Are These Glasses OK to Dispense?

Robert Lee, OD
Western University College of Optometry
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Course Objectives

- This course is tailored to the paraoptometric who determines glasses prescriptions during entrance testing or receives glasses back from the laboratory.
- Single vision, multifocals and progressive lenses will be verified for all aspects of the prescription including vertical prism and calculation of induced prism.

Disclosure

- As a paid speaker I have not been sponsored by any companies mentioned in this lecture.
- I am not a consultant to nor an employee of any ophthalmic company.

A lensometer is capable of measuring:

- sphere and cylinder power
- cylinder axis
- optical center location
- amount and direction of prism

Lensometer optics

- The lensometer target consists of 2 sets of lines that are 90 degrees apart.
  - the sphere line (single)
  - the cylinder line (chubby)

Lensometer Orientation

- Adj. eyepiece (1)
- Marking device (5)
- Lens holder (Gimbal) (6)
- Lens table (9)
- Power drum (10)
- Locking lever (11)
- Cyl. axis wheel (17)
**Eyepiece Calibration**

- Rotate the **eyepiece** (1)
- Set **Power drum** (10) to zero

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**Single Vision Lens Power Determination**

- Release the **lens holder** (6) and center the glasses against the **lens stop** (16)
- Adjust the **spectacle table** (9) so the lenses are not tilted

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**Single Vision Lens Power**

- Rotate **power drum** toward you...
- If sphere power...
- Read power

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**Single Vision Lens Power**

- If nothing comes in focus...!
- Turn both the **power drum** and **cylinder axis wheel** at the same time until...

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**Single Vision Lens Power Determination**

- ...either the cylinder or sphere line is focused.

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**± and - Cylinder Lens Reading**

- For minus cylinder format, the sphere power should be the ____ reading
- For plus cylinder format, the sphere should be the ____ reading
If the cylinder line comes in focus first (most plus)...

The difference between the first and second drum reading is the cylinder power value.

The cylinder axis is read directly off the cylinder axis wheel.

Finding and Spotting the Distance Optical Center (OC)

Center the right lens sph.-cyl. intersection in the reticule. Spot the OC.
Without moving the lens table, slide the frames over to the left lens and locate and spot the OS OC.
Patient's PD = 70 mm

Checking for prism with a PAL

Measuring the bifocal add

- A near (reading) addition is a small plus lens that is "added to" the distance lens.

What is the add power?

- Distance Rx
- Looking thru the bifocal segment your are viewing the total near power.
- The total near power is the sum of the distance power + the bifocal add.
- The add is the difference between the total near power and the distance power.

1. Distance Rx = +2.00D
2. Looking thru the bifocal segment the total near power is +3.00D
   The total near power is the sum of the distance power + the bifocal add
3. The add is the difference between the total near power (+3.00D) and the distance power (+2.00) or a +1.00 Add
How to determine the add power

- Distance Rx = +2.00D
- Looking thru the bifocal segment the total near power is +3.00D
- The total near power is the sum of the distance power + the bifocal add
- The add is the difference between the total near power (+3.00D) and the distance power (+2.00) or a +1.00 add

Verifying Lens Segments and Surfaces

- Check seg height and width.
- On flat top bifocals check that the segment lines are not tilted.
- Verify the distant and near PD.

Finding and Spotting the Distance Optical Center (OC)

What is indicated if the OS target is above the reticule...?

NEAR PD
Checking for Unwanted Vertical Prism

- Determine the lens with the most vertical power (it doesn't matter if the sign is + or -).
- Place the OC of the most power lens in the center of the lensometer reticule (bullseye).
- The least power lens has the prism.

Checking for Unwanted Vertical Prism Example #1

- Is there vertical prism?
- If yes, which lens has the prism and what is the prism amount and base?

Checking for Unwanted Vertical Prism Example #2

- Is there vertical prism?
- If yes, which lens has the prism and what is the prism amount and base?

Can I Still Figure Out the PD?
YES!

Lens Material

- Differentiating between CR-39, AR coated and hi-index lenses
- Identifying differences between plastic and glass multifocals

Lens Thickness

- When specifying 2.0 mm center thickness on a minus lens
  - Spot the OC first
  - Use a lens caliper to measure at the OC
**Base Curves**

- You are filling an outside Rx from an OMD. The Rx states “Match base curves”.
- The habitual CR-39 Rx:
  - OD +1.00 DS BC +4.00 OU
  - OS +1.00 DS
- The new Rx:
  - OD +3.00 DS
  - OS +3.00 DS

Should you match the BC?

**Match the habitual base curves?**

A +3.00 Lens Can Be Made From a Variety of Front Curves

<table>
<thead>
<tr>
<th>6D</th>
<th>5D</th>
<th>4D</th>
<th>3D</th>
</tr>
</thead>
<tbody>
<tr>
<td>-3D</td>
<td>-2D</td>
<td>-1D</td>
<td>0D</td>
</tr>
</tbody>
</table>

Steepest | Flattest

**Base Curves (BC)**

- Front or back surface?
- Red or black scale?
- What if I get two readings?
- What should the approximate BC be for each lens below?
  - OD +4.00
  - OS -3.00

**Can An Rx Be Off And Still Pass?**

- ANSI Z-80.1-2005 (American National Standards Institute)
- Not requirements but recommendations. Use them as goals.
**ANSI Standards**

- Sphere power & cylinder power (+/- 0.25D)
- Cylinder axis depends on the cylinder power (14-7-5-3-2 rule)
- Prism Power
  - Vertical 1/3Δ
  - Horizontal 2/3Δ

**Finding and Spotting the Distance Optical Center (OC)**

The DBOC’s should equal the wearer’s PD unless...

**Calculating Prism**

- Prentice rule
- \( \Delta = d_{cm} \times F \)
- Where:
  - \( d \) = distance away, in centimeters, the pt. is looking from the lens optical center (OC)
  - \( F \) = lens power in diopters

**Clinical Example #1**

- You find the PD is off by 10 mm on your glasses. Is that OK? How much total prism is induced?

Assume patient with +2.00 O.D., +2.00 O.S.

\[
\Delta OD = d_{cm} \times F \\
= 0.5 \times 2.00 \\
= 1.00
\]

\[
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= 0.5 \times 2.00 \\
= 1.00
\]
Δ OD = d_{cm} \times F
= 0.5 \times 2.00
= 1.00 \text{ BO}

Δ OD = d_{cm} \times F
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= 1.00 \text{ BO}

Keep the glasses or send them back to the lab?

- Sphere power & cylinder power (± 0.25D)
- Cylinder axis depends on the cylinder power (14-7-5-3-2 rule)
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Thank you.