

LONGLIFE™

Project-O-Chart®

User's Guide



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Warnings & Cautions

Reichert Technologies (Reichert) is not responsible for the safety and reliability of this instrument when:

- Assembly, disassembly, repair, or modification is made by unauthorized dealers or persons.
- Instrument is not used in accordance with this User's Guide.

WARNING: AN INSTRUCTION THAT DRAWS ATTENTION TO THE RISK OF INJURY OR DEATH.



WARNING: UNITED STATES FEDERAL LAW AND EUROPEAN REGULATIONS REQUIRE THAT THIS DEVICE BE PURCHASED ONLY BY A PHYSICIAN OR A PERSON ACTING ON BEHALF OF A PHYSICIAN.

WARNING: THIS INSTRUMENT SHOULD BE USED IN STRICT ACCORDANCE WITH THE INSTRUCTIONS OUTLINED IN THIS USER'S GUIDE. THE SAFETY OF THE OPERATOR AND THE PERFORMANCE OF THE INSTRUMENT CANNOT BE GUARANTEED IF USED IN A MANNER NOT SPECIFIED BY REICHERT TECHNOLOGIES.

WARNING: DO NOT REPAIR OR SERVICE THIS INSTRUMENT WITHOUT AUTHORIZATION FROM THE MANUFACTURER. ANY REPAIR OR SERVICE TO THIS INSTRUMENT MUST BE PERFORMED BY EXPERIENCED PERSONNEL OR DEALERS WHO ARE TRAINED BY REICHERT SO THAT CORRECT OPERATION OF THIS INSTRUMENT IS MAINTAINED.

WARNING: MODIFICATIONS TO THIS INSTRUMENT ARE NOT ALLOWED. ANY MODIFICATION TO THIS UNIT MUST BE AUTHORIZED BY REICHERT OR SERIOUS INJURY TO THE OPERATOR OR PATIENT MAY OCCUR.

WARNING: IF THIS INSTRUMENT IS MODIFIED, APPROPRIATE INSPECTION AND TESTING MUST BE CONDUCTED TO ENSURE CONTINUED SAFE USE OF THIS INSTRUMENT.

WARNING: TO AVOID RISK OF ELECTRIC SHOCK, THIS EQUIPMENT MUST ONLY BE CONNECTED TO A SUPPLY MAINS WITH PROTECTIVE EARTH OR DAMAGE TO THE INSTRUMENT AND/OR INJURY TO THE OPERATOR OR PATIENT MAY OCCUR.

WARNING: ENSURE THAT THE VOLTAGE APPLIED TO THE UNIT IS THE SAME AS THE VOLTAGE THAT IS INDICATED ON THE DATA PLATE OR DAMAGE TO THE INSTRUMENT AND/OR INJURY TO THE OPERATOR OR PATIENT MAY OCCUR.

WARNING: THE INSTRUMENT MUST BE PLUGGED INTO AN OUTLET WITH AN EARTH GROUND. DO NOT REMOVE OR DEFEAT THE EARTH GROUND CONNECTION ON POWER INPUT CONNECTOR ON THE UNIT'S POWER CORD OF THIS INSTRUMENT OR DAMAGE TO IT AND/OR INJURY TO THE OPERATOR OR PATIENT MAY OCCUR.

WARNING: THE EQUIPMENT OR SYSTEM SHOULD NOT BE USED ADJACENT TO OR STACKED WITH OTHER EQUIPMENT AND THAT IF ADJACENT OR STACKED USE IS NECESSARY, THE EQUIPMENT OR SYSTEM SHOULD BE OBSERVED TO VERIFY NORMAL OPERATION IN THE CONFIGURATION IN WHICH IT WILL BE USED.

WARNING: THIS INSTRUMENT IS NOT SUITABLE FOR USE IN THE PRESENCE OF FLAMMABLE ANESTHETIC MIXTURES, SUCH AS OXYGEN OR NITROUS OXIDE.

WARNING: THE USE OF ACCESSORIES OR CABLES OTHER THAN THOSE SPECIFIED, WITH THE EXCEPTION OF THOSE SOLD BY THE MANUFACTURER AS REPLACEMENT PARTS FOR THE INTERNAL COMPONENTS, MAY RESULT IN INCREASED EMISSIONS OR DECREASED IMMUNITY OF THE EQUIPMENT OR SYSTEM.

Warnings & Cautions (continued)

CAUTION: AN INSTRUCTION THAT DRAWS ATTENTION TO THE RISK OF DAMAGE TO THE PRODUCT.



CAUTION: THE INTERNAL CIRCUITRY OF THE INSTRUMENT CONTAINS ELECTROSTATIC DISCHARGE SENSITIVE DEVICES (ESDS) THAT MAY BE SENSITIVE TO STATIC CHARGES PRODUCED BY THE HUMAN BODY. DO NOT REMOVE THE COVERS WITHOUT TAKING PROPER ESDS PRECAUTIONS.

