

## Retinomax Autorefractor



### ***What Are You Testing?***

The Nikon Retinomax autorefractor measures refractive error (astigmatism, farsightedness, nearsightedness).

### ***What You Need to Do the Test:***

1. The Retinomax autorefractor.
2. Printer for the Retinomax.
3. Printer paper.
4. A model eye for calibrating the Retinomax.
5. Tape.
6. Antibacterial wipes.
7. An umbrella or curtain to help achieve low-level lighting.
8. A data sheet, ID labels, an electronic time stamp, and a pen.

### ***Getting Ready:***

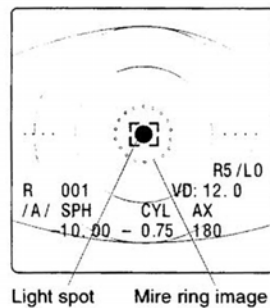
1. At the beginning of each day, the Retinomax must be calibrated. If the PC has not checked the calibration, measure the model eye. The procedure for calibration is included in the Retinomax carrying case. Always calibrate the unit in “Manual Mode.” If the readings do not meet the tolerance limits specified in the calibration procedure, inform the PC. A back-up Retinomax will need to be used.
2. Make sure the measurement window is clean.
3. Select the child’s ID label and place it on the data sheet.
4. Turn on the unit. Adjust the viewfinder until the internal monitor display becomes clear.
5. Place the Retinomax on the charger.
6. Attach the printer to the charger and turn on the printer and the charger.

### ***How You Do the Test:***

1. If the child is wearing glasses, remove them prior to testing.
2. Stamp the start time with the electronic stamp in the appropriate box on the data sheet. Press firmly and let go when the stamp stops printing by itself.
3. Have the child sit/stand with his/her back against the wall/chair.
4. The tester should sit facing the child.
5. Press the blue “**Power**” button to turn on the Retinomax. Extend the forehead rest. Look at the lights on the switch panel.
6. Make sure that “**Auto Mode**” is lit up.
7. Make sure that “**Quick**” is **not** lit up.
8. Look in the viewfinder. The display should show “**RO/LO**” in the upper right-hand corner. This shows that the Retinomax has taken 0 measurements for the right and left eye. If you don’t see this, turn the Retinomax off and on again. Adjust the viewfinder again until the image in the window is clear.
9. Hold the Retinomax in front of the child’s right eye. Tell the child to look in the center of the round hole in the front of the Retinomax and see if he/she can find the “white lights of an airplane in the sky....” It may help to put your thumb on the

child's forehead. Hold the child's head in place with your other fingers. The working distance is about 40 mm.

10. Position the Retinomax in front of the child's eye using the vertical eye position target line and the horizontal eye position target line. Alignment is easier by looking through the viewfinder after lowering the forehead rest to where it comes in contact with the child.
11. Press the green "**Start**" button on the handle once to begin taking measurements. Look through the viewfinder. You will see a set of brackets ( [ ] ). Center the brackets over the child's pupil. See that the center dot is focused.
12. Move the unit toward and away from the child until each dot image of the mire ring can be seen clearly. Adjust the distance so that the mire ring is as small and sharp as you can make it. Keep the headrest in contact with the child's forehead or with your thumb on the child's forehead.



13. When the alignment process is complete, the measurement is automatically started. Every time a measurement is made, a beep sounds.
14. Encourage the child to keep looking at the Retinomax. Ask him/her if they can see the white lights. It may help to keep talking about the lights. (For example, "What shape are the lights? What else could those lights be?")
15. Once the display on the Retinomax indicates that it has taken 8 measurements of the right eye (**R8/L0**), remove the instrument from the child's forehead and align the instrument with the left eye. Listen for the beep and/or look at the lights on top of the instrument to be sure the instrument has switched to the left eye. Perform the measurements of the left eye. When the display on the Retinomax indicates that it has taken 8 measurements of the left eye (**R8/L8**), remove the unit from the child's forehead. Aim it at the printer and press the "**Print**" button to print the child's results.

16. If the readings taken do not have a confidence value of **8** or greater, you must take the readings again. Dimming the lights may help in obtaining a reliable measurement. Only eyes with a confidence value of 7 or less should be measured again. Up to two repeat sets of readings may be performed.

