

Brief User's Guide
for the
Eyeglasses Inventory
Program
Version 6.1-6

By

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1/2/2007



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1.0 Introduction

The goal of this document is to give relevant and easy to use information about the use of the Eyeglasses Inventory Program Version 6.1-6 in an optical clinic environment. To present this information quickly, many pictures are employed throughout. Sections 2 and 3 provide an overview while the Appendices provide added details and techniques.

2.0 Operational Steps

In an eyeglasses clinic there are several steps which must be performed in order to satisfy a patients needs for prescription eyeglasses.

Here are the major steps:

1. Assign a patient number to the patient when he/she enters the clinic. Write their age on the armband.
2. Dilate the **young**¹ patient's eyes before testing with the autorefractor.
3. Set up the computer for measurement.
4. Prepare the patient for the test.
5. Measure the patient's eyes with the autorefractor
6. Transfer the measurement to the computer.
7. The computer displays possible glasses for the patient.
8. Print the pick list
9. Fitters work with the patient fitting him/her with the appropriate pair of glasses from the list.
10. Computer operator records that the glasses have either been **rejected**² or removed from inventory.
11. Shake hands with the happy patient.

If you want to learn more about the program read Appendices A through C.

¹ "Young" is defined as follows. If the person is less than 20 of age, always dilate. If this person is between 21 and 30 you might have to dilate. If you have plenty of time, always dilate. If not, test the person twice and if the two tests widely differ, do the dilation. If they are close to being the same, go with their results. If the patient is between 31 and 40, you might have to dilate. Go ahead and test the patient twice and if the results are similar, go with their results. If they differ, do the dilation. You will likely never have to dilate if the patient is over 40.

² You classify a pair of glasses as "rejected" if the prescription on them is very close to their measurement but the patient cannot see out of them. "Rejected" does not mean that the patient does not like the glasses. When you categorize a pair of glasses as "rejected" you are saying that you suspect (but are not sure) that the glasses have been measured improperly. If the pair has been rejected 3 or more times, you should remove it from inventory.

3.0 Operational Steps Pictured

Below is a copy of the main screen of the Eyeglasses Inventory Program.

The screenshot shows the 'Glasses Selection and Inventory Control' software interface. Key sections include:

- Data Entry Area:** Fields for Left and Right eye prescriptions (Sphere, Cylinder, Axis, Add, Net Pwr), gender (Male, Female, Child), lens type, and age. Buttons for 'Save UN-Matched Prescription' and 'CLEAR' are present.
- Items Available:** A table listing available glasses with columns for 'Left' and 'Right' eye specifications (Nr, SPH, CYL, Axis, Add(Pwr), PD, Rej #, Flag) and status (S, R, P, B, G, Flag).
- SEARCH Section:** Includes 'Left Cut-Back & Search', 'Right Cut-Back & Search', and 'Total Inventory List' buttons. A 'Help Me Find Something for this patient' button is highlighted with a red circle and a yellow arrow pointing to the text 'Help Finding Glasses'.
- Inventory Section:** Displays 'Left Eye Inventory' and 'Right Eye Inventory' tables with columns for 'Nr', 'Sphere', 'Cylinder', 'Axis', 'Add(Pwr)', 'PD', 'Reject #', and 'G'.

Note the blocks over the different areas (circled). Click these for detailed help on this area.

Here is a description of the steps involved.

- 1) Assign a patient number to the patient when he/she enters the clinic. Write their age on the armband.**

Notice that the below patients all have uniquely numbered arm bands. When they enter the room, their age should be written on the armband.



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2) Dilate the young patient's eyes before testing with the autorefractor.

There is no certain way of determining that you do or do not have to dilate a patients eyes. The younger they are, the more likely it will be needed. Teenagers and younger are certainly going to need to be dilated. (See footnote 1 in section 2.0) Here are dilation instructions:

Dilating the eyes for the Autorefractor Tests.

Below are the types of drops. You put the drops into the eye in this order.

1. Proparicane Hcl .5% (Numbs the eye in about 5-15 seconds)
2. Tropicamide (1%) (will paralyze the focusing capability / accommodation of the eye and dilate it somewhat)

Put the patients you are dilating in a row and go down the row putting the first drop into 4 people. Go back to the first of the 4 and put a drop of the second medicine. If you do not numb the eye first, the 2nd drop will sting a lot. It takes about 15 minutes for the drops to take affect. You then pull them out of the line and do the test. The affects of the drops will wear off in 4 hours

One way of knowing if dilation is needed is to test the eyes with the autorefractor and get a 9 or 10 confidence level reading. Now test 1 or 2 more times getting the same confidence level. If the 2-3 readings differ a lot, then you must dilate their eyes to get an accurate reading.

IMPORTANT

- 1) Since these drops are prescription only, work with your licensed MD in their instillation.
- 2) Work with your local Optometrist or Ophthalmologist to acquire Mydriatic Glasses (sunscreens) to give the patient whose eyes have been dilated.

3) Set up the computer for measurement.

If you plan to look for bifocals which match the patient's reading power, then enter the age and click the **Set Reading and Add Powers** button. So your picklist printout will have the right patient number on it, enter the patient number also. Double click patient number or age field to clear or reset it. See Appendix B for more information on entering these fields quickly and easily.

