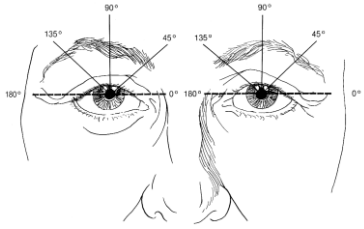
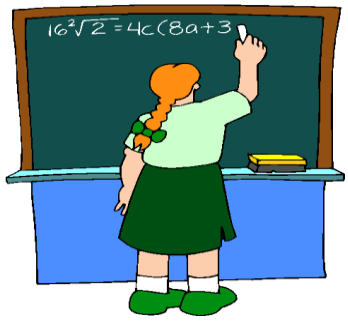
Get Ready: Visual Field Correction and Calibration Pitfalls



Correction For the Humphrey & Goldmann Visual Fields



When performing visual fields, you must take the patients correction into account. IF you do not, then you could be causing **refractive scotomas** to occur. These are areas of non-seeing that are only there because the patient is not visually corrected appropriately.

A good rule of thumb : any patient not seeing 20/40 or better should have a refraction prior to their HVF/GVF to ensure that you are not inducing refractive scotomas.

Goldmann vs. Humphrey

When you are doing Goldmann, you need to "do the math" that will tell you what correction you need for the test.
The Humphrey machine will do the calibration *for you* – but….

Does the Humphrey know if a patient has had cataract surgery and has an IOL or not ?!

Batman Comics: The Riddler

No !!!!!!!!

So…. whether you are doing a Goldmann or a Humphrey, **you** should be doing the math.

"To Drop or Not To Drop…That Is The Question !"

It all depends on what your doctor is looking for !

No "right" answer – it is *physician preference*. The key to doing quality fields is <u>being consistent</u> with the way they are being performed.

IF a patient had a field the last visit dilated, you would want to do the next field dilated so that you can *compare* the two.

DILATED : largest field possible due to the pupil being dilated
UNDILATED: the way it is in an every day life

Back to Basics

When considering what correction to use, it's the patient's **DISTANCE** correction, *not* their bifocal add that we use !

Sphere	+	Cylinder	x	Axis
⇩		⇩		⇩
(+) = farsighted (-) = nearsighted		astigmatism		where the astigmatism "lives"

Dilated or Undilated ?

Dilated : All patients get a **+3.25** added to their **sphere** of their correction regardless of age

Undilated: Use the **"add for age"** chart added to their **sphere**

Astigmatism: Use the astigmatism chart whether they are dilated or undilated

Cylinder

Cylinder	Visual Field Correction
+0.25	none
+0.50,+ 0.75	+0.25 added to sphere
+1.00 or more	***keep it all***

Undilated

	Bowl radius			
Age (yr)	30 cm (Goldmann, Perimat, Fieldmaster 101)	33 cm (Humphrey, Digilab 750, Dicon)	42.5 cm (Octopus 2000, 500)	50 cm (Octopus 201, Squid)
30 to 40	+1.00	+1.00	+0.50	—
40 to 45	+1.50	+1.50	+1.00	+0.50
45 to 50	+2.00	+2.00	+1.50	+1.00
50 to 55	+2.50	+2.50	+2.00	+1.50
55 to 60	+3.00	+3.00	+2.50	+2.00
Over 60	+3.25	+3.00	+2.50	+2.00

Add For Age Table

30 to 40	+ 1.00
40 to 45	+ 1.50
45 to 50	+ 2.00
50 to 55	+ 2.50
55 to 60	+ 3.00
60 and over	+ 3.25

This "add" is added to the sphere of the Rx.

