

UNITY® VIA PROGRESSIVE LENSES

TECHNICAL WHITE PAPER



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INTRODUCTION

There are many digital progressive lenses available on the market today that deliver excellent quality and increased benefits for both customers and eye care professionals (ECPs). The VSP® Optics Group (VSP) currently offers a wide range of digital progressive lenses, each of them demonstrating a high level of success in the optical market.

VSP is introducing five new digital progressive lenses to its Unity product line. These new lenses expand the proven visual performance of existing VSP Unity products and incorporate state-of-the-art calculation technologies and new optical features. With these new lens designs, VSP takes a leap forward in innovation and product consistency. Customers will now truly enjoy unsurpassed visual quality.

A BREAKTHROUGH IN UNITY PROGRESSIVE LENSES

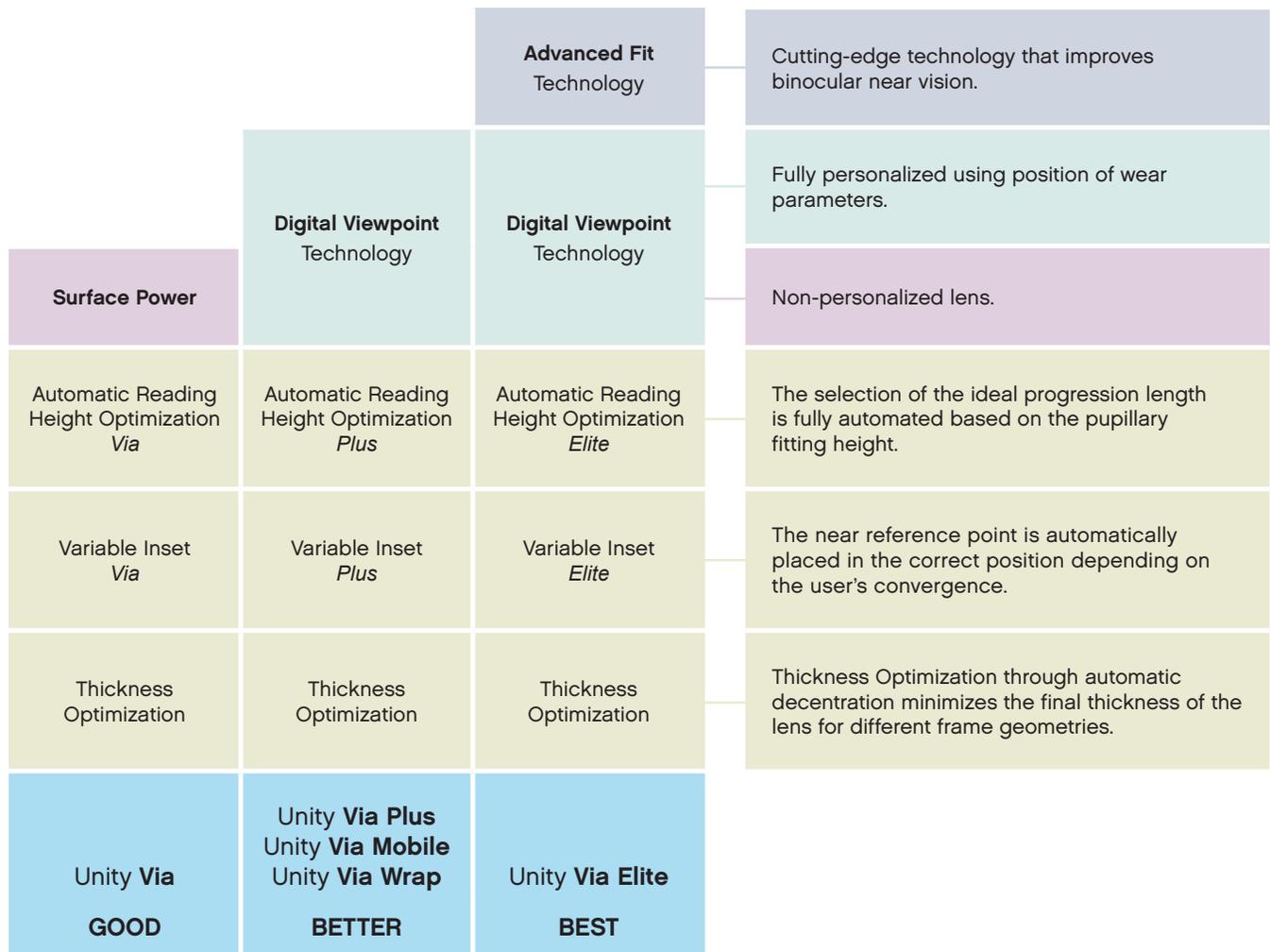
All designs in the Unity Via family of Progressive Lenses introduce sophisticated lens design architectures and new optimization techniques to create the most up-to-date lenses.

These five new product designs are positioned to address three different market categories. The technologies and features driving them are what differentiate them from their competitors.

The new Unity products span from entry level to the most sophisticated product offered in the industry, driving a clear path forward to provide each individual customer with the most adapted visual solution.

Every lens is optimized using an advanced digital lens calculation platform, based on in-depth knowledge of optical science and user visual needs and satisfaction. Unity lenses have been developed to take advantage of all the benefits offered by free-form technology, delivering three progressive lens designs that are almost mathematically perfect.

The beauty of the new Unity lens portfolio is that it offers an updated, unified and consistent product line. The designs and the technologies incorporated within each design build from one category level to the next.



KEY TECHNOLOGIES AND FEATURES BY CATEGORY

UNITY VIA

The Unity Via lens is a non-compensated, basic digital progressive for general use with generous visual fields in the near and distance zones. Though it is not personalized or compensated, it is a digitally surfaced product, offering several benefits because of the way it is computed.

Included among the benefits of this product are lens thickness optimization, automatic decentration and expanded binocular near vision which make Unity Via a clearly superior lens when compared to a conventional progressive.

- **Surface Power Technology®** The lens is produced by free-form technology; the power and addition are nominal (what is prescribed by the doctor) and the lens is not personalized.
- **Automatic Reading Height Optimization** allows the most suitable progression length to be automatically selected for each customer. Four minimum fitting heights options are available in increments of 2 mm: 12, 14, 16, and 18 mm.
- **Automatic Scaling Method** guarantees consistency and higher accuracy between different progression lengths. The power distribution of the lens is also preserved regardless of the progression length, guaranteeing consistency and accuracy between progression lengths.
- **Variable Inset** provides improved binocular vision while reading. The monocular inset is automatically calculated for each customer. An inset range of 0 to 4 mm is available in 0.5 mm steps.
- **Thickness Optimization** guarantees the best possible aesthetics for any frame.

VIA UNITY—DESCRIPTION AND TARGET

Well balanced between distance and near visual areas, this lens is a good solution for presbyopes who want to wear a progressive lens full time and are looking for an economic solution.

UNITY VIA PLUS, UNITY VIA MOBILE, AND UNITY VIA WRAP

The Unity Via Plus, Unity Via Mobile, and Unity Via Wrap are compensated digital lenses designed for frequent progressive lens wearers. They have generous visual fields in the near and distance zones. Because the lenses are compensated, they offer many benefits of a digital design, including optimization and precision. Personalized position of wear (POW) parameters are used to further improve the wearer's visual experience. Default personalization parameters will be used if the real personalization parameters are not provided. Refer to Appendix A for default personalization parameters.

Included among the benefits of this product are lens thickness optimization, automatic decentration, and expanded binocular near vision which make these three lenses clearly superior when compared to non-compensated progressive lenses.