CAUTION: DO NOT USE SOLVENTS OR STRONG CLEANING SOLUTIONS ON ANY PART OF THIS INSTRUMENT AS DAMAGE TO THE UNIT MAY OCCUR. SEE MAINTENANCE SECTION FOR DETAILED CLEANING INSTRUCTION.

CAUTION: PORTABLE AND MOBILE RF COMMUNICATIONS EQUIPMENT CAN AFFECT MEDICAL ELECTRICAL EQUIPMENT.

CAUTION: THIS INSTRUMENT IS NOT TO BE USED NEAR HIGH-FREQUENCY EMITTING SURGICAL EQUIPMENT.

CAUTION: THIS INSTRUMENT IS NOT INTENDED TO BE CONNECTED TO EQUIPMENT OUTSIDE THE CONTROL OF REICHERT TECHNOLOGIES OR MUST BE TESTED TO AN APPLICABLE IEC OR ISO STANDARDS.

CAUTION: THE USE OF ACCESSORIES OR CABLES OTHER THAN THOSE SPECIFIED, WITH THE EXCEPTION OF THOSE SOLD BY THE MANUFACTURER AS REPLACEMENT PARTS FOR INTERNAL COMPONENTS, MAY RESULT IN INCREASED EMISSIONS OR DECREASED IMMUNITY OF THE EQUIPMENT OR SYSTEM.

CAUTION: THIS INSTRUMENT MUST BE PLUGGED INTO AN OUTLET WITH AN EARTH GROUND THAT IS CONNECTED TO THE RECEPTACLE OR DAMAGE TO THE UNIT MAY OCCUR. DO NOT DISABLE OR REMOVE THE GROUND PIN.

Symbol Information

The following symbols appear on the instrument.



Consult Instructions for Use symbol indicating important operating and maintenance instructions that are included in this User's Guide



Caution Symbol indicating important information and maintenance instructions that are included in the User's Guide



Protective Earth



ON / OFF



Date of Manufacture

REF

Catalog Number

SN

Serial Number



Waste of Electrical and Electronic Equipment



Authorized to mark given by Intertek ETL Semko for conformance with electrical standards



Fragile Contents in Shipping Container - handle with care



Keep Dry - Package shall be kept away from rain



Authorized Representative in European Community



This Way Up - Indicates the correct upright position of package

Introduction

Congratulations on your purchase of the LongLife™ Project-O-Chart® (hereafter referred to as the LongLife POC).

This User's Guide is designed as a training and reference manual for operation, maintenance, and troubleshooting. We recommend that you read it carefully prior to use and follow the instructions in the guide to ensure optimum performance of your new instrument. Properly trained eyecare professionals such as ophthalmologists, optometrists, opticians and eye care technicians should operate this instrument.

Please retain this guide for future reference and to share with other users. For additional copies of this manual or questions related to the LongLife POC, contact your local authorized Reichert dealer or contact our Customer Service department directly at:

Tel: 716-686-4500

Fax: 716-686-4555

E-mail: reichert.information@ametek.com

Indications for Use

The LongLife POC is designed for:

- Visual acuity testing in clinics, hospitals, or ophthalmologist's or optometrist's offices.

Contraindications

There are none associated with the LongLife POC.

Instrument Setup

This manual should be used in reference to the Reichert LongLife POC Model 12084.

Package Contents

Contents of the shipping container should include the following:

- LongLife POC Head (P/N 12084-800)
(Includes Objective Tube. See Parts Identification for detailed listing.)
- Objective Tube (P/N 11082-868)
- Dust Cover (P/N 11085-064)
- Cross Slide (P/N 12084-851)
- Instruction Manual (P/N 12084-101)
- Power Cord (P/N WCBL10018)

Accessories

- Table Mount (P/N 12090)
- Wall Mount (P/N 12091)
- Instrument Stand Mount (P/N 12092)
- Floor Stand (P/N 12096)
- Yoke (P/N 12094)
- 20" x 20" Non-Depolarizing Screen (P/N 11808)
- 13.5" x 13.5" Screen (P/N 11084-000)
- Halogen Bulb (P/N 11143)

