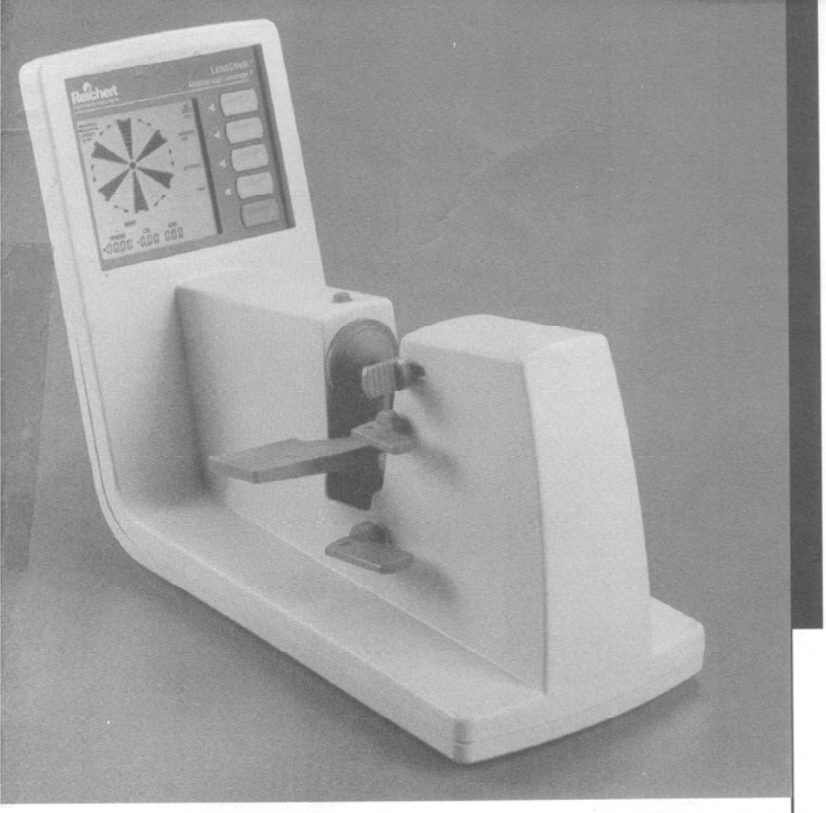

LensChek™

Advanced Logic Lensometer®

User's Guide

Leica

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Introduction

Congratulations on your purchase of the LensChek™ Advanced Logic Lensometer®. The LensChek will provide you fast, accurate and reliable prescription measurement of eyeglass lenses for many years.

The LensChek is an innovative microprocessor controlled lens measurement system that reduces operator error and provides precise, repetitive measurements for single, multifocal, progressive, and contact lenses. This instrument performs the same functions that a Lensmeter performs, with the addition of the following special features.

- Measurement of the lens in a numeric format on a Liquid Crystal Display (LCD)
- Storage of the left and right lens measurements for external printing or data transfer
- Quick and accurate measurement of prism in either diopters or millimeters
- Direct measurement of the prescription in either the + or - cylinder mode
- Automatic rounding mode in either 0.01, 0.12 or 0.25 diopters
- Conversion mode (Convert Mode) of a standard lens to a contact lens prescription
- Conversion mode (Convert Mode) of a lens prescription with sphere, cylinder and axis measurements to its spherical equivalent number.

This User's Guide is designed as a training and reference manual for operation, maintenance and troubleshooting. We recommend you carefully read and follow the instructions in this Users Guide to ensure optimum performance of your new instrument. Any request for additional copies of this Users Guide can be sent to:

- Your authorized Reichert Ophthalmic Instruments dealer, or
- Leica Microsystems, Inc., Ophthalmic Instruments Division
  (Formerly Reichert Ophthalmic Instruments)
  Customer Service Department
  3374 Walden Avenue
  Depew, N.Y. 14043-2437 USA
  Tel: 716-686-4500
  Fax: 716-686-4555
  e-mail: oid@leica-microsystems.com

Unpacking

Perform the following steps to remove the LENSCHEK and its accessories from the packaging container.

1. Open the box and remove the cardboard insert that retains the LENSCHEK in position during shipment.

CAUTION: WHEN REMOVING THE LENSCHEK FROM THE PACKAGING CONTAINER, HOLD ONLY THE WOODEN BOARD THAT ATTACHES TO THE BOTTOM OF THE LENSCHEK. IF THE LENSCHEK IS REMOVED BY HOLDING ONTO THE COVER OR THE LIQUID CRYSTAL DISPLAY SECTION OF THE LENSCHEK, THE LENSCHEK MAY BE EXTERNALLY AND/OR INTERNALLY DAMAGED.

2. Hold onto the wooden board and remove the LENSCHEK and board from the box.

3. Remove the bolts that attach the LENSCHEK to the wooden board using a 7/16 inch wrench.

4. Remove the Plastic bag that covers the LENSCHEK.

5. Visually check the LENSCHEK for obvious damage or missing parts. If there is obvious damage to the LENSCHEK or there are missing items in the packaging container, contact Leica Microsystems, Inc., Ophthalmic Instruments Division, and report the damage or missing parts. Refer to the Introduction section of this manual for an address and telephone number of Leica Microsystems, Inc., Ophthalmic Instruments Division (formerly Reichert Ophthalmic Instruments).

CAUTION: DO NOT APPLY INPUT POWER TO THE LENSCHEK UNTIL THE STEPS IN THE INSTRUMENT INITIALIZATION SECTION ARE COMPLETE OR DAMAGE TO THE INSTRUMENT MAY OCCUR.

6. Put the invoice, extra Nosepiece Cover, Dust Cover, (VHS Tape, and Bottle with Resealable Cap for the 110 Volt Model Only) and the Ink Pad, in a place of safe storage so that it is available when required.

