

LensChek™

**Advanced Logic Lensometer®**

User's Guide

*Leica*

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## Warnings and Cautions



**CAUTION:** ANY REPAIR OR SERVICE TO THE LENSCHek MUST BE PERFORMED BY EXPERIENCED PERSONNEL THAT ARE TRAINED BY LEICA MICROSYSTEMS, INC. OPHTHALMIC INSTRUMENTS DIVISION (FORMERLY REICHERT OPHTHALMIC INSTRUMENTS) SO THAT CORRECT MEASUREMENT OF THE LENSCHek IS MAINTAINED.



**CAUTION ESDS:** THE INTERNAL CIRCUITS OF THE LENSCHek HAVE ELECTROSTATIC DISCHARGE SENSITIVE DEVICES (ESDS) AND ARE SENSITIVE TO HIGH VOLTAGES PRODUCED BY STATIC CHARGES FROM THE HUMAN BODY. DO NOT REMOVE THE COVER OF THE LENSCHek WITHOUT PROPER PRECAUTIONS OR ESDS DAMAGE MAY OCCUR TO THE ELECTRONIC CIRCUITS AND CAUSE MALFUNCTION OF THE LENSCHek.



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



**CAUTION:** USE OF ALCOHOL ON THE LIQUID CRYSTAL DISPLAY (LCD) OR ON ANY OF THE LENSES INSIDE THE LENSCHek MAY CAUSE DAMAGE AND/OR INCORRECT MEASUREMENT BY THE LENSCHek.



**CAUTION:** USE ONLY AN APPROVED LENS CLEANING SOLUTION THAT IS SAFE FOR PLASTIC LENSES WHEN CLEANING LENSES ON THE LENSCHek OR INCORRECT MEASUREMENT BY THE LENSCHek MAY OCCUR.



**WARNING:** DO NOT REMOVE OR OBSTRUCT THE EARTH GROUND CONNECTION ON THE INPUT POWER CONNECTOR TO THE LENSCHek OR DAMAGE TO THE LENSCHek AND/OR INJURY TO THE OPERATOR MAY OCCUR.

## 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

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Fax: 716-686-4555

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# Introduction

## Unpacking

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



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

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

2. Hold onto the wooden board and remove the LENSCHK and board from the box.
3. Remove the bolts that attach the LENSCHK to the wooden board using a 7/16 inch wrench.
4. Remove the Plastic bag that covers the LENSCHK.
5. Visually check the LENSCHK for obvious damage or missing parts. If there is obvious damage to the LENSCHK 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 LENSCHK 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 LENSCHK, 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 LensChk is necessary.

# Introduction

## Contents

The items listed below are in the LensChek packaging container. If any of these items are missing, please contact Leica Microsystems, Inc., Ophthalmic Instruments Division.

- LensChek (110 or 230 Volt Model)
- Dust Cover (P/N 12621-044)
- Nosepiece Cover (P/N 12621-047)
- Power Cord (P/N WCBL10018, 110V Model Only; P/N WCBL10027, 230V Model Only)
- Marking Pen Ink (P/N 712661-315, 110 Model Only; P/N 12621-190, 230V Model Only)
- Information Packet that contains the following
  - Users Guide (P/N 12621-101)
  - Inspection Tag (P/N X54120)
  - Quick Measurement Guide (P/N 12621-102)

In addition, the following items are contained in the packaging container for the 110 Volt Model only:

- VHS Tape Labeled "Introducing the LENSCHK" (P/N 12621-105)
- Resealable Cap for Pen Marking Ink (P/N 12621-191).

# Instrument Initialization

## Initial Checks

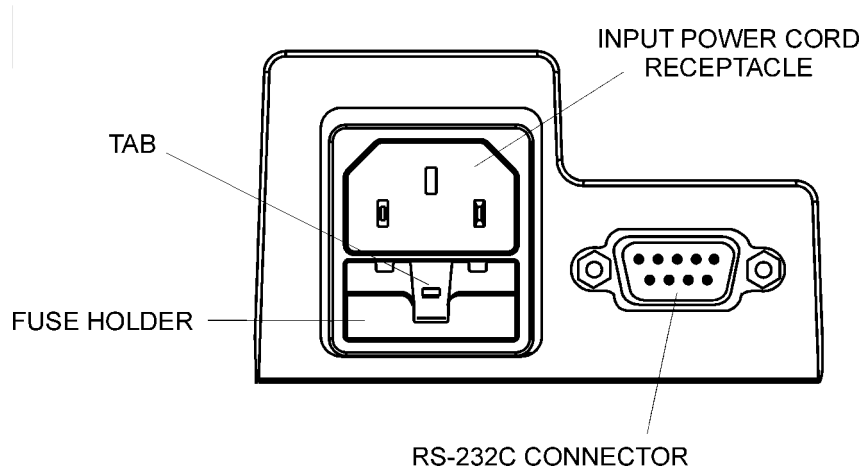
It is recommended that the following checks be performed after the LENSCHK is removed from the packaging container:

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 LENSCHK 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  $\pm 10\%$  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.