Note: A reading means that a measurement was taken. Readings may have either acceptable or unacceptable confidence values.

17. **DO NOT TEAR THE PRINTOUT OFF OF THE PRINTER UNTIL TESTING IS COMPLETED.**
18. Print after the first test and after each retest but do not tear off the printer tape until all measurements have been taken and printed. Advance the paper in the printer by pressing the feed button to provide a margin for taping. Tear off the printer tape.
19. Tape the printout to the child's data sheet. For each eye, **circle the first reading** with a confidence value of **8** or greater. Circle the entire line, including both the measurement and the confidence value. Be careful not to write on either the measurement or the confidence value.
20. If you obtain a reading but the printer does not print a measurement for an eye, do **not** mark "None (unable)" on the data sheet. Report the number of readings that were obtained for the eye. If the refractive error and confidence value are available from the machine's display, write them in the box on the printout on the data sheet. Label the values for each eye "Right" or "Left." If the values are not available from the machine's display, write "No Printout."
21. You can make 3 **consecutive** "attempts" per eye to get a reading and fail (such as timing out). If you don't get a reading for an eye after 3 **consecutive** attempts, mark "None (unable)."

Note: An "attempt" means that an effort was made to take a reading but the instrument timed out. There is no data available to print.

22. If you obtain one or more readings but need to take another reading (because the confidence value is too low) you can make 3 more **consecutive** attempts to get another reading. If you are unable to get another reading after 3 consecutive attempts, testing stops. Mark the number of **readings** (not attempts) that you obtained and attach the printout for the readings that were obtained.
23. If this is the last test you are taking on the child, stamp the end time with the electronic stamp in the appropriate box on the data sheet. Press firmly and let go when the stamp stops printing by itself.

24. Turn off the Retinomax to clear the measurements for the next child. Rest the Retinomax in the charger in between testing children.
25. Cleanse the headrest with an antibacterial wipe.

***What You Tell the Child:***

1. Tell the child to stand very still.
2. Tell the child that he/she will see white lights.
3. Tell the child to keep his/her eye open as long as possible.

***What You Write Down:***

1. Stamp the start time with the electronic stamp in the appropriate box on the data sheet when you start the Retinomax measurement.

<b>Start Time Stamp</b>
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2. The unit automatically records and prints the measurements for you. Tape the printout to the data sheet **before** the child leaves the station. Make sure you don't cover any of the readings with the tape or write on any of the readings.
3. Mark the number of readings taken per eye in item **#R2 a** and **#R2 b**. If the child does not allow the machine to be positioned properly for measuring an eye, or if the machine does not provide a reading for an eye, mark "None (Unable)" on the data sheet for that eye.

**R2      Number of readings per eye**

a. Right Eye

b. Left Eye

None (unable) ( )

None (unable) ( )

One ( )

One ( )

Two ( )

Two ( )

Three ( )

Three ( )

4. If you obtain a reading but the printer does not print a measurement for an eye, do **not** mark "None (unable)" on the data sheet. Report the number of readings that were obtained for the eye. If the refractive error and confidence value are available from the machine's display, write them in the box on the printout on the data sheet.

Label the values for each eye “Right” or “Left.” If the values are not available from the machine’s display, write “No Printout.”

5. If you obtain one or more readings but need to take another reading (because the confidence value is too low) and then fail 3 times in your attempt to get a reading (because the instrument times out), mark the number of readings that you obtained and attach the printout for the readings that were obtained.

***Remember!***

1. Make sure you put the ID label on the form.
2. Make sure you stamp the start time on the form.
3. Remember that the unit must be calibrated before taking measurements.
4. Do not tear off printout until all readings are complete.
5. Advance the paper in the printer by pressing the feed button.
6. Make sure the printer has enough paper to record the results.
7. Remember to tape the printouts to the form right after you take the reading. Make sure you don’t cover any of the readings with the tape or write on any of the readings.
8. For each eye, **circle** the first measurement with a confidence value of **8 or greater**.
9. You may make **3 consecutive** attempts per eye to get a reading.
10. Do not take more than **3 readings** per eye.
11. Remember to stamp the end time on the data sheet if this is the last test you are doing with a child.

