WTF – What the Fit?

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On behalf of Vision Expo, we sincerely thank you for being with us this year.

Vision Expo Has Gone Green!

We have eliminated all paper session evaluation forms. Please be sure to complete your electronic session evaluations online when you login to request your CE Letter for each course you attended! Your feedback is important to us as our Education Planning Committee considers content and speakers for future meetings to provide you with the best education possible.

VISION EXPO

Financial Disclosure

Carrie Wilson has no financial interests to disclose.

Learning Objectives

By the end of this course, you will be able to:

- Identify frame elements that make frame fitting easier for complex eyeglass fits
- Understand the more complex lens designs that are required for higher powers
- Recognize the necessary point-of-wear measurements to take maximize efficiency in complex eyeglass fitting
- Make the necessary adjustments to fine-tune the final fit

What is the number one way that you can reduce lens thickness?

- Refractive Index
- Frame Shape
- Specifying Minimum CT/ET Thickness

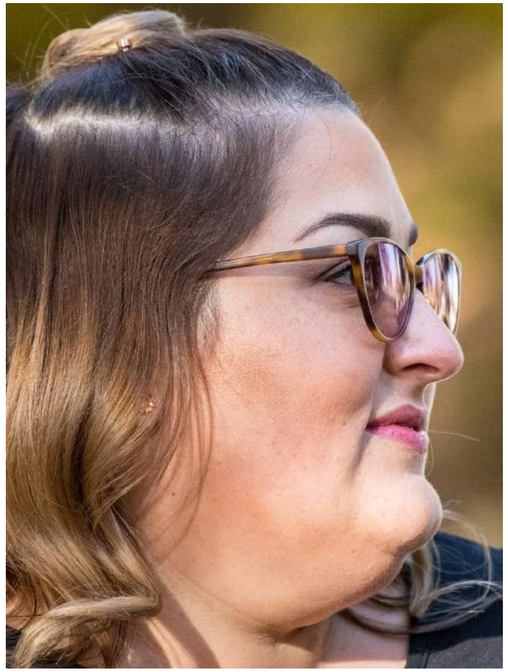
What is the number one way that you can reduce lens thickness?