# Instrument Initialization

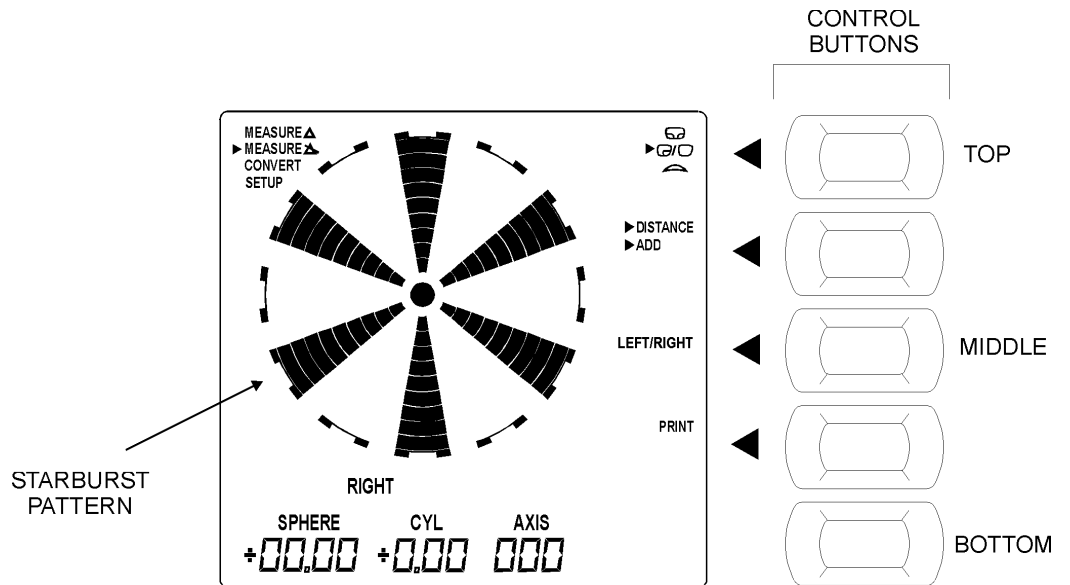


Figure 2 - Starburst

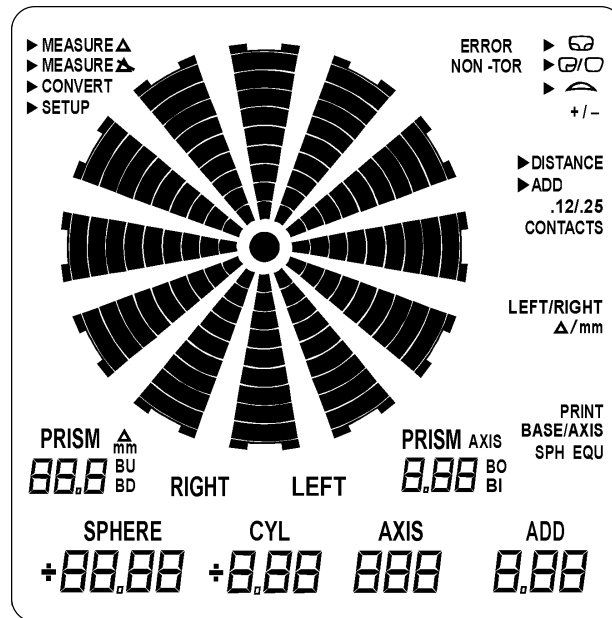


Figure 3 - LCD Screen (All Segments Displayed)

# Overview

Before operating the LensChek, please refer to Figure 4 below:

