Kendall Optometry Ministry, Inc

How to use the Field Assembly Eyeglasses

1/19/2005

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Kendall Optometry Ministry, Inc

"Serving the Lord by providing better vision to the Honduran and Nicaraguan People"

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Part number 10021 **$10**

Table of Contents

1.0 Introduction

The purpose of this document is to show how to use field assembly glasses in an optical clinic. There is little requirement for knowledge of optometry to use this document. The most important items you need to know are:

1) The Sphere, Cylinder, and Axis of the patients prescription., (Section 2.0)
2) The Spherical equivalent of the prescription and when to use it, (Section 2.4)
3) How to select a frame size, (Sections 3 and 4)
4) How to insert a lens and rotate it (if necessary) for axis, and (Section 6.0)

All these items will be described in this document.

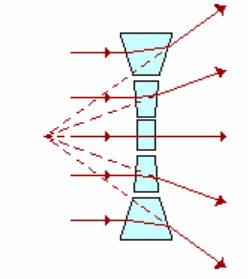
2.0 The Prescription

The prescription for each eye is given as Sphere, Cylinder and Axis. You get these numbers by measuring the eyes with an autorefractor or other methods. The Sphere is minus (-) for nearsighted/Miopic people and plus (+) for farsighted/Hyperoptic people. The cylinder value can be plus or minus but for this kit all the cylinder is minus. The axis can be any number from 0 to 180.

2.1 Sphere

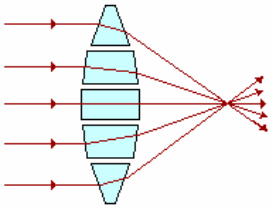
Lens that are minus can be easily identified. Physically they are thin in the middle and thick on the edges. They are called "concave" because they "cave in" at the center. Also, when you hold them up to print they will make the print smaller. Think of this "minus makes things smaller". Minus lens are used for nearsighted people. Nearsighted people can see up close but not far away.

Figure 1
Concave/Minus Lens



Lens that are plus are thin along the edges and thick in the center. They are called "convex" because the "vex out" at the center. Also, when you hold them up to print they will make the print larger. Think of this as "plus makes things larger". Plus lens are used for farsighted people. Farsighted people can see far away but not up close.

Figure 2
Convex/Plus Lens



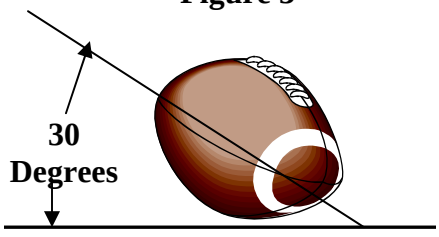
2.2 Cylinder

Cylinder is used to correct astigmatism. While lens without cylinder have a shape like a basketball, lens with cylinder are shaped like a cylinder or football (Figure 3). Lens with cylinder cause circles to be ovals as can be seen in Appendix C.

2.3 Axis

The axis is the placement angle of the cylinder. For example the football to the right is at an angle of about 30 degrees.

Figure 3



Note

Cylinder and axis combine together to correct astigmatism.

2.4 Spherical Equivalent.

Spherical equivalent is calculated automatically by the Kendall Optometry Ministry Eyeglasses Inventory Program (labeled **Equiv** under **Right** or **Left** on the screen) using the following equation:

Spherical Equivalent = Sphere + ½ * Cylinder

For example if you have the following prescription:

Sphere = 3.00 Cylinder = - 1.50 Axis = 86

The spherical equivalent is:

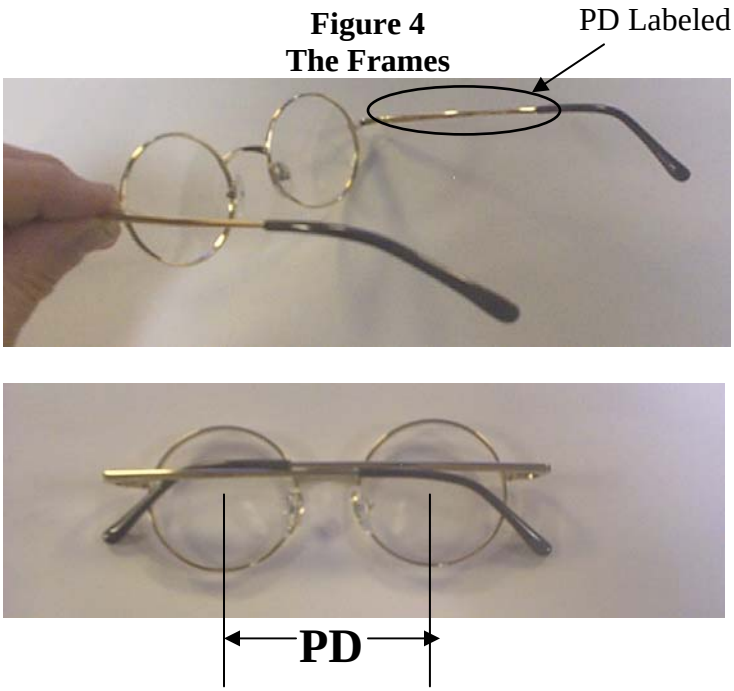
3.00 + ½ * (-1.50) = 3.00 + (-.75) = 2.25