Frame Fit

The Frame

Bridge

Radius of Curvature

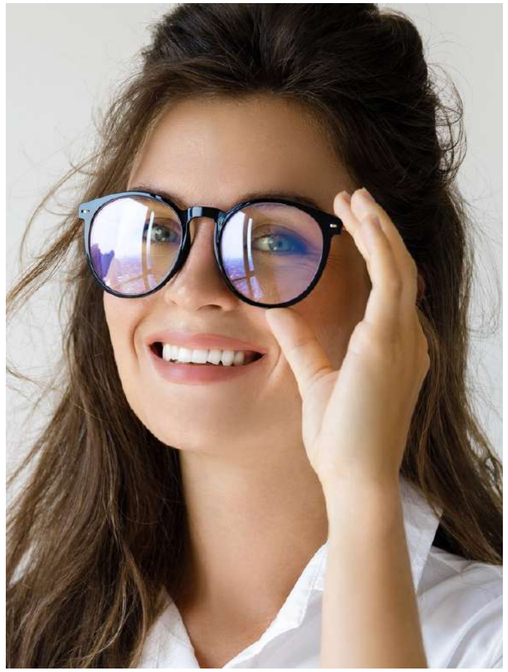


Tilt

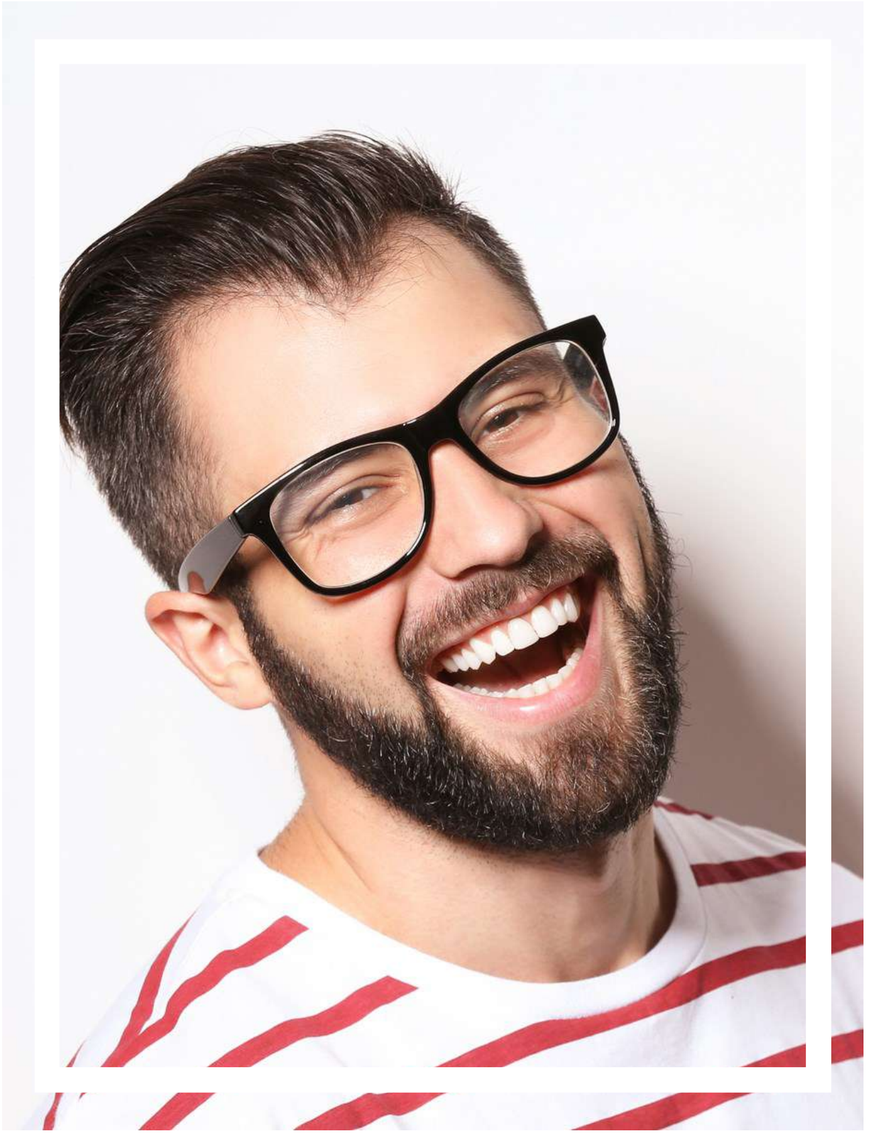
End Piece

The Frame

Temples



Frame Front



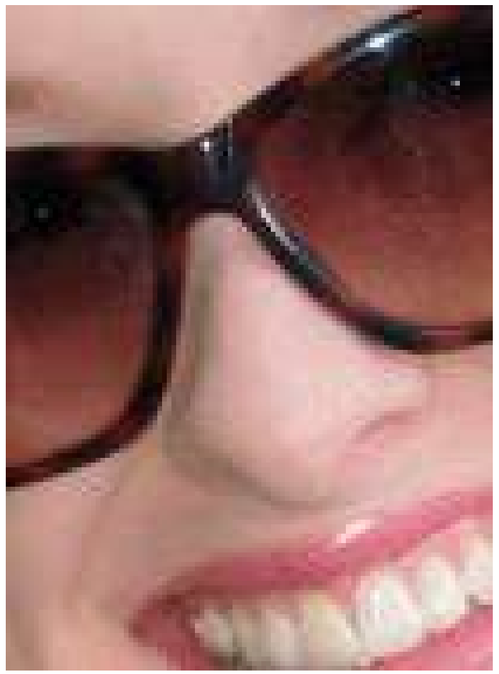
Does the bridge fit or can it be adjusted to ensure proper alignment with the visual axis?