- **Digital Viewpoint Technology:**
 - Power is fully compensated in every gaze direction
 - Oblique aberration reduction
 - Expanded visual fields
 - The lenses can be fully personalized for the “as worn” position
 - Personalization parameters are taken into account during the calculation
- **Automatic Reading Height Optimization** allows the most suitable progression length to be automatically selected for each customer. Seven minimum fitting height options are available in increments of 1 mm: 12, 13, 14, 15, 16, 17, and 18 mm.
- **Automatic Scaling Method** guarantees consistency and higher accuracy between different progression lengths. The power distribution of the lens is also preserved regardless of the progression length, guaranteeing consistency and accuracy between progression lengths.
- **Variable Inset** provides improved binocular vision while reading. The monocular inset is automatically calculated for each customer. An inset range of 0 to 4 mm is available in 0.5 mm steps.
- **Thickness Optimization** guarantees the best possible aesthetics for the frame geometry selected.

UNITY VIA PLUS—DESCRIPTION AND TARGET

Well balanced between distance and near visual areas, this lens is a good solution for presbyopes who want to wear a progressive lens full time and are looking for a personalized, high-end product. This lens is a good solution for demanding customers with high visual expectations, especially in near vision.

UNITY VIA MOBILE—DESCRIPTION AND TARGET

Developed specifically for electronic device users, the Unity Via Mobile design provides wide visual fields for both near and distance vision with smooth transitions between visual fields. The design also includes a shorter progression profile and a closer near working distance of 32 cm to increase visual comfort when viewing digital devices such as smartphones, which are typically held closer than printed reading materials. Unity Via Mobile has an extra addition of 0.125D in the near vision area to deliver extra magnification when reading the small font on digital device screens. This lens is a good solution for demanding users who have high visual expectations and a frequent and intense use of digital devices.

UNITY VIA WRAP—DESCRIPTION AND TARGET

Unity Via Wrap is specifically designed to be used in sport and/or high curvature frames, providing an extra wide distance visual field to enjoy outdoor activities. This lens is optimized using real personalization parameters. Otherwise, a default wrapping angle of 15° will be used to compensate for the effect of a high base curve to deliver exceptional visual clarity at all distances. It is the perfect solution for demanding customers who want to purchase a high curvature frame.

UNITY VIA ELITE

The Unity Via Elite lens is a fully compensated and personalized digital lens designed for power progressive wearers who want to take full advantage of digital technology. The design has generous visual fields in the near and distance zones. Because the lenses are compensated and personalized, they offer all of the benefits of a digital design, including optimization, precision, and personal customization. Real personalization parameters are used when available to truly customize the lens for the wearer based on the selected frame. Refer to the Appendix for default personalization parameters.

Included among the benefits of this product are lens thickness optimization, automatic decentration, and expanded binocular near vision, which make the Via Elite lens a clearly superior, top of the line lens when compared to non-compensated, non-personalized progressive lenses.

- **Advanced Fit** provides the patient with superior binocular near vision through an ultra-precise location of the near reference point allowing for superior binocular near vision performance, faster adaptation, better comfort and ergonomics.
- **Digital Viewpoint Technology:**
 - Power is fully compensated in every gaze direction
 - Oblique aberration reduction
 - Expanded visual fields
 - The lenses can be fully personalized for the “as worn” position
 - Personalization parameters are taken into account during the calculation
- **Automatic Reading Height Optimization** allows the most suitable progression length to be automatically selected for each customer from infinite fitting height options ranging from 12 to 18 mm.
- **Automatic Scaling Method** guarantees consistency and higher accuracy between different progression lengths. The power distribution of the lens is also preserved regardless of the progression length, guaranteeing consistency and accuracy between progression lengths.
- **Variable Inset** provides improved binocular vision while reading. The monocular inset is automatically calculated for each customer. The monocular insets will be automatically calculated for each customer from infinite inset values ranging from 0 to 4 mm.
- **Thickness Optimization** guarantees the best possible aesthetics for the frame geometry selected.

UNITY VIA ELITE—WDESCRIPTION AND TARGET

A balance between distance and near visual fields makes this lens the perfect solution for presbyopes with high power prescriptions who wear their progressives full time and are looking for a personalized, premium lens. It is ideal for customers who spend a lot of time working at near distances and require unsurpassed near visual performance.

The incorporation of Advanced Fit technology, provides superior binocular near vision to the wearer through a more personalized and precisely located near reference point that is uniquely calculated for each individual.

Unity Via Elite reaches a new level of customization for every customer.

CALCULATION TECHNOLOGIES

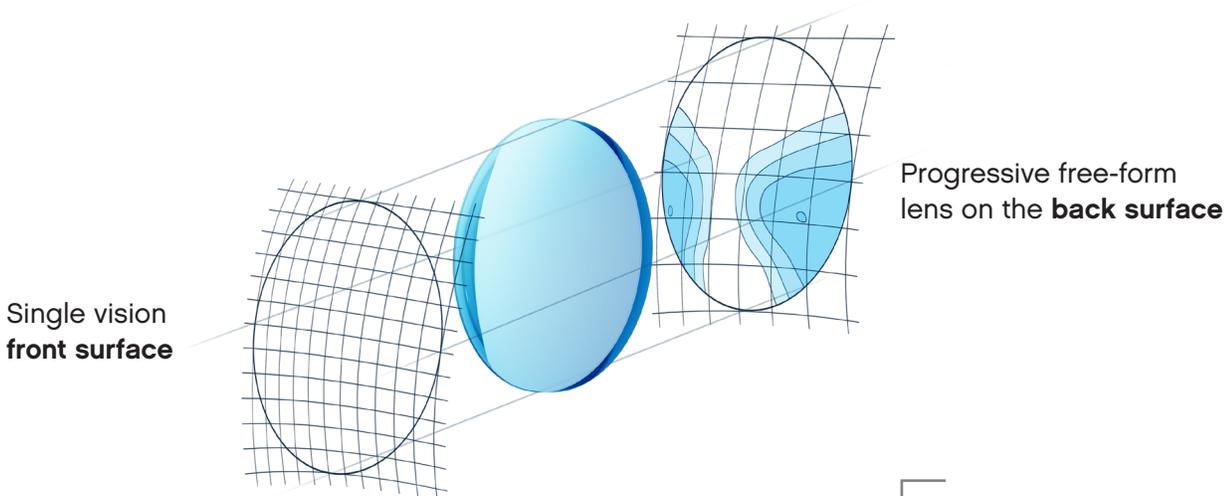
UNITY VIA · UNITY VIA PLUS · UNITY VIA MOBILE · UNITY VIA WRAP · UNITY VIA ELITE

Unity Lenses provide some of the most flexible solutions ranging from basic lens designs to the latest, state-of-the-art personalized lenses that exist in the market today.

1. SURFACE POWER TECHNOLOGY

Basic lens calculation technology used to produce a free-form entry-level product.

Surface Power Technology is the entry-level, free-form technology used to produce digital lenses. Progressive lenses made with this technology have the progressive surface on the back of the lens and typically, a spherical front surface. The progressive surface is calculated using a pure geometrical method that produces lenses with similar optical performance as conventional progressive lenses but with the advantages of the free-form digital process, such as flexible designs, variable corridor lengths and variable insets. This technology does not take into account any personalization or optimization and the power of the lens is nominal, or not compensated.