You can give a person the spherical equivalent prescription for a pair of glasses IF the cylinder is less than -2.00 (like -1.50 above). It is not better to give them the spherical equivalent (versus the exact prescription) , but it can be quite helpful and is certainly better than giving them nothing.

3.0 The Frames

The frames (see Figure 4) in this kit come in 3 sizes: 57mm, 61mm and 65 mm. These frames are suitable for small children up to teenagers and small adults. These sizes are called PD which stands for "Pupilary Distance" (distance between the pupils). Frames are measured using PD because it is **important** that the pupils be behind the focal center of the lens.

Figure 4
The Frames



The next section (3.1) will describe two methods for measuring the PD for a patient for any pair of glasses.

> **NOTE**
> The most important thing to remember for the use of these circular lens is the center of each lens must be centered right over the center of the eye (or the pupil). If it is not, then try a larger or smaller pair of frames.

If you are not sure of the size (57/61/65) of the pair of lens, then look at the small print on the temple (see circled are in Figure 4 above). You will see something like:

STYLE #2 GOLD 61-135.

The "61" in the above means the pair of glasses is 61mm. You can also place the pair of glasses on the PD measurement sheet shown to the right in Figure 5 and repeated in full size in Appendix A.

Figure 5 PD Measurement Sheet

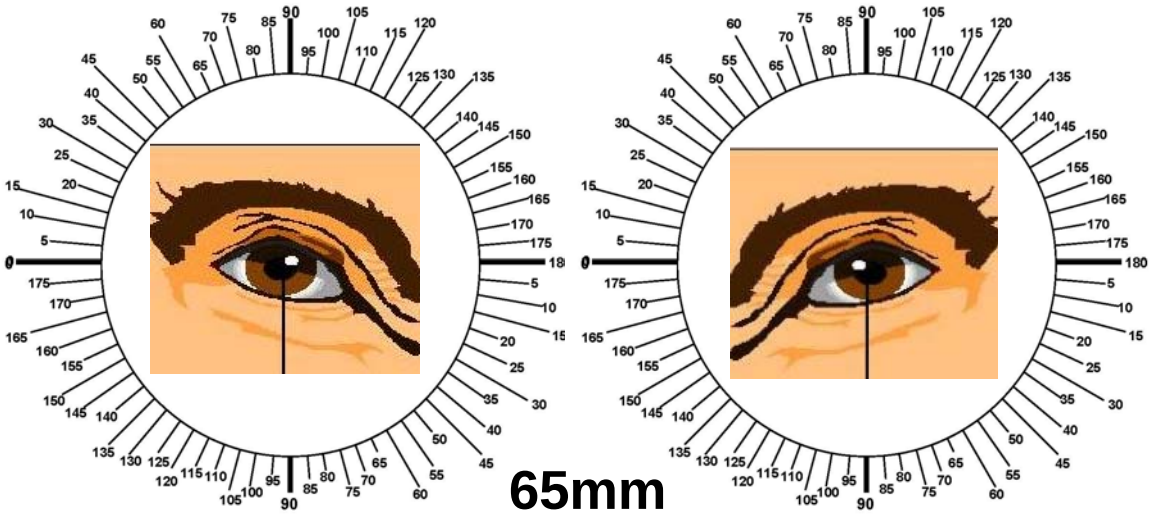
4.0 How to measure Pupillary Distance (PD)

In some cases you may need to measure the PD for a person. Realize that if the glasses have the exact right prescription but the PD is wrong, the patient might either see double or a blurred image. Measure the PD **every time** before fitting a person with snap-together frames and lens. With used prescription glasses, it is faster to try another pair rather than take the time to measure the PD. On the following pages are two methods to measure the PD. The ruler showing in method 2 is included in the snap together kit.