Width

Design

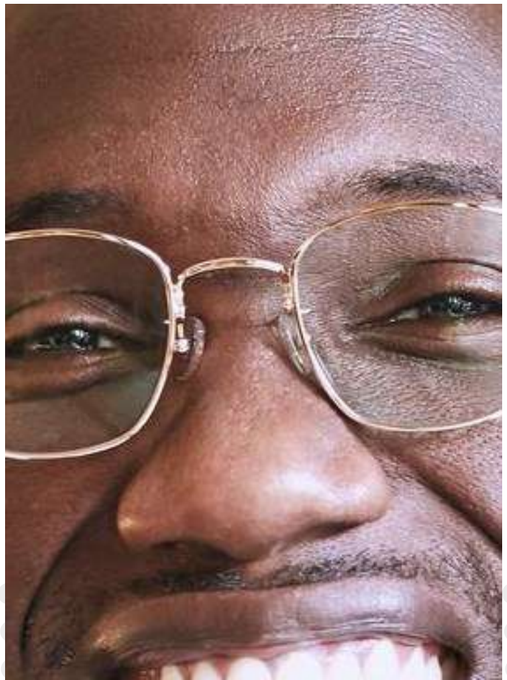
Vertex Distance

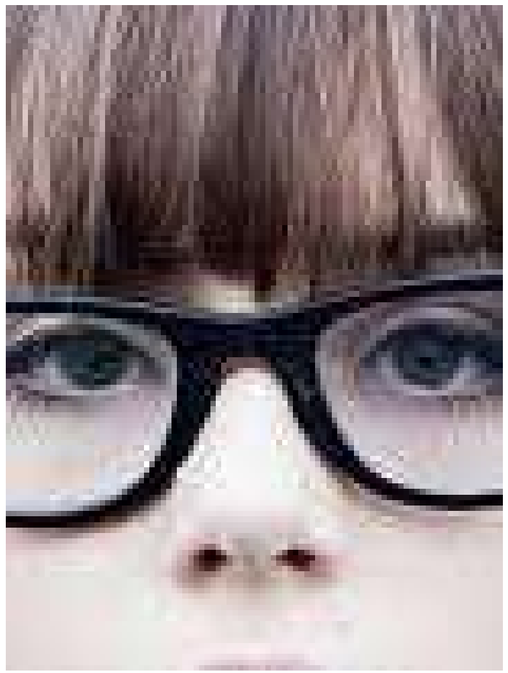
The Bridge Width



Too Wide

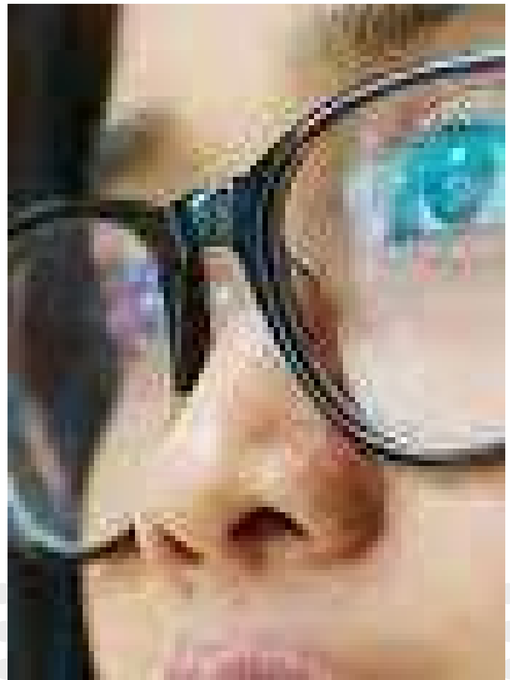
Too Narrow





Too Wide

Too Narrow



The Bridge Design

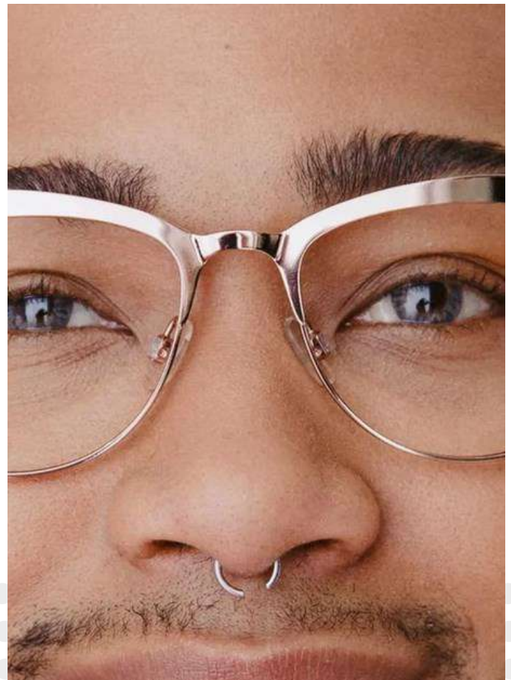
The Frontal Angle

Too Wide
Frontal Angle

Too Steep
Frontal Angle

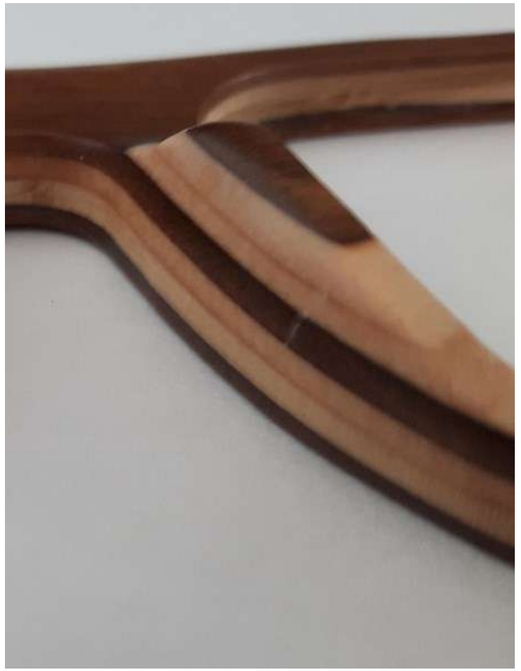
Too Wide
Frontal Angle

Good Frontal