CAUTION: WHEN TRANSPORTING THE LENSCHEK, PROPERLY PROTECT THE INSTRUMENT IN THE CORRECT PACKAGING CONTAINER OR DAMAGE MAY OCCUR DURING TRANSPORTATION.

7. After all contents are removed from the container; put all the packing materials in the container (bolts, bag, cardboard, etc.) and then in a place of safe storage, so that they are available for use if future transportation of the LensChek is necessary.

Initial Checks

It is recommended that the following checks be performed after the LENSCHEK is removed from the packaging container:

NOTE: If there is any obvious damage to the LensChek, please contact Leica Microsystems, Inc., Ophthalmic Instruments Division.

CAUTION: DO NOT APPLY INPUT POWER TO THE LENSCHEK UNTIL INSTRUCTED OR DAMAGE TO THE INSTRUMENT MAY OCCUR.

1. Place the LensChek on a table in an area indoors that is clean, dry, at room temperature (5 to 40° Celsius), and away from direct sunlight and sources of bright light.

2. If applicable, connect the printer interface cable from the printer to the RS-232C connector on the rear connection panel of the LensChek (Figure 1). Tighten the screws to the RS-232C Connector.

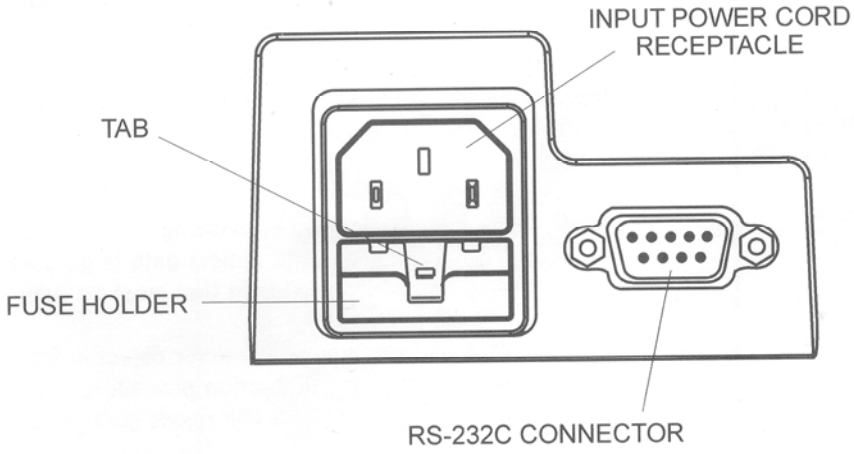


Figure 1, Rear Connection Panel

Instrument Initialization

Setup

CAUTION: INPUT VOLTAGE FLUCTUATIONS SUPPLIED TO THE LENSCHEK EXCEEDING ±10% OF THE NOMINAL VOLTAGE IS NOT RECOMMENDED OR DAMAGE AND/OR INCORRECT OPERATION OF THE LENSCHEK MAY OCCUR.

CAUTION: BEFORE APPLYING INPUT POWER TO THE LENSCHEK, VISUALLY INSPECT THE IDENTIFICATION LABEL ON THE REAR OF THE UNIT AND VERIFY THAT THE VOLTAGE YOU ARE APPLYING IS THE CORRECT INPUT VOLTAGE FOR THE UNIT. INCORRECT VOLTAGE APPLIED TO THE LENSCHEK WILL CAUSE MALFUNCTION AND/OR DAMAGE TO THE UNIT.

1. Attach one end of the power cord into the input power cord receptacle of the LensChek (Fig. 1). Attach the other end of the power cord to a power source of the correct voltage.

   NOTE: The LensChek does not have an ON/OFF input power switch. Operation of the LensChek begins when the input power cord is connected from the unit to a power source of correct voltage and frequency.

2. When the LensChek starts to operate, a self-calibration procedure is initiated. This procedure begins with a counterclockwise revolving pattern that counts down from 19 to zero and ends in a "starburst" pattern. When the "Starburst" pattern is displayed, the LensChek has finished the self-calibration procedure and is ready for use. To manually initiate a self-calibration procedure, simultaneously depress the top (blue) and middle (blue) control buttons. Refer to Figure 2 for an illustration of a "Starburst" pattern and the location of the top and middle control buttons.

   NOTE: If the counterclockwise revolving pattern does not stop revolving, there may be an object blocking the optical path (e.g., packaging material, paper, etc.) or a bright source of external light that must be removed.

   NOTE: Do not insert a lens or any other object in front of the Nosepiece or the optical path until the self-calibration procedure is completed or an incorrect value of sphere, cylinder and/or axis will result during the subsequent testing of lenses.

   NOTE: If the sphere, cylinder and/or axis have a value other than zero when there is no lens in front of the nosepiece; the self-calibration procedure must be immediately initiated. To manually initiate a self-calibration procedure, simultaneously depress the top (blue) and middle (blue) control buttons.

3. **Simultaneously depress the top (blue) control button and the bottom (green) control button on the display panel to verify that all the Liquid Crystal Display (LCD) segments are functional.** After verification, depress the middle (blue) control button to return the LENSCHEK to the default operating mode. Refer to Figure 3 for an illustration of the LCD screen with all segments displayed.