## SureSight Vision Screener



### ***What Are You Testing?***

The Welch Allyn SureSight is a screening autorefractor that identifies nearsightedness, farsightedness, astigmatism and difference between eyes.

### ***What You Need to Do the Test:***

1. Welch Allyn SureSight Vision Screener.
2. Printer for SureSight.
3. Paper for printer.
4. Double A (AA) batteries for printer.
5. A/C adaptor.
6. Tape for attaching printout to data sheet.
7. A dimly lit room without sunlight.
8. An umbrella or curtain to help achieve low level-lighting.

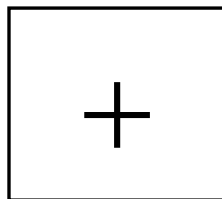
9. A data sheet, ID labels, an electronic time stamp, and a pen.

### **Getting Ready:**

1. Select the child's ID label and place it on the data sheet.
2. Be sure there are fresh batteries in the printer. If they are not fresh, plug the printer into the AC power.

### ***How You Do The Test:***

1. If the child is wearing glasses, remove them prior to testing.
2. Stamp the start time with the electronic stamp in the appropriate box on the data sheet. Press firmly and let go when the stamp stops printing by itself.
3. Turn the instrument on by pushing any button.
4. Have the child sit/stand with his/her back against a chair/wall.
5. Make sure that the SureSight instrument is set on "**Child**" mode. When set correctly, a picture of a small child will be displayed on the screen (in bottom left corner). If it set on "Adult" mode, press the child/adult picture button.
6. Position yourself at eye level to the child, facing the child straight on.
7. Position the SureSight instrument 14 inches from the child. Push the "**Go**" button. Direct the child's attention to the flashing green lights/red central light by saying "I am going to take a movie of your eyes." "Look at the red light in the camera...."
8. Look through the peephole and aim the cross target on the center of the pupil (black area of the eye) of the right eye.



- If you are too far away, you will hear slow low-pitched noises. Slowly move the instrument closer to the child.
- If you are too close to the child, you will hear a quick high-pitched beep. Slowly move the instrument away from the child.



- When you are at the correct distance you will hear a steady low tone. If you don't also hear chirps, swirl the instrument slightly within the pupil area. While the measurements are being collected, the instrument will make a high-pitched noise (chirping).
9. When testing of the right eye is complete, you will hear a sound of "tah-dah".
  10. Keep the same working distance. Turn yourself and the SureSight toward the left eye. Double-check and make sure the **L** light is flashing. Align the cross target over the left pupil. Your working distance should be 14 inches.
  11. A "tah-dah" will sound when testing of the left eye is complete.
  12. Aim the instrument at the printer at a distance of at least 3 feet and push the print button. If you are too close to the printer, the printer will print black boxes. If the readings taken do not have a confidence value of **6** or greater, you must take the readings again. Only eyes with a confidence value of 5 or less should be measured again. Up to two repeat sets of readings may be performed.  
  
Note: A reading means that a measurement was taken. Readings may have either acceptable or unacceptable confidence values.
  13. **DO NOT TEAR THE PRINTOUT OFF OF THE PRINTER UNTIL TESTING IS COMPLETED.**
  14. Check to see if you need to retest one or both eyes. Retest an eye if the confidence number (located on the upper right side of the display) is less than **6**.
  15. If the SureSight times out during testing, this is not considered a reading. You can make 3 **consecutive** "attempts" per eye to get a reading and fail (such as timing out). If you don't get a reading for an eye after 3 **consecutive** attempts, mark "None (unable)."  
  
Note: An "attempt" means that an effort was made to take a reading but the instrument timed out. There is no data available to print.
  16. If you obtain one or more readings but need to take another reading (because the confidence value is too low) you can make 3 more **consecutive** attempts to get another reading. If you are unable to get another reading after 3 consecutive attempts, testing stops. Mark the number of **readings** (not attempts) that you obtained and attach the printout for the readings that were obtained.
  17. A third test is needed if the confidence number is less than **6** on the second reading.
  18. Do not take more than **3** readings per eye.