Angle



The Bridge Design

The Splay Angle and Vertex



Wide Splay Angle

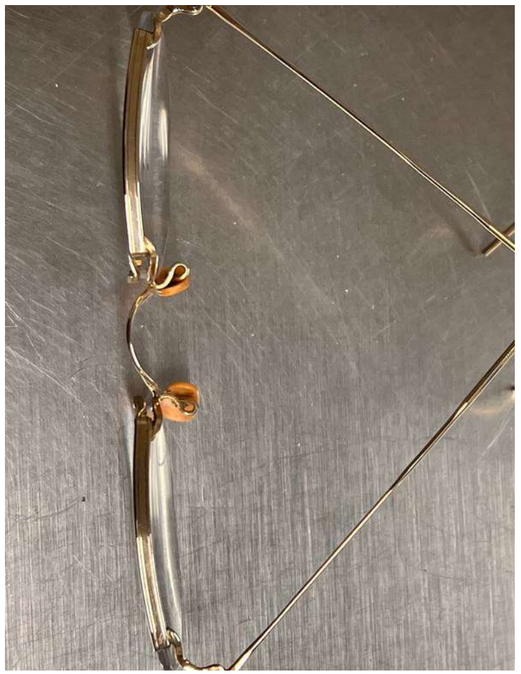
Narrow Splay Angle

Extended Vertex

Extended Vertex

The Radius Of Curvature

Lens and Frame Curves Working Together



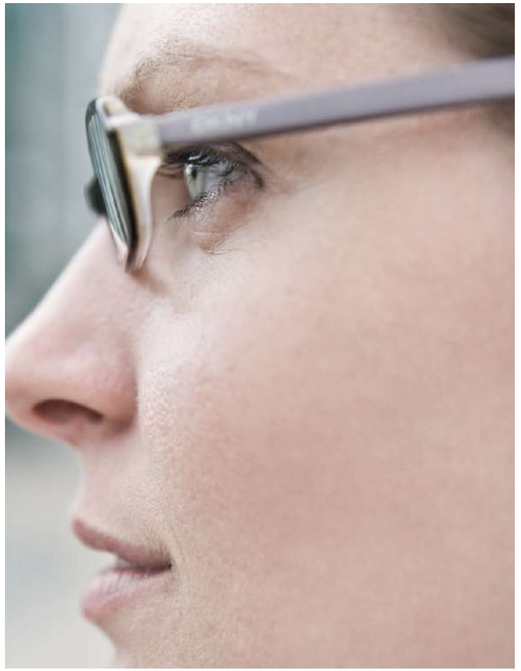
4 Base Match
+4.00 Rx

Plano Base
Match -14.00 Rx

8 Base Lens 4
Base Frame

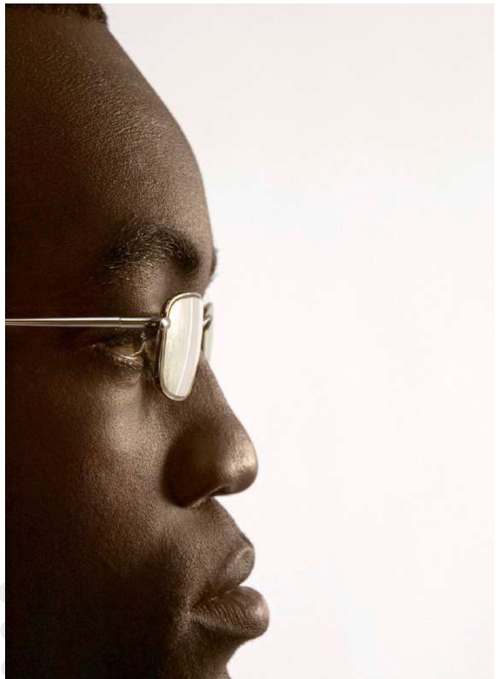
2 Base Lens
2 Base Frame
-30.00 Rx