Patient	10k	1k	100	10	1	Used	Age	10	1
221	▲	▲	▲	▲	▲	0199		▲	▲
Number	▼	▼	▼	▼	▼		▼	▼	▼

4) Prepare the patient for the measurement

Either you or the translator must tell the patient two things: 1) "Keep your eyes WIDE open, and 2) do not blink." See "How to do Many Optical Things" for Spanish for these phrases.

5) Measure the patient's eyes with the autorefractor

Be sure that you stable your elbow (as shown to the below/right) and place your hand to bridge between the autorefractor and the side of the patients head. Make sure that if the patient moves, the autorefractor will move the same direction and amount.

Measure the eyes

When you transfer the reading in the next step, the autorefractor printer will print a prescription for the patient. Try to get a reading accuracy of 9 or 10 as shown on the printout on the next page. If you have no autorefractor printer, you can see this number in the viewfinder.

You improve your accuracy by 1) holding the instrument stable, 2) have the patient keeps his/her eyes wide open, 3) dilate younger patients, and 4) make sure the patient does not blink.



On PC screen

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Autorefractor Printout

12.24 ' 2 4:41PM
 Name:
 No. 393 VD: 13.75

-REF-

[R] SPH CYL AX
 - 0.50 - 0.25 165
 - 0.50 - 0.25 162
 - 0.50 - 0.25 162
 - 0.50 - 0.25 168
 - 0.50 - 0.50 167
 - 0.50 - 0.50 169
 - 0.25 - 0.75 172
 - 0.50 - 0.25 172

* - 0.50 - 0.25 168 9

[L] SPH CYL AX
 - 1.00 - 1.00 2
 - 0.75 - 1.25 179
 - 0.50 - 1.25 179
 - 0.50 - 1.75 178
 - 0.50 - 1.25 174
 - 0.75 - 1.00 180
 - 0.50 - 1.25 177
 - 0.50 - 1.50 2

* - 0.50 - 1.25 179 8

Retinomax K-plus

Annotations: "Reading number" points to "Reading Nr" in a box above. "Right eye" points to the [R] section. "Left eye" points to the [L] section. "8 readings" points to the list of 8 readings for each eye. "Confidence levels" points to the 9 and 8 values. "Average reading sent to the computer" points to the * - 0.50 - 1.25 179 8 line.

RR - 0.50 - 0.25 168 9
 L - 0.50 - 1.25 179 8

PRINTING

R8/L8
 VD: 13.75

L-M 393
 /A/ SPH CYL AX
 - 0.50 - 1.50 2

Retinomax 2 Viewfinder

NOTE
 The confidence level is NOT automatically transferred from the autorefractor to the computer. You must manually enter it on the main computer screen to get it right on the DYMO Printout.

Note
 When there is no autorefractor printer, then the Dymo printer will print the prescription.

Dymo Printout
 Patient #: 201 Age: 59

Retinomax 2

EYE	SPH	CYL	AXIS	ADD	CL
R(OD)	2.00	-2.00	x94	1.50	10
L(OS)	1.50	-1.00	x101	1.50	10

Settings
 Matched Default setting.

Lcn# (#Rej) Flags

Your goal is a 9 or a 10 with the confidence levels. Only settle for 8 after trying several times to improve it.

6) Transfer the measurement to the computer.

Point the instrument & press PRINT You see this window on the PC



Incoming Data... shows at the top of window.

Autorefractor Data Captured. Version 5.3.x

Left Eye	Right Eye
Sphere: 1.75	Sphere: 2.00
Cylinder: -1.00	Cylinder: -1.25
Axis: 89	Axis: 101
Confidence value: 10	Confidence value: 9
CLEAR LEFT	CLEAR RIGHT
CLEAR ALL	

Reading Number: 1

Search Options
NOTICE
 Verify the above left & right "Confidence Values" BEFORE search.
 Enable Automatic Search

Search HIDE

The measurement is transferred to the main window

Data Entry Area. --[Click for help]

Restore Autoref. <input type="checkbox"/> BLIND	Restore Autoref. <input type="checkbox"/> BLIND
Left	Right
Confidence value: 10	Confidence value: 10
Sphere: 2.25	Sphere: 2.50
Cylinder: -1.00	Cylinder: -.50
Axis: 98	Axis: 91
Net Pwr: 3.75	Net Pwr: 4.50
Add: 2.00	Add: 2.25
Equiv: 1.75	Equiv: 2.25
<-Reverse-->	

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7) The computer displays possible glasses for the patient.

Search Results Window (Click for help)

Items Available

Print 10 lines of below list plus prescription. [Exact Match] [D/4] [D/2] [Default] [D*2]

No Check = Turn on Equivalent. Check = Turn on Match Match Net/Add Power

BOTH Match Only Left Match Only Right Match Only ALSO or ONLY.