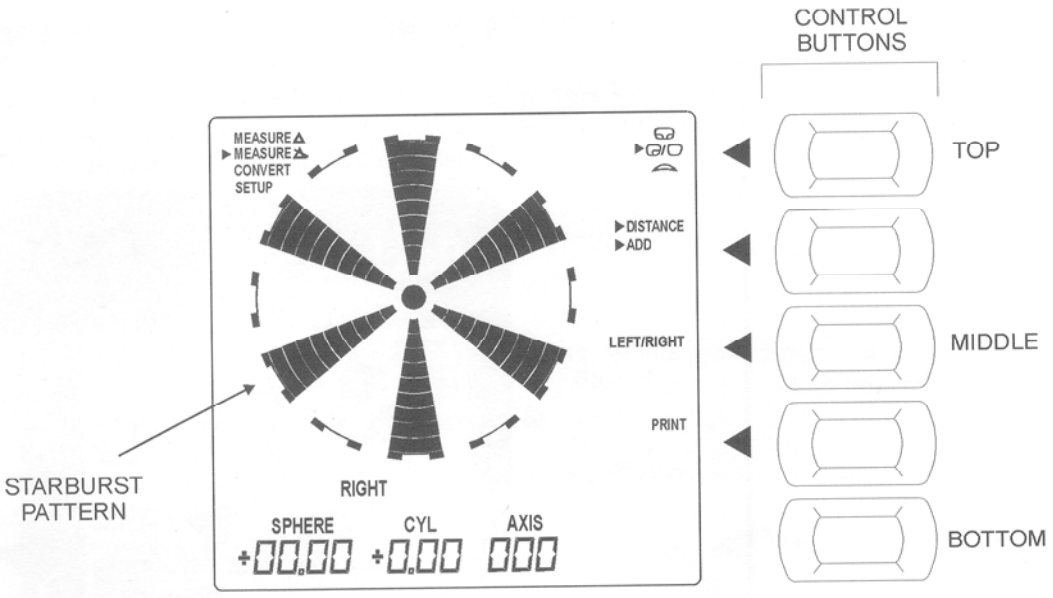


Figure 2 - Starburst

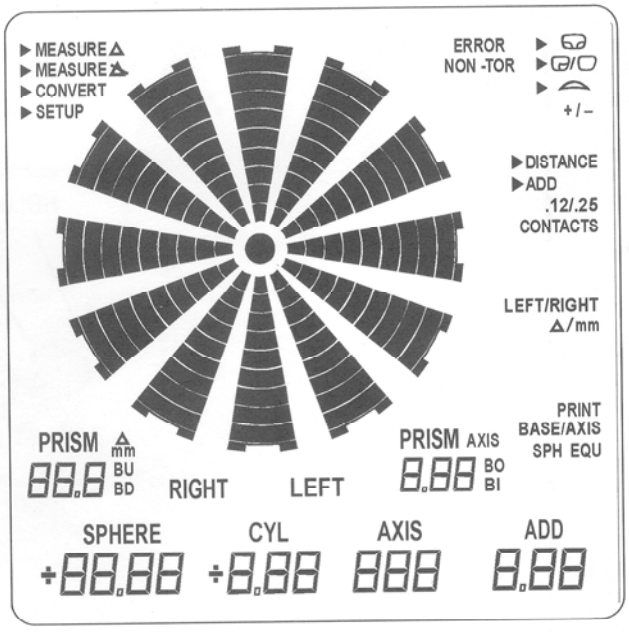


Figure 3 - LCD Screen (All Segments Displayed)

1. LCD Screen Operating Modes

The Liquid Crystal Display (LCD) Screen (shown in Figure 4) has four basic operating modes that are selected by depressing the bottom (green) control button: Measure - No Prism, Measure - Prism, Convert, and Setup. Each of the operating modes has a specific function in determining the optical components of eyeglass lenses. Details of these operating modes are listed below.

MEASURE

A. Measure - No Prism

This is the default operating mode. After the initiation of a self-calibration procedure (see page 6, Setup), the LensChek defaults to this operating mode. Most eyeglass lenses are measured using this operating mode.

NOTE: Use the Measure - Prism mode for eyeglasses that require measurement of the prism component.

The Measure - No Prism mode consists of the following options:

(1) Lens Style

The top (blue) control button toggles between the three different styles of lenses to be measured. The lens type being measured must be selected from one of the following.

- Progressive Lenses
- Single / Bifocal
- Contact Lenses

(2) Distance / Add

The second (from the top) control button (blue) toggles between Distance and the Add function.

▶ DISTANCE

- Distance Option

This option measures the distance segment of the lens for any of the lenses given above.

▶ ADD

- Add Option

The Add option is used for measuring only the added sphere in the bifocal segment of the lens. In this mode, "ADD" is shown in the lower right corner of the LCD screen.

C. Convert (cont.)

▶ SPH EQU

(4) Spherical Equivalent

The fourth (from the top) control button (blue) converts the normal sphere, cylinder, and axis values to a spherical equivalent. The following formula gives the Spherical Equivalent (SPH EQU):

SPH EQU = Sphere + Cyl / 2

SETUP

D. Setup

This operational mode modifies the default parameters of the LENSCHEK that are set during power-up or a self-calibration procedure. **To access this menu, press and hold the bottom (green) control button for approximately 5 seconds.** To exit this screen, depress the bottom (green) control button once. The following options are available in the setup mode.

▶ +/–

(1) +/– Cylinder Mode

The top (blue) control button toggles between the following three settings for the LENSCHEK.

\+ The plus mode of operation displays the prescription reading in a + cylinder format.

– The minus mode of operation displays the prescription reading in – cylinder format.

+/– The plus / minus mode of operation displays the prescription reading in either a – cylinder format or a + cylinder format in accordance with the following equation:

IF: (Sphere + Cyl) > 0, then + Cyl mode.

IF: (Sphere + Cyl) < 0, then – Cyl mode.

(2) .12 /.25 Rounding Mode

▶ .12 /.25

The second (from the top) control button (blue) toggles between two settings (.12 / .25) on early versions of the LENSCHEK. On all other LENSCHEKs the same button toggles between three settings (.12 /.25 /.01). This rounding mode numerically rounds numbers to the nearest 1/8, 1/4, and 1/100 (respectively) for the Sphere, Cylinder, and Add data. The rounding value is indicated in the Setup mode at the lower right hand corner of the LCD Screen.

2. LensChek Components (cont.)

D. LENS MARKER (cont.)

The Lens Marker Lever is attached to the Lens Marker Pen and has movement in two directions. In the first direction, the Lens Marker Lever is rotated downward which removes the marking pen from the ink pad, aligning it in front of the lens. In the second direction, the Lens Marker Lever moves (horizontally) toward the lens for application of the ink to the lens.