Parts Identification

- | | |
|--|--|
| 1. Rear Cover | The back housing cover for the unit. |
| 2. Horizontal Line Selector | Selects which horizontal line(s) to project. |
| 3. Cross Slide | Masks either the entire square slide or a single vertical row of optotypes, or applies the Red/Green filter. |
| 4. Vertical Motion Slide Control | Changes the specific slide being projected. |
| 5. Mounting Knob | Secures the LongLife POC to a Yoke Assembly. |
| 6. Support Barrel | Holds the Objective Assembly. |
| 7. Objective Tube Assembly | Consists of both the Outer Objective (8) and Inner Objective (9). |
| 8. Outer Objective | Adjusts the size of the projected image on the screen. |
| 9. Inner Objective | Focuses the projected image on the screen. |
| 10. Retaining Ring | Holds the Positive and Negative Objective Lenses in place. |
| 11. Outer Objective Tube Locking Screw | Holds the Outer Objective in place. |
| 12. Inner Objective Tube Locking Screw | Holds the Inner Objective in place. |
| 13. Rear Cover Fastener | Holds the Back Cover to the unit. |
| 14. ON/OFF Switch | This turns power to the unit on or off. |
| 15. AC Inlet | Where the Power Cord to the unit gets plugged in. |
| 16. Power Cord | Provides power to the unit. |
| 17. Yoke (Not Supplied) | Attaches to the unit and is necessary when mounting the LongLife POC to a Table Mount, Wall Mount, Floor Stand, or Instrument Stand. |
| 18. Fork Adjusting Screws | Secures the Yoke Assembly to a mounting device. |
| 19. Reflector Support | The housing where the Reflector is held in place. |
| 20. Bulb | Responsible for the projected image on the screen. |
| 21. Captive Screw | Secures the Reflector Support to the Condenser Holder. |

Instrument Setup (continued)

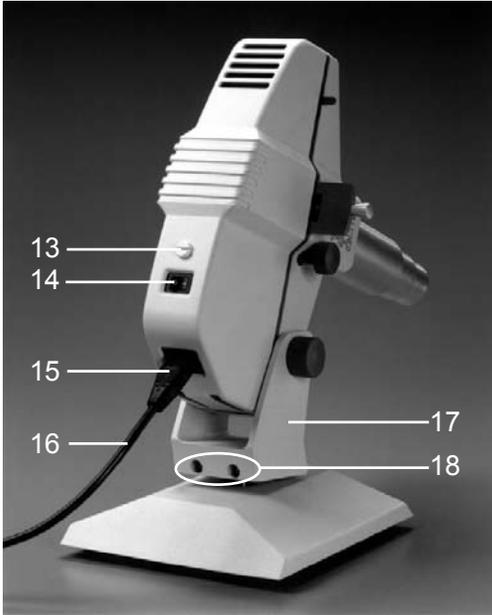
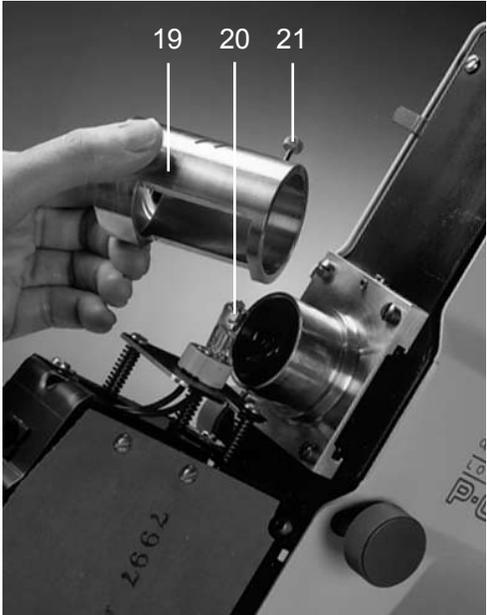
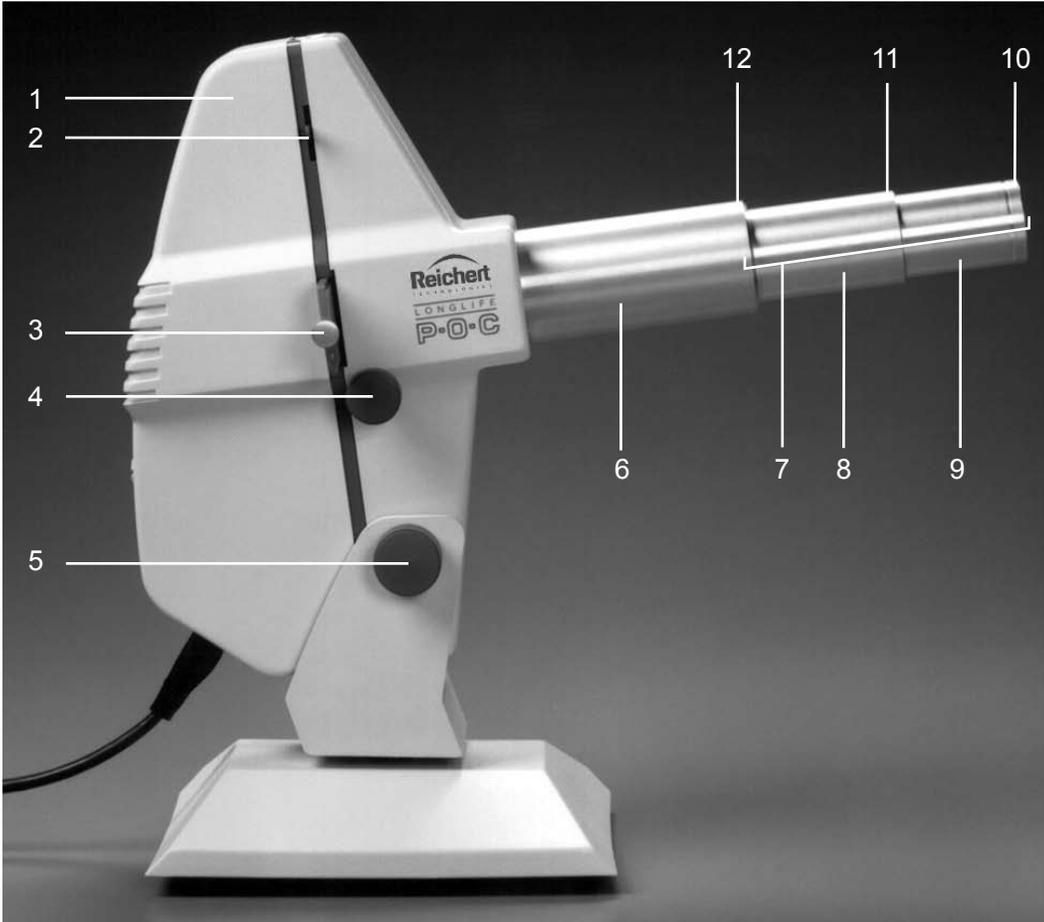