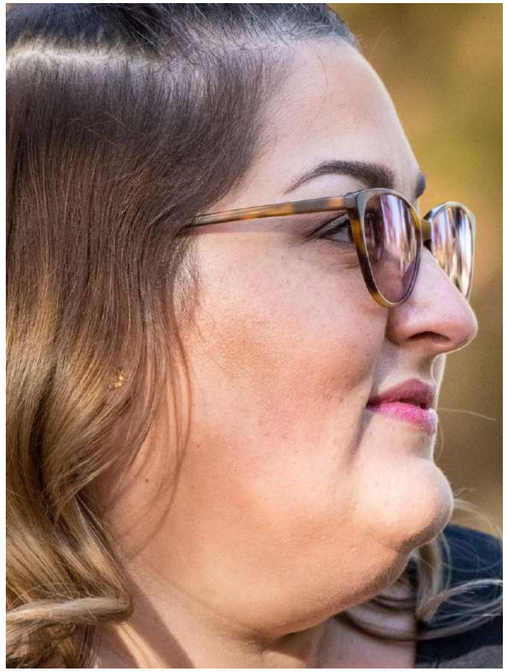
Frame Tilt



8 degrees

2 degrees
to plano





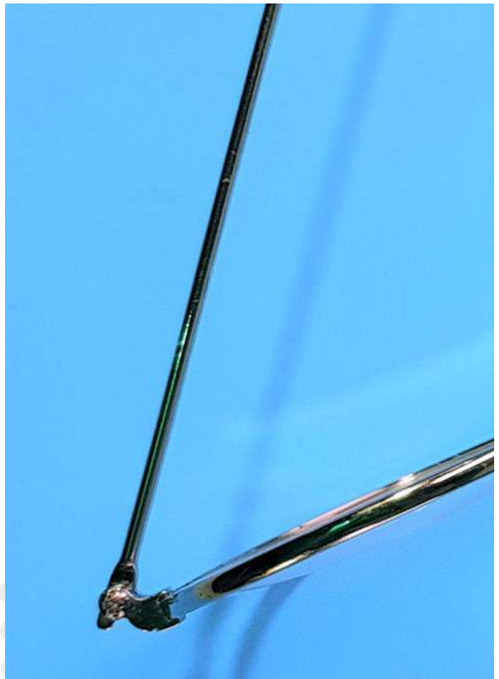
Retroscopic Tilt

4 degrees

End Piece

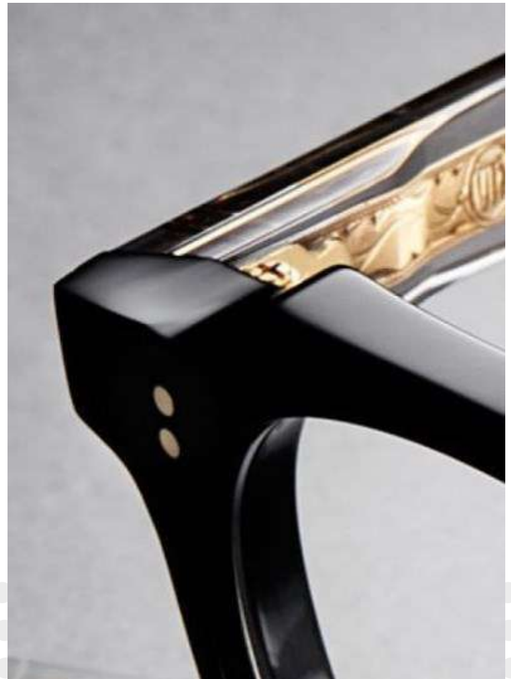
Turnback

90 degrees



Extended Endpiece

Miter



Temples

Too short

Turn back + length

Difficult Mastoid

Mastoid

The Frame Front

Too Wide 9mm decentration each

Too Deep

Too Narrow

Too Wide Hyperope

Frame Front With Astigmatism

A thicker edge at the horizontal, a small B measurement will maximize lens thickness differences.

A thicker edge at the vertical, a small B measurement will minimize lens thickness differences.

An oblique axis will need more consideration and visualization, You may need to contact your lab for makeability help.

For all prescriptions., the desired frame B measurement is within 30% of the A measurement.