CAUTION: DO NOT EXTEND THE TIP OF THE CENTER MARKING PEN INTO THE NOSEPIECE APERATURE OR DAMAGE TO THE APERATURE MAY OCCUR.

E. NOSEPIECE

The Nosepiece assembly contains precision optics and a camera assembly that produces optical data for eyeglass lens measurement. This assembly is factory assembled and has no internal replaceable parts. The only part that is replaceable is the Nosepiece Cover. This cover is removable and should be replaced if it is damaged.

3. Special Functions

The LensChek has software-controlled special functions that are initiated by depressing selected control buttons next to the Liquid Crystal Display (LCD) screen.

A. DISPLAY–ALL–SEGMENTS

The Display–All–Segments special function displays every segment of the LCD screen at the same time so that if a segment is not working, it will be easily identified (refer to Figure 3).

To activate this function, simultaneously depress the top (blue) control button and the bottom (green) control button on the display panel and verify that all the Liquid Crystal Display (LCD) segments are functional. After verification, depress the middle (blue) control button to return the LensChek to the default operating mode.

B. SELF–CALIBRATION

A self-calibration function is available to the user to ensure correct operation of the LensChek. If a residual sphere, cylinder, axis, or prism is indicated, when a lens is not being measured, initiation of this special function is recommended.

To activate this function, simultaneously depress the top (blue) and middle (blue) control buttons. The Sphere will count from 19, down to zero and then the display will indicate the Starburst pattern (refer to Figure 2, for an illustration of the Starburst). After the Starburst pattern is displayed, the LensChek defaults to the Measure – No Prism mode and uses the set default parameters. If a special Setup function was used, it may have to be reset if the unit was unplugged for an extended period of time.

LENS ALIGNMENT (Continued)

PROGRESSIVE

Figure 6 is an illustration of the alignment arrows for only the progressive lenses.

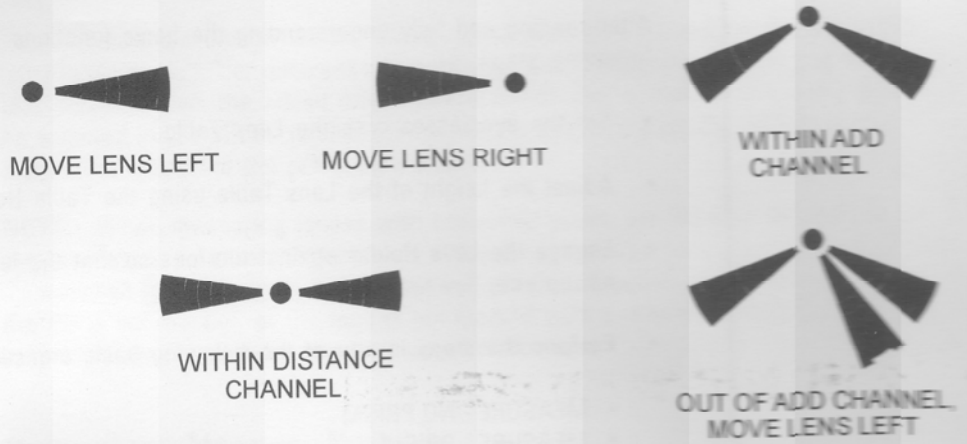


Figure 6 - Progressive Lens Alignment Arrows

LENS MARKER

The Lens Marker is a device that transfers a small amount of marking ink from the ink pad onto the optical center of the lens (provided that the lens is optically centered when the Lens Marker is used). If marking of the lens is desired, rotate the Lens Marker Levers downward and then move them toward the lens (with the Lens Marker Lever rotated downward) until the Marking Pen transfers the marking ink.

HOLD BUTTON

The Hold Button moves the SPHERE, CYLINDER, AXIS, and ADD data displayed on the LCD screen into temporary memory, and can be depressed after all data from a lens is taken (including the ADD data). The temporary memory can hold the data from only one left and one right lens. When the LEFT / RIGHT control (blue) button is toggled to the same side (E.G., toggled from RIGHT TO LEFT TO RIGHT) the data that was in memory is gone.

NOTE: If a print-out of data is desired, the data in temporary memory must be printed immediately after both left and right data are sent to temporary memory. If the LEFT / RIGHT control button is depressed an additional time before the PRINT control button is depressed, the data will be lost from temporary memory and it will not be printed.

2. Measurement Procedures

The LensChek has some basic measurement modes. For a definition of these modes, refer to OVERVIEW, LCD SCREEN in this manual. The following are the basic measurement modes.

- MEASURE ⧋
- MEASURE △
- CONTACT LENS, MEASURE ⧋
- PROGRESSIVE ADD LENS, MEASURE ⧋ (MARKED LENS)
- PROGRESSIVE ADD LENS, MEASURE ⧋ (UNMARKED LENS)

Measure - Prism

▶ MEASURE △

This measurement mode has the same operation steps as listed for the MEASURE - NO PRISM mode. The difference between the two measurement modes is that the LCD screen shows the added prism measurement. The format for the prism data may be selected in the SETUP mode (refer to OVERVIEW, LCD SCREEN, SETUP in this manual for details of the prism data format).

NOTE: When measuring lenses with horizontal prism; the PD must be marked on the eyeglasses prior to measurement of the lenses, or the lens must be marked with a reference indicator (e.g., circle) that will give the location of lens measurement. If the PD is not marked, or the lens is not marked with a reference indicator; the measured prescription for the lens may be incorrect.

Contact Lens, Measure - No Prism

▶ MEASURE ⧋

A. Select the MEASURE - NO PRISM mode by pressing the bottom control (green) button (refer to Figure 4 for an illustration of the control buttons). MEASURE - NO PRISM is shown in the upper left corner of the LCD screen.