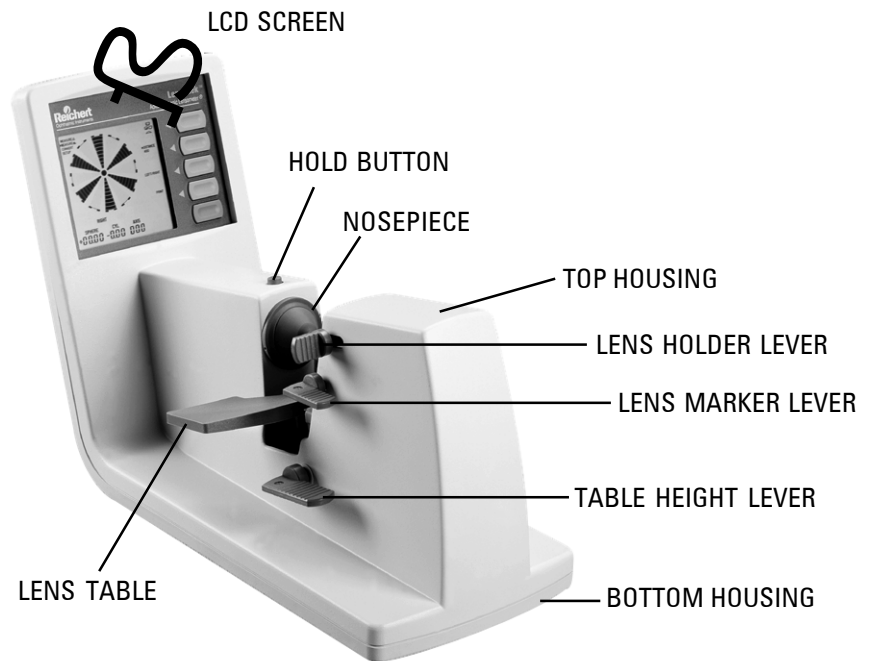
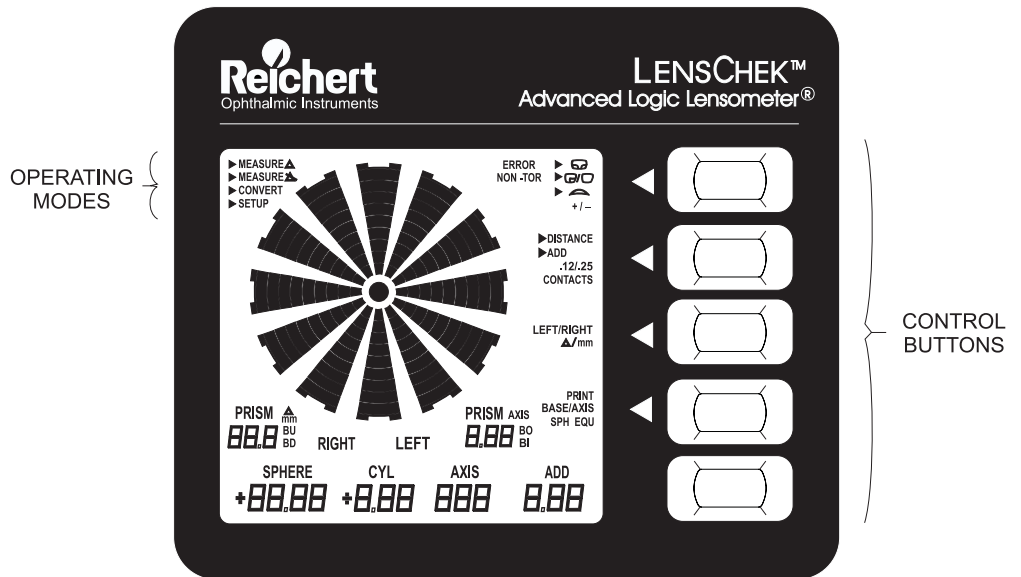


Figure 4 - LensChek Parts

## 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

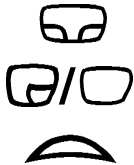
This is the default operating mode. After the initiation of a self-calibration procedure (see page 6, Setup), the LensChek defaults to this operating mode. Most eyeglass lenses are measured using this operating mode.

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.

▶ LEFT/RIGHT

## A. Measure - No Prism (cont.)

### (3) Left / Right Data

The third (from the top) control button (blue) selects the lens side that is to be measured (e.g., patients left side = Left). After the data is taken for two lenses (Left and Right) depressing the LEFT/RIGHT button again will clear the data from memory.

NOTE: If a print-out of the Left and Right data is desired, depress the PRINT button immediately after the Left and Right data is acquired.

### (4) Print

The Print button sends a command to the printer to print the prescription data that is in memory.

MEASURE 

## B. Measure - Prism

This operating mode is used when measuring a prescription that has a prism component. Refer to the similar operating modes given in MEASURE - NO PRISM. Prism data can be measured in either diopters or millimeters.