35 y.o. male Undilated r/o Glaucoma

Glasses Rx:

OD: +2.25 sphere
OS: +2.00 sphere

VF Rx:

OD: +2.25 sph
+1.00 add for age
+3.25 sph

OS: +2.00 sph
+1.00 add for age
+3.00 sph

18 y.o. Undilated r/o optic neuritis

Glasses Rx is:

OD: +2.50 sphere
OS: plano

Visual Field Rx:

OD: +2.50 sphere
no add for age..under 30
+2.50

OS: plano
no add for age....under 30
no correction

42 y.o. Undilated r/o pituitary tumor

Glasses Rx:

OD:+1.00 + 0.50 x 92 add +1.25
OS:+0.25 + 1.25 x 02 add +1.25

Visual Field Rx:

OD: +1.00 + 0.50 x 92
+1.50 add for age
+2.50 +0.50 x 92
+0.25 for cylinder
+2.75 sphere

OS: +0.25 +1.25 x 02
+1.50 add for age
+1.75 + 1.25 x 02
keep the cylinder !
+1.75 + 1.25 x 02

55 y.o. Undilated: monocular pt with glaucoma

Glasses Rx:

OD: prosthesis
OS: -5.25 +1.00 x 150

VF Rx:

OD: prosthesis

OS: -5.25 +1.00 x 150
+3.25 (more than -3.25)
-2.00 + 1.00 x 150

Dilated

Do Not Use The Add for Age !!!

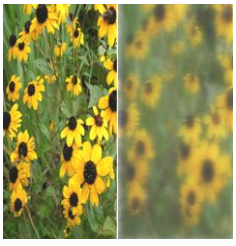
Everyone gets +3.25 added to their sphere *regardless* of their age !

Cylinder rules stay in effect for dilated patients !

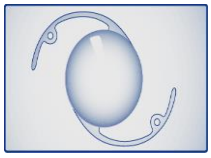
Dilation Makes Everyone 70 !

Because dilation causes patients to lose their ability to see up close (accommodate), we need to give them a +3.25 to help with the test.

What else causes you to lose your ability to accommodate ?



What makes you 70 ?!



IOL

Aphakia

Dilating Drops

- 3.25 or more

12 y.o. Dilated : Sports Screening Exam

Rx is:

OD: -1.00 +0.75 x 10
OS: plano +1.00 x 10

VF Rx:

OD: -1.00 + 0.75 x 10
+3.25 dilated
+2.25 + 0.75 x 10
+0.25 cylinder
+2.50 sp

OS: plano + 1.00 x 10
+3.25 dilated
+3.25 + 1.00 x 10
** keep all cylinder
+3.25 + 1.00 x 10

Glasses will give you refractive scotomas !

What about contacts ?

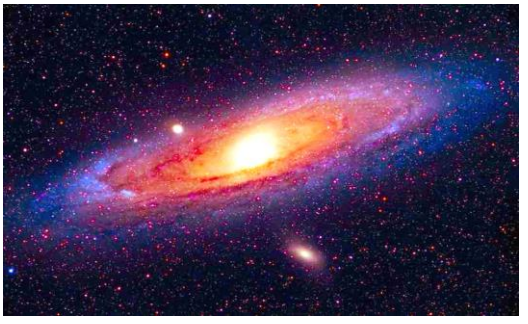
Patient's Rx =

OD: -7.50 + 1.00 x 87
OS: -7.00 + 0.50 x 97

When they wear their contact lenses with the appropriate correction… they see **20/20** OU.

Their contacts make them what Rx?

NOTHING !!!!!!!



23 y.o. Undilated: Family hx glaucoma & ↑ C/D

Glasses RX:

OD: SCL 20/15 vision
OS: SCL 20/15 vision
* He wears no other corrective glasses

Visual field Rx will be:

OD: SCL **nothing**
OS: SCL **nothing**

Leave the contacts in for the **whole** visual field (either HVF or GVF) …..

" Contacts make your nothing ! "

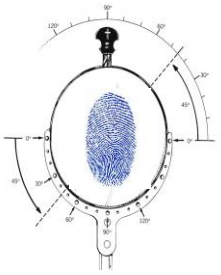
Correction Holder

Do not use **red** or black wide rimmed lenses for testing.