Left							Right								
#	Nr.	SPH	CYL	Axis	Add (Pwr)	PD	Rej #	Flag	SPH	CYL	Axis	Add (Pwr)	(S R P B)	G	Flag
0.8	1409	2.25	-0.50	093	0.00(2.00)	M	0	-Match	2.25	-0.50	090	0.00(2.00)	(xxxx)	M	-Match
1.0	1613	1.25	-0.75	097	2.75(3.63)	M	0	-Match	2.50	-0.25	086	2.75(5.13)	(xxxB)	F	-Match
1.1	1515	2.25	-0.25	087	0.00(2.13)	M	0	-Match	1.75	-0.25	090	0.00(1.63)	(xxxx)	E	-Match
1.1	1716	2.00	-0.25	095	2.25(4.13)	M	0	-Match	2.00	-0.25	086	2.50(4.38)	(xxxB)	F	-Match
1.1	3588	2.00	-0.25	088	0.00(1.88)	M	0	-Match	2.25	-0.50	094	0.00(2.00)	(xxxx)	M	-Match
1.1	3858	2.00	-0.25	101	0.00(1.88)	M	0	-Match	2.00	-0.25	090	0.00(1.88)	(xxxx)	M	-Match
1.1	3894	2.00	-0.25	083	0.00(1.88)	M	0	-Match	2.00	-0.25	090	0.00(1.88)	(xxxx)	M	-Match
1.3	1553	1.75	-0.25	083	0.00(1.63)	M	0	-Match	2.00	-0.25	091	0.00(1.88)	(xxxx)	M	-Match
1.3	3423	2.00	-0.25	090	0.00(1.88)	M	0	-Match	2.00	-0.50	087	0.00(1.75)	(xxxx)	M	-Match
1.3	3690	2.00	-0.25	109	2.25(4.13)	M	0	-Match	1.75	-0.25	106	2.25(3.88)	(xRxB)	F	-Match
1.5	0670	2.25	-1.00	089	2.50(4.25)	M	0	-Match	1.75	-0.50	088	2.25(3.75)	(xxxB)	F	-Match

Help Me Find Something for this patient. (Click for help)

Left Lens Left Cut-Back & Search SEARCH Right Cut-Back & Search Right Lens

Reset Cut-Back Cut-Back BOTH & Search Reset BOTH Cut-Backs Reset Cut-Back

Left Cut-Back Count: 000 Status= Found: 0020 Right Cut-back Count: 000

8) You print a pick list

Patient #: 221

Retinomax 2

EYE SPH CYL AXIS ADD CL

R(OD): 2.50 -0.50 x91 2.25 10

L(OS): 2.25 -1.00 x98 2.00 10

Settings

Matched Default setting.

ROSE RULE in effect for:

NO Over Plus (+) sphere.

NO over cylinder. (-)

NO over Minus (-) sphere. >35 Yrs.

#	Lcn#	(#Rej)	Flags
0.8	1409		M
			R(OD): 2.25/-0.50/90 Add:0.00
			L(OS): 2.25/-0.50/93 Add:0.00
1.0	1613		F-B
			R(OD): 2.50/-0.25/86 Add:2.75
			L(OS): 1.25/-0.75/97 Add:2.75
1.1	1515		E
			R(OD): 1.75/-0.25/90 Add:0.00
			L(OS): 2.25/-0.25/87 Add:0.00
1.1	1716		F-B
			R(OD): 2.00/-0.25/86 Add:2.50
			L(OS): 2.00/-0.25/95 Add:2.25
1.1	3588		M
			R(OD): 2.25/-0.50/94 Add:0.00
			L(OS): 2.00/-0.25/88 Add:0.00
1.1	3858		M
			R(OD): 2.00/-0.25/90 Add:0.00
			L(OS): 2.00/-0.25/104 Add:0.00

On the picklist Under the “Flags” column, “F-B” means “Female-BiFocal” and “M-B” means “Male-Bifocal”. A number in the “(#Rej)” column indicates the number of times this pair of glasses has been previously rejected. Now staple the above picklist to the prescription showing in step 5 and hand it to the fitters. See Appendix A on how to understand and revise the above search results.

9) Fitters work with the patient fitting him/her with the appropriate pair of glasses from the list.

The picklist to the right shows a column identified with a #. This is the number which has been assigned to the pair of glasses to characterize how close the glasses came to the patient’s prescription. The smaller the number, the closer the match. The fitter should try glasses on the patient starting with the top item (#5710) on the list. Keep in mind that some of these glasses might be too big or the patient might not like their style. These are not “rejects”. (See footnote 2 in Section 2.0) If you try them on and the patient is not able to see through them (even though you BELIEVE they are the right prescription and size), you should call this a “reject” and mark it on the list accordingly. When you identify a pair of glasses, the fitter should mark the picklist and return it to the computer operator to record what has happened. To the right is a sample of a picklist which has been marked and returned to the computer operator.

Patient #: 401 Age: 54

Retinomax 2

EYE SPH CYL AXIS ADD CL

R(OD): 2.00 -1.25 x101 1.50 9

L(OS): 1.75 -1.00 x89 1.50 10

Settings

Matched Default setting.

Matched ADD Power Also.

#	Lcn#	(#Rej)	Flags
1.3	5710		F-B
1.5	6869		M-B
1.6	2800		F
1.6	3712		M-B
1.8	0845		F
1.8	1732		F-B
2.0	1447		M-B
2.0	5643		F

10) The computer operator records that the glasses have either been “rejected” or removed from inventory.

On an inventory list (showing in step 7) the operator clicks on a line. The first line (for the list in step 9) is for location number 6869. The operator will see the response to the right. Since the list has been marked with an “R” (for reject), the operator click on **Reject Pair**. The operator does the same thing for line number 2800. Lastly, the operator clicks line 0845 and then clicks **Remove Pair** to remove the glasses from inventory.