Unity Via Progressive Lenses are calculated using **Surface Power Technology.**

ADVANTAGES

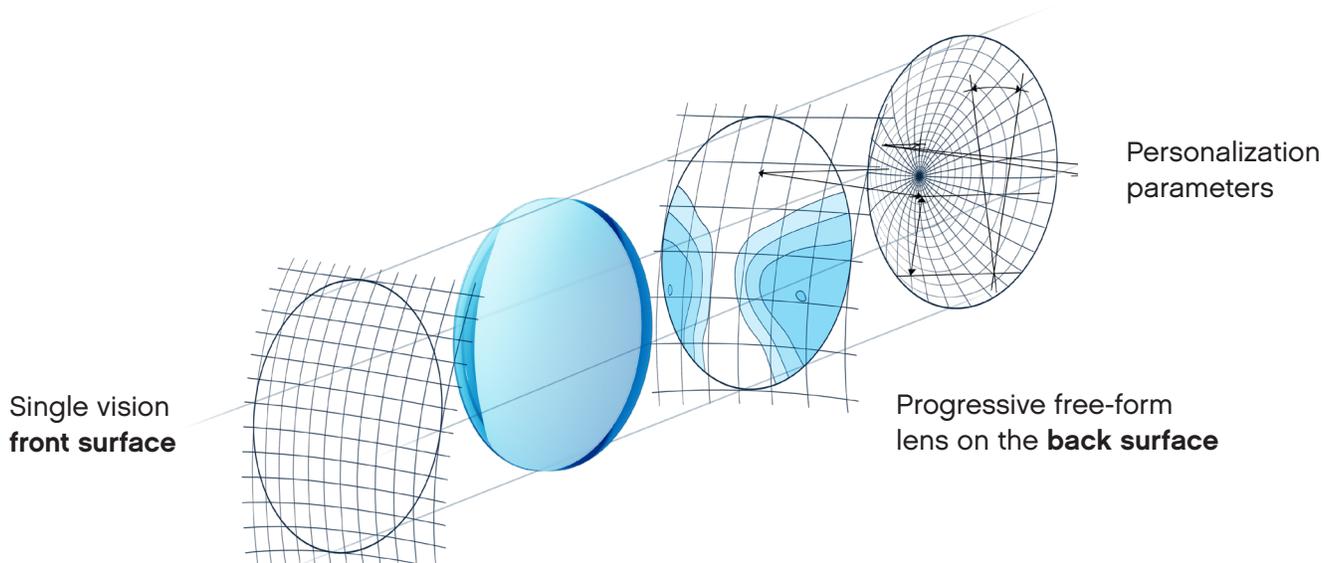
- The technology is easy for ECPs to understand
- The measured powers at the near and distance reference points match the nominal prescription prescribed by the doctor (power is not compensated)
- A higher level of power accuracy is provided when compared to conventional lens production

2. DIGITAL VIEWPOINT TECHNOLOGY

Achieving full personalization.

Digital Viewpoint is one of the most advanced technologies available today for producing free-form digital lenses. It is based on an advanced, three-dimensional calculation model that takes into account the “as worn” position of the lens and the natural movements of the human eye. The result of this innovative calculation method is a progressive lens that is personalized and provides better vision throughout all zones of the lens.

This unique calculation method takes into account position of wear (POW) variables, such as pantoscopic tilt angle (rake), wrap angle, back vertex distance and near working distance. Due to the optimization of the lens based on personalization parameters, the final lens provides visual optimization in every gaze direction.



Unity Via Progressive Lenses
are calculated using
Digital Viewpoint Technology.

ADVANTAGES

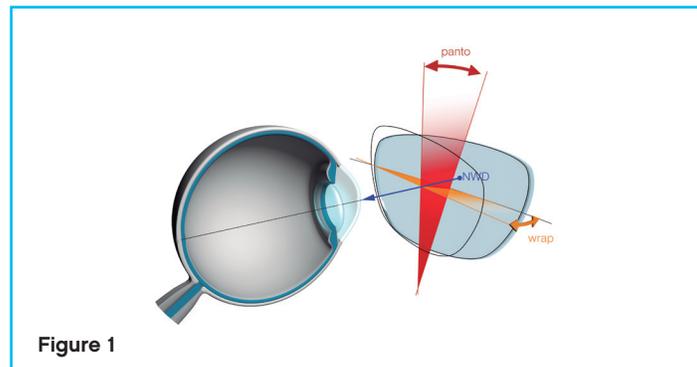
- Full personalization
- Oblique aberration reduction
- Superior vision in all gaze directions
- Optimized power at every point of the lens
- Excellent vision, especially with difficult jobs due to high wrap frames and/or high Rx's

2.1. DIGITAL VIEWPOINT CALCULATION STEPS

As explained below, Digital Viewpoint Technology applies three steps to calculate the compensated lens power.

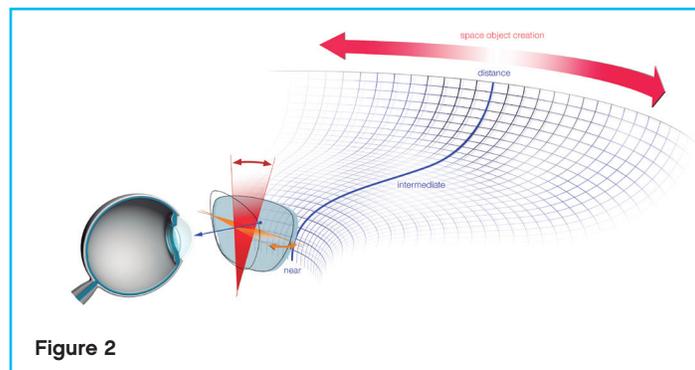
Step 1 of 3 – Eye Lens System

First, a 3D eye-lens system is built using the personalization parameters (Figure 1). Digital Viewpoint simulates the lens in its position as worn in front of the eye, taking into account all of the patient's unique personalization parameters. The more parameters that are measured and provided, such as pantoscopic tilt angle, wrap angle, or back vertex distance, the more accurate the simulation will be.



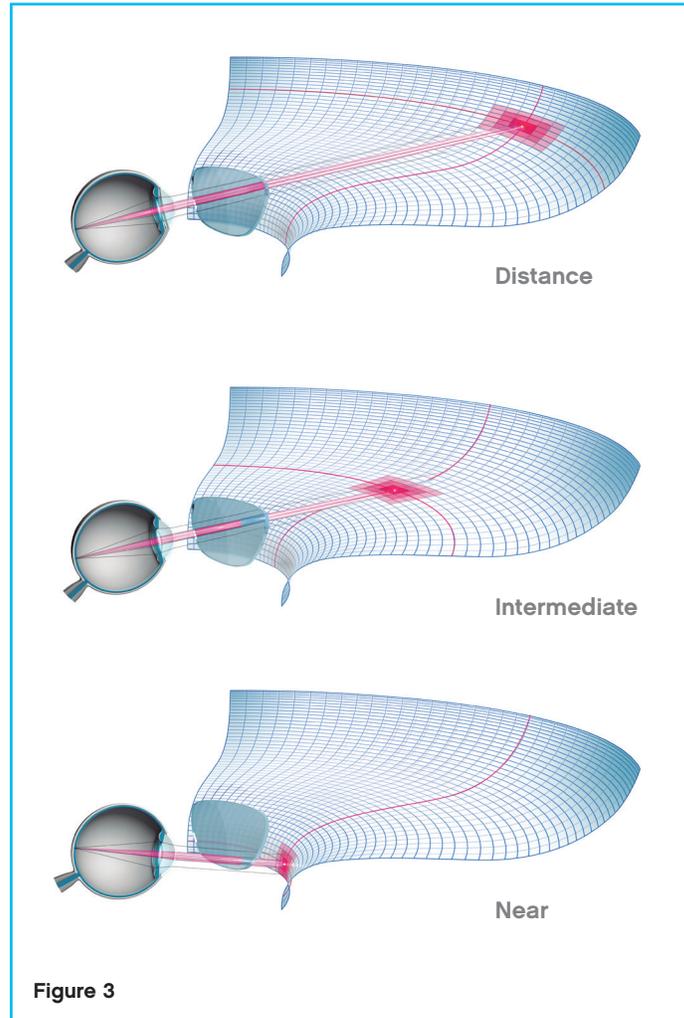
Step 2 of 3 – Object Space

Next, Digital Viewpoint calculates the object space to know how different areas of the lens are mapped out to view near, intermediate, and distance vision (Figure 2). The object space beyond the lens (relative to where near, intermediate, and distance objects are located) is simulated for the best possible optics.