Figure IS-1 - Parts Identification

Instrument Setup (continued)

Unpacking Instructions

Great care has been taken to deliver your LongLife POC to you safely. Please read this User's Guide before operating the unit.

The instrument is packaged in shipping containers to protect the instrument from damage during shipping. Please remove the LongLife POC Head, Objective Tube Assembly, Cross Slide and Power Cord carefully from the packaging material. Refer to Figure IS-2.

Note: Please retain the packaging so that if future transportation is required, the instrument can be sent in its original packaging.

Note: The Yoke, Slides, and various mounts and/or stands are each sold separately.



Figure IS-2 Unpacking the LongLife POC

Instrument Setup (continued)

Installation & Alignment

In order to mount the LongLife POC to a stand or mount, it must first be attached to the Yoke Assembly (P/N 12094). Once placed on the Yoke Assembly, the Yoke can be mounted to all the other mounting assemblies.

Yoke Assembly

1. Insert the Fork Insert into the Mounting Fork. Refer to Figures IS-3.
2. Using a 3/16" Allen screwdriver, secure the Fork Insert with the two Fork Adjusting Screws. Refer to Figure IS-4.

Note: These screws will be loosened to allow for mounting onto a stand. Do not overtighten these screws since they will be loosened and retightened onto an assembly.

3. Loosen the Mounting Knobs by turning the counter-clockwise. Refer to Figure IS-5.
4. Insert the LongLife POC between the Mounting Fork. Refer to Figure IS-5.
5. Secure the LongLife POC with the two Mounting Knobs by turning the knobs clockwise to secure them. Refer to Figure IS-5.

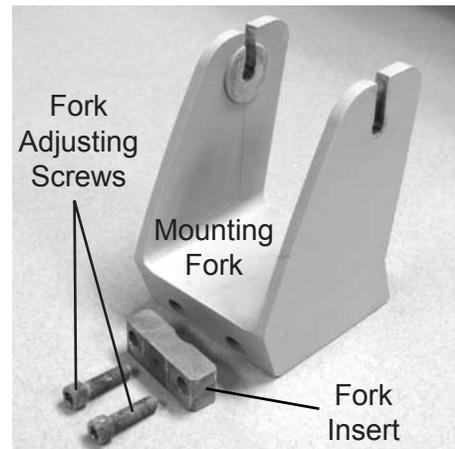


Figure IS-3 Yoke Parts

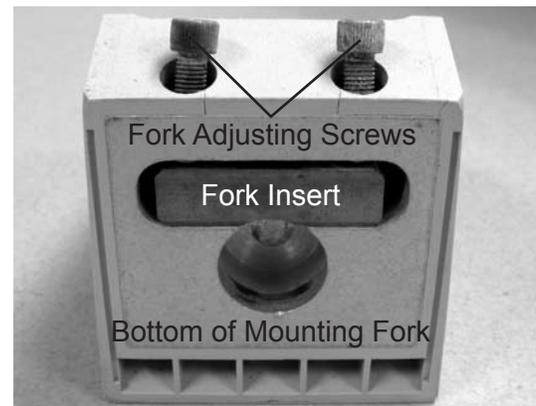


Figure IS-4 Yoke Parts - Bottom View

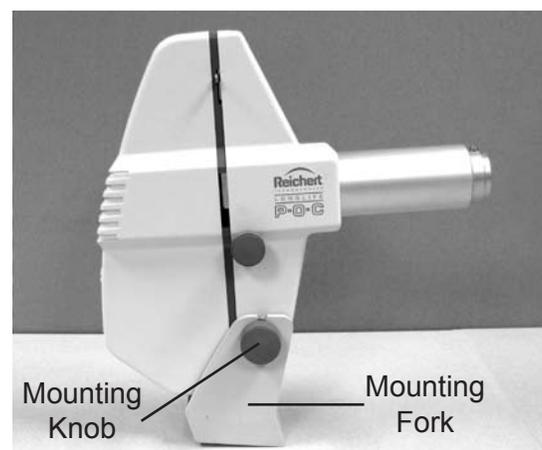


Figure IS-5 Mount to Yoke

Instrument Setup (continued)

Installation & Alignment (continued)

Wall Mount Assembly

The Wall Mount Assembly (P/N 12091) enables the LongLife POC to be mounted on a wall, enabling the maximum physical distance between the LongLife POC and the screen.