Remove or Reject Inventory...

You have selected to REMOVE or REJECT number: 328

Showing:

[2.0 0328 1.50 -0.50 102 2.50(3.75) M 0 -Match | 2.00 -0.50 085 2.50(4.25) (xxxB) F -Match]

from the list for person: 1

NOTICE

After you remove or return a pair of eyeglasses, click the REFRESH PERSON LIST button on the bottom left of the screen and you will see your change listed. You will not see the change in the main inventory list unless you click the CLEAR & RELOAD ALL INVENTORY button.

Remove Pair Reject Pair Cancel

11) Shake hands with the happy patient.

Appendix A – Revising and understanding the search results.

Examine the row of buttons (shown below) that are at the top/left part of the main screen.

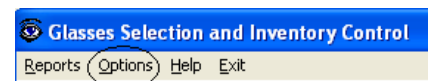
Exact Match
D/4
D/2
Default
D*2

A
B
C
D
E

Clicking buttons (E-A) from right to left is going in the Direction of closer and closer and likely fewer and fewer matches

Read the words in the above block as it very quickly summarizes the action of the search control buttons.

If you click on the Options area of the screen as shown to the right, you will see the below display. The part of the options settings which affect what glasses are reported in the search results window is shown in the large square box A. You change the values displayed in items 1-3 when you click from left to right the buttons **Exact Match**, **Default/4**, **Default/2**, **Default** and **Defaults*2**. and these changes affect the search choices.



Program Options Version 6.1.x

Set Program Options Help with this options window (Click for help)

	From Age	To Age	Add Value
0	37	0.00	
38	43	1.00	
44	47	1.50	
48	55	2.00	
56	99	2.50	
100	101	2.50	
102	103	2.50	
104	105	2.50	

Buttons: Exact Match, Defaults /4, Defaults /2, Restore Defaults, Defaults *2

Change Search Options

Both Eye Options:
 Match Left Only (BLIND in right eye) Match Right Only (BLIND in left eye)
 Match Both Equally Match Reading Power also, OR only
 NO match on spherical equivalence. Male & Female searches should include "Either".

General Program Options

Set Program diagnostic mode. Refresh screen upon Add/Remove Remove Obsolete Forms
 Print patient prescription on picklist. Disable Focometer Support. Reading Glasses.
 Enable Autorefractor Data Capture Automatic Search when changed. Lens & Frames
 Enable automatic search when read. Display Confidence Level.
 Enable HOME button [H] on main screen. Print Glasses List Prescriptions.

Rose Rules HELP with Rose Rules

Enable Rose Rules. NO Over plus. NO Over Cylinder. NO Over Minus if: [35] or greater.

Buttons: Save to File & Continue, CONTINUE

Select your Autorefractor

Retinomax 2 or K-Plus 2 Nikon Retinomax or K-Plus **Comm Port?**
 Welch Allyn Suresight Marco Nidek Ark-20/30 1 2 3 4 5
 Canon RK-2 Auto Ref-Keratometer None 6 7 8 9 10
 11 12 13 14 15
 16 None

Set Program Options

1. Maximum Sphere Overage allowed to make the list:	0.25
2. Maximum Cylinder Overage allowed to make the list:	0.25
3. (+ or -) Axis Deviation allowed to make the list:	2
4. Maximum Allowed Cylinder when NO Patient Astigmatism:	.25
5. Minimum Patient Sphere Value when above parameter is met:	1.00
6. Amount to Cut-Back Cylinder each time:	0.25

Buttons: Exact Match, Defaults /4, Defaults /2, Restore Defaults, Defaults *2

Set Program Options

1. Maximum Sphere Overage allowed to make the list:	1.00
2. Maximum Cylinder Overage allowed to make the list:	1.00
3. (+ or -) Axis Deviation allowed to make the list:	10
4. Maximum Allowed Cylinder when NO Patient Astigmatism:	.5
5. Minimum Patient Sphere Value when above parameter is met:	4.00
6. Amount to Cut-Back Cylinder each time:	0.25

Buttons: Exact Match, Defaults /4, Defaults /2, Restore Defaults, Defaults *2

Set Program Options

1. Maximum Sphere Overage allowed to make the list:	0.50
2. Maximum Cylinder Overage allowed to make the list:	0.50
3. (+ or -) Axis Deviation allowed to make the list:	5
4. Maximum Allowed Cylinder when NO Patient Astigmatism:	0.25
5. Minimum Patient Sphere Value when above parameter is met:	2.00
6. Amount to Cut-Back Cylinder each time:	0.25

Buttons: Exact Match, Defaults /4, Defaults /2, Restore Defaults, Defaults *2

Set Program Options

1. Maximum Sphere Overage allowed to make the list:	2.00
2. Maximum Cylinder Overage allowed to make the list:	2.00
3. (+ or -) Axis Deviation allowed to make the list:	20
4. Maximum Allowed Cylinder when NO Patient Astigmatism:	1.00
5. Minimum Patient Sphere Value when above parameter is met:	8.00
6. Amount to Cut-Back Cylinder each time:	0.25

Buttons: Exact Match, Defaults /4, Defaults /2, Restore Defaults, Defaults *2

The changes you make in this window are duplicated in the selections in the top / right area of the main window as shown at the top of the last page. Buttons in both windows turn yellow when clicked.