Step 3 of 3 – Ray Tracing

Finally, Digital Viewpoint simulates how the eye rotates to look in every direction at various distances (Figure 3). For each position of the eye, it computes the oblique aberrations that would limit the visual quality through that particular point on the lens. Digital Viewpoint uses this information to minimize these undesired aberrations point-by-point, and across the lens in all gaze directions, until the back surface of the lens is fully optimized.



2.2. PERSONALIZATION PARAMETERS

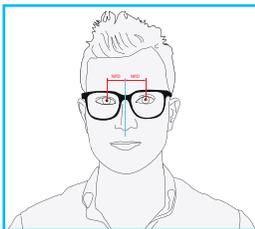
When possible, the ECP should take measurements for all personalization parameters and send them with the lens order for full compensation. These parameters will be used by Digital Viewpoint to refine the optimization of the lens and guarantee the best lens for each specific wearer.

In the event that some of the personalization parameters are not available, the final lens will be personalized using default values. Default personalization values have been carefully determined to guarantee the best optimization in the most standard cases.

It is important to note that even when personalization parameter values are missing and default values are used, Digital Viewpoint still provides superior vision over conventional lenses. The way that prescription, progression, material and base curve are combined at each point of the lens will still be optimized.

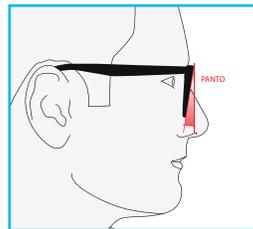
It is highly recommended that actual personalization be used in cases that require special fitting such as with high wrap frames, rather than default values.

The personalization parameters used during the calculation are:



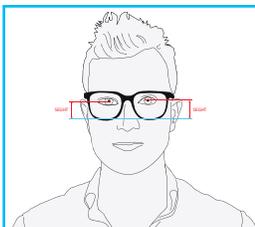
MONOCULAR PUPILLARY DISTANCE*

Is defined as the distance from the axis of symmetry of the face to the center of the pupil.



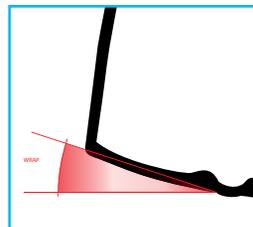
PANTOSCOPIC ANGLE

This is the angle in the vertical plane between the optical axis of a spectacle lens and the visual axis of the eye in primary position.



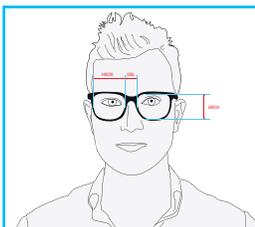
PUPILAR HEIGHTS*

Is the vertical distance between the pupil center and the deepest part of the lens shape.



WRAP ANGLE

Frame curvature



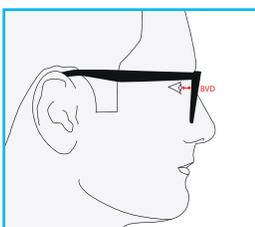
FRAME DIMENSIONS*

Frame dimensions are used to calculate the final diameter, thickness of the lens and improve the efficiency of the optimization.



NEAR WORKING DISTANCE

This is the distance from the lens to the typical reading position for the wearer.



BACK VERTEX DISTANCE

Distance between the cornea and the back surface of the lens.

Note: When personalization parameters are missing, the default values will be used for the lens calculation. Refer to Appendix for more information.

*mandatory

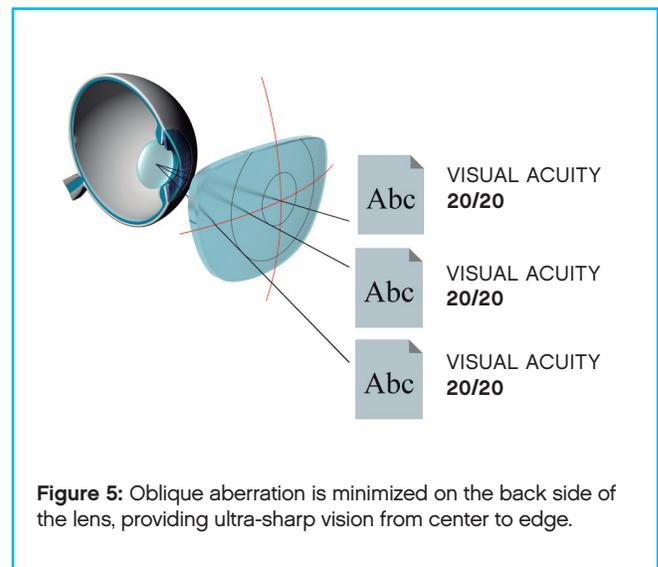
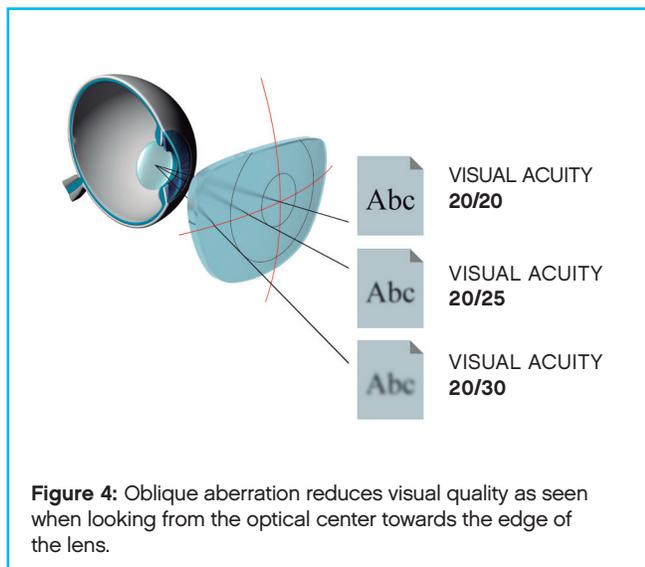
2.2.1. BENEFITS OF PERSONALIZATION

Lens personalization helps to reduce oblique aberration.

Oblique aberration is a focusing error that is experienced by wearers when they look through an area of the lens that is significantly away from the optical center of the lens. When an image is not focused on the fovea (normal to the lens), wearers will see the target object out of focus, vision becomes blurry and visual acuity is reduced. Oblique aberration reduction is especially important in a progressive lens because all of the useful visual areas of the lens are away from the center of the design, including the near area of the lens.