1. Secure the Wall Mount Assembly to the wall by securing it with six screws. Refer to Figure IS-6.

Note: Ensure the Wall Mount is properly installed and that the screws are either secured into a stud, or with proper wall studs.

2. Place the Yoke Assembly on the Pivot Pin. Refer to Figure IS-6.
3. Using a 3/16" Allen screwdriver, tighten the Fork Adjusting screws to hold the Yoke Assembly in place. Refer to Figure IS-7.

Table Mount Assembly

The Table Mount Assembly (P/N 12090) is a stand that enables the LongLife POC to be placed on a table or any other flat surface that is sufficiently large that the entire base fits on top.

1. Using a 3/16" Allen screwdriver, loosen the Fork Adjusting Screws and place the Yoke Assembly on the Pivot Pin. Refer to Figures IS-4 and IS-9.

Note: The Pivot Pin on the Table Mount is the same as the Pivot Pin shown on the Wall-Mount Assembly in Figure IS-6.

2. Once the Yoke Assembly is in the desired position, tighten the Fork Adjusting Screws with a 3/16" Allen screwdriver until the Yoke does not move. Refer to Figures IS-4 and IS-9.

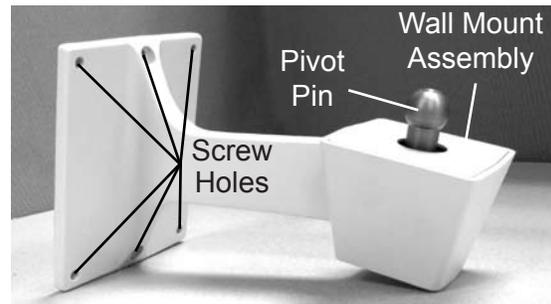


Figure IS-6 Wall Mount Assembly

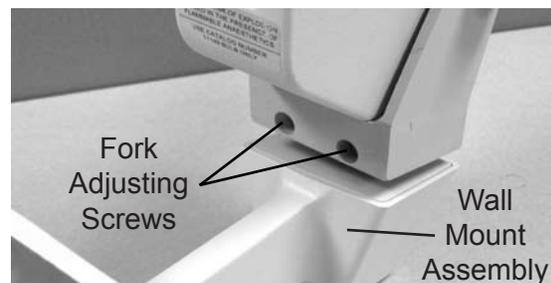


Figure IS-7 Fork Adjusting Screws

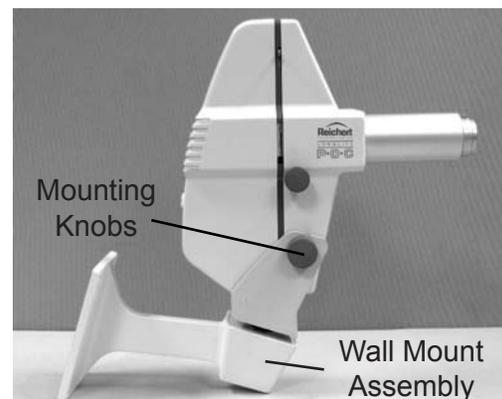


Figure IS-8 Wall Mount With Projector

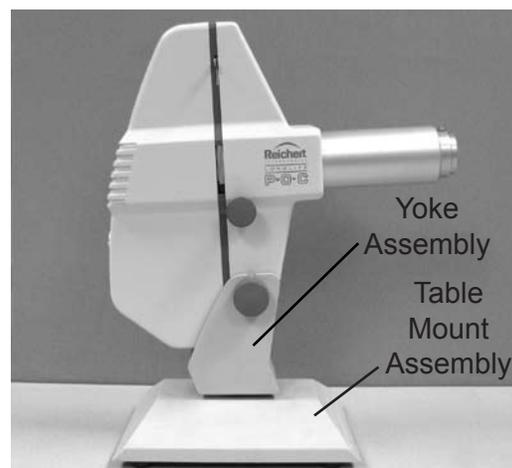


Figure IS-9 Table Mount Assembly

Instrument Setup (continued)

Installation & Alignment (continued)

Instrument Stand Assembly

The Instrument Stand Assembly (P/N 12092 or 15258) is a mount that enables the LongLife POC to be placed on the Vertical Post of a stand.