The below table shows the values of these parameters at the various settings.

Item Nr	Item Description	Exact Match value	Default / 4 value	Default / 2 value	Default value	Default * 2 value
1	Maximum sphere overage allowed to make the list.	0.00	0.25	0.50	1.00	2.00
2	Maximum cylinder overage allowed to make the list.	0.00	0.25	0.50	1.00	2.00
3	+ or – axis deviation allowed to make the list.	0	2	5	10	20

What this means is when the **DEFAULT VALUE** setting is chosen, every pair of glasses appearing in the search window must be within + or -1.00 diopter of the correct sphere, + or – 1.00 diopter of the correct cylinder, + or – 10 degrees of the correct axis.

When the **DEFAULT/2 VALUE** setting is chosen, every pair of glasses appearing in the search window must be within + or -0.50 diopter of the correct sphere, + or – 0.50 diopter of the correct cylinder, + or – 5 degrees of the correct axis.

When the **DEFAULT/4 VALUE** setting is chosen, every pair of glasses appearing in the search window must be within + or -0.25 diopter of the correct sphere, + or – 0.25 diopter of the correct cylinder, + or – 2 degrees of the correct axis.

When the **EXACT MATCH VALUE** setting is chosen, every pair of glasses appearing in the search window must match the patient prescription exactly.

Supposed you have the below prescription. (Arrows are to show items of comparison.)

Left			Right		
Sphere	Cylinder	Axis	Sphere	Cylinder	Axis
1.75	-1.25	88	2.00	-.50	91

and you get the below search results:

Items Available

Print 10 lines of below list plus prescription. [Exact Match D/4 D/2 **Default** D*2]

No Check = Turn on Equivalent. Check= Turn on Match

BOTH Match Only Left Match Only Right Match Only ALSO or ONLY.

Left										Right									
#	Nr.	SPH	CYL	Axis	Add (Pwr)	PD	Rej #	Flag		SPH	CYL	Axis	Add (Pwr)	(S R P B)	G	Flag			
0.8	4562	1.50	-1.00	083	0.00(1.00)	M	0	-Match		2.00	-0.25	098	0.00(1.88)	(xxxx)	F	-Match			
0.9	5777	1.75	-0.25	086	0.00(1.63)	M	0	-Match		1.75	-0.25	092	0.00(1.63)	(xxxx)	F	-Match			
1.3	6597	1.50	-0.50	093	0.00(1.25)	M	0	-Match		1.50	-0.50	091	0.00(1.25)	(xxxx)	F	-Match			
1.5	1654	1.75	-0.50	092	0.00(1.50)	M	0	-Match		2.00	-0.50	098	0.00(1.75)	(xxxx)	F	-Match			
2.0	2888	1.50	-0.50	075	0.00(1.25)	M	0	-Match		2.00	-0.50	087	0.00(1.75)	(xxxx)	F	-Match			
2.1	4369	1.00	-0.50	084	0.00(0.75)	M	0	-Match		1.25	-0.50	094	0.00(1.00)	(xxxx)	F	-Match			
2.3	0328	1.50	-0.50	102	2.50(3.75)	M	0	-Match		2.00	-0.50	085	2.50(4.25)	(xxxB)	F	-Match			
2.5	4360	0.75	-0.75	089	0.00(0.38)	M	0	-Match		1.00	-0.50	101	0.00(0.75)	(xxxx)	F	-Match			

Notice that since **Default** is chosen, both the Sphere and Cylinder results must be within + or – 1.00 diopter (and they are) and all the axis values must be within + or – 10 degrees (and they are).

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Now click on D/2 (Default divided by 2) and the below is shown. The prescription is repeated for easy comparison. (Arrows are to show items of comparison.) Notice in this case both the Sphere and Cylinder results must be within + or - 0.50 (and they are) and the axis must be within + or - 5 degrees (and they are).

Left			Right		
Sphere	Cylinder	Axis	Sphere	Cylinder	Axis
1.75	-1.25	88	2.00	-.50	91

Items Available															
Print	10	lines of below list plus	<input checked="" type="checkbox"/>	prescription.	[Exact Match	D/4	D/2	Default	D*2]						
No Check = Turn on Equivalent. Check= Turn on Match															
<input checked="" type="checkbox"/> BOTH Match Only					<input checked="" type="checkbox"/> Left Match Only					<input checked="" type="checkbox"/> Right Match Only					
<input type="checkbox"/> ALSO or					<input type="checkbox"/> ONLY.										
Left					Right										
#	Nr.	SPH	Cyl	Axis	Add (Pwr)	PD	Rej #	Flag	SPH	Cyl	Axis	Add (Pwr)	(S R P B)	G	Flag
0.8	4562	1.50	-1.00	083	0.00(1.00)	M	0	-Match	2.00	-0.25	098	0.00(1.88)	(xxxx)	F	-Match

Clicking on D/4 gives no results as there are no glasses in the inventory that are that close.