Method 1: (Easiest but not the most accurate)

For snap together glasses, you will be measuring DISTANCE PD. Here is another way to measure distance PD for the frames. Take the template in Appendix A and cut out the center holes so you can see through them. Now hold the template up the eyes of the person as shown below:

Figure 6
(See also Figure 10)



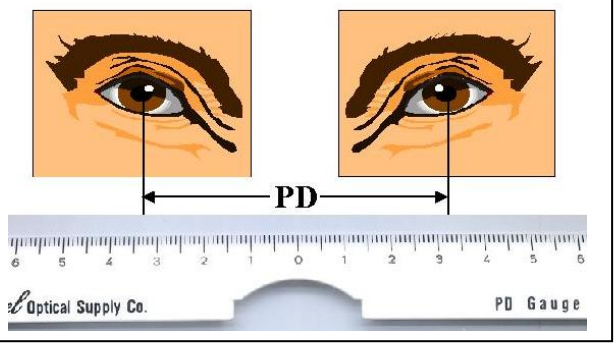
Try the 3 different templates until you find the one which more closely allows the pupils to be in the EXACT center of the holes. When you have found that template, that gives you the best PD for the patient. You now can select your frame size.

Method 2 (used most often by optometrists)

The PD is the distance between the patient's pupils as shown in the pictures below. The "near" PD is used for reading while the distance PD is for seeing at a distance. The distance PD is always 4-6mm larger than the near PD. Place yourself about 16" (40 cm) away from the person for the test and have them remove their glasses so you can clearly see their eyes.

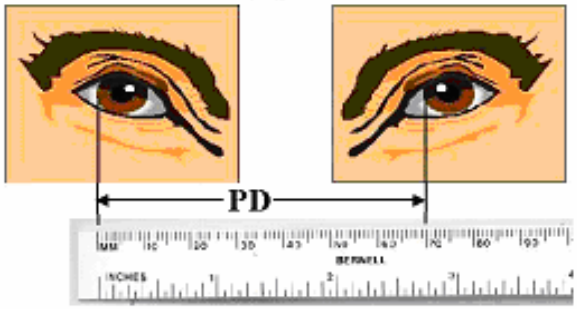
Near PD: (center ridge mm ruler) For the "near" PD place a center ridge mm ruler on the patent's nose just below their eyes. Have the patient look at your nose. Measure the distance from the nose to the center of each pupil and total the two reading. This example is 66 mm.

Figure 7
Near PD



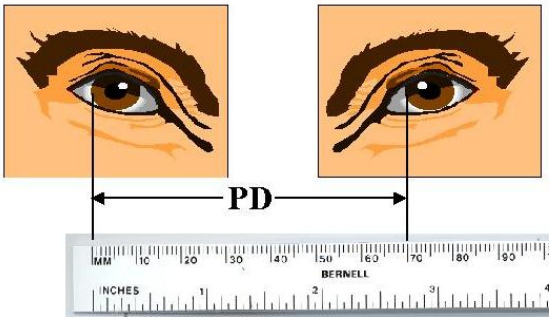
Near PD (regular mm ruler): You can also measure the "near" PD by placing a regular mm ruler in front of the eyes. Have the patient look at your nose. Measure the distance from the left of the iris of one eye to the left of the iris of the other eye. This example is 66 mm

Figure 8
Near PD



Distance PD (regular mm ruler): Have the patient look past your ear at an object across the room. Using a regular mm ruler measure from the left of the iris of one eye to the left of the iris of the other eye. This example is 70 mm.

Figure 9
Distance PD



5.0 The lens in the kit

The lens that are included in the Kendall Optometry Ministry kit are in powers from +8.00 to -8.00. There are also several lens which have ZERO sphere but have cylinder with powers from -.50 to -3.00. When you use the lens from this kit you will need to mark the powers that you have used on the table in Appendix B. Copies of this table will be provided to you. This will allow the kit to be replenished with new inventory at the end of your trip.