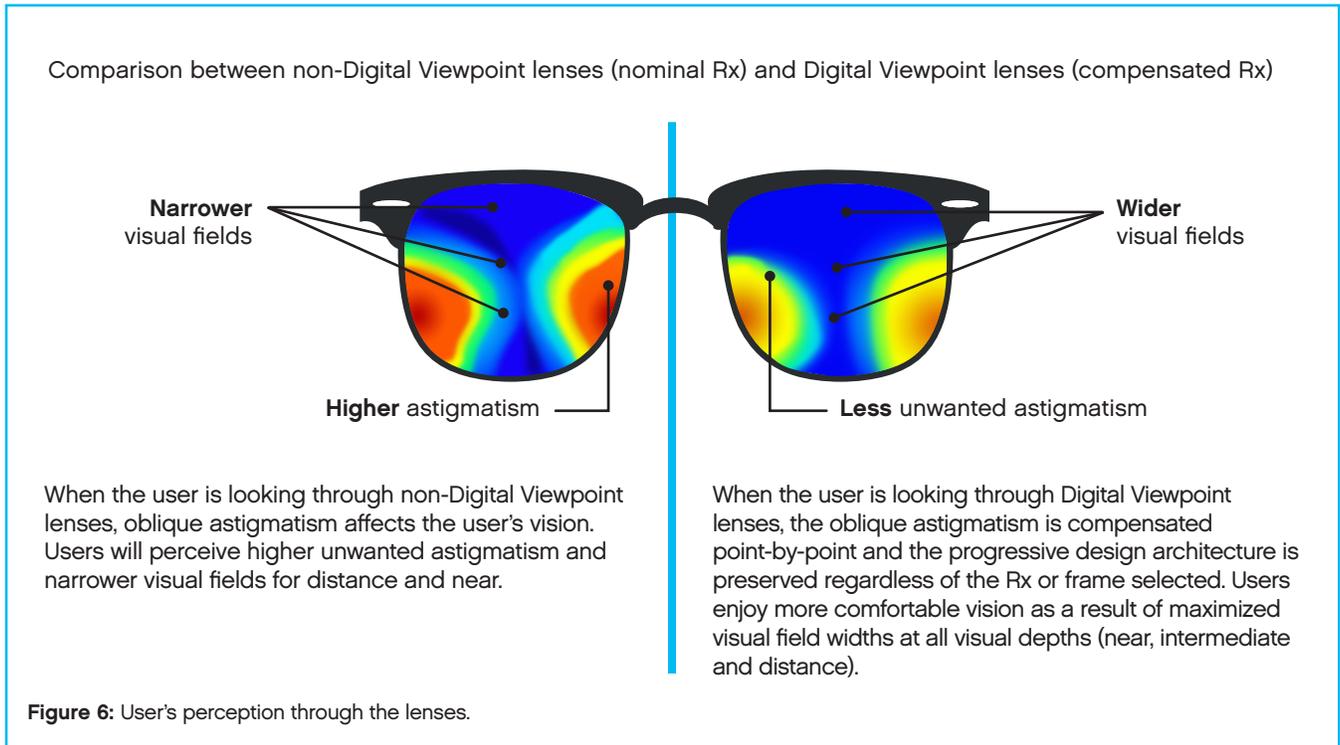
Digital Viewpoint Technology corrects oblique aberrations at all points on the lens, providing the patient with the exact compensated power needed to see clearly in all gaze directions. As a result, users will experience ultra-sharp vision quality all over the lens.

In mid to high prescriptions and/or high wrap frames, oblique aberration is even more severe. The effects of high curvature and wrap can easily be corrected through optimization and provide an improved visual experience for these types of users. The result is a fully optimized lens that offers clearer vision from center to edge for any prescription or frame shape selected.



Wider visual fields perceived by the customer.

Another benefit linked with the correction of oblique aberration is that the visual fields are wider. In progressive lenses without this correction, distance, intermediate and near visual fields perceived by the user are compromised when looking through the lenses. Digital Viewpoint Technology corrects the oblique aberration, overcoming this problem and providing maximum visual field widths regardless of the Rx or frame type. The following figure represents how the visual fields are significantly wider for Digital Viewpoint lenses.



2.3. UNDERSTANDING COMPENSATED POWER

Digital Viewpoint Technology minimizes oblique aberration, modifying the power at each point on the lens. The result of the power modification is the compensated power.

To perform a quality inspection of the lens, it is important to understand the differences between prescribed power and compensated power. The prescribed (or nominal) power is simply the prescription measured and provided by the doctor. Compensated power is the power that is calculated by Digital Viewpoint Technology to reduce oblique aberrations at every point on a progressive lens, which is different from the prescribed power in sphere, cylinder and axis. The lab ticket will provide both the prescribed power and the compensated power. When performing a quality check on a Digital Viewpoint lens with a lensometer, refer to the compensated power on the lab ticket, not the prescribed power.



3. AUTOMATIC READING HEIGHT OPTIMIZATION

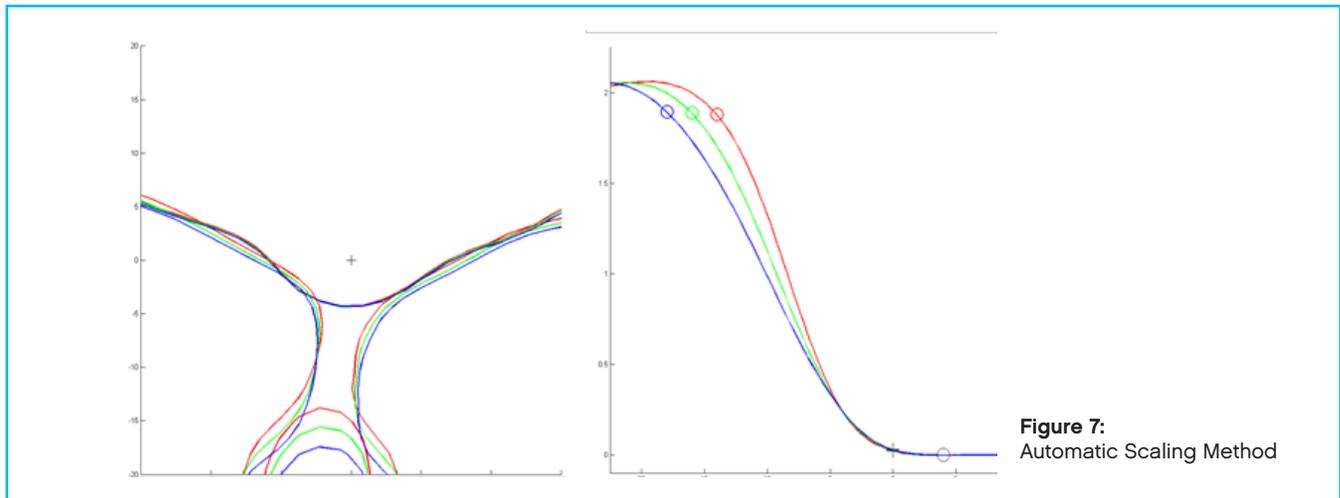
Unbeatable precision that guarantees consistency.

The progression length is the distance from the fitting cross to 100% of the near reference point. All Unity lens designs are available in multiple progression lengths and adaptable to any pupil height. The correct corridor length is **automatically calculated** by an internal algorithm and takes into account the pupil height and inset of the near area of the lens for all Unity lenses. The corridor length is **fully optimized** for each individual user. The result is that the near reference point location is optimized vertically, allowing customers to read with **better ergonomics**.

