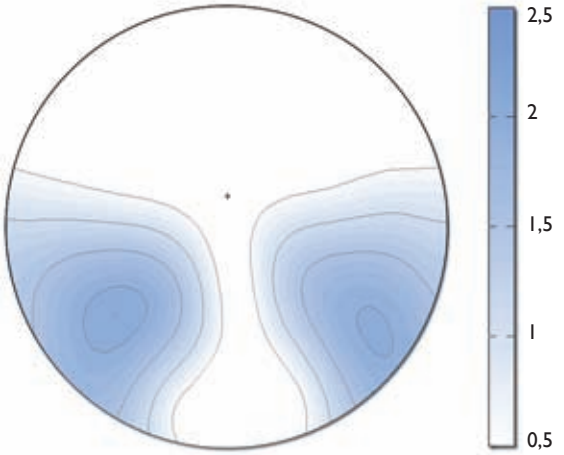
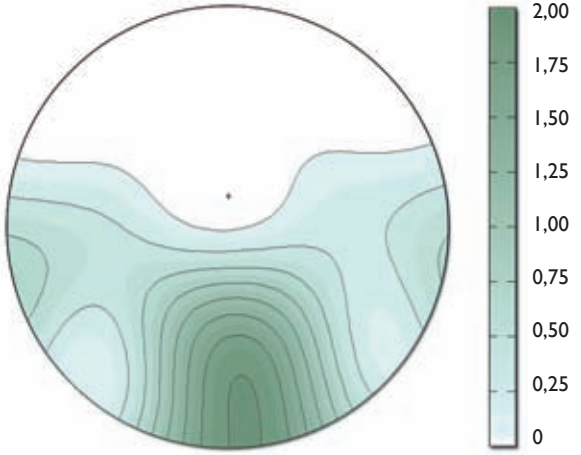
Rebel

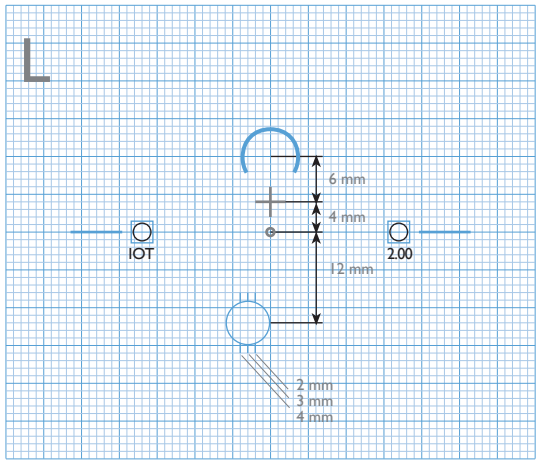
Cilinder Map
MFH =18mm

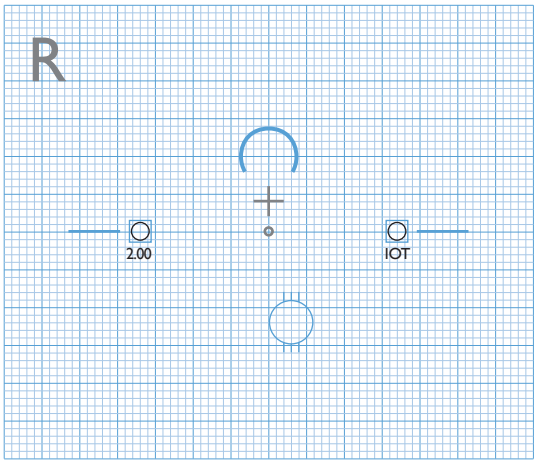




Power Map
MFH =18mm

Stamps
MFH =18mm





Recruit - Urban Style

Nowadays most people lead a urban lifestyle, big buildings around us, roads, subways, shops… Progressive users who need a versatile lens which provides them with comfort and good visual fields to get a quick adaptation to any scenario inside cities.

Laramy-k's Recruit represents the flagship of soft progressive designs.This revolutionary design provides wearers with the perfect solution for their daily life; soft transition between distances and big visual fields improve comfort and reduce the adaptation period, adaptation is almost immediate.

Exceptional for near vision with a good far field, Laramy-k's Recruit is a safe bet for customer satisfaction due to its high performance and its easy adaptation.

Get your urban life design; provide your customers with a comfortable lens with Laramy-k's Recruit

Positioning:

Flagship soft design, Lens for a urban lifestyle.

Target:

Users with little or no experience wearing Pals, looking for a comfortable lens for an active urban lifestyle. Wearers in their 40s who never have worn progressives or who have worn soft Pals.