6.0 Steps for Fitting Glasses.

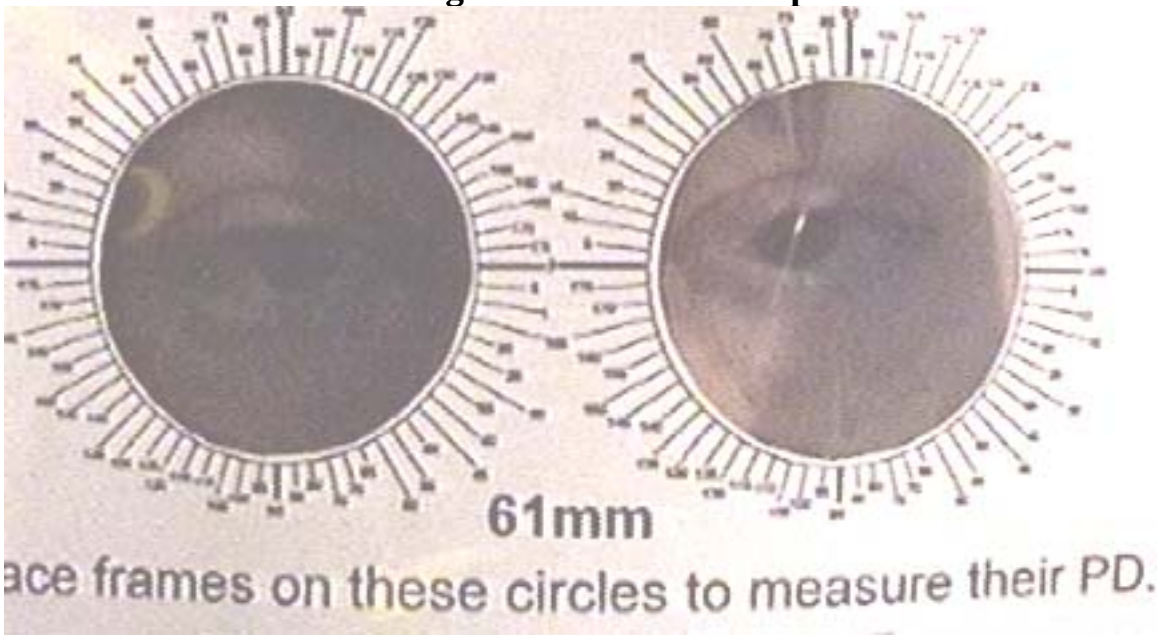
With most of the lens, one side of the lens sticks out more than the other. When you put the lens in the frame, have the side that sticks out more in the front.

When you are about to fit the glasses, determine which of the below 3 conditions apply to your patient. If you are unsure, try condition 1. It that does not work, try condition 2.

Condition 1: If the person has high sphere and low or no cylinder.

1. Measure the eyes and record the right and left prescription. For example:
   Right (OD): Sphere = -3.25 Cylinder= -.50 Axis: 89
   Left (OS): Sphere = -2.75 Cylinder= 0 Axis: N/A
2. Calculate the spherical equivalent for both eyes (for example):
   Right = -3.25 + ½ * (-.50) = -3.50
   Left = -2.75 + ½ * (0) = -2.75
   Remember that the program shows this under **Left** or **Right** in the **Equiv** field.
3. If the cylinder is less than -1.50 to -2.00 then you can fit the patient with the spherical equivalent of the prescription (see section 2.4).
4. Select the lens from the kit.
5. Use the template in Appendix A to discover the PD for the frame. (Figure 10 below). This figure shows that a smaller PD (57 for example) may work better. (See section 4 also).
6. Place the lens in the frame and fit them to the patient.

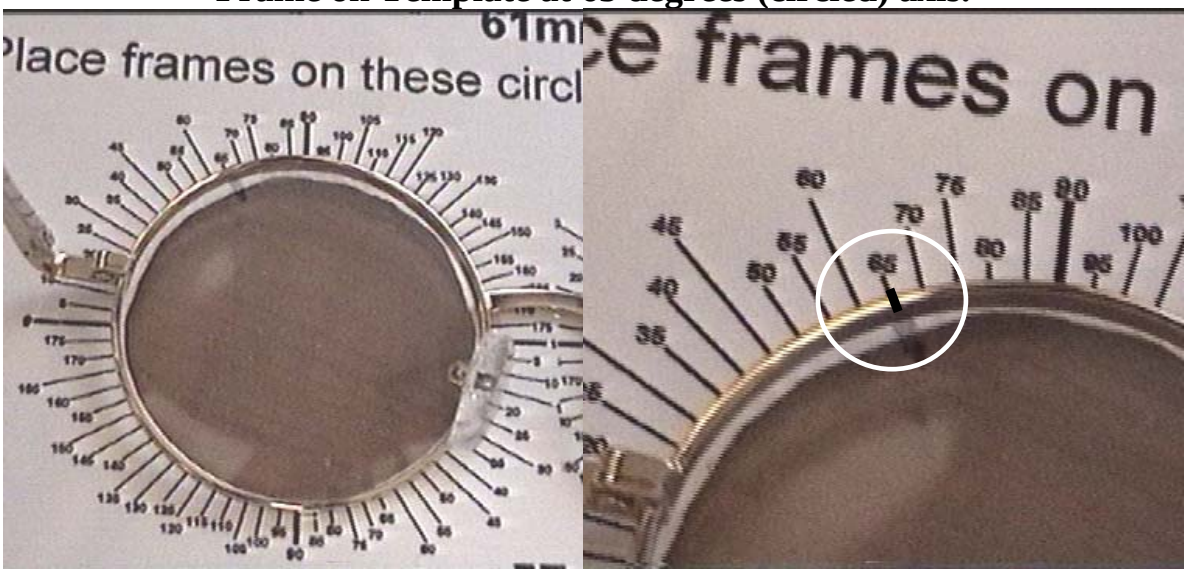
Figure 10
Measuring the PD with the template



Condition 2: If the person has low sphere (+-.50 or below) but high cylinder (> -2.00).