Watch for fingerprints!

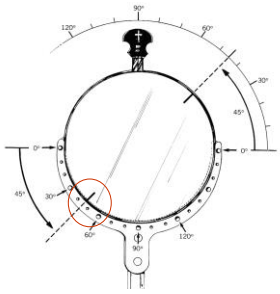
Remove after the central 30 degrees.

Never use the patients' glasses ⊗



GVF Correction Holder

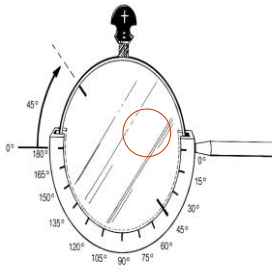
Same rules… remove from the machine and place the correction in the holder.



Anderson: Perimetry

HVF Correction Holder

Cylinder is placed at 45° in this picture.



Anderson: Perimetry

Goldmann Visual Field Calibration

Before you can even begin the field, the machine must be calibrated ! This ensures that the light intensities are correct and that the machine is **standardized**. Ideally, the machine *should be* calibrated before each patient… but in "the real world", most offices calibrate them once an AM shift and once a PM shift.

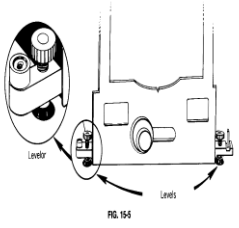
Calibration Pearls

* **1000 asb** (apostilb)
  An apostilb is a unit of luminance = to 0.3183 candela/m$_2$ or 0.1 millilambert
* **32.5** versus " what it is"
* lock pantograph handle at **70°**

Cannot do the visual field if you do not calibrate!

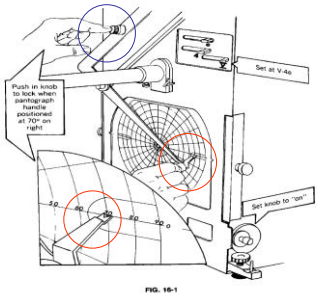
Level The Machine

On the bottom of each side of the perimeter, there are **levels**. Adjust the levels so that the "bubble" is in the center of each circle.



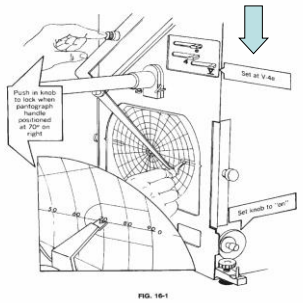
Lock Pantograph Arm At 70°

70° is located on the right hand side of the paper on the horizontal line. Push knob in to lock arm.



Adjust All Levers to V4e

Located in the upper right hand side of the machine. Make sure the levers are in the grooves.

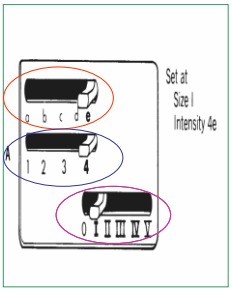


Levers

Intensity (0.1 log)

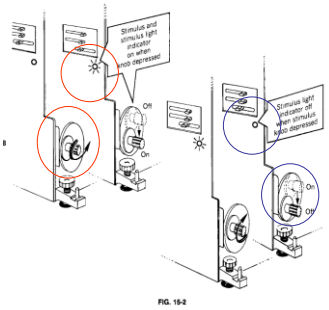
Intensity (0.5 log)

Size



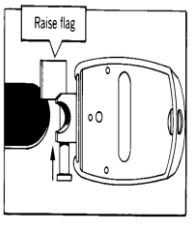
Turn Machine On..Turn Stimulus Light Switch To On

Located on the right lower side. During calibration, "twist" knob to keep light on. After calibration you will push "down" on lever to turn light on/off.