CONVERT

## C. Convert

This operating mode allows the parameters of the measured lens to be displayed using different formats. Descriptions of these formats are listed below. The bottom (green) control button is not used in this operating mode.

▶ +/-

### (1) +/- Cylinder Conversion

The top (blue) control button toggles between + and – prescription readings. This option converts a prescription reading with a + cylinder to a – cylinder format, or a – cylinder to a + cylinder format.

▶ CONTACTS

### (2) Contact Lens Conversion

The second (from the top) control button (blue) converts an eyeglass prescription to a contact lens prescription. The stored Left / Right values for an eyeglass prescription are converted to give contact lens prescription values when this button is depressed.

▶ LEFT/RIGHT

### (3) Left / Right Data

The third (or middle) control button (blue) toggles between the stored data of the Left and Right lenses. In this mode (Convert), the Left and Right data can be reviewed many times without being erased.

▶ SPH EQU

## C. Convert (cont.)

### (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):

$$\text{SPH EQU} = \text{Sphere} + \text{Cyl} / 2$$

SETUP

## D. Setup

This operational mode modifies the default parameters of the LENSCHK 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 LENSCHK.

- + 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:  $(\text{Sphere} + \text{Cyl}) > 0$ , then + Cyl mode.

IF:  $(\text{Sphere} + \text{Cyl}) < 0$ , then - Cyl mode.

▶ .12/.25

### (2) .12 /.25 Rounding Mode

The second (from the top) control button (blue) toggles between two settings (.12 / .25) on early versions of the LENSCHK. On all other LENSCHKs 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.

▶  $\Delta$  /mm

▶ BASE/AXIS

## D. Setup (cont.)

### (3) Prism Measurement (Measure - Prism mode only)

The third (from the top) control button (blue) selects the units of measurement in diopters or in millimeters. The units of measurement in the prism measurement mode are indicated next to PRISM on the lower left side of the LCD screen.

### (4) Prism Reference Mode (Measure - Prism, Diopters mode only)

The fourth from the top (blue) control button selects the reference point of the prism. Selection of BASE provides measurement in BU (Base Up), BD (Base Down), BI (Base In), and BO (Base Out) prism diopters. Selection of AXIS provides measurement in degrees.

## 2. LensChek Components

The following are important assemblies of the LensChek. Refer to Figure 4 for the location of the assemblies.

### A. HOLD BUTTON

On the top of the LensChek housing is a grey colored button that controls storage of the left / right lens data. This button is depressed after lens data (including the Add function) is acquired for a lens. After the data for the right lens is stored by depressing the hold button, data for the left lens may be additionally stored by depressing the hold button again. The LensChek will allow the storage of all prescription data for only one right and one left lens.

### B. LENS TABLE

The Lens Table provided on the LensChek is calibrated for correct horizontal axis measurement of eyeglasses. Vertical adjustment of the Lens Table is performed by movement of the Table Height Levers (refer to Figure 4).

### C. LENS HOLDER

The Lens Holder maintains a spring-loaded force on an eyeglass lens securing it against the Nosepiece. In addition, it aligns the lens parallel to the Nosepiece for correct optical alignment.

Engagement of the Lens Holder occurs when the Lens Holder Lever is fully retracted and then slowly released until it contacts the lens. After lens measurement has occurred, the Lens Holder can be fully retracted and set into a locked position away from the Nosepiece.

### D. LENS MARKER

The Lens Marker is a device that applies ink from the ink pad onto the marking pens and then onto the lens. There are three marking pens in this assembly; one marks the optical center of the lens and the other two mark the cylinder reference axis (after lens alignment using the starburst). After both lenses are marked (a pair of eyeglasses), the distance between the center marks on each lens is the PD (interpupillary distance) measurement.

## 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 APERTURE OR DAMAGE TO THE APERTURE 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.



**1. Introduction**

Following is information on how to measure eyeglass lens prescriptions using the LensChek. It is strongly recommended that you read and understand the INTRODUCTION, UNPACKING, INSTRUMENT INITIALIZATION and OVERVIEW sections in this manual so that you know the operation of the LensChek and the functions it is capable of performing. Refer to Figure 4 for LensChek parts.

LENS TABLE

The Lens Table is provided so that correct alignment of the eyeglass lens is maintained. Set the eyeglasses on the Lens Table so that the bottom of each lens touches the top of the table surface.

**NOTE:** It is important to correctly set the eyeglasses on the LensTable or incorrect axis data will result.

LENS HOLDER

The Lens Holder is provided so that the lens surface is flat against the nosepiece. Engagement of the Lens Holder occurs when you pull back on both of the Lens Holder Levers and then slowly release the tension on the Lens Holder Levers. Engage the Lens Holder Assembly to secure the lens against the nosepiece.



