Slide 1

Advanced Dispensing for Paraoptometric Assistants

©2022
Alex Yoho, ABOM

Slide 2

Working with Rimless

Slide 3

Lab Work For Rimless Eyewear Drilling

• Finishing the hole
Protecting the lens

- Rimless frames often have exotic lenses
- Lens tapes are a good bet
- Clean hands
- Clean bench
Mounting techniques

• Be sure strap is bent properly
• Proper hardware sequence
• First protect the lens (Top Hat Washers)
• Then protect the protectors (Metal Washers)
• Locknuns or Loc-tite
• Finishing the nut or cap nut
Slide 28

Slide 29
Mounting
• Barrel Type

Slide 30
Mounting
• Stud Type
Slide 31

Tube nuts save the day when studs are too short.

Slide 32

Compression Mount Frames

Slide 33
A good quality pair of very sharp end cutters are essential.
There are several tools available for extracting stubborn bushings.

A Scribe works better to open holes since it opens the front more, allowing for easier assembly.

A good compression tool is needed. Several types are available.
Slide 43

Bushings for compression mounting

Slide 44

Remove old hardware by cutting the strap on the back surface of the lens
Press or pull the frame part out of the lens.
The frame part will still have the bushing tubes around the prongs.

Carefully nip off the bushing tubes.

Insert a new bushing into the holes from the back side of the lens.
Lightly grip the ends of the tubes and pull the strap tightly against the lens while pushing the strap against the lens.

Keeping the cutter edges close to the tubes, slide the cutters to the front of the lens and cut the tubes.

Open the crushed ends of the tubes with a scribe and aggressively wallow out the front.
Slide 55

After placing the frame part into position, press the plier jaw firmly against the back strap.

Slide 56

While continuing pressure from the back, introduce the front plier jaw and compress into place.

Slide 57

Western optical #1050
Slide 58

Pliers for compression
• Hilco # 21-436

Slide 59

The compression is now complete

Slide 60

Nylon suspension mounting
• Interliners
• Avoiding chipped lenses
• Gauging string length
• Should you heat the string
• Using different thicknesses
• Keeping string from slipping
Insert lens into the top of the frame. Holding the two together, insert a ribbon and pull the string away from and around the lens.
When the string pops into the groove, pull one side of the ribbon to remove it.
Slide 67

Customizing for Security
- Temple tip modifications
- Extension tips for more “hook”
- Cable makers
- Permanent straps and harnesses
- Switching to silicone Pads & Tips

Slide 68

Customizing eyewear for special patient needs and comfort
- unusual facial characteristics requiring special frame reconditioning for visual and physical comfort.
Customizing for Extraordinary Needs

- Ptosis crutch
- Moisture chambers
- Wind protection
- Incorporating low vision aids
- Occlusion methods
Slide 73

Various Moisture Chambers

Slide 74

Ear Difficulties

- Due to deformities
- Due to trauma
- How ears are reconstructed

Slide 75
Snuggle Wraps

The Able Co.
2156 Medway Rd.
Chas, SC, 29412
Phone (843) 762-6769
Fax (843) 762-2380

• Cool - open spaces allow for air circulation
• Comfortable - each bar is cushioned in foam and covered in a soft cotton fabric
• Does not slip off wrist
• Not bulky - can be worn over or under clothes
• Friendly appearance

Traumatic Ear loss & Reconstruction

Nose Difficulties
Warning Graphic
Surgical Photos
Slide 79

Ear Reconstruction

Slide 80

Mastoid Process

Slide 81

Nose Difficulties

• Cancer surgery
• Hypertelorism
Slide 82

A Need for Cheek Lifts

• Just a little spot

Slide 83

Mohs Procedure

Slide 84

Nosepad Pressure on the Incision
making eyewear more comfortable for the aging population

• Looking at new Styles
Making eyewear more comfortable for the aging population

- Use smaller pads
- What will keep them from slipping?
A New Paradigm and Why

Wrapped Frames

Slide 120
Lenses Evolve!

• We are entering the future now
• Freeform lens processing is addressing problematic lens distortions we have been dealing with since eyewear was first invented.
• Some lens designers are calling this new technology “HD Vision” (High Definition)

Advanced Optics

• Lenses & Aberrations
• The Progressive Power Lens
  – Visual Challenges of PALs
  – Distance
  – Intermediate
  – Near

Lenses & Aberrations

• Spherical Aberration
• Distortion
• Marginal Astigmatism
• Coma
In any ophthalmic lens, a single ray passing along the visual axis of the eye & through the optical center of the lens is not refracted...