▶ 

B. Select the Lens Style - Contacts mode by pressing the top (blue) control button. Refer to OVERVIEW, LCD SCREEN, MEASURE - NO PRISM for an illustration of the lens styles.

▶ LEFT/RIGHT

C. Select the Lens Side - LEFT/RIGHT by pressing the middle (blue) control button. The side will be shown in the lower section of the LCD screen and will change between RIGHT and LEFT as the control button is pressed.

D. Place the lens in a Contact Lens Holder (P/N 12624) and place the contact lens in front of the nosepiece, convex side out. Center the lens in front of the nosepiece using the Table Height Lever and carefully move the lens so that the inside curvature touches the nosepiece cover.

HOLD BUTTON

E. Record the data, and/or press the Hold Button for temporary storage of the data (refer to Figure 4 for the Hold Button).

F. Repeat steps C. thru E. for the other contact lens if desired.

▶ PRINT

G. Press the fourth (from the top) control button (blue) for a print-out of the contact lens data (if the printer is available and a print-out is desired).

Marked Progressive Lens, Measure - No Prism

This measurement mode is used when progressive lenses have measurement markings displayed on the lens.

▶ MEASURE

A. Select the MEASURE - NO PRISM mode by pressing the bottom control (green) button (refer to Figure 4 for an illustration of the control buttons). MEASURE - NO PRISM is shown in the upper left corner of the LCD screen.

▶ 

B. Select the Progressive Lens mode by pressing the top (blue) control button. Refer to OVERVIEW, LCD SCREEN, MEASURE - NO PRISM for more information about the lens styles.

▶ LEFT/RIGHT

C. Select the Lens Side - LEFT/RIGHT by pressing the middle (blue) control button. The side will be shown in the lower section of the LCD screen and will change between RIGHT and LEFT as the control button is pressed.

▶ DISTANCE

D. Align the lens in front of the Nosepiece at the center, of the top circle. This is the DISTANCE measurement.

NOTE: Some progressive lenses have a circle with a thick border for marking the optical center or the ADD power of the lens. This marking may interfere with the measurement process of the LENSCHEK. If an incorrect measurement of the lens occurs due to this condition, move the lens laterally (sideways) a small amount to adjust for this condition.

NOTE: Some progressive lenses have a clear plastic overlay for marking the optical center or the ADD power of the lens. This overlay may interfere with the measurement process of the LENSCHEK. If an incorrect measurement of the lens occurs due to this overlay, mark the optical center and the ADD section with the marking pens; remove the overlay and then remeasure the lens.

▶ ADD

E. Align the Nosepiece with the center of the lower circle on the progressive lens. This is the ADD measurement.

HOLD BUTTON

F. Record the data, or press the Hold Button for temporary storage of the data (refer to Figure 4 the Hold Button).

G. Repeat steps C. thru F. for the other lens side.

▶ PRINT

H. Press the fourth (from the top) control button (blue) for a print-out of the data to the printer (if the printer is available and a print-out is desired).

Unmarked Progressive Lens, Measure - No Prism

This measurement mode is used when the progressive lenses do not have measurement markings on the lens.

▶ MEASURE

A. Select the MEASURE - NO PRISM mode by pressing the bottom control (green) button (refer to Figure 4 for an illustration of the control buttons). MEASURE - NO PRISM is shown in the upper left corner of the LCD screen.

▶ 

B. Select the Progressive Lens mode by pressing the top (blue) control button. Refer to OVERVIEW, LCD SCREEN, MEASURE - NO PRISM for more information about lens styles.

▶ LEFT/RIGHT

C. Select the Lens Side - LEFT/RIGHT by pressing the middle (blue) control button. The side will be shown in the lower section of the LCD screen and will change between RIGHT and LEFT as the control button is pressed.

▶ DISTANCE

D. Align the lens in front of the Nosepiece about ¼ the distance from the top of the lens. Move the lens left or right to align the optical center of the lens (as shown by the alignment arrows) until the within distance channel pattern is shown (refer to Figure 6 for an illustration of the alignment arrows for the progressive lens). Maintaining the optical center, move the lens down until the sphere value increases by .25 diopters (becomes more positive); move it back up until it decreases by .25 diopters. This is the DISTANCE measurement.

NOTE: For this step, a value increase of .25 diopter is only in the positive direction only (e.g., an increase of .25 diopter from +2.75 is +3.00 diopter; an increase of .25 diopter from -2.75 is -2.50 diopter).

▶ ADD

E. Press the second (from the top) control button (blue) until the ADD function is shown in the lower right of the LCD screen. While remaining within add channel (refer to Figure 6 for an illustration of the alignment arrows for the progressive lens), move the lens upward; the lens ADD power should either:

- rise and then decline
- rise and remain the same
- rise continuously.

HOLD BUTTON

F. Record the data, or press the Hold Button for temporary storage of the data (refer to Figure 4 for the Hold Button).

G. Repeat steps C. thru F. for the lens in the other side of the eyeglasses.

▶ PRINT

H. Press the fourth (from the top) control button (blue) for a print-out of the data to the printer (if the printer is available and a print-out is desired).

Cleaning and Maintenance

WARNING: DO NOT PERFORM ANY MAINTENANCE ON THE LENSCHEK UNLESS EYE PROTECTION IS WORN.

CAUTION: DO NOT USE STRONG CLEANING SOLUTIONS OR SOLVENTS OF ANY KIND ON ANY PART OF THE LENSCHEK OR DAMAGE TO THE LENSCHEK MAY OCCUR.

Perform the following CLEANING / MAINTENANCE procedures as necessary to maintain proper operation of the LENSCHEK.

