“Slab Off”
or
Bicentric Grinding
What is This?

A **slab-off** is a technique in which base-up prism is ground on lower half of the lens in either the most minus or least plus.

The finished product looks as if a “slab”, or section of the lens has been removed, hence the name **slab-off**
What is it Doing?

This grinding technique is used to neutralize an unwanted prismatic effect when looking through a multifocal correction at near or through the reading area.

The unwanted prismatic effect is caused by anisometropia lens corrections.
Anisometropia

Is a condition in which there is a significant difference in refractive errors between the two eyes.

This is often congenital but can also be caused by cataracts or trauma.
Examples

1) OD +4.00 Sph,  OS +1.00 Sph

2) OD -6.00 Sph,  OS -2.00 Sph

3) OD +2.00 Sph,  OS -2.00 Sph
When to use a Slab- Off or Bicentric Grind

When there is a RX showing a significant power difference between the right and left lenses in the 90\textsuperscript{th} degree meridian.
Which Eye?

The rule is the eye with either the most minus or least plus will receive the prism correction or Slab-off.
Rule of Thumb

If the prism is $2^\Delta$ or more vertical, then a slab off grind may apply.

This is just a rule of thumb, there are other circumstances that come into play that the ECP may decide not to use the slab off.
The patient does not have a problem when looking at a distance
Cross Section

When looking through the reading area is where the imbalance happens.
When light rays pass through a prism they always bend toward the base.
Combining two prisms base to base creates a lens thicker in the middle and thinner at the edge, or a **plus lens**.
When light rays travel through the two prisms of a plus lens they bend toward the bases or toward each other.
Back to Basics

Combining two prisms point to point creates a lens thicker at the edge and thinner in the middle, or a \textit{minus lens}.
When light rays travel through the two prisms of a minus lens they bend away from the bases or away from each other.
The result is diplopia or double vision at near
Cross Section

This part will be ground off creating the same prism effect as the plus lens.

Now the base up prism cancels the effect of the base down prism.
Trifocal

Slab line
Recommended on the bifocal
Progressive

- Fitting cross
- Slab line
- Usually placed 4mm below the MRP

MRP
What About Single Vision ????
We need to find the total power in the 90\textsuperscript{th} meridian when there is cylinder present in RX’s.

And the RX’s have to be in \textit{minus} cyl.

The next slide has an oblique meridian formula to calculate how much cyl is in the 90\textsuperscript{th} meridian.
Degrees from Axis 90 = % of cyl power

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This chart will determine how much of the cylinder power of the RX will be added to the Sph power to get the total vertical power in each eye.
Example

OD  -.25  -1.00  X 30
OS  -5.00  - .75  X 50

OD axis is 60 degrees away from 90
The chart shows that 75% of cyl power will be added to the Sph which is -.75

Result  -.25 + -.75 = -1.00 @ 90
Example

OD     -.25 -1.00 X 30
OS     -5.00 - .75 X 50

OS axis is 40 degrees away from 90
The chart shows that 44% of cyl power will be added to the Sph which is -.33

Result  -5.00 + -.33 = -5.33 @ 90
Results

OD    -.25 -1.00 X 30
OS    -5.00 -.75 X 50

\[
\begin{align*}
\text{OD} & \quad -.75 \\
\text{OS} & \quad -5.33 \\
& \quad 4.58 \\
\end{align*}
\]

Total vertical imbalance
Since the total is over 2\(\Delta\) then a Slab-off is recommended
Practice

OD    -1.00
OS    +1.00

Total will be 2Δ dioptors of vertical imbalance
Practice

OD -3.00 -1.50 X 90

OS -5.00 SPH

Total will be 2∆ dioptors of vertical imbalance
Practice

OD  +3.50 -1.00 X 180

OS  +1.50 -1.50 X 135

OD  +2.50 @ 90

OS  +0.75 @ 90

1.75° vertical imbalance
Reverse Slab

This lens has the slab-off pre-molded on the front of the lens.

Reverse slab lenses have base down prism instead of base up.

Because of this, most minus and least plus rule must be reversed.
Reverse Slab

• Only St 28 available

• Only in CR 39

• Prism comes in .5 dioptor steps

• Range from 1.5 to 6.00 dioptors of prism
Questions

Next ------ Press-on Prisms
Press-on Prisms
How Are They Used

• Designed to be used as a temporary fix to fluctuating and rapidly changing refractive errors

• Ideal for patients following postoperative temporary fittings, vision therapy, or to alleviate sudden onset of diplopia (double vision)

• Also used when high prism cannot be ground in the spectacle lens
Press-on Prisms

- Unlike a conventional prism, Fresnel prism looks like a bunch of narrow adjacent prisms cut into a sheet of plastic.

- The press-on prism is applied over the patients spectacle lens with the correct prism power ordered.

![Diagram of Conventional Prism and Fresnel Prism](image)
Press-on Prisms

- Press-on prisms are only 1mm thick and can be cut to fit most frame sizes and shapes.

- Press-on prisms adhere to the lens concave side with only water
How to Apply

The press-on prism is marked so the direction can be positioned (base in, out, etc.)
How to Apply

Simply lay out over the existing lens and cut with scissors to match the shape.
How To Apply

• With desired shape ready, wash both lens and prism in a weak solution of liquid dish detergent and rinse thoroughly

• Submerge lens and prism in warm water or stream of running water

• Position prism with smooth side down on the concave side of lens, remove from water holding it in place and press dry
Some Down Sides

- Remember these are temporary
- They do get dirty and are harder to clean and sometimes can slip off the lens
- Return trips to the ECP to reattach is possible
- Patients sometime complain that the lens is cloudy
Availability

- From 1 diopter through 10 diopters
- Then 12, 15, 20, 25, 30, 35, and 40 D
- Also available in aspheric plus and minus powers and D-segs
Press-on Prisms

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