Properly Centered High Powered Lenses

10.50 -3.00 x074 10^BI
+11.00 -1.75 x080 10^BI
1.67

+9.00 OU FT28
photochromic Poly

21.00 OU w/+4.00 Add, dual side lenticulated round segment.

Cr39 -5.25-0.25/-5.75-0.50

Centration

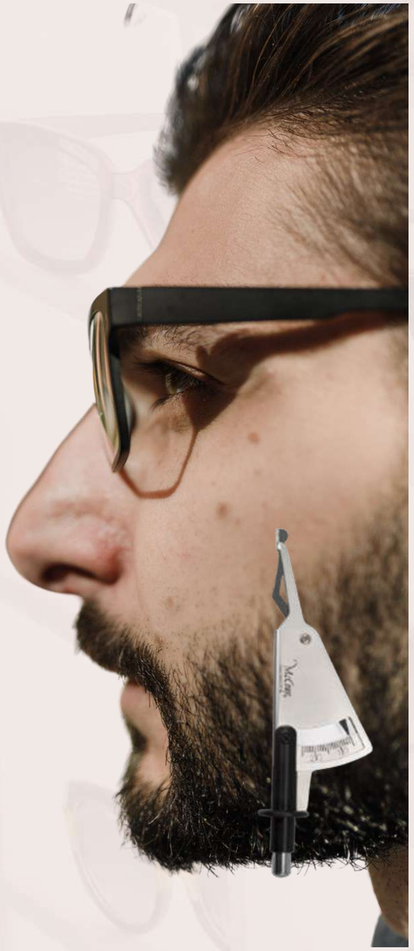
Horizontal centration

Frame monocular PD within 2 mm of the patient's monocular PD

Vertical centration

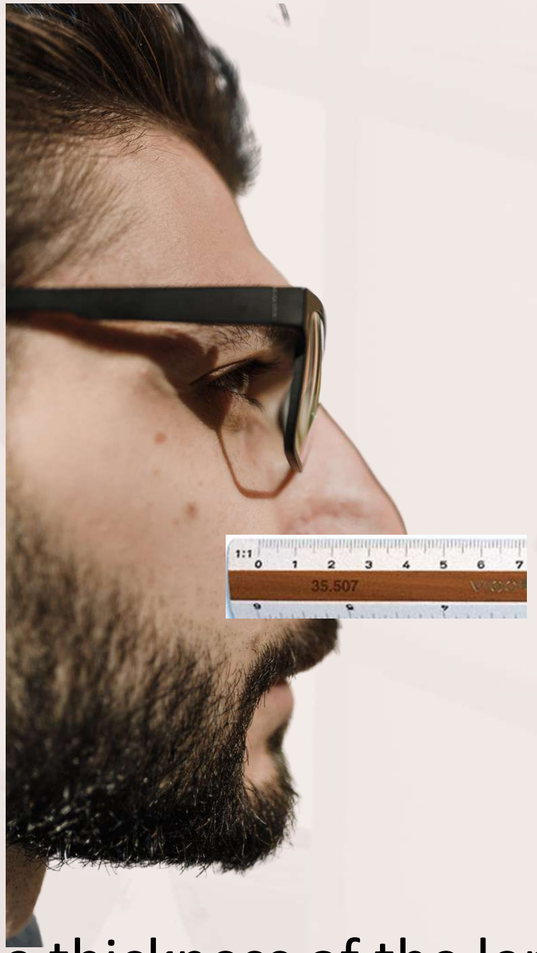
- Corresponds to the required pantoscopic tilt for the fitting
- Typically within 4 mm above the datum
- Avoid B measurements that a pupil placement close to the top of the frame even if the eye is within the recommended datum

Vertex Distance



Distometer

PD Stick



Take the thickness of the lens from the center using calipers and remove the thickness from the above measurement.

Vertex Distance

$$\text{Per mm} = \frac{\text{Diopter}^2}{1000}$$

Compensated vertex power (if necessary) for over +/-4 in each meridian.

Martin’s Formula for Tilt

Excessive tilt will create a change in effective spherical power and induce a cylinder power for the patient.

Martin’s Formula For Tilt is the mathematical representation of this phenomenon.

Martin’s Formula for Tilt

A patient is prescribed a +15.00 sph lens. The lens selected is a digitally surfaced lens, non-compensated lens and the optician measures the fitting height at the pupil center. The pantoscopic tilt for the frame is 10 degrees.

Induced Rx is +15.15 +0.47 x 180

Measuring Angle of Face Form

Measuring Angle of Face Form
1. Frame is measured off of face after proper adjustment
2. Envision a line that moves straight across from the nasal to the temporal
3. Make a reference dot at the temporal outer limits of the eyewire
4. Draw line from the nasal of the straight line to the temporal dot
5. Use a protractor to give you the angle

Measuring Angle of Face Form

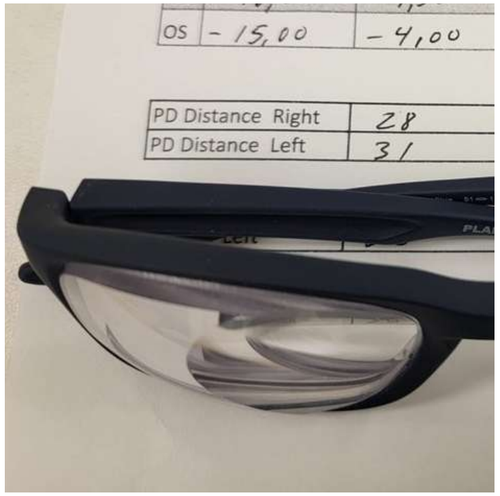
Martin’s Formula For Tilt

Measuring Tilt with a PD Stick
1. Ensure frame is adjusted comfortably
2. Measure pupil height with the patient in a normal posture
3. Viewing the patient from the side, help the patient modify chin height until the frame is perpendicular to the floor.
4. Dot second pupil height and measure distance between the two marks
5. Multiply the measurement by 2 and this gives you the amount of tilt