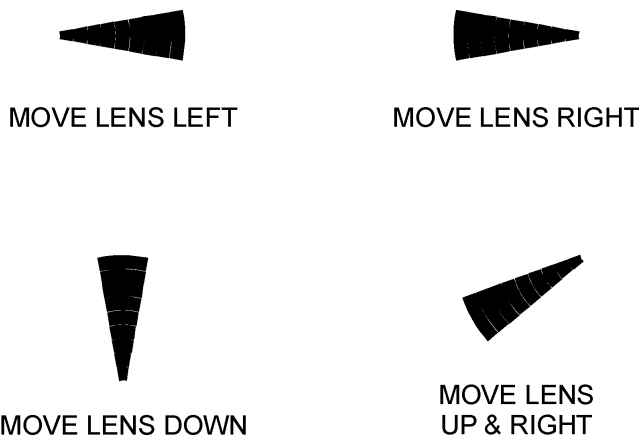
**CAUTION:** DAMAGE TO THE EYEGLOSS LENS OR THE NOSEPIECE COVER MAY OCCUR IF THE LENS HOLDER LEVERS ARE QUICKLY RELEASED.

LENS ALIGNMENT

The “Starburst Pattern” (refer to Figure 2) is a graphic utility of the Liquid Crystal Display (LCD) that gives a visual indication of lens alignment / centration. When measuring the parameters of an eyeglass lens on the LensChek, the optical center of the lens must first be found. To find the optical center, move the lens in the direction of the arrow.

Figure 5 is an illustration of the alignment arrows for all lenses except progressive lenses.

SINGLE BIFOCAL



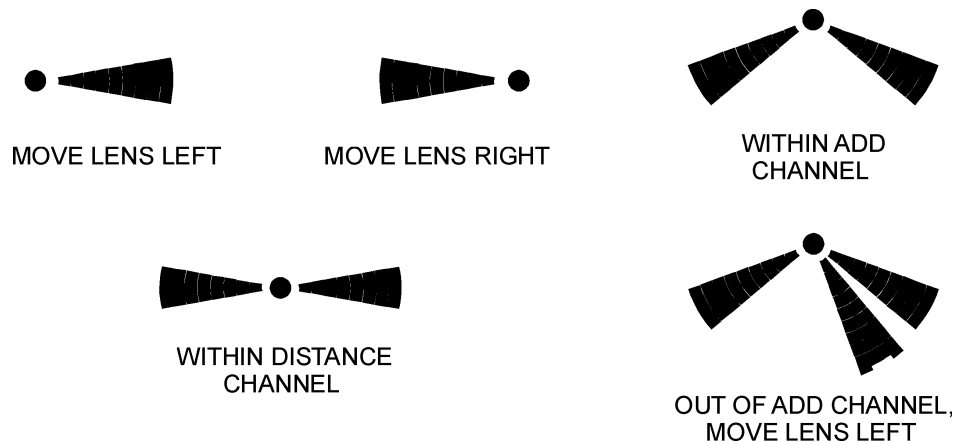
**Figure 5 - Alignment Arrows**



# Operation

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 LENSCHK 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)

## 2. Measurement Procedures (cont.)

After reading and fully understanding the basic functions of the LENSCHK , perform the following steps.

- Set the eyeglasses onto the Lens Table.
- Adjust the height of the Lens Table using the Table Height Lever.
- Engage the Lens Holder against the lens so that the lens is flat against the nosepiece.
- Perform the steps in one of the following basic measurement modes:
  - MEASURE - NO PRISM
  - MEASURE - PRISM
  - CONTACT LENS MEASURE - NO PRISM
  - MARKED PROGRESSIVE LENS MEASURE - NO PRISM
  - UNMARKED PROGRESSIVE LENS MEASURE - NO PRISM.