Sometimes you may not get any results at all especially for those people with astigmatism (high cylinder). If so, you can make a special type of search for “Spherical Equivalent” lens. A “Spherical Equivalent” lens is a lens with sphere power only (or sphere plus very low cylinder) whose value is calculated as: Sphere + 1/2*Cylinder. Assume the following prescription:

Left			Right		
Sphere	Cylinder	Axis	Sphere	Cylinder	Axis
1.75	-1.25	88	2.00	-.50	91
Read Pwr	Add.	SPH Equ=	Read Pwr	Add.	SPH Equ=
		1.13			1.75
Left/Right Prescription:					
1.75 (1.13) / -1.25 / 88			2.00 (1.75) / -.50 / 91		

Notice that the calculated spherical is: Left=1.13 and Right= 1.75. If you go to the top right portion of the screen where you see:

Items Available														
Print	10	lines of below list plus	<input checked="" type="checkbox"/>	prescription.	[Exact Match	D/4	D/2	Default	D*2]					
No Check = Turn on Equivalent. Check= Turn on Match														
<input type="checkbox"/> BOTH Match Only					<input checked="" type="checkbox"/> Left Match Only					<input checked="" type="checkbox"/> Right Match Only				
<input type="checkbox"/> ALSO or					<input type="checkbox"/> ONLY.									

and click off the **BOTH Match Only** checkmark and then do a search for the above you will see the graphic on the next page.

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Items Available

Print 10 lines of below list plus prescription. [Exact Match D/4 D/2 **Default** D*2]

No Check = Turn on Equivalent. Check= Turn on Match **Match Net/Add Power**

BOTH Match Only Left Match Only Right Match Only ALSO or ONLY.

Left										Right						
#	Nr.	SPH	CYL	Axis	Add (Pwr)	PD	Rej #	Flag		SPH	CYL	Axis	Add (Pwr)	(S R P B)	G	Flag
0.2	1809	1.25	0.00	000	0.00(1.25)	M	0	-Equiv		1.75	0.00	000	0.00(1.75)	(xxxx)	F	-Equiv
0.2	6852	1.00	0.00	000	0.00(1.00)	M	0	-Equiv		2.00	-0.50	092	0.00(1.75)	(xxxx)	F	-Match
0.7	0125	1.25	0.00	000	0.00(1.25)	M	0	-Equiv		1.50	0.00	000	0.00(1.50)	(xxxx)	M	-Equiv
0.7	1237	1.25	0.00	000	0.00(1.25)	M	0	-Equiv		1.50	0.00	000	0.00(1.50)	(xxxx)	M	-Equiv
0.7	1724	1.50	0.00	000	0.00(1.50)	M	0	-Equiv		1.75	0.00	000	0.00(1.75)	(xxxx)	F	-Equiv
0.7	2418	1.25	-0.25	159	0.00(1.13)	M	0	-Equiv		1.50	-0.25	016	0.00(1.38)	(xxxx)	F	-Equiv
0.7	2430	1.00	0.00	000	0.00(1.00)	M	0	-Equiv		1.50	0.00	000	0.00(1.50)	(xxxx)	F	-Equiv
0.7	2627	0.75	0.00	000	0.00(0.75)	M	0	-Equiv		1.75	0.00	000	0.00(1.75)	(xxxx)	F	-Equiv
0.7	2640	1.50	0.00	000	0.00(1.50)	M	0	-Equiv		1.75	0.00	000	0.00(1.75)	(xRxx)	F	-Equiv
0.7	2838	1.00	0.00	000	0.00(1.00)	M	0	-Equiv		1.50	0.00	000	0.00(1.50)	(xxxx)	F	-Equiv
0.7	3369	1.25	0.00	000	0.00(1.25)	M	0	-Equiv		1.50	0.00	000	0.00(1.50)	(xxxx)	F	-Equiv

Help Me Find Something for this patient. (Click for help)

Left Lens Reset Cut-Back Left Cut-Back & Search **SEARCH** Right Cut-Back & Search Right Lens Reset Cut-Back

Cut-Back BOTH & Search Reset BOTH Cut-Backs

Left Cut-Back Count: 000 Status= Found: 0438 000 Right Cut-back Count

Which shows a HUGE number of matches to the spherical equivalent of the prescription. If you click on D/2 you will find 241. If you click on D/4 you will only have 13 matches as you see below:

Items Available

Print 10 lines of below list plus prescription. [Exact Match **D/4** D/2 Default D*2]

No Check = Turn on Equivalent. Check= Turn on Match **Match Net/Add Power**

BOTH Match Only Left Match Only Right Match Only ALSO or ONLY.