7. Select the appropriate cylinder lens from the kit.
8. Place the frame on the template in Appendix A and mark the left and right axis (if any) on the frame with a black sharpie marker. See Figure 11 below.
9. Place the lens in the frame and align the black mark on the lens with the black mark you made on the frame (circled in Figure 11 for an axis of 65).
10. Tighten the screws on the frame..

Figure 11
Frame on Template at 65 degrees (circled) axis.



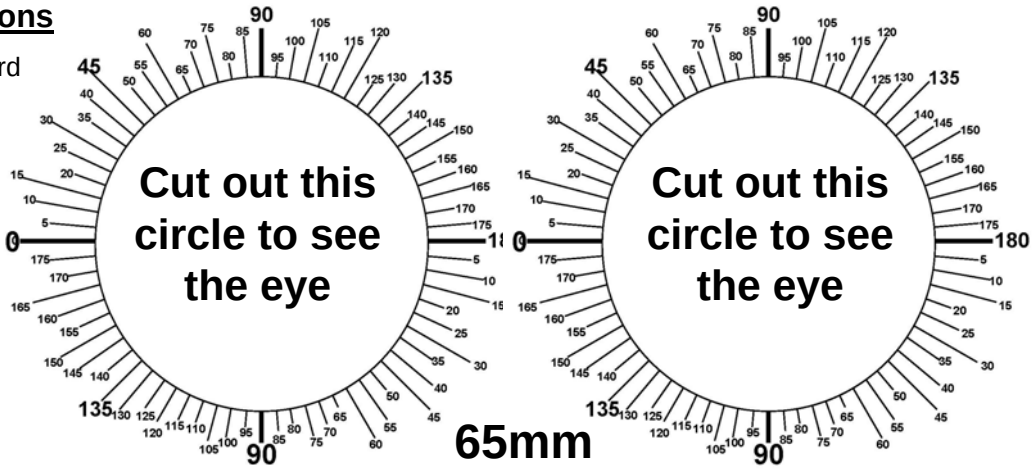
Condition 3: If the person has both high sphere and high cylinder.

Try again to fit them with used prescription glasses. If nothing can be found, then fit them as if they were condition 1 above.

Appendix A – AXIS and PD Measurement Scales

Instructions

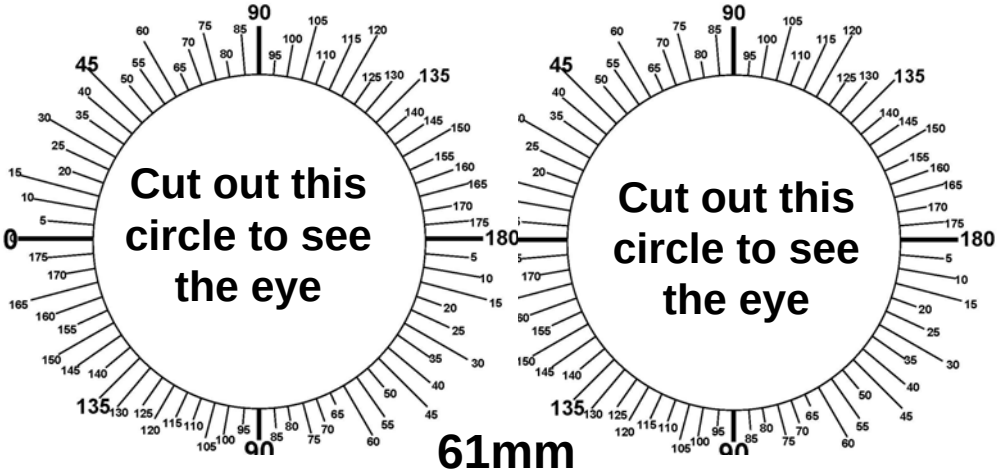
Print on card stock and laminate.