### Measure - No Prism

▶ MEASURE 

▶ 

▶ LEFT/RIGHT

▶ DISTANCE

▶ ADD

HOLD BUTTON

LENS MARKER

▶ PRINT

- 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 for the Single/Bifocal mode by pressing the top (blue) control button. Refer to OVERVIEW, LCD SCREEN, MEASURE - NO PRISM for an illustration of the lens styles.
- 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. Move the lens to its optical center by moving the lens in the direction shown by the alignment arrows (refer to Figure 5 for an illustration of the alignment arrows) until the "Starburst" is shown. This is the DISTANCE measurement.
- E. If measuring a bifocal section; select the ADD mode and move the bifocal section of the lens until the maximum ADD value is shown in the lower right corner of the LCD screen.
- F. Record the data, and/or press the Hold Button for temporary storage of the data (refer to Figure 4 for the Hold Button).
- G. If measuring the PD (inter-pupillary distance) by marking the optical center of the lens, move the Lens Marker Lever into position and put a mark at the optical center (refer to Figure 4 for the Lens Marker Lever).
- H. Repeat steps C. thru G. for the other lens side.
- I. Press the fourth (from the top) control button (blue) for a print-out of the lens data (if the printer is available and a print-out is desired).

▶ MEASURE 

## Measure - Prism

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.

▶ MEASURE 

## Contact Lens, Measure - No Prism

▶ 

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.

▶ LEFT/RIGHT

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.

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 



▶ LEFT/RIGHT

▶ DISTANCE

- 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.
- 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. 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 LENSCHK. 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 LENSCHK. 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


HOLD BUTTON

▶ PRINT

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



▶ LEFT/RIGHT

▶ DISTANCE

- 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.
- 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. Align the lens in front of the Nosepiece about  $\frac{1}{4}$  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).

▶ PRINT

- G. Repeat steps C. thru F. for the lens in the other side of the eyeglasses.
- 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 LENSCEK UNLESS EYE PROTECTION IS WORN.

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

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

## Cleaning

1. LCD Screen Cleaning
2. LENSCEK 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. LENSCEK 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.



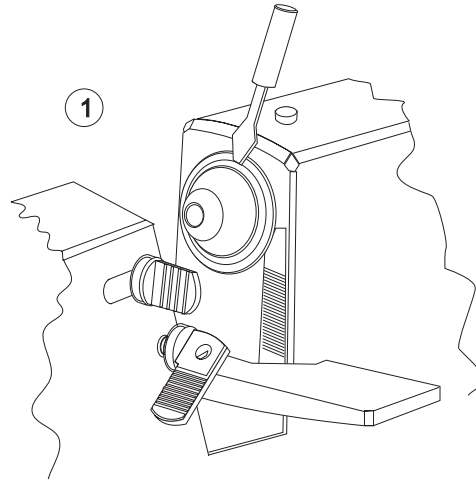
## Cleaning and Maintenance

### 5. NOSEPIECE COVER REMOVAL / INSTALLATION

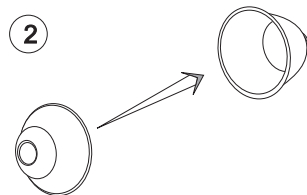
If the Nosepiece Cover is damaged or torn, replace it. Refer to Figure 7.



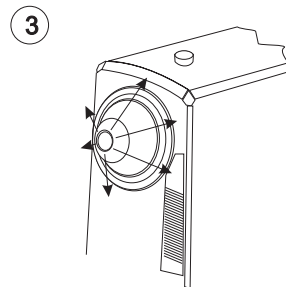
**CAUTION:** DO NOT USE SHARP OBJECTS TO REMOVE THE NOSEPIECE COVER OR DAMAGE TO THE NOSEPIECE COVER MAY OCCUR. INCORRECT MEASUREMENTS MAY OCCUR IF THE NOSEPIECE COVER IS DAMAGED.



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 LENSCHCK



INSTALL A NEW NOSEPIECE COVER ONTO THE METAL NOSEPIECE OF THE LENSCHCK. 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**