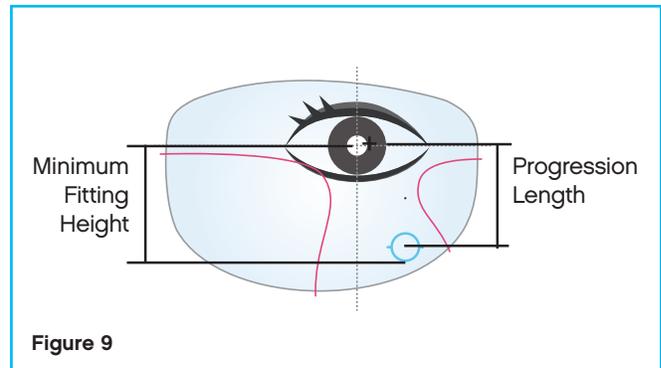
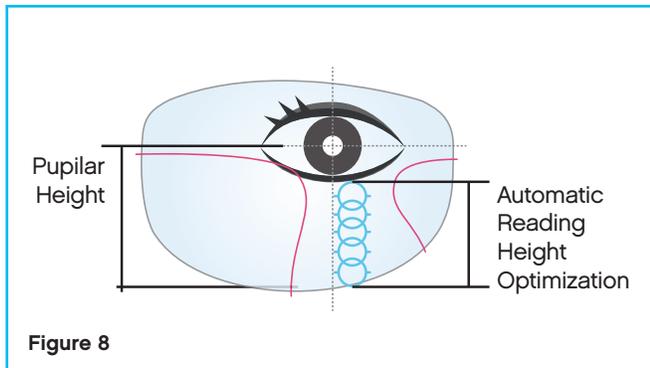
Unity Via lenses are available in the progression lengths below:

- **Unity Via** → Progression lengths in increments of 2 mm
- **Unity Via Plus, Unity Via Mobile, Unity Via Wrap** → Progression lengths in increments of 1 mm
- **Unity Via Elite** → Infinite progression lengths

To deliver different progression lengths, an **Automatic Scaling Method** is used in the lens design process to guarantee **consistency and higher accuracy** between different progression lengths of the same lens design.



Another related concept is the minimum fitting height (MFH) of a lens design, which is the shortest pupil height that can be used to fit a specific corridor length. In other words, every progression length has a corresponding MFH to guarantee that there is enough near area in the lens within the frame. MFHs are available from 12 – 18 mm in all three designs.



ADVANTAGES

- Design consistency is provided between all progression lengths.
- Lens performance is consistent regardless of progression length selected.
- Guarantees that a reliable product is available to the customer. Much easier for the ECP to submit the order because progression length is automatically selected by the software.
- The progression length is automatically optimized according to the pupil height.
- 100% of the addition is always fitted inside the frame.
- **Easier for ECP: Same centration charts** for all designs (ECPs can prescribe any of the three lenses with a minimum fitting height of 12 mm) and the **progression length is calculated automatically** by an internal algorithm.

4. VARIABLE INSET

Widening the binocular near visual field.

In progressive lenses, the inset is the horizontal shift of the reading area towards the nasal side of the lens with respect to the distance reference point.

Every user needs a unique inset to maximize his/her binocular near visual field. The correct inset value depends on the near power of the lens, inter-pupillary distances for each eye, near working distance and back vertex distance. Unity lens designs are calculated individually to obtain the correct inset for each wearer.

Unity Via, Unity Via Plus, Unity Via Mobile, Unity Via Wrap and Unity Via Elite Progressive Lenses all have a variable inset that is automatically calculated by the **Variable Inset Method** resulting in **wider binocular near vision**. The Variable Inset Method is implemented in all five designs:

- **Unity Via, Unity Via Plus, Unity Via Mobile & Unity Via Wrap** → Insets available in increments of 0.5 mm from 0.0 to 4.0 mm
- **Unity Via Elite** → Infinite insets available from 0.0 to 4.0 mm

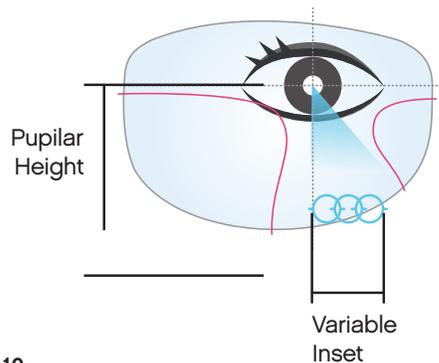


Figure 10

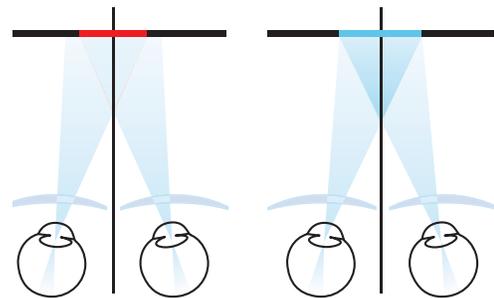
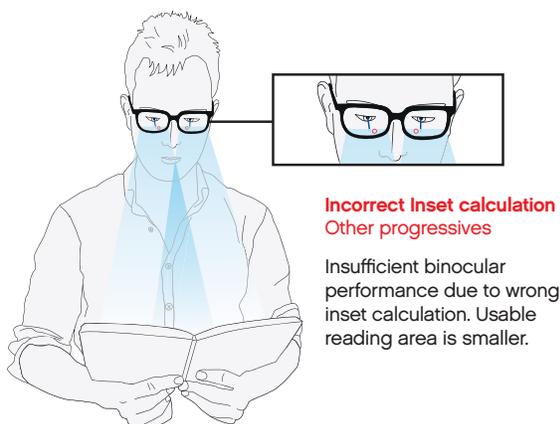
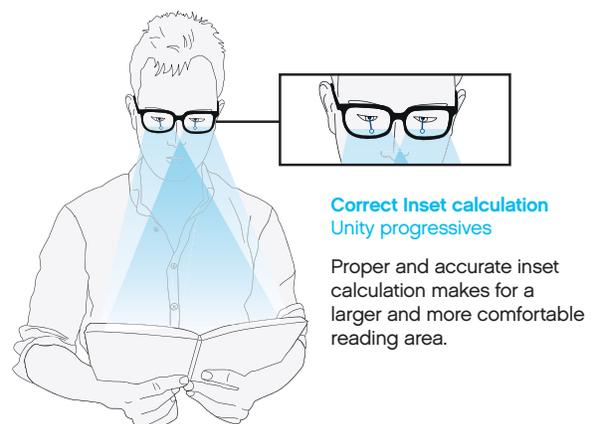


Figure 11



Incorrect Inset calculation Other progressives

Insufficient binocular performance due to wrong inset calculation. Usable reading area is smaller.



Correct Inset calculation Unity progressives

Proper and accurate inset calculation makes for a larger and more comfortable reading area.

Figure 12

ADVANTAGES

- Wider binocular near vision
- Better ergonomics
- Easier to find the near area
- Better comfort

5. THICKNESS OPTIMIZATION

In free-form lenses, the progressive lens is digitally generated on the back side of the lens. The optical center (OC) may be decentered to any location on the lens in order to minimize the final size and thickness of the lens. This is especially helpful for hyperopes (positive Rx). The algorithm calculates the most optimum design location for each job based on frame dimensions and pupil location, while optimizing the decentration and final size and thickness of the lens.

There are two options for optimizing thickness in the labs: 1) The A, B, and DBL dimensions can be provided to the lab, and the lab can use the default frame shape, or 2) the A, B, and DBL dimensions can be provided to the lab, and the lab can use the actual frame tracing. The latter will provide maximum optimization. The frame tracing is not required for thickness optimization, however, if the tracing is available and submitted to the lab, maximum thickness optimization will be achieved.

Thickness Optimization is implemented in **Unity Via, Unity Via Plus, Unity Via Mobile, Unity Via Wrap** and **Unity Via Elite**.

