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Varilux 4-D: A True Customized Progressive Lens

Every time you try to dispense a newly introduced premium progressive lens, you find it difficult to engage your potential prospect with you. Even the experienced tries, leaves room for error and risks not being able to convert. The difficulties had been on and on and on for years, but now before you get caught in such situations, take a long hard gander over the FABs offered by new **4-D Progressive Lens**, it seems that a true innovative personalized progressive lens with most advanced design features is right there at the top of the list. The lens performs well, sometimes spectacularly well, but only when you match all your digital measurements while dispensing the eyewear.

No short cuts.....be thorough and reap thorougha wonderful lens for wonderful vision.

Varilux 4-D is a revolutionary 7th generation customized progressive addition lens that not only allows enhancements but also enhances overall visual responses of the wearer with progressive lenses. *Mr Gautam, 59 years who was already using Varilux Physio progressive lens design, when he was given the new 4-D Progressive Lens, he told that the new lens was a better lens and superior to his previous progressive lens. The new 4-D provided him better vision on both sides and has increased his visible status to the tune of 70% to 80 %. This is what Mrs Jain told me when she was given the 4-D for the first time. Another feedback from Mr Santra who was insisted to go for 4-D, in spite being happy with the previous*

progressive lens design was very encouraging as he silently pointed out that 4-D was a better lens and he did not feel any discomfort even while using new spectacle for the first time.

Varylux 4-D is a digitally processed customized progressive lens that is designed as pair to respect Binocular Summation. Binocular calculation consists of adjusting the performance between the two lenses such that the optical qualities of both right and left retinal images corresponding to the coupled eye directions are similar while ensuring optimal vision for the dominant eye. A personalized lens that is customized to its 4-Dimensional Advantages:

- The prescription
- The position of wear
- The frame shape and size, and
- Biometric customization

Customization for the Prescription

Digitalized process used to manufacture 4-D lenses precisely customizes the lens for the wearer's exact prescription that ensures wide and symmetrical fields of clear vision from both right and left lenses. The wearer enjoys better lens performance when he looks through the peripheral regions of a spectacle lens as oblique astigmatism that degrades vision quality and narrow the field of vision is minimized. This is achieved by minimizing the effect of lens aberrations within the viewing area of progressive addition lens.

Customization for the position of wear



Fig: 1 VISIOFFICE SYSTEM

VISIOFFICE digitally measures the degree of pantoscopic angle and panoramic angle of the spectacle frame on the wearer's face together with ERCd that determine the position of spectacle frame on the wearer's face. The lens incorporates these data while lens designing process and provides the wearer maximum acuity and symmetrical viewing zones through the lens. The position of the spectacle frame on wearer's face tilts the lens in horizontal and vertical direction that induces oblique astigmatism which ultimately affects the optical performance of the lens during secondary and tertiary gaze. The change that is noticed through central viewing region is particularly the point of concern. The optics of the new **4-D progressive lenses** is customized for an individual's unique fitting position that improve clear vision through the central viewing zones as well as through para-central zones.

Customization for the frame shape and size

The new **4-D progressive lens** is designed based upon the spectacle frame "A" measurement, "B" measurement and "D" measurement measured with VISIOFFICE that allows the optics of the lens design to take full advantage of the available lens area. Matching the lens design to shape and size of the frame based

upon fitting height measurement maximizes the near and distance vision utility without compromising optical performance on other regions of the lens.

Biometric customization



Fig: 2 Measuring Head and Eye Movement Ratio

The new **4-D progressive lens** identifies each patient by the characteristics of their traits of individual visual habits. Sighting ocular dominance, head and eye movement ratio and habitual visual postural data are measured digitally with the help of VISIOFFICE that are included while designing the lens. And when the wearer uses the lenses he enjoys the unique attribute of binocular summation that provides minimum difference in image quality that improves fusion and depth perception and ultimately increases binocular field of vision. The lens so designed adapts to the individual wearer, instead the wearer adapting to the lens and the suitable power progression profile along the meridional line enables the wearer to explore the object field without tiresome vertical head movement.



Fig: 3 Dominant Eye Test

Taking the innovation in lens customization to a new level, **4-D lens** is designed on an absolute new ways of dispensing measurements. For the first time an optician can measure live 3-Dimensional measurement of human eye in their office quickly and accurately. This dynamic 3-Dimensional measurement determines the exact space or position of Eye Rotation Centre or so called ERC. All human eyes have a unique ERC. They confirm the uniqueness of human eye that is defined by EYECODE DATA. Eye Code Data is the new reference for Pupillary Distance and Fitting Height measurement and what was an approximate vertex distance is now replaced by the Distance between the Eye Rotation Centre and the lens called Eye Rotation Centre Distance –ERCd. These 3-D measurements – PD, Fitting Height and the ERC Distance build the very unique code of each eye which forms the foundation of the lens individualization based on the physiology of each wearer. When directing the eyes to view a given object, all fixation axes will pass through the Eye Rotation Centre and intercept the lens in the precise area. Knowing the position of the Eye Rotation Centre is the only way to calculate the unique optical function for each gaze direction and achieve the perfect lens to eye alignment. Rather than applying theoretical values, EYECODE lenses are uniquely manufactured using mean 3-D co-ordinates of ERC. When these very specific measurements are applied in the eye care professional's centering process and lens manufacturing process, the patient gets the most precise vision possible instantly and effortlessly that

- Improves reflex vision, that also provides visual stability when moving
- Increases width of lens zone used for foveal vision
- Increases field of clear vision area

- Improves dynamic vision
- Allows faster adaptation
- Reduces muscle fatigue

Courtesy: Thanks to Essilor India Pvt Ltd for helping me with pictures and technical information.