All 65mm

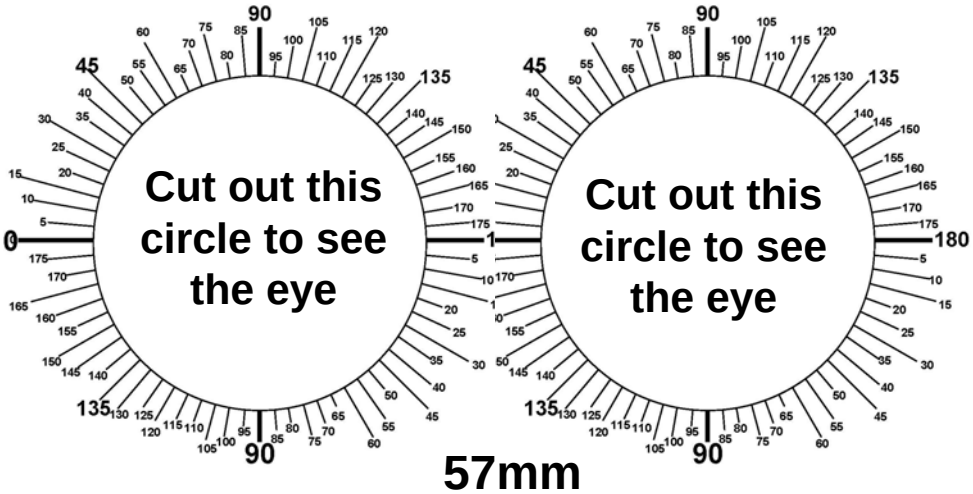
42mm Rotate lens in frames to line up axis mark.

Lens



61mm

Place frames on these circles to measure their PD.



57mm

AXIS and PD Measurement Scales

Kendall Optometry Ministry, Inc.

http://eyeglasses-inventory.com/ **Phone: (502)-640-2227 Fax: (502)-495-2532**

1/21/2005

Appendix B – Lens and Frames Usage Chart

Lens and Frames Usage Chart

(Used to replace inventory that is used by a team)

Spherical only lens

Spherical power	Inventory Level	Mark an "X" in the appropriate column and row below when you use one of these lens.	Current Inventory	Spherical power
-8.00	2			-8.00
-7.50	2			-7.50
-7.00	3			-7.00
-6.50	4			-6.50
-6.00	4			-6.00
-5.75	4			-5.75
-5.50	4			-5.50
-5.25	4			-5.25
-5.00	4			-5.00
-4.75	4			-4.75
-4.50	4			-4.50
-4.25	4			-4.25
-4.00	4			-4.00
-3.75	4			-3.75
-3.50	4			-3.50
-3.25	4			-3.25
-3.00	4			-3.00
-2.75	4			-2.75
-2.50	4			-2.50
-2.25	4			-2.25
-2.00	5			-2.00
-1.75	4			-1.75
-1.50	6			-1.50
-1.25	6			-1.25
-1.00	6			-1.00
-0.75	6			-0.75
-0.50	6			-0.50
0.50	4			0.50
0.75	4			0.75
1.00	5			1.00
1.25	4			1.25
1.50	4			1.50
1.75	3			1.75
2.00	3			2.00
2.25	3			2.25
2.50	3			2.50
2.75	3			2.75
3.00	3			3.00
3.25	2			3.25
3.50	3			3.50
3.75	2			3.75
4.00	3			4.00
4.25	2			4.25
4.50	3			4.50
4.75	2			4.75
5.00	3			5.00
5.25	2			5.25
5.50	3			5.50
5.75	2			5.75
6.00	3			6.00
6.50	4			6.50
7.00	3			7.00
7.50	2			7.50
8.00	2			8.00

Cylinder only lens. There is ZERO spherical power in these lens.

Use for people with low or now sphere but have cylinder which needs correction. ***Use for people with lo***

Cylinder Power	Inventory Level	Mark an "X" in the appropriate column and row below when you use one of these lens.	Current Inventory	Cylinder Power
-0.50	2			-0.50
-0.75	2			-0.75
-1.00	2			-1.00
-1.25	3			-1.25
-1.50	3			-1.50
-1.75	3			-1.75
-2.00	3			-2.00
-2.25	3			-2.25
-2.50	3			-2.50
-2.75	2			-2.75
-3.00	2			-3.00

Frames

Size in mm	Inventory Level	Mark an "X" in the appropriate column and row below when you use one of these frames.	Current Inventory	Size in mm
57	50			57
61	30			61
65	20			65