CAUTION: WHEN ATTACHING THE INSTRUMENT STAND ASSEMBLY TO THE VERTICAL POST, ENSURE THE SCREWS ARE TIGHTENED ENOUGH SO THAT THE INSTRUMENT STAND ASSEMBLY DOES NOT MOVE. FAILURE TO TIGHTEN SCREWS SUFFICIENTLY MAY RESULT IN DAMAGE TO THE UNIT AND POSSIBLY CAUSE SERIOUS HARM.

Note: The Instrument Stand Assembly with P/N 12092 was designed to be used with the Advantage Stand or Advantage Plus Stand. The Instrument Stand Assembly with P/N 15258 was designed to be used with the Endurance Stand. These are not tested for use on other Vertical Posts.

1. Unscrew the two Screws at the rear of the Instrument Stand so that the two halves are separate. Refer to Figure IS-10.
2. Place the Front of the Instrument Stand Assembly on the front side of the Vertical Post, and place the Back of the Instrument Stand Assembly behind it. Refer to Figure IS-11.
3. Using a 3/16" Allen screwdriver, secure the Front and Back with the two Screws. Refer to Figure IS-12.
4. Install the Yoke Assembly to the Pivot Post on the Instrument Stand Assembly. Refer to Figure IS-13.
5. Once the Yoke Assembly is in the desired position, tighten the Fork Adjusting Screws so that the Yoke Assembly does not move. Refer to Figure IS-13.

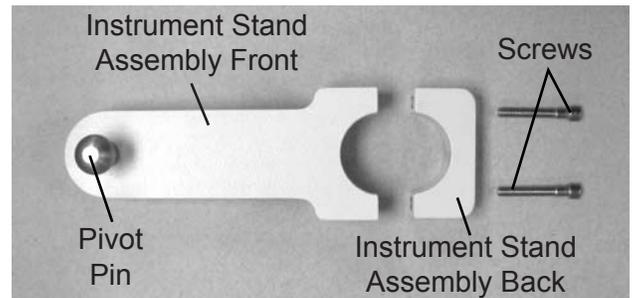


Figure IS-10 Instrument Stand Assembly - Apart

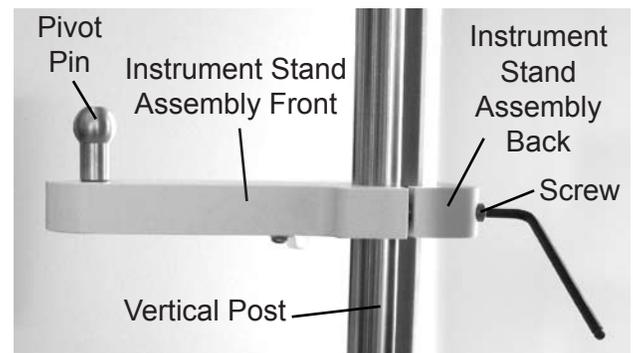


Figure IS-11 Instrument Stand Assembly

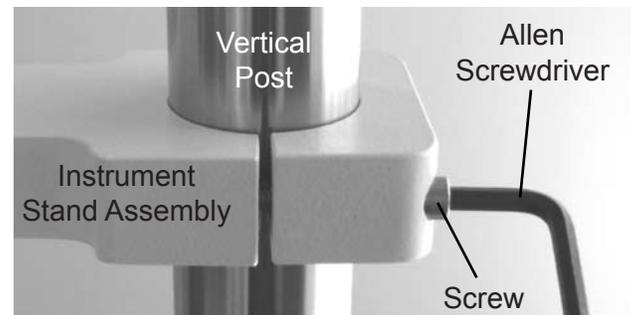


Figure IS-12 Tighten Screws

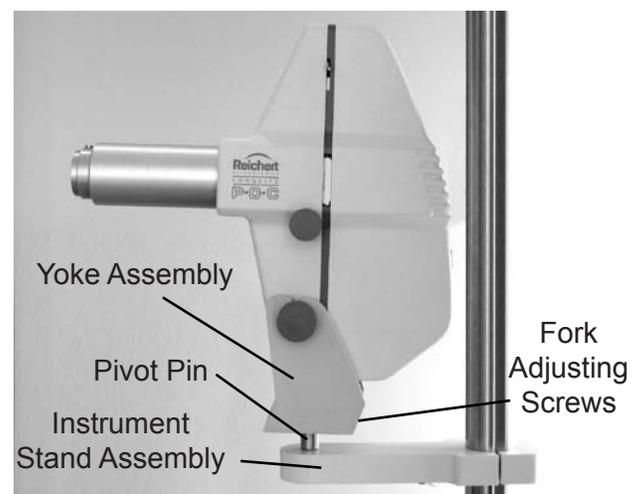


Figure IS-13 Mount Projector

Instrument Setup (continued)

Installation & Alignment (continued)

Floor Stand Assembly

The Floor Stand Assembly (P/N 12096) allows the LongLife POC to be mounted to the top of the Stand and placed independent of walls, instrument arms and tables. This allows for the largest freedom of movement.