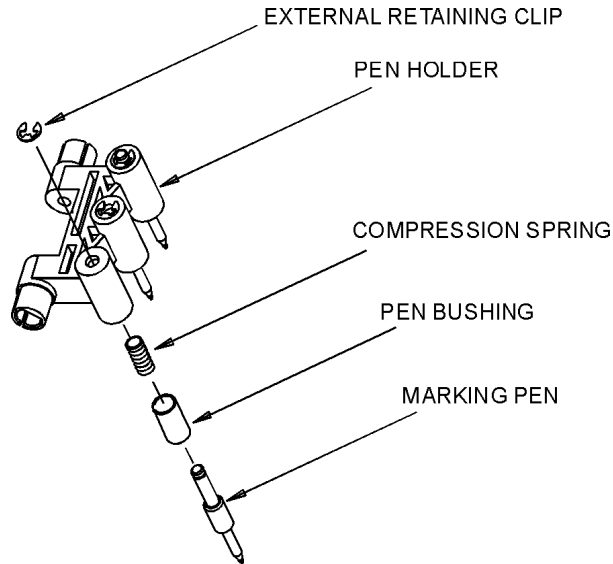
## Cleaning and Maintenance



### 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.



## Cleaning and Maintenance

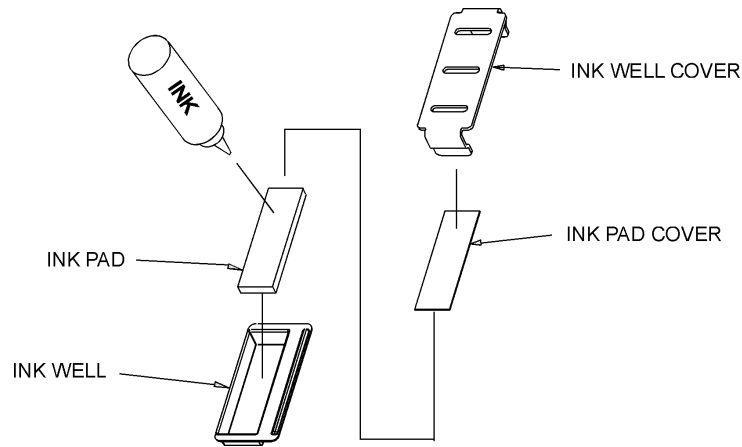


Figure 9 - Marking Ink Replacement

### 8. NOSEPIECE LENS CLEANING

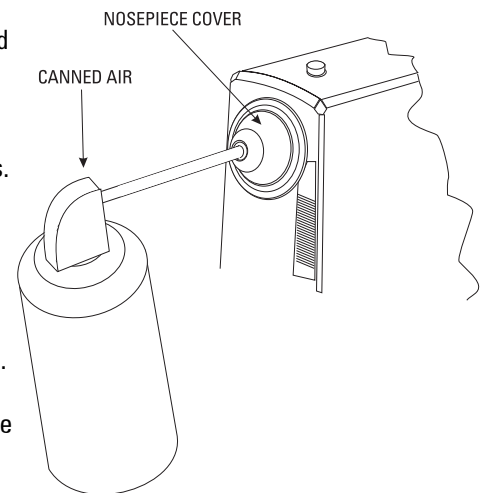
- A) Move the Lens Holder Levers to the retracted position.

**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:

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

# Troubleshooting

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

## 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

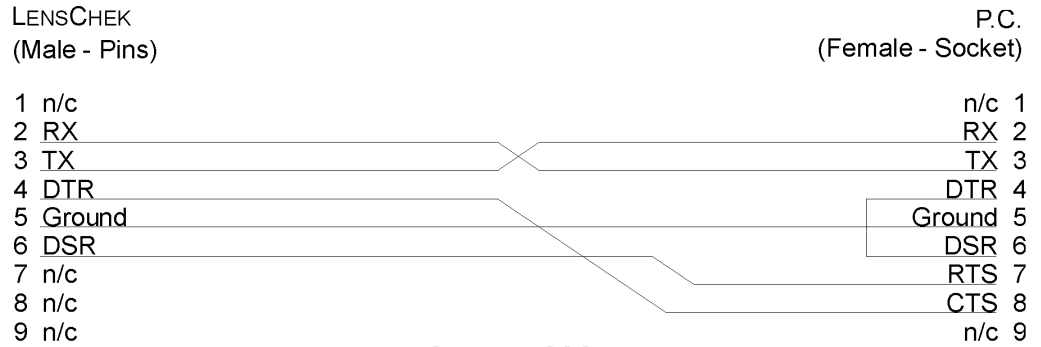
### Physical Dimensions:

<u>Width</u>	<u>Height</u>	<u>Length</u>	<u>Weight</u>
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