TOTAL FRAMES USED: _____

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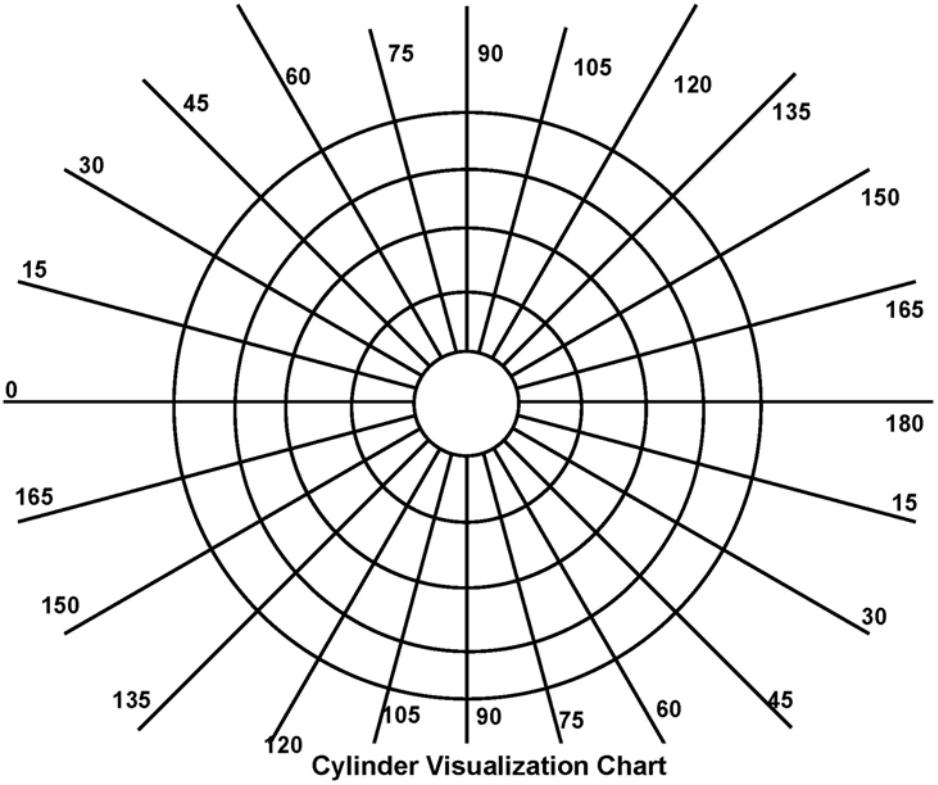
Appendix C – Further verification of Axis.

Hold the glasses about 16 inches away from your face and about 4-6 inches away from the chart. Look through them at this chart to further verify the approximate value of your axis..

Diagram when viewed through a pair of glasses without Cylinder.
(All are circles)



Below are examples of what you will 0/180 or 90 degree axis.

Diagram when viewed through a pair of glasses where the axis is 0 or 180.
(Oval points to Zero or 180)

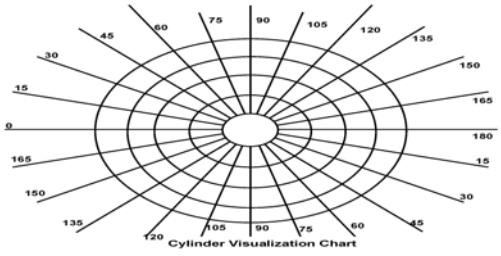
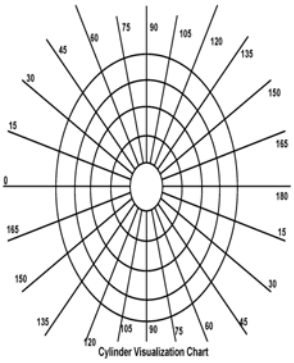
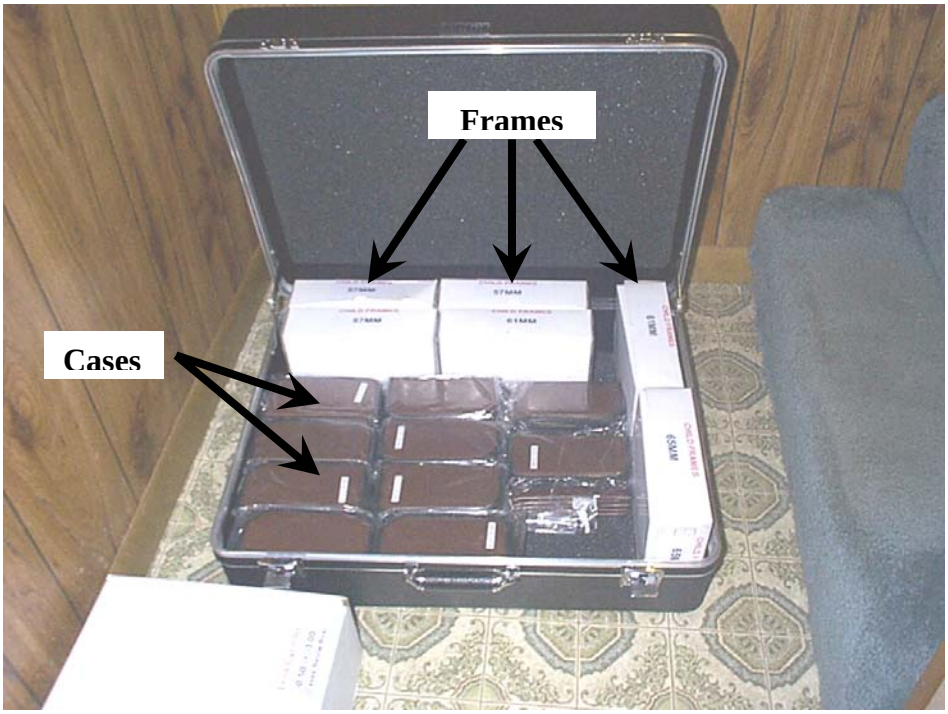