Cleaning

1. LCD Screen Cleaning
2. LENSCHEK Housing Cleaning
3. Nosepiece Cover Cleaning
4. Marking Pen Cleaning

Maintenance

5. Nosepiece Cover Removal / Installation
6. Marking Pen Removal / Installation
7. Marking Ink Replacement
8. Nosepiece Lens Cleaning

1. LCD SCREEN CLEANING

Gently clean any dirt or contaminants off of the LCD screen with a lint-free cotton cloth moistened (only moistened) with a lens cleaner that is safe for plastic lenses or a mild soap solution. If a mild soap solution is used on the LCD screen, gently wipe the residual soap solution off the LCD screen with a lint-free cotton cloth.

WARNING: KEEP ALCOHOL AWAY FROM HEAT AND FLAMES. ALCOHOL IS FLAMMABLE. USE EYE PROTECTION WHEN USING ALCOHOL.

2. LENSCHEK HOUSING CLEANING

Gently clean any dirt or contaminants off of the Top and Bottom Housing with a lint-free cotton cloth moistened (only moistened) with alcohol or a mild soap solution. If a mild soap solution is used on the housing, gently wipe the residual soap solution off the housing with a lint-free cotton cloth moistened with water.

3. NOSEPIECE COVER CLEANING

Clean the Nosepiece Cover with a lint-free cotton cloth moistened with alcohol. If the inside surface of the Nosepiece Cover is contaminated, remove and clean the inside of the Nosepiece Cover with a lint-free cotton swab moistened with alcohol. If the Nosepiece Cover is damaged or torn, replace it. Refer to Figure 7 for Nosepiece Cover Removal / Installation.

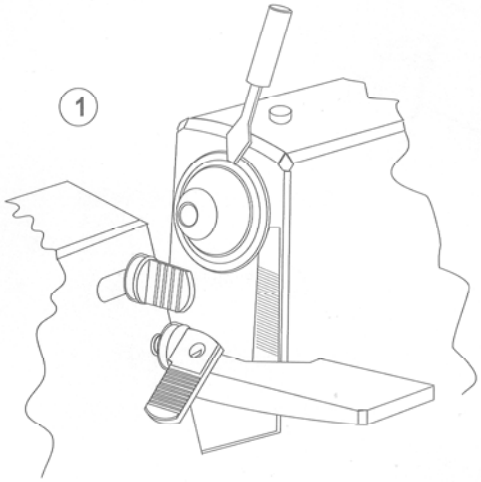
4. MARKING PEN CLEANING

Clean any ink, dirt or contaminants off of the Marking Pens with a lint-free cotton cloth moistened with alcohol or a mild soap solution. If a mild soap solution is used, gently wipe the residual soap solution off the Marking Pens with a lint-free cotton cloth moistened with water.

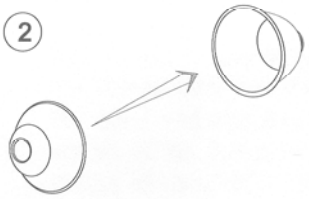
5. NOSEPIECE COVER REMOVAL / INSTALLATION

If the Nosepiece Cover is damaged or torn, replace it. Refer to Figure 7.

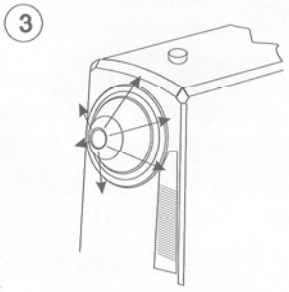
CAUTION: DO NOT USE SHARP OBJECTS TO REMOVE THE NOSEPIECE COVER OR DAMAGE TO THE NOSEPIECE COVER MAY OCCUR. INCORRECT MEASUREMENTS MAY OCCUR IF THE NOSEPIECE COVER IS DAMAGED.



USING A SMALL SCREWDRIVER, PUSH THE BLADE UNDER THE LARGE DIAMETER OF THE RUBBER NOSEPIECE COVER. PULL THE EDGE OF THE NOSEPIECE COVER OUT OF THE GROOVE AND OFF OF THE METAL NOSEPIECE.



AFTER THE NOSEPIECE COVER IS REMOVED, INVERT A **NEW** NOSEPIECE COVER FOR INSTALLATION ONTO THE NOSEPIECE OF THE LENSCHEK



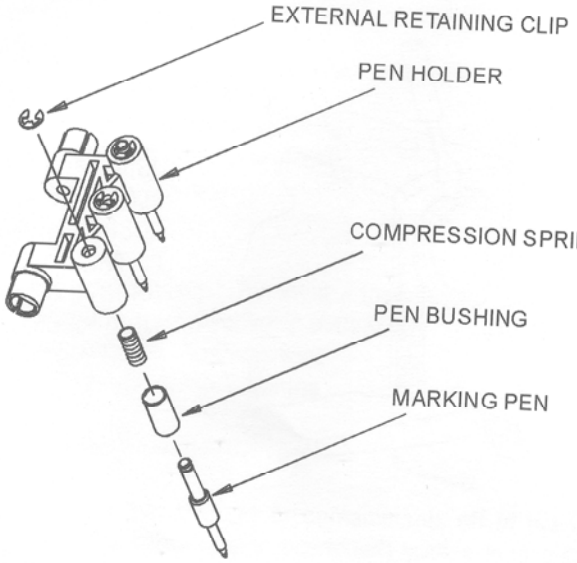
INSTALL A **NEW** NOSEPIECE COVER ONTO THE METAL NOSEPIECE OF THE LENSCHEK. PUSH THE RUBBER COVER FLAT AGAINST THE METAL NOSEPIECE IN THE DIRECTION SHOWN, ENSURING THAT THE COVER FITS CORRECTLY IN ITS GROOVE AND IS FLAT AGAINST THE NOSEPIECE.

Figure 7 - Nosepiece Cover Removal / Installation

6. MARKING PEN REMOVAL / INSTALLATION

If the marking pen is damaged or does not operate correctly, replace it. Refer to Figure 8.