ADVANTAGES

- Better aesthetics
- More freedom in frame selection
- Lens thickness optimized for the frame geometry
- Lighter weight lenses

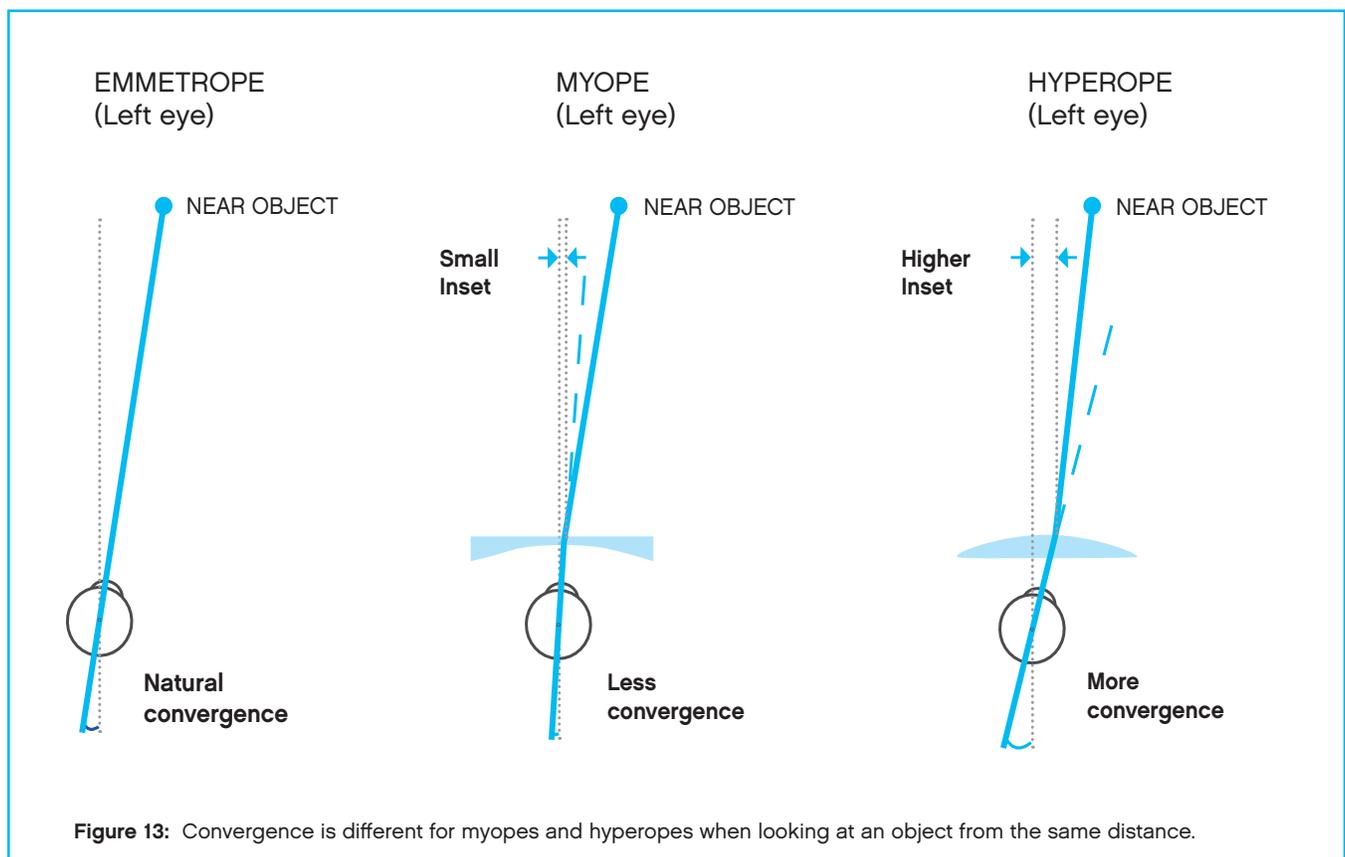
6. ADVANCED FIT

Superior binocular near vision control.

It is well known that binocular vision is adjusted when looking through an ophthalmic lens. The natural convergence and accommodation of the eyes without glasses while reading is different when using ophthalmic lenses as it depends on the lens power. In addition, when the eyes rotate for reading, ophthalmic lenses, and more importantly progressive lenses, induce a prism for which our visual system must compensate. However, although these effects are there, they are significantly reduced by providing personalized insets and corridor lengths for each individual. Advanced Fit technology is VSP's latest advancement that precisely controls the near reference point vertically and horizontally, improving binocular near vision. Advanced Fit technology, unique to Unity Via Elite Progressive Lenses, provides more natural accommodation and convergence for both myopes and hyperopes.

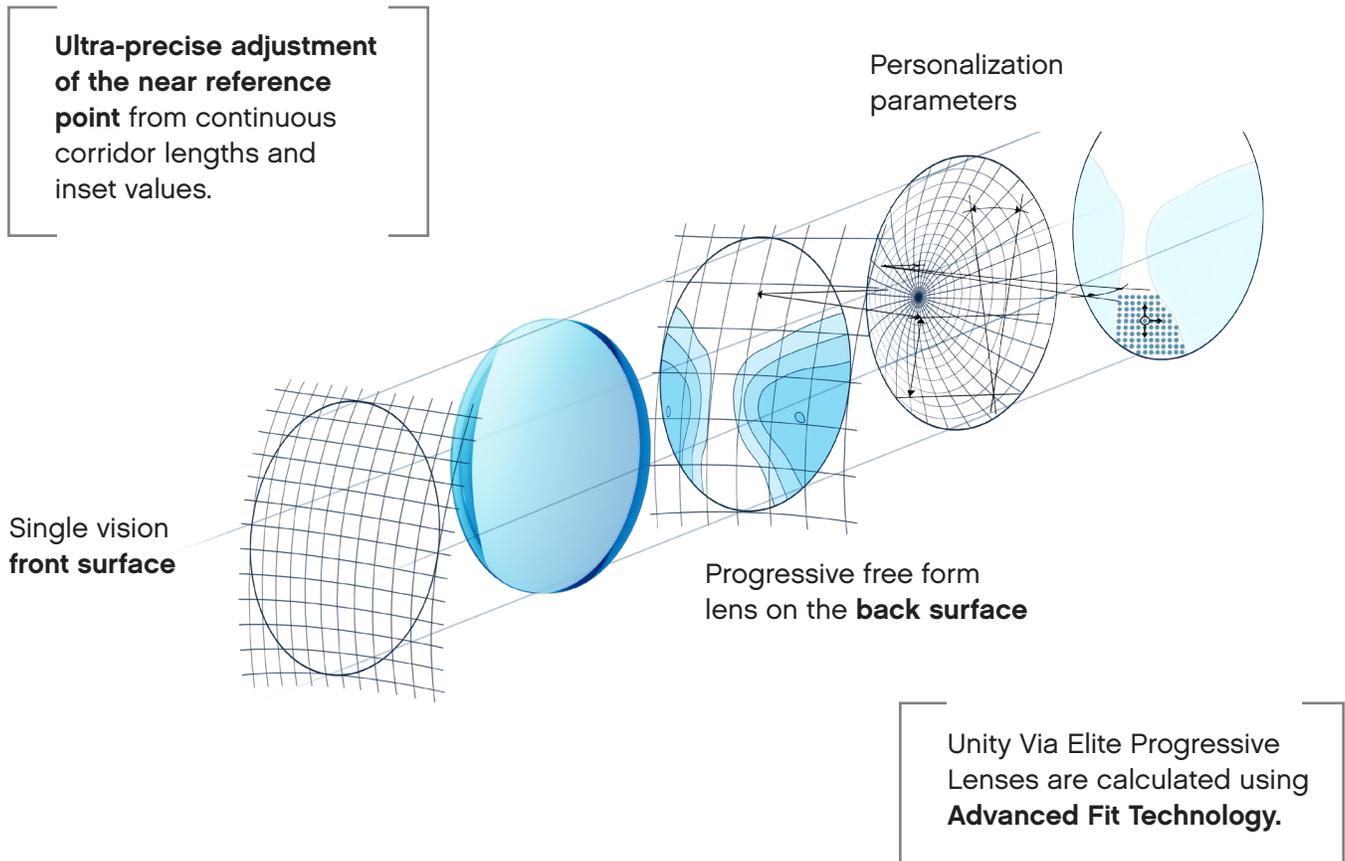
Delivering a more natural relationship between accommodation and convergence.