Left										Right						
#	Nr.	SPH	CYL	Axis	Add (Pwr)	PD	Rej #	Flag		SPH	CYL	Axis	Add (Pwr)	(S R P B)	G	Flag
0.2	1809	1.25	0.00	000	0.00(1.25)	M	0	-Equiv		1.75	0.00	000	0.00(1.75)	(xxxx)	F	-Equiv
0.2	6852	1.00	0.00	000	0.00(1.00)	M	0	-Equiv		2.00	-0.50	092	0.00(1.75)	(xxxx)	F	-Match
0.7	0125	1.25	0.00	000	0.00(1.25)	M	0	-Equiv		1.50	0.00	000	0.00(1.50)	(xxxx)	M	-Equiv
0.7	1237	1.25	0.00	000	0.00(1.25)	M	0	-Equiv		1.50	0.00	000	0.00(1.50)	(xxxx)	M	-Equiv
0.7	2418	1.25	-0.25	159	0.00(1.13)	M	0	-Equiv		1.50	-0.25	016	0.00(1.38)	(xxxx)	F	-Equiv
0.7	2430	1.00	0.00	000	0.00(1.00)	M	0	-Equiv		1.50	0.00	000	0.00(1.50)	(xxxx)	F	-Equiv
0.7	2838	1.00	0.00	000	0.00(1.00)	M	0	-Equiv		1.50	0.00	000	0.00(1.50)	(xxxx)	F	-Equiv
0.7	3369	1.25	0.00	000	0.00(1.25)	M	0	-Equiv		1.50	0.00	000	0.00(1.50)	(xxxx)	F	-Equiv
0.7	3649	1.25	-0.25	173	0.00(1.13)	M	0	-Equiv		1.75	-0.25	025	0.00(1.63)	(xRxx)	F	-Equiv
0.7	4393	1.25	0.00	000	0.00(1.25)	M	0	-Equiv		1.50	0.00	000	0.00(1.50)	(xxxx)	F	-Equiv
0.7	6359	1.25	-0.25	135	0.00(1.13)	M	0	-Equiv		1.50	-0.25	035	0.00(1.38)	(xxxx)	M	-Equiv

Help Me Find Something for this patient. (Click for help)

Left Lens Reset Cut-Back Left Cut-Back & Search **SEARCH** Right Cut-Back & Search Right Lens Reset Cut-Back

Cut-Back BOTH & Search Reset BOTH Cut-Backs

Left Cut-Back Count: 000 Status= Found: 0013 000 Right Cut-back Count

These are very close matches to the spherical equivalence. **NOTE** that frequently for patients with low cylinder values (1.50 or less) the spherical equivalent will be **totally** acceptable. Click the yellow bar for more help in finding a pair of glasses for the patient.

Appendix B –Convenience Options

Here are the various functions (numbered 1-7 in red) you can perform in the data entry area:

1) Add $+.25$ to the Sphere and/or the Cylinder.

The first screenshot shows the initial state for both eyes. For the Left eye, Sphere is 1.50, Cylinder is -.75, and Axis is 88. For the Right eye, Sphere is 2.00, Cylinder is -.50, and Axis is 91. The second screenshot shows the result after clicking the up arrow on the Sphere and Cylinder fields for both eyes. For the Left eye, Sphere is 1.75 and Cylinder is -.50. For the Right eye, Sphere is 2.25 and Cylinder is -.25. The Net Power and Equivalent Add values are also updated accordingly.

In each of the up/down scroll bars, click them several times to add or subtract values from the associated field.

2) Remove $.25$ from the Sphere and/or the Cylinder.

The first screenshot shows the initial state for both eyes. For the Left eye, Sphere is 1.50, Cylinder is -.75, and Axis is 88. For the Right eye, Sphere is 2.00, Cylinder is -.50, and Axis is 91. The second screenshot shows the result after clicking the down arrow on the Sphere and Cylinder fields for both eyes. For the Left eye, Sphere is 1.25 and Cylinder is -1.00. For the Right eye, Sphere is 1.75 and Cylinder is -.75. The Net Power and Equivalent Add values are also updated accordingly.

3) Clear Left or Right Cylinder and Axis together. Double click the Cylinder Field.

The first screenshot shows the initial state for both eyes. For the Left eye, Sphere is 1.50, Cylinder is -.75, and Axis is 88. For the Right eye, Sphere is 2.00, Cylinder is -.50, and Axis is 91. The second screenshot shows the result after double-clicking the Cylinder field for both eyes. The Cylinder and Axis fields are now empty. For the Left eye, Sphere is 1.50, Cylinder is empty, and Axis is empty. For the Right eye, Sphere is 2.00, Cylinder is empty, and Axis is empty. The Net Power and Equivalent Add values are also updated accordingly.

4) Clear Sphere and Add by double clicking the field.

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5) Add .25 or subtract .25 from the Left or Right Add field.

You cannot make the field become less than zero.

BEFORE

AFTER

Add .25 to the Add Field.

Subtract .25 from the Add Field.

6) Restore the original left and/or right autorefractor reading after your changes

BEFORE

AFTER

7) Click Up or Down to add or subtract 100, 10, or 1 from the Patient Number and Age fields. Double click Age to clear and Patient Number to set to 1.

Subtract

Subtract

Two Miscellaneous features

1) Look at the **Match Only** checkboxes below. This means when you click one of these checkboxes, you will only get **Matches** which match Sphere, Cylinder, and Axis. When you uncheck this box, you may get **Matches** and also **Equiv** which match the Spherical **equivalent** of the prescription only. In case you find nothing better a spherical equivalent may be a good substitute for a person with “low” cylinder (around 1.5 or lower). You can do the left or right eye separately or both together.

Items Available

Print 10 lines of below list plus prescription. [Exact Match D/4 D/2 Default D*2]

No Check = Turn on Equivalent. Check = Turn on Match

BOTH Match Only Left Match Only Right Match Only

Match Net/Add Power ALSO or ONLY.