WARNING: CAUTION MUST BE OBSERVED WHEN USING SHARP OBJECTS TO REMOVE THE MARKING PENS FROM THE LENSCHEK OR PERSONAL INJURY MAY OCCUR.



1. Using a small long-nose pliers, remove the External Retaining Clip while holding on to the Marking Pen so that the Marking Pen does not eject from the Pen Holder.
2. Carefully remove the Marking Pen from the Pen Holder so that the Compression Spring does not drop into the LensChek.
3. Install a new Marking Pen (with a new Compression Spring if necessary).
4. Push the Marking Pen up into the Pen Holder and attach the External Retaining Clip.

Figure 8 - Marking Pen Removal / Installation

7. MARKING INK REPLACEMENT

When the Marking Pens do not transfer the marking ink from the Ink Pad to an eyeglass lens, either the marking ink is gone, or the ink has dried in the Ink Pad. If the marking ink is hardened, replacement of the Ink Pad is suggested. For replacement of the marking ink, refer to Figure 9.

NOTE: When replacing marking ink, remove the Ink Pad Cover and apply marking ink to the Ink Pad, not the Ink Pad Cover.

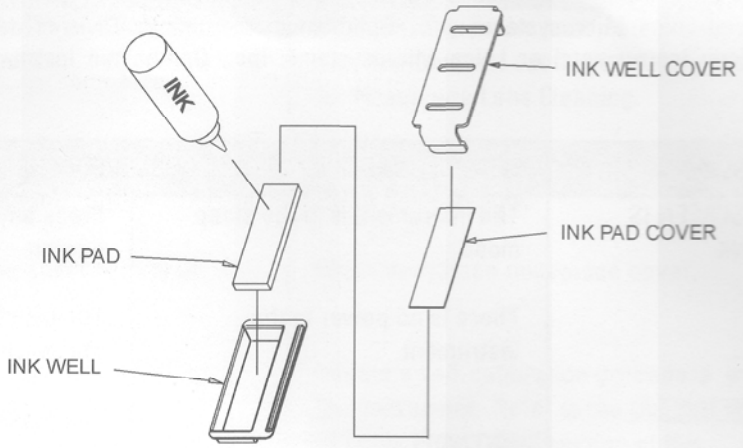


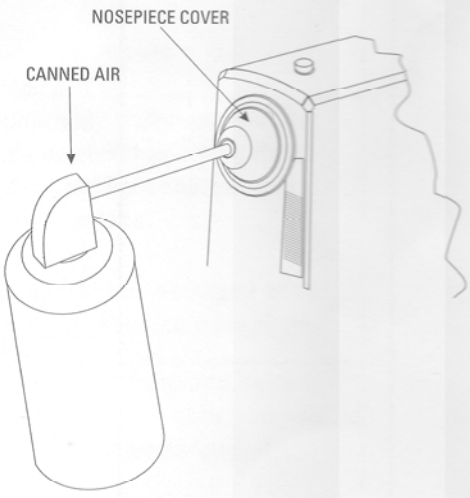
Figure 9 - Marking Ink Replacement

8. NOSEPIECE LENS CLEANING

A) Move the Lens Holder Levers to the retracted position.

CAUTION: USE ONLY A SOURCE OF DRY, CLEAN, OIL-FREE COMPRESSED AIR TO CLEAN THE INSIDE OF THE NOSEPIECE. DO NOT USE A LIQUID CHEMICAL SPRAY TO CLEAN THE NOSEPIECE LENS BECAUSE CHEMICALS FROM THE SPRAY MAY BECOME TRAPPED INSIDE THE NOSEPIECE ASSEMBLY AND CAUSE MEASUREMENT ERROR.

B) Using canned air*, insert one end of the plastic tube into the canned air and the other end into the Nosepiece as shown in the figure on this page. Only a short duration of spray is necessary to clean the nosepiece lens.



C) Spray the inside of the Nosepiece so that any contaminants on the Nosepiece Lens are displaced from inside the Nosepiece. Remove the plastic tube from inside the Nosepiece.

D) Simultaneously push the top and middle buttons (blue) on the LensChek next to the LCD Screen so that a self-calibration procedure is initiated. Make sure that the Sphere, Cyl and Axis data on the LCD Screen are all zero.

* Suggested source of canned air:
ENVI►RO►TECH™ DUSTER 1671; TECH SPRAY™ Inc., P.O. Box 949, Amarillo, Texas 79105
(It is necessary to follow manufacturer's directions and cautions prior to, during, and after use.)

Troubleshooting

If a malfunction or an incorrect process occurs in the LensChek, refer to the following information for possible causes and suggested actions. If the suggestions given below do not help, contact your authorized Leica Microsystems, Inc., Ophthalmic Instruments Division dealer (formerly Reichert Ophthalmic Instruments) or Leica Microsystems, Inc., Ophthalmic Instruments Division (see page 2).

PROBLEM	POSSIBLE CAUSE	SUGGESTED ACTION
LCD SCREEN IS BLANK	The instrument is in the sleep mode.	Press any control button next to the LCD screen.
	There is no power to the instrument.	The instrument is not plugged in. Plug in the instrument.
		The fuses inside the fuse holder are damaged. Replace the fuses.
		LCD Screen contrast set too low, contact your authorized Reichert dealer.
		The instrument is damaged, contact your authorized Reichert dealer.
STARBURST WILL NOT STOP SPINNING AT POWER-UP	Ambient lighting is too bright for the instrument.	Move the instrument to a place that has a lower ambient light.
	Excessive dirt on the lens inside the nosepiece.	Dirty lens inside the nosepiece, refer to the Maintenance section of this manual for cleaning the nosepiece lens.
	The light source inside the instrument is not entering the nosepiece.	The Marking Pen is blocking the light source to the nosepiece.
		Remove any foreign object that is blocking the light source to the nosepiece or behind the lens holder.
		Incorrect input voltage applied to the instrument.
		Damaged instrument. Contact your authorized Reichert dealer.