1. Place the Floor Stand on the floor, ensuring it is on a level surface and the Stand does not wobble or shake.
2. Loosen the Fork Adjusting Screws on the Yoke Assembly and place the Yoke Assembly on the Pivot Pin. Refer to Figure IS-14 and IS-15.
3. Once the Yoke Assembly is in the desired position, tighten the Fork Adjusting Screws until the Yoke does not move. Refer to Figure IS-15.

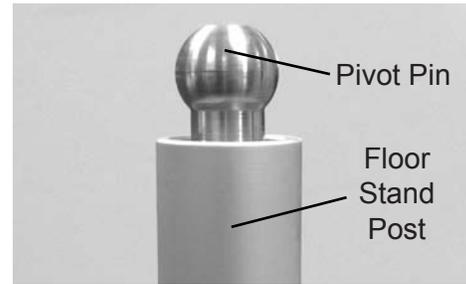


Figure IS-14 Pivot Pin

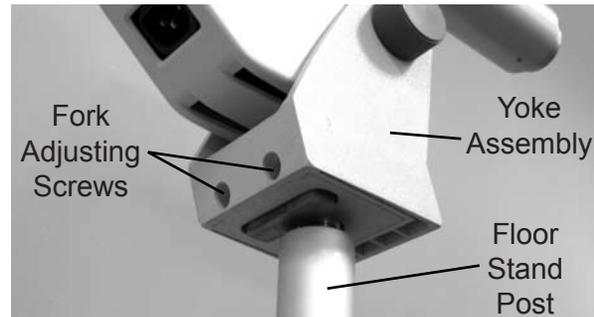


Figure IS-15 Attach Yoke Assembly

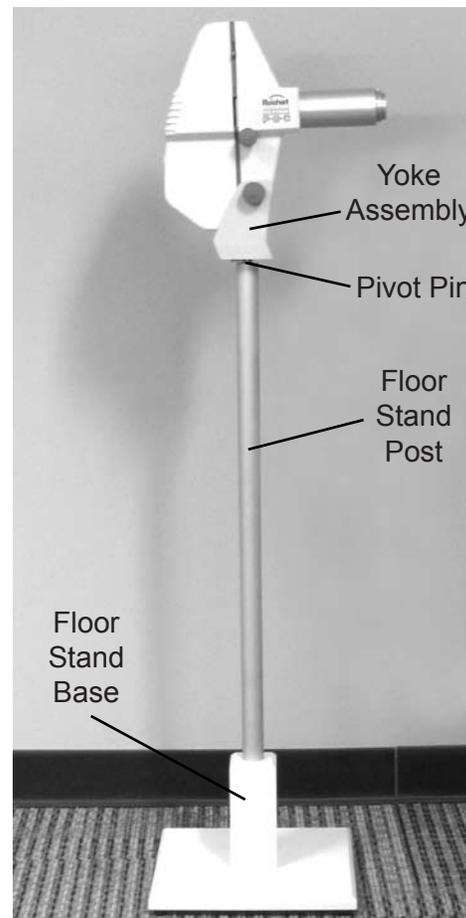


Figure IS-16 Floor Stand Assembly

Instrument Setup (continued)

Installation & Alignment (continued)

Input Voltage Selection

The 12084 LongLife POC is configured for 110V use. For 230V applications the following procedure must be followed.

CAUTION: ENSURE THE POWER CORD IS DISCONNECTED FROM THE UNIT BEFORE ATTEMPTING THE FOLLOWING PROCEDURE.

1. Using a flat head screwdriver, turn the Rear Cover Fastener a quarter turn counter-clockwise to remove the Rear Cover to access the Electrical Assembly. Refer to Figures IS-17 and IS-18.

Note: A 'click' will sound when the Rear Cover Fastener is fully disengaged.

2. Using a Philips head screwdriver, remove the two screws that hold the Protective Paper over the electrical housing, and fold down the cover. Refer to Figure IS-19.
3. Slide the plastic switch to change the Voltage. Refer to Figures IS-20 and IS-21.

Note: The visible number shows what the voltage is set to. Options are either 115V or 230V. Refer to Figure IS-21.

4. Remove the Fuse that comes standard with the LongLife POC by lifting it straight out of the fuse holder. Refer to Figure IS-21.
5. Replace it with a A=.25, V=250, Non-Time Delay (fast acting) .25 Diameter x 1.25 LG (3AG) fuse, and press it into place in the Fuse Holder until it snaps into place. Refer to Figure IS-21.
6. Fold the Protective Paper back into position and secure it with the 2 Cover Screws. Refer to Figure IS-19.
7. Install the Rear Cover and secure it with the Rear Cover Fastener. Refer to Figure IS -17.