19. To retest one eye, press the **R/L** button (softly). To retest the right eye press the R/L button softly until the **R** is flashing. To retest the left eye press the R/L button softly until the **L** is flashing. To start the retest, press the **“Go”** button.
20. To retest both eyes, press the **“Go”** button.
21. Print after the first test and after each retest, but do **not** tear off printer tape until all measurements for that child have been printed. Advance the paper in the printer by pressing the feed button to provide a margin for taping, Tear off the printer tape and attach the printout to the data sheet.
22. If more than one reading is taken for an eye, **circle the first reading** with a confidence value of **6** or greater. Make sure the circle goes around the confidence rating and the measurement values, and does not go over the printing.
23. NOTE: Attach printout by taping only at the top and bottom edges. Do not tape over any results.
24. If you obtain a reading but the printer does not print a measurement for an eye, do **not** mark “None (unable) on the data sheet. Report the number of readings that were obtained for the eye. If the refractive error and confidence score are available from the machine’s display, write them in the box on the printout on the data sheet. Label the values for each eye “Right” or “Left.” If the values are not available from the machine’s display, write “No Printout.”
25. If the printout shows black boxes instead of values, print again and count it as one reading.
26. If this is the last test you are taking on the child, stamp the end time with the electronic stamp in the appropriate box on the data sheet. Press firmly and let go when the stamp stops printing by itself.

***What You Tell The Child:***

1. Tell the child to sit very still.
2. Tell the child to look at the red light inside the green lights.
3. Tell the child to open his/her eyes wide “like you are surprised” and keep them open.

**What You Write Down:**

1. Stamp the start time with the electronic stamp in the appropriate box on the data sheet.

<b>Start Time Stamp</b>
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2. The unit prints the measurements for you. Tape the printout to the data sheet **before** the child leaves the testing area.
3. Mark the number of readings taken per eye in item **#A2 a** and **#A2 b** on the data sheet. If the child does not allow the machine to be positioned properly for measuring an eye, or if the machine does not provide a reading for an eye, mark **“None (unable)”** on the data sheet for that eye.
4. You can attempt to get a reading and fail (such as timing out) up to 3 times per eye. If there are no numerals on the display for any of the measurement attempts, **“None (unable)”** should be marked for that eye. In addition, **“instrument failure”** should be written on the data sheet. If the machine malfunctions, an Interrupted Test Report Form should be filed.
5. If you obtain a reading but the printer does not print a measurement for an eye, do **not** mark **“None (unable)”** on the data sheet. Report the number of readings that were obtained for the eye. If the refractive error and confidence value are available from the machine’s display, write them in the box on the printout on the data sheet. Label the values for each eye **“Right”** or **“Left.”** If the values are not available from the machine’s display, write **“No Printout.”**
6. If you obtain one or more reading but need to take another reading (because the confidence value is too low) and then fail 3 times in your attempt to get a reading (because the instrument times out), mark the number of readings that you obtained and attach the printout for the readings that were obtained.
7. If this is the last test you are taking on the child, stamp the end time with the electronic stamp in the appropriate box on the data sheet.

**A2 Number of readings per eye**

a. Right Eye

None (unable) ( )

One ( )

Two ( )

Three ( )

b. Left Eye

None (unable) ( )

One ( )

Two ( )

Three ( )

***Remember!***

1. Make sure you put the ID label on the form.
2. Make sure you stamp the start time on the form.
3. Make sure the SureSight is in “**Child**” mode.
4. Position the unit straight ahead and level with the child.
5. Rotate the unit to the left eye after right eye measurement.
6. Remind the child to look at the red light.
7. Make sure the printer has enough paper to record the results.
8. Do not tear off the printout until all readings are complete.
9. Advance the paper in the printer by pressing the feed button.
10. Remember to tape the printouts to the form right after you take the readings. Make sure you don't cover any of the readings with the tape or write on any of the readings.
11. If the confidence number is **less than 6**, retest that eye.
12. You may make **3 consecutive** attempts per eye to get a reading
13. Do not take more than **3 readings** per eye.
14. For each eye, **circle** the first measurement with a confidence value of 6 or greater.
15. Remember to stamp the end time on the data sheet if this is the last test you are doing with a child.