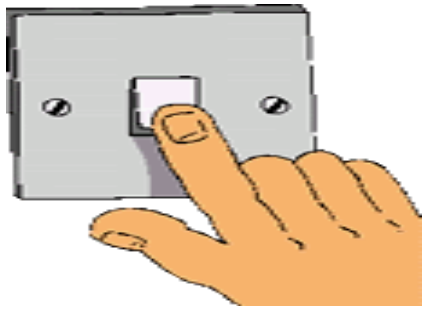


Raise The Flag

Located on right hand side of the bowl. Gently push the flag up. DO NOT grab the flag with your fingers because the oils on your fingertips can cause the flag to become discolored.



Turn the Room Lights Off!

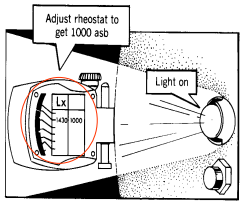


Calibrate The Light Meter

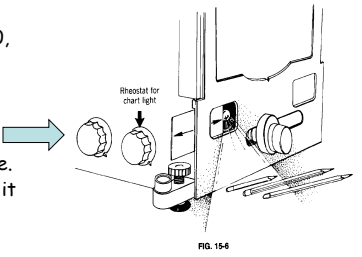
IF all the steps have been performed up to this point, the light meter *should* read **1000 asb** . There are (2) types of light meter:

a. will automatically react to the light hitting the meter

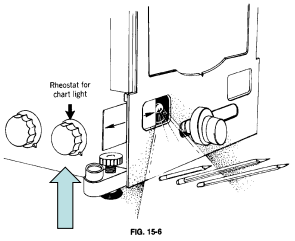
b. there is a **red** button behind the meter that you push in the activate the meter



If the light meter does not read 1000, **adjust the stimulus knob** located on the lower left hand side of the machine. IF after adjusting it *still* will not read 1000, change the bulb !



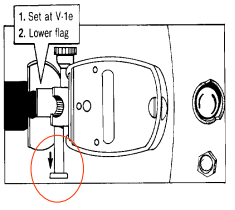
This knob will adjust the paper screen intensity so you can see what you are drawing. Adjust this to full on *before* you start the test.



Lower The Flag

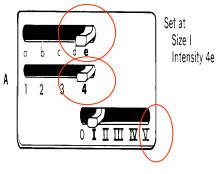
Lower the flag.

Now instead of the light hitting the light meter, we will use the flag to calibrate the bowl.

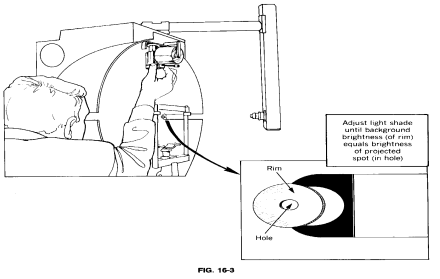


Move Levers To V1e

Move all the levers so that they read **V1e.**



Go To Right Side Of The Machine- Look Through Slat



Close one eye. With your right arm, reach up and adjust the black, ribbed light housing. **Careful –** this gets **hot** fast! If you pull on it too hard, it will also come off. It's ok…put it back on !

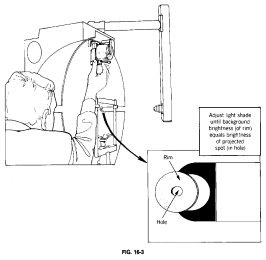
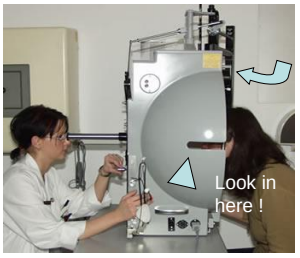


FIG. 16-3



Adjust rheostat until bowl and flag blend

The Book vs. Real Life

The book says (and for all **written** tests the answer ***will be***) that when adjusted properly, the **bowl reading** is **32.5**. But, in the real world, when **performing** the test, the answer is **"whatever the light housing reads on the scale"**. There is a scale imprinted on the housing, in units of "1". Read the numbers and record *that* as your answer during *performance* tests.