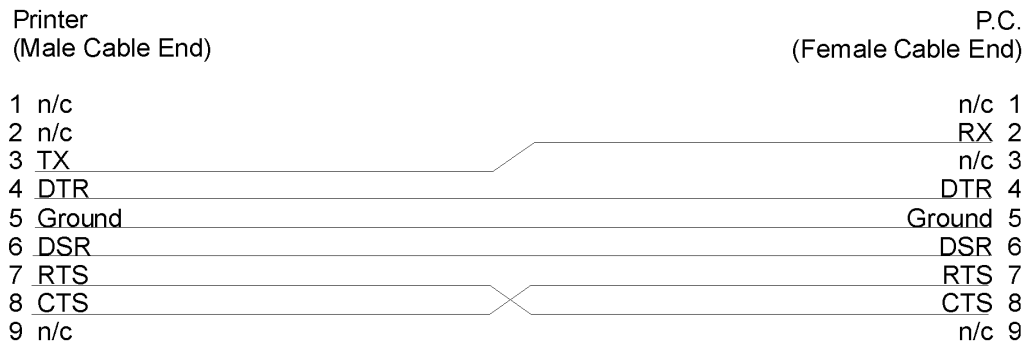
Display ..... High Contrast LCD

## Appendix B - LensChek Connections



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

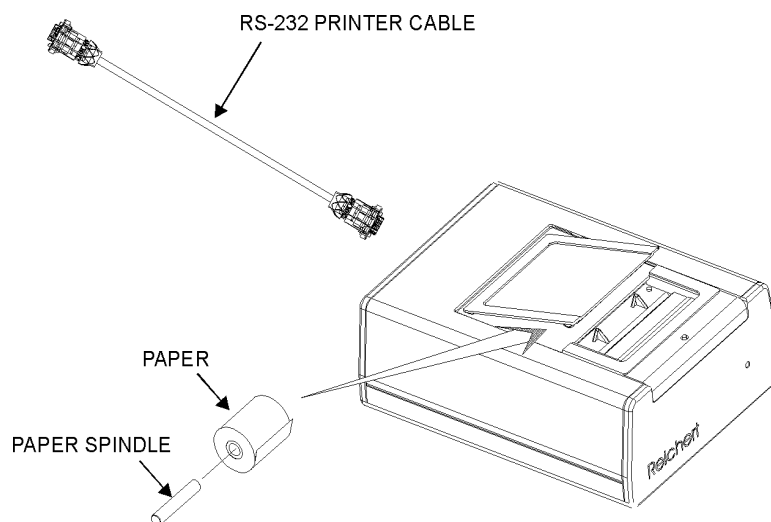
### LensChek to P.C. Connections



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

## Appendix C – Printer



### LENSCHEK PRINTER

This Printer is designed to use only with the LensChek™, Advanced Logic Lensometer®

### INSTALLATION

1. Remove the protective cap from the RS-232C port.
2. Ensure that the input power to the LENSCHek is disconnected and then connect the RS-232 Printer Cable to the LENSCHek.
3. Connect the RS-232 Printer Cable to the Printer.
4. Apply input power to the LENSCHek.

### PAPER REPLACEMENT

1. Lift the paper access door and remove the paper and paper spindle.
2. Remove the paper from the paper spindle.
3. Replace the paper onto the paper spindle.
4. Install the paper and paper spindle into the Printer.
5. Close the paper access door.

### PRINTER PARTS

- Paper Spindle (P/N 12430-328)
- Access Door (P/N 12430-325-001)
- RS-232 Printer Cable (P/N 12622-004)

### SPECIFICATIONS

Input Power .....	From LENSCHek thru Cable
Dimensions .....	6.3 (L) x 4.8 (W) x 2.3 (H) inches
	16.0 (L) x 12.2 (W) x 5.8 (H) cm.
Weight .....	1 lb. 15 oz. (880 grams) - w/ No Paper

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Ophthalmic Instruments Division  
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Telephone 716 686 4500  
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[www.leica-oid.com](http://www.leica-oid.com)

**ISO-9001 Certified**

12621-101 Rev. D 1/99 PP

# Ordering Information

## ACCESSORIES

<b>Catalog #</b>	<b>Description</b>
12621-044	LENSCHEK Dust Cover
12440	Printer Paper, 100 Rolls
12441	Printer Paper, 5 Rolls
12622	LENSCHEK Printer
12623	Ink Pad and Holder, Qty: 5
12624	Contact Lens Holder
712661-351	Red Marker Ink

Keratometer  
LongLife™ Project-O-Chart  
Selectra™ Project-O-Chart  
XCEL® Slit Lamps  
XPERT® NCT PLUS Advanced Logic Tonometer  
Non-Contact™ II Tonometer  
Leica Phoroptor® Refracting Instrument  
Leica AP250 Projection System  
Leica KR450 Auto Keratometer/Refractor  
Leica AR350 Auto Refractor  
Leica KM250 Auto Keratometer  
Leica PL800 Digital PD Meter

## OTHER LEICA MICROSYSTEMS, INC, OPHTHALMIC INSTRUMENTS DIVISION PRODUCTS

To complement your LensChek™ Advanced Logic Lensometer®, we invite you to take a look at the other products made by Reichert Ophthalmic Instruments:

For a list of dealers in your area, contact Leica Microsystems, Inc., Ophthalmic Instruments Division's Customer Service Department at (716) 686-4500.