Troubleshooting

PROBLEM	POSSIBLE CAUSE	SUGGESTED ACTION
RESIDUAL SPHERE OR CYLINDER READINGS	Excessive dirt on the lens inside the nosepiece.	Dirty lens inside the nosepiece, refer to the Maintenance section of this manual for Nosepiece Lens Cleaning.
	Ambient lighting is too bright for the instrument.	Move the instrument to a place that has a lower ambient light.
	Nosepiece cover is dirty or damaged.	Clean or replace nosepiece cover.
	Incorrect calibration of the instrument.	Initiate a self-calibration procedure on the instrument. Refer to the OVERVIEW, SPECIAL FUNCTIONS section of this manual.
PRESCRIPTION WILL NOT ERASE	Prescription sent to memory.	Erase memory by pressing the LEFT / RIGHT button twice.
	In Convert mode of operation.	Switch to a Measurement mode.
LCD SCREEN WILL NOT GO INTO THE SLEEP MODE	Instrument is holding LEFT/RIGHT prescription data.	Clear the data by pressing the LEFT/RIGHT control button twice.
	A lens is placed in front of the nosepiece.	Remove the lens from in front of the nosepiece.
	In Convert or Setup mode.	Switch to a Measurement mode.
ERROR	The light source inside the instrument is not entering the nosepiece.	Remove any foreign object (packaging material, etc) or object (Marking Pens) that is blocking the light source from entering the nosepiece.
		The nosepiece cover is damaged or not installed correctly onto the nosepiece.
NON-TOR	Irregularities in the light source to the nosepiece.	Dirty lens inside the nosepiece, refer to the Maintenance section of this manual for cleaning the nosepiece lens.
		Lenses that have a strong or a very unusual prescription may give this error message.

Appendix A - LensChek Specifications

Types of Lens Measured:

- Single Vision
- Progressive Addition
- Bifocal/Trifocal
- Contact Lens

Performance:

Spherical Power ..... -25D to + 25D
Increments ..... 0.01D, 0.12D or 0.25D
Cylindrical Power ..... -10D to + 10D
Increments ..... 0.01D, 0.12D or 0.25D
Axis: ..... 0° to 180°
Increments ..... 1°
Add: ..... 0D to + 10D
Increments: ..... 0.01D, 0.12D or 0.25D
Prism: ..... 0 to 10 D
Increments: ..... 0.1 D

Lens Diameters Accommodated:

Lens Blanks: ..... 28 to 100 mm
Contact Lenses: ..... from 5 mm

Electrical:

Voltage:
Model 12621: ..... 100-120 volts AC 50/60 Hz
Model 12621/230: ..... 220-240 volts AC @ 50 Hz
Power Consumption: ..... 10 VA

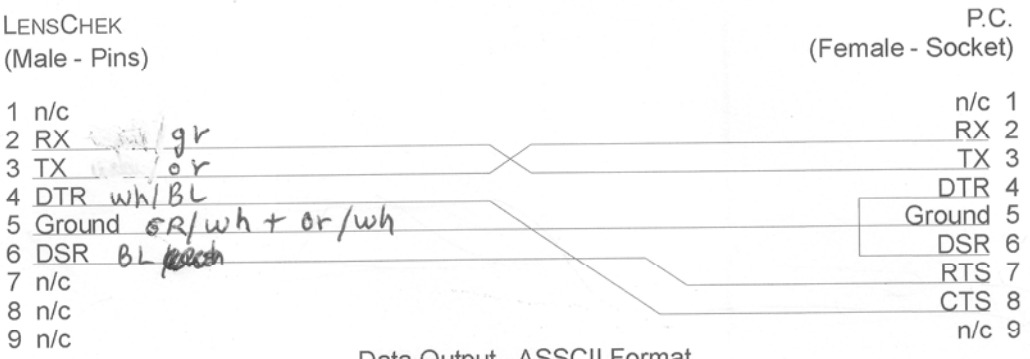
Physical Dimensions:

Width	Height	Length	Weight
6.5 inches	10.6 inches	16.0 inches	8.0 lb.
165.1 mm	269.2 mm	406.4 mm	3.6 Kg

Physical Dimensions: RS-232C

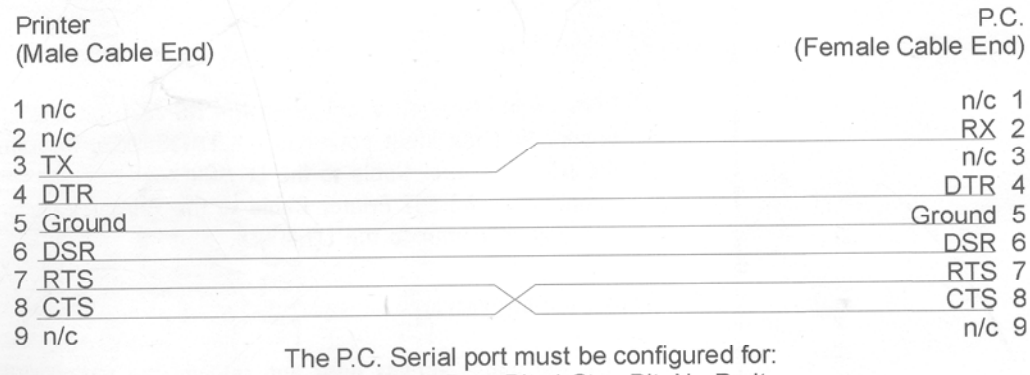
Display ..... High Contrast LCD

Appendix B - LensChek Connections



Data Output - ASSCII Format
2400 Baud, 8 Data Bit, 1 Stop Bit, No Parity

LensChek to P.C. Connections



The P.C. Serial port must be configured for:
2400 Baud, 8 Data Bit, 1 Stop Bit, No Parity

Printer (P/N 12622) to P.C. Connections