Spherical Aberration occurs because rays striking the periphery of the lens are refracted more than rays in the center of the lens...

...the magnification or minification in the lens periphery causes distortion.
Lenses & Aberrations

Aspheric lenses reduce distortion...

spherical lens = constant radius of curvature
aspheric lens = multiple radii of curvature

Marginal Astigmatism is unwanted peripheral astigmatism caused by differences between tangential & sagittal refraction...

circle of least confusion
Marginal Astigmatism can be reduced by proper selection of base curvature... 

Coma is a high order aberration that causes image "flare" in the shape of a comet... 

...coma is affected by the size of the lens stop (in the eye, the pupil)
Progressive Power Lenses are subject to the aberrations common to every ophthalmic lens...
Slide 136

Slide 137

Coma

Slide 138

Patient Parameters
- **Pantoscopic Tilt**: the angle of the frame on the face
- **Wrap angle**: the angle of the frame itself
- **Vertex distance**: distance between the lens and the eye
- **Pupillary Distance**
- **Fitting Height**
Slide 139

Changes in position of wear creates aberrations

Slide 140

Understanding Measurements

Slide 141

Fitting Height

- Fitting Height is the measurement from the center of the patient’s pupil to the lowest point of the frame’s eyewire in millimeters
- Referred to as:
  - Fitting Height for PALs
  - Optical Center [OC] Height measurement for single vision wearers
  - Seg Height measurement for Bifocal vision wearers
Slide 142

**PD**

- Pupillary Distance (PD) refers to the distance between the patients pupils in millimeters

![Image of PD](image.png)

---

Slide 143

What about all these **NEW** measurements?

- Actually, measurements like Vertex, Pantoscopic Tilt and Wrap Angle (Position of Wear measurements) are not new
- Lens designers have been using average or “default” values when creating a new lens for years
- Now the ECP has the ability to take these measures for each patient individually – personalizing the product for that specific person

---

Slide 144

**Vertex**

- Vertex is the distance between the back surface of the lens and the apex of the cornea.

![Image of Vertex](image.png)
**Slide 145**

**Pantoscopic Tilt**
- Pantoscopic Tilt is the angle of the frame on the face in degrees

**Slide 146**

**Wrap Angle**
- Wrap angle is the angle of the frame itself measured in degrees

**Slide 148**

**New Measurements**

**Eye Data**
- ERC (Eye Rotation Center)

**Behavioral Data**
- Natural Head Posture (Head Cape)
- Head/Eye Ratio
- Stability Coefficient
**Slide 149**

Eye Rotation Center (ERC)

- Eye Rotation Center (ERC) is the distance between the back of the lens and the point around which the eye rotates.
- The ERC can be different for each eye.

![Eye Rotation Center Diagram](image)

**Slide 150**

Natural Head Posture

- Natural Head Posture (Head Cape Angle) refers to how a patient's head rests naturally on the neck and shoulders. This has a direct impact on alignment of the design.

**Slide 151**

H/E Ratio & Stability Coefficient

- Some people move their head more to see things, while other people move their eyes more.
- The **Head / Eye Ratio** is a value that measures this.
- The **Stability Coefficient** determines how consistently the patient sticks to his or her H/E Ratio.
**Slide 152**

**Taking Measurements**

- Standard Required Measurements
  - Frame Measurements
  - Fitting Height (Seg Height)
  - PD (Pupillary Distance)
- Position of Wear Measurements
  - Pantoscopic Tilt
  - Wing Angle
  - Vertex Distance
- Behavior Measurements
  - ERC
  - Head Cape or Natural Head Position
  - H/E Ratio
  - Stability Coefficient

Manual or Electronic Device

**Slide 153**

**Manual Measurements**

**Slide 154**

- Position of wear measurements can be taken either manually or digitally.
  - Varilux Patient Measuring Tool (LVAR200751)
  - "How to Use" presentation available
  - Video planned
The Visioffice System

Bottom Line

• It's all about focus
• Experiment with different systems
• Settle on a few good lens designs
• Pay attention to Patient’s lifestyle

Advanced Dispensing for Paraoptometric Assistants

Alex Yoho, ABOM