Performance at each distance:

FAR	✱✱✱✱✲✲
INTERMEDIATE	✱✱✱✱✲✲
NEAR	✱✱✱✱✲✲

MFH Available	15, 17, 19 mm
Progression Length	11, 13, 15 mm
Corridor Length	9, 11, 13 mm

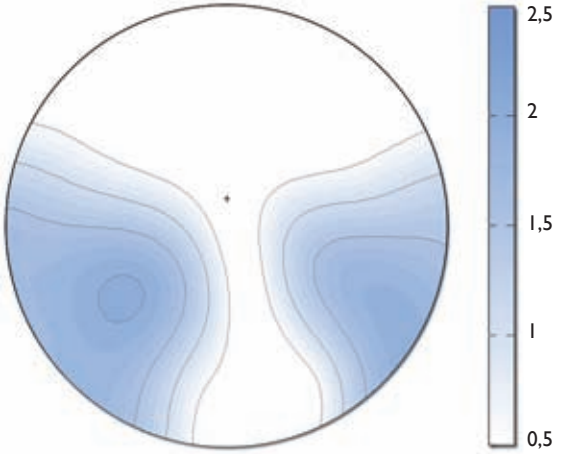
Benefits:

- Very wide near field mixed with an also wide far vision zone
- Real comfort, adaptation is easy and fast
- Available in three progression lengths
- High precision and high personalization due to Digital Ray-Path technology
- Clear vision in every gaze direction
- Oblique astigmatism minimized

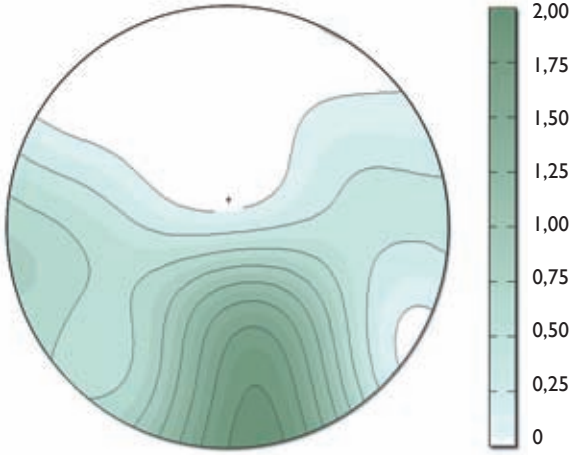
LARAMY-K PTICAL
AN UNCUT ABOVE THE REST
Phone: (800)525-1274
Fax: (800)628-9819
www.laramyk.com

Recruit

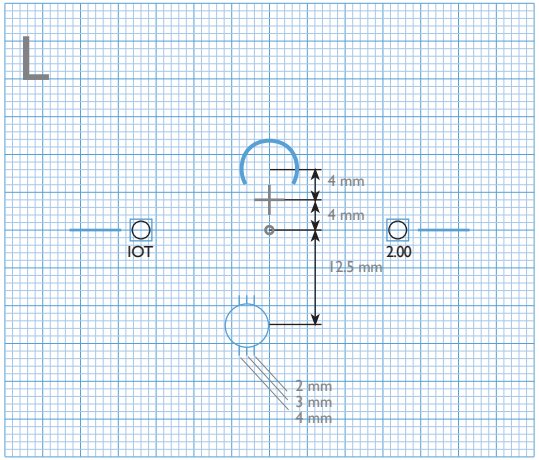
Cilinder Map
MFH =19mm

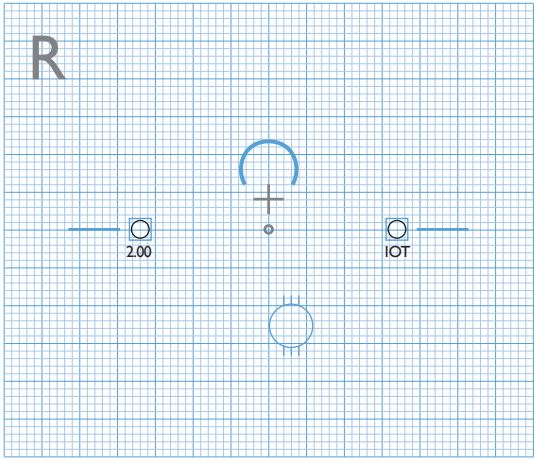


Power Map
MFH =19mm



Stamps
MFH =19mm





Renegade - Standard

Basic design well balanced between far and near fields. The technology used for calculating the surface of this basic progressive is Surface Power. This technology guarantees that measured power will be the same as the prescription, and this makes this lens easy to be understood and sold by all kinds of practitioners.