Diagram when viewed through a pair of glasses where the axis is 90.
(Oval points to 90 degrees)

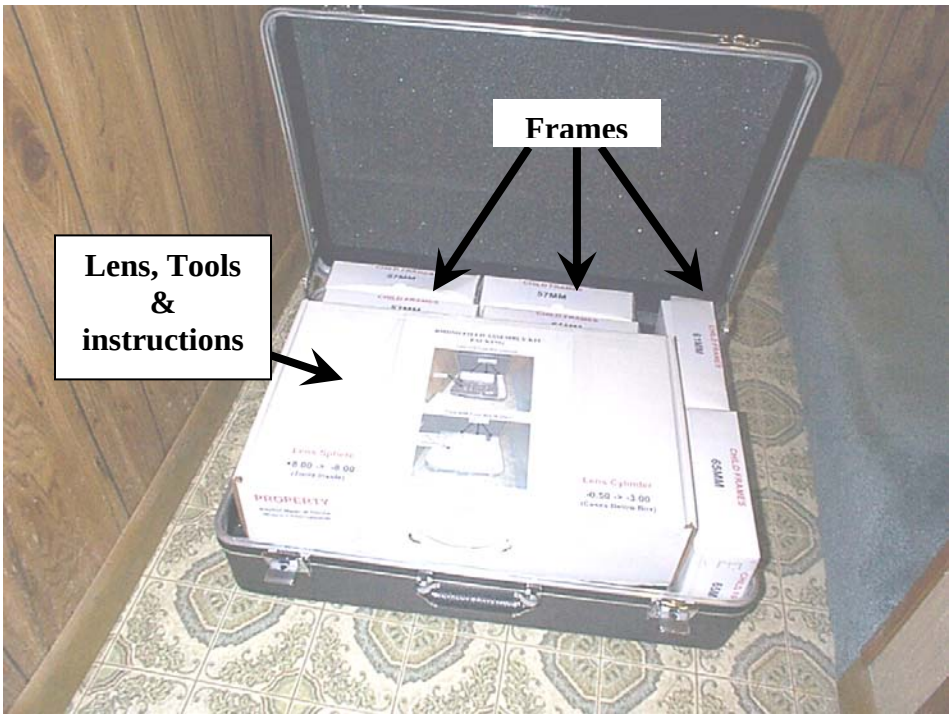


BMDMI FIELD ASSEMBLY KIT PACKING

View with Lens Box removed



View with Lens Box in place



READ ME FIRST

Use this kit ONLY if you cannot find appropriate used prescription glasses.

NOTE: These glasses are not free. The team is being charged for each pair used.

This kit contains:

Lens
(In bags in narrow white boxes)
(That are in large white box)

Frames
(In white boxes)
(In 3 different sizes)

Glasses Holders
(**ONLY** for glasses in this case)
(Stored under White box in case)

Instructions
(Includes template to measure frame size and the axis)

Read thoroughly.

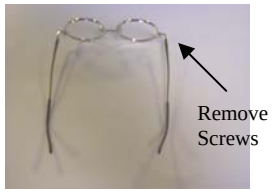
& Tools
(Includes a small pack of screws)

The steps:

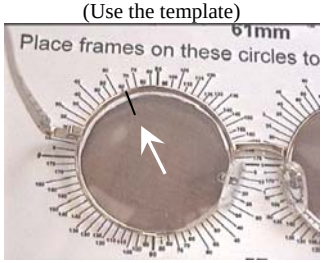
1. Measure the eyes
(Write down the Prescription)

2. Find the lens
(Low cylinder get sphere only)
(High cylinder get cylinder only)

3. Insert the lens
(Lens bulge in front)



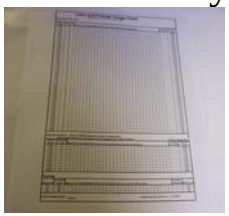
(Rotate cylinder lens to axis)
(Use the template)



4. Fit the Glasses

5. Give glasses + case.

6. Fill out inventory sheet.



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