Test vs. Real Life

At this point, unlock the arm. Put the patient in the machine. Re-lock the arm. The book states that when you calibrate the bowl, you need to have the patient in there. You want to adjust the bowl intensity in accordance to what they are wearing !

Other Tips Before Starting

Focus eyepiece by pulling in and out on the tube.

Adjust patient fixation to small (switch down)

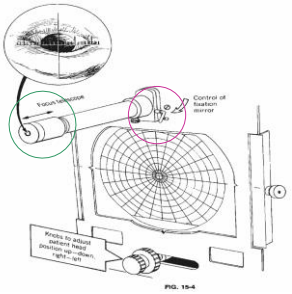
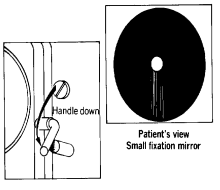


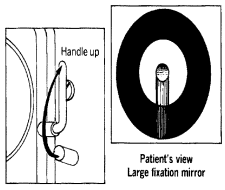
FIG. 15-4

Other Tips Before Starting

Handle down gives a smaller target for the patient to see. This helps prevent *micro* scanning from side to side of the target.



Handle up gives a much larger viewing spot. This can *sometimes* cause difficulties while you are plotting the blind spot.

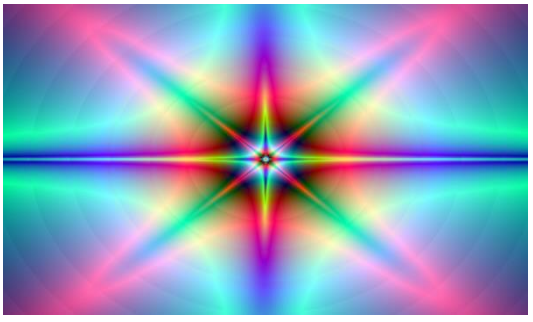


Theory vs Real Life

"25° Temporal Rule"

Put the pantograph handle on the 25° spot on the *right* hand side of the paper. Adjust levers to **I2e**. Turn light on. If patient responds, this is what you start the test with. If not, adjust levers to **I3e**, and continue to increase stimulus size/intensity until patient responds. Start test with first light they respond to.

Why Don't I Like This ??

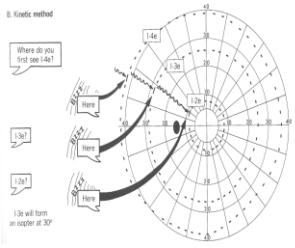


IF the patient starts the test with the **I4e**, *do you know* if they see the **I2e** or the **I3e** ?

One reason to do VF's is progression. Start with **I2e**, and go larger. **IF** after time the patient cannot see the **I2e**…it is gone. And *that* is progression ! Don't start with the largest stimulus and work in !

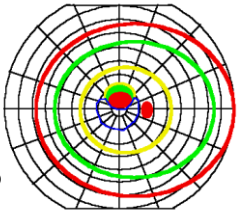
Kinetic Perimetry

Moving from an area of *non-seeing* to a *presumed area of seeing* using a given size and intensity of light to find the boundary or *threshold* of that light.



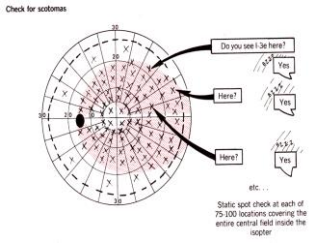
Isopter

An **isopter** is a connection of responses to a given stimulus.
You get an isopter by performing kinetic perimetry. The *implication* is that everything inside that circle of lights is seen by that stimulus. **How do you know** ??????



Static Perimetry

Once you have an isopter, you then need to check inside to see if there are any areas of non-seeing. You are looking for ***scotomas***. You need to check **75-100** times in the central 30 degrees.



Take The Plunge – It'll Be A Blast ☺