High Powered Lens Designs

+25.00 Plus Lenticular

-25.00 Micromyodisc

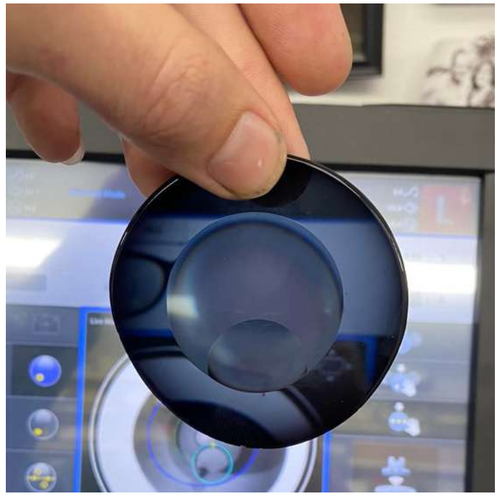


10 BC Wrap Lenticular

Frosted High Power Lenticular

27^ BO Lenticular 7.5^ BO Before/After

High Powered Lens Designs



Plus
Lenticular
Rnd Bifocal

-14.oo Wrap
Lenticular

-30.00 Sph
Lenticular
OU

-24.75 Minus Lenticular
Before and After Surfacing

Vertex Distance

Sphero-Cylinder Lens Calculation – Sphere Power

A power of -8.00 -2.00 x 180 is refracted at 15 mm. The lenses are fit at a vertex distance of 10 mm. What power should be ordered to get the intended Rx?

Vertex Distance

$$\frac{8^2}{1000} = \frac{64}{1000} = 0.064$$

Move .06 diopter for each mm of movement

5 x .06 = .3 diopters

Minus lenses have a stronger effective power the closer to the eye it gets so you must order weaker lenses to compensate.

So, -8.00 - 0.30 = -7.70 or -7.75@ 180

Vertex Distance

Sphere + Cylinder = Dioptric Power to be Calculated

$$\frac{10^2}{1000} = \frac{100}{1000} = 0.1$$

Move 0.1 diopter for each mm of movement

5 x 0.1 = 0.5 diopters

So, -10.00 - 0.50 = -9.50 @ 090

Vertex Distance

Final power

-8.00 -2.00 x 180 refracted becomes

-7.75 – 1.75 x 180 compensated

Magnification

Magnification is in an issue due to aniseikonia, or a difference in the size of images as they are interpreted by the brain.

To minimize this difference, changes to the lens design can be utilized

- Thickness – Thicker = more magnification
- Base curve – Steeper front curve = more magnification
- Vertex Distance – magnification increases the further away from the eye
- Index of Refraction – higher the index, the thinner the material can be and therefore less magnification

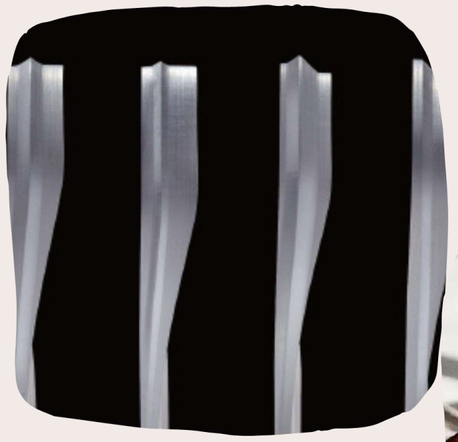
Magnification

To Increase Magnification	To Increase Minification
Increase Base Curve	Decrease Base Curve
Increase Center Thickness	Decrease Center Thickness
Increase Vertex of Plus Lens	Decrease Vertex of Plus Lens
Decrease Vertex of Minus Lens	Increase Vertex of Minus Lens

Remember:
For myopes, it is better to change the base curve and vertex distance as necessary
For hyperopes, it is better to change the center thickness and vertex distance

Adjusting Vertex

- ❖Bevel placement on the lens
  - Work with the lab
- ❖Adjustment of nosepads
  - Pad Arms
  - Saddle on Zyl
  - Plus move further away from the eye
  - Minus bring closer to the eye



Conclusion

- Fit is more important than lens material for thinness
- Fine details, all the way to the bevel, can make a large difference in the finished product
- In today's world of online shopping, it is even more important to understand the nuances of fit.