Myopes converge less than emmetropes when looking at a near object. In contrast, hyperopes converge more than emmetropes when looking at the same object (shown in the figure below). Therefore, a different accommodative effort is used between myopes and hyperopes. This effect is even more complex when looking through progressive lenses.



Superior binocular vision provided by ultra-precise positioning of the near difference.

Advanced Fit is a cutting edge technology that is unique to the Unity Via Elite lens. The end result of this innovative technology is that improved binocular vision is provided to the wearer through a more personalized and precisely located near reference point. Wearers will get the benefit of a more natural relationship between accommodation and convergence while reading, resulting in unsurpassed visual ergonomics and maximum extension of the binocular near zone.

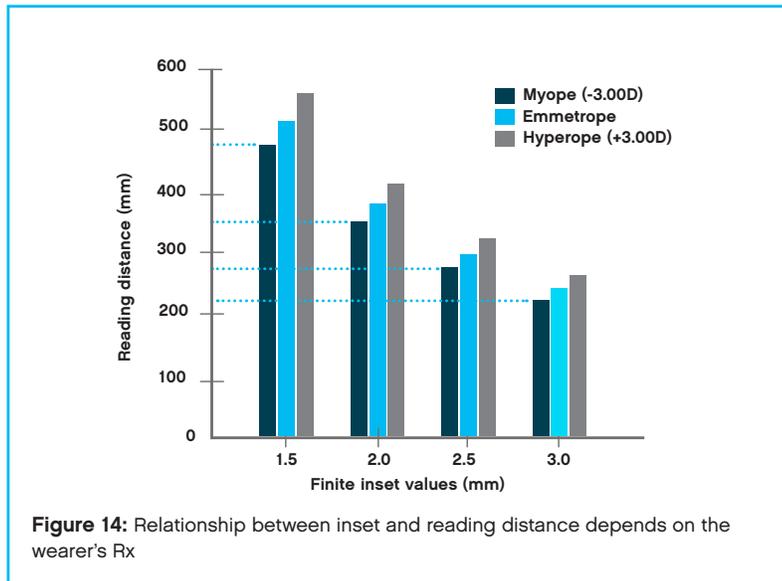


ADVANTAGES

- Better binocular vision provided by ultra-precise positioning of the near reference point
- Accommodation and convergence are more natural for both myopes and hyperopes
- Intermediate and near areas are found more easily
- Allows the wearers to adjust easily to their preferred reading distance
- Allows for natural posture and visual ergonomics
- Unbeatable visual comfort
- Easier adaptation
- Maximum extension of the binocular near visual field

Because of the near prism induced by the lens, the previous figure shows how myopes converge less than normal for the amount of accommodation, whereas hyperopes converge more.

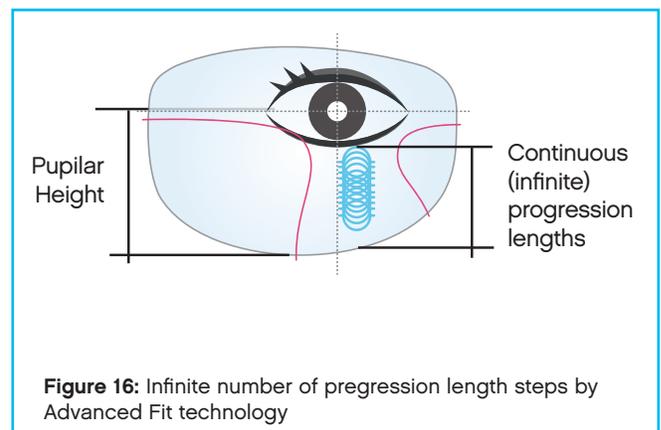
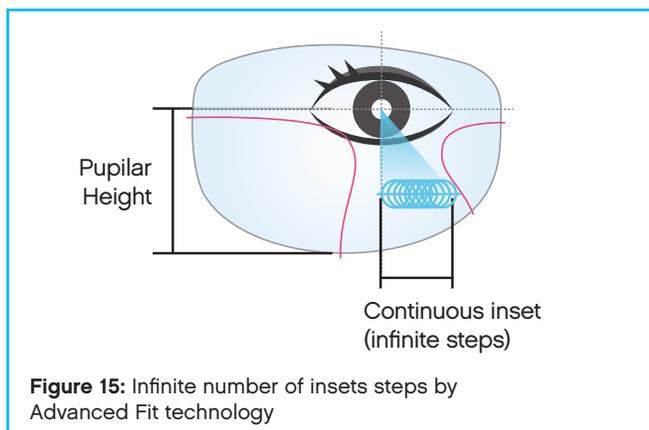
Some advanced lenses take into account the horizontal and vertical prism induced at near vision but they are limited to a fixed number of insets and corridor length values. Also, in most cases the inset and the progression is defined as a straight line from distance to near.



Having a limited number of inset values directly affects the wearer's reading distance. The figure at the left shows how different values of insets have a direct impact on the reading distance for a certain wearers' prescription. For example, the working distance of a -3.00D myopic wearer with a 0.50 mm inset deviation is modified by more than 10 cm. If that is the case, this patient is then forced to compromise his natural reading distance.

Advanced Fit technology goes a big step further by offering more degrees of freedom. The calculation is no longer limited to a fixed number of progression lengths and inset values. Advanced Fit technology considers the way the addition increases along the corridor, instead of assuming the inset should be a complex curve from distance to near in which the inset is progressively changing, following the real path of the eyes when looking from distance to near.

Advanced Fit technology uses advanced algorithms that consider vertical and horizontal prism, power, binocularity and ergonomics to generate the most optimal digital lens surface for each individual wearer. This is now possible as a result of incorporating for the first time continuous progression lengths (infinite steps from 12 to 18 mm) and continuous inset values (infinite steps from 0 to 4 mm).



ADVANCED FIT TECHNOLOGY

FIRST STEP: Set of parameters known as “a priori”

Prescription, binocular condition, working distance, frame parameters including lens tilts are used by Advanced Fit technology. The more parameters considered, the better will be the optimization.

SECOND STEP: Defining and setting the optimal working environment for the user

This includes object space and visual task. Advanced Fit takes into account the wearer’s natural reading distance for performing his near activities. The wearer’s natural reading distance can be measured by the ECP and provided when ordering the lens. Again, the more data provided, the better the optimization will be.

THIRD STEP: Surface optimization for all viewing directions

With all the advantages of Digital Viewpoint technology plus the extra flexibility of infinite inset and corridor lengths, the surface optimization requires a number of iterations, each of which is computed considering all the optical properties of the lens (prism, power and binocular balances, space and movement perception). Ergonomics for the wearer, including optical properties as well as object environment and the preferred visual tasks, are also taken into consideration. The iteration stops when no further change of surface geometry, inset and vertical position of the near reference point can improve visual performance and ergonomics.

The advantages of allowing infinite insets and progression lengths during the optimization are:

- Optimal accommodation convergence along the corridor through management of horizontal prismatic effects for any given progressive addition. This provides unsurpassed comfort at sustained near vision and with dynamic changes between far and near vision.
- Optimal ergonomics of the near reference point located at the best vertical location for extra comfort at sustained vision.

DEFAULT PERSONALIZATION PARAMETERS

If any of the personalization parameters are missing when ordering the lenses, the calculation will be performed using the following default values.

PERSONALIZATION PARAMETERS	DEFAULT VALUES
Pantoscopic Angle	12°
Wrapping Angle	5°*
Back Vertex Distance	14 mm
Near Working Distance	40 cm**

*For Unity Via Wrap lenses a default wrapping angle of 15° will be used.

**For Unity Via Mobile lenses a default near working distance of 32 cm will be used.

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