Renegade's power distribution has been designed to make a standard lens which will provide users with a balanced design with good performance in any scenario, wide near and also wide far mixed with a good corridor.

Performance at each distance:

FAR	✶✶✶✶✲✲
INTERMEDIATE	✶✶✶✲✲✲
NEAR	✶✶✶✶✲✲

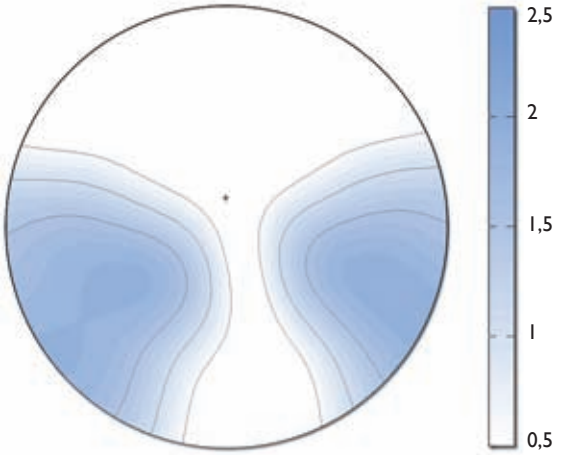
MFH Available	16, 18, 20 mm
Progression Length	14, 16, 18 mm
Corridor Length	9, 11, 12 mm

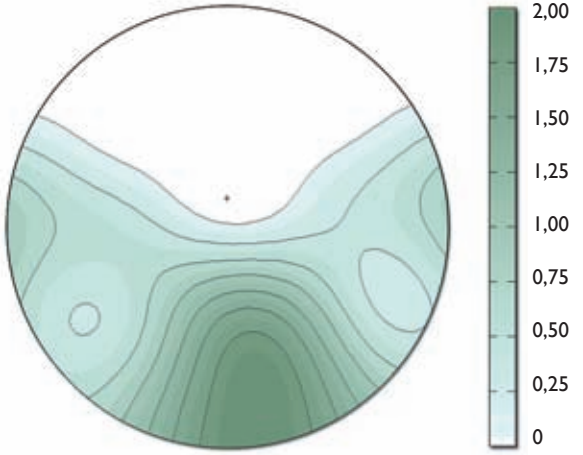
Benefits:

- Well balanced basic lens
- Wide near and far
- Good performance for standard use
- Available in three progression lengths
- Short version available
- Surface Power calculation makes an easy-to-understand lens for the practitioner

Renegade

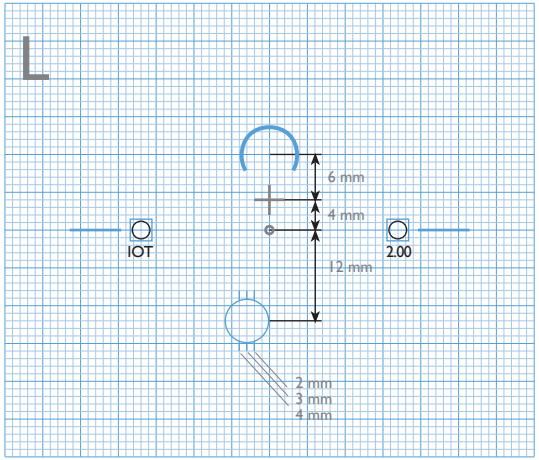
Cilinder Map
MFH =18mm

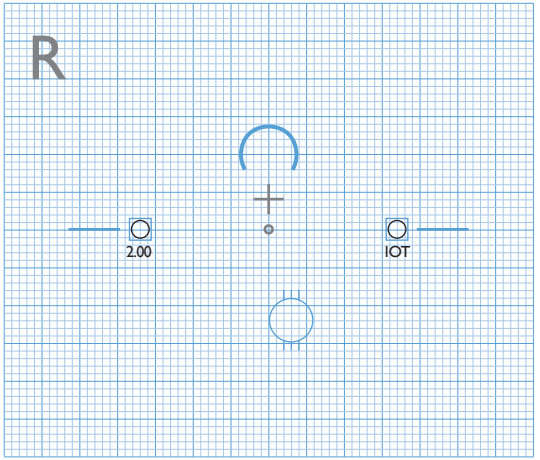




Power Map
MFH =18mm

Stamps
MFH =18mm





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