2) Note the data entry area showing at the beginning of this Appendix. The field labeled **Equiv** indicates the calculated Spherical Equivalent of the patient’s prescription. Spherical equivalent is calculated below as:

$$\text{Spherical Equivalent} = \text{Sphere} + \frac{1}{2} \text{Cylinder.}$$

For example for a person with: Sphere=2.5, Cylinder=-1.50 and Axis = 93 the spherical equivalent is $2.5 + \frac{1}{2}(-1.50) = 2.5 - .75 = 1.75$

Notice this part of the screen=>

Sphere	Cylinder	Axis
2.50	-1.50	93
Net Pwr	Add.	Equiv
1.75		1.75

Appendix C – Cutback for Astigmatism

If you refer to the document entitled “How to do many optical things” you will see that Astigmatism can be quite a problem for patients. Even a young child cannot adapt his or her eyes to the problems caused by astigmatism. Therefore, it is very important you understand how to use the Eyeglasses Inventory Program to select glasses for a patient with astigmatism.

Remember the three components of the measure of the eye. 1) Sphere, 2) Cylinder, 3) axis. It is the last 2 parameters that describe astigmatism for the patient.

Astigmatism (for the sake of this discussion) is divided into high and low astigmatism. “High” astigmatism is when the power of the cylinder is GREATER than 1.50-2.00 diopters. “Low” cylinder is when the power of the cylinder is less than 1.50 diopters. Keep in mind that when a patient has “high” astigmatism, this patient can rarely accept a pair of glasses which provide correction for all of this astigmatism. This is where “cutback” comes into the picture.

Now let us look at the eyeglasses inventory program. In the below figure we see the cylinder components for the left and right eye:

Left		Right	
Restore Autoref.	<input type="checkbox"/> BLIND	Restore Autoref.	<input type="checkbox"/> BLIND
Confidence value: 10		Confidence value: 10	
Sphere	Cylinder	Axis	
4.75	-2.75	101	
Net Pwr	Add	Equiv	
5.88	2.50	3.38	
Right/Left Prescription:			
OD: 4.50 -3.00x93 Add: 2.50		OS: 4.75 -2.75x101 Add: 2.50	

This patient has “High” astigmatism. If you look for a pair of glasses which match this prescription, you might find a match. Even if you do, you should not give these glasses to the patient as it will probably make them feel “dizzy”. Here is what you do. Look at this area of the screen below.

Left Lens Left Cut-Back & Search **SEARCH** Right Cut-Back & Search Right Lens

Reset Cut-Back Cut-Back BOTH & Search Reset BOTH Cut-Backs Reset Cut-Back

Left Cut-Back Count: 000 Status= Listed... 7017 000 Right Cut-back Count

All around the search button you will find buttons which are used in cutback. Let me list them and explain each of them.

- 1) **Left Cut-Back & Search, Right Cut-Back & Search, or Cut-Back BOTH & Search.** If you click on this button the cylinder for the left, right, or both lens is reduced by .25 diopters HOWEVER, the sphere is adjusted to keep the spherical equivalent the same. The **Left (or right) Cut-Back Count** is incremented by 1.
- 2) **Left Lens Reset Cut-Back, Right Lens Reset Cut-Back, or Reset BOTH Cut-Backs.** If you click on this button the Sphere and Cylinder for the respective side is returned to it’s original value. The respective cut back counts are return to zero.

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I found no glasses when I tried to find a pair of glasses for the patient with the above prescription. Let us click the Cut-Back BOTH and Search button 5 times and I see the below.

Items Available

Print 10 lines of below list plus prescription. [Exact Match D/4 D/2 Default D*2]

No Check = Turn on Equivalent. Check= Turn on Match Match Net/Add Power

BOTH Match Only Left Match Only Right Match Only ALSO or ONLY.

Left								Right							
#	Nr.	SPH	CYL	Axis	Add (Pwr)	PD	Rej #	Flag	SPH	CYL	Axis	Add (Pwr)	(S R P B)	G	Flag
2.6	0087	3.25	-0.75	100	2.50(5.38)	M	0	-Match	3.00	-0.75	096	2.50(5.13)	(xxxB)	F	-Match
2.6	2711	3.50	-0.50	096	2.00(5.25)	M	0	-Match	3.25	-0.75	095	2.00(4.88)	(xxxB)	F	-Match
2.8	1961	3.75	-0.50	106	0.00(3.50)	M	0	-Match	3.50	-0.75	102	0.00(3.13)	(xRxx)	M	-Match
3.8	2486	3.25	-0.75	091	2.00(4.88)	M	0	-Match	3.50	-0.75	080	2.25(5.38)	(xxxB)	M	-Match
3.8	5871	3.25	-0.75	091	2.00(4.88)	M	0	-Match	3.50	-0.75	080	2.25(5.38)	(xxxB)	M	-Match

Help Me Find Something for this patient. (Click for help)

Left Lens Left Cut-Back & Search **SEARCH** Right Cut-Back & Search Right Lens

Reset Cut-Back Cut-Back BOTH & Search Reset BOTH Cut-Backs Reset Cut-Back

Left Cut-Back Count: 005 Status= Found: 0005 005 Right Cut-back Count

Now I have found 5 pairs of glasses which will be highly acceptable to the patient. Please note that if you only had “High” cylinder on the left eye, you would just cut back the left eye. The same applies to the right eye.

Using Cutback can not only improve your chances for a match but will give the patient glasses which are highly acceptable.

A Good Rule of thumb
 Use cutback to reduce the “high” cylinder value by half.
 Use it on either eye or both eyes.