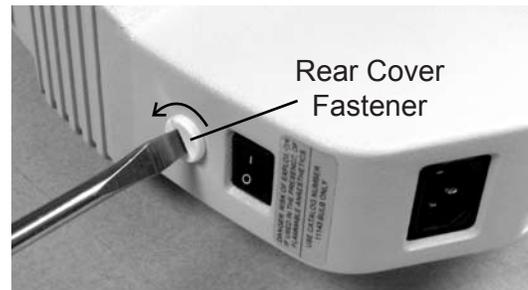


Figure IS-17 Rear Cover Fastener

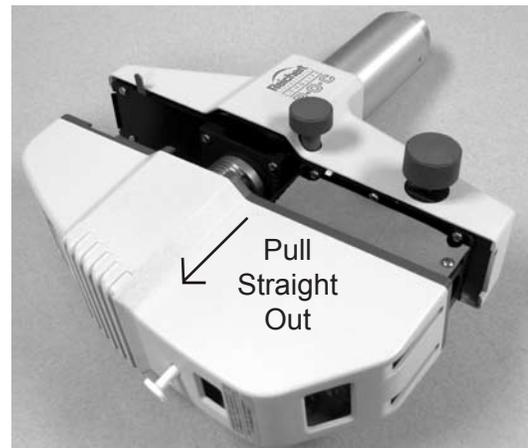


Figure IS-18 Remove Rear Cover

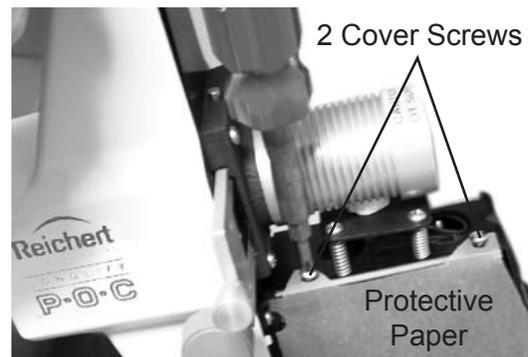


Figure IS-19 Remove 2 Screws

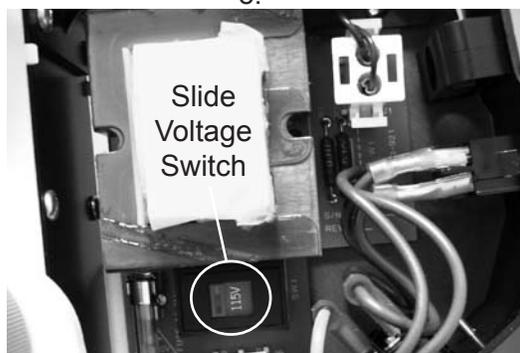


Figure IS-20 Voltage Switch

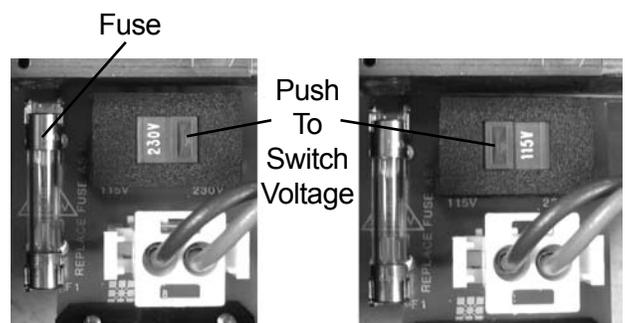


Figure IS-21 Select Voltage

Instrument Setup (continued)

Installation & Alignment (continued)

Refracting Room Setup

WARNING: CARE MUST BE TAKEN TO ARRANGE THE CABLES FOR THE UNIT AND ACCESSORIES SUCH THAT THEY DO NOT PRESENT A TRIPPING HAZARD TO THE EXAMINER OR A DANGER TO THE PATIENT.

WARNING: POSITION THE INSTRUMENT SO THAT IT IS NOT DIFFICULT TO OPERATE THE DISCONNECTION DEVICE (PLUG).

Set up the unit according to the following guidelines. The following distances are important in the setup of a refracting room:

- **REFRACTING DISTANCE (RD)** This is equal to the distance from the patient's eye to the screen.
- **PROJECTION DISTANCE (PD)** This is equal to the distance from the slide to screen.
- **LETTER HEIGHT (LH)** The height of a 20/200 character should be equal to the refraction distance times the tangent of 50 minutes of arc or .014545.

$$LH \text{ (inches or mm)} = RD \text{ (inches or mm)} \times .014545$$

For example, a refracting distance of 240 inches (20 feet) will require a letter height of 3.49 inches (240 inches x .014545 = 3.49 inches)

1. Determine the refracting distance by measuring the distance from the patient to the screen.

Note: Refer to Figures IS-22 and IS-23, which show combinations of refraction and projection distances achievable with this system.

2. Install the projector screen.

Note: To ensure maximum performance from your projector, we recommend that you always use Reichert projection screens.

3. Insert the variable focus objective tube into the support barrel.

Note: Do not fully tighten the outer objective lock screw, to allow for final focus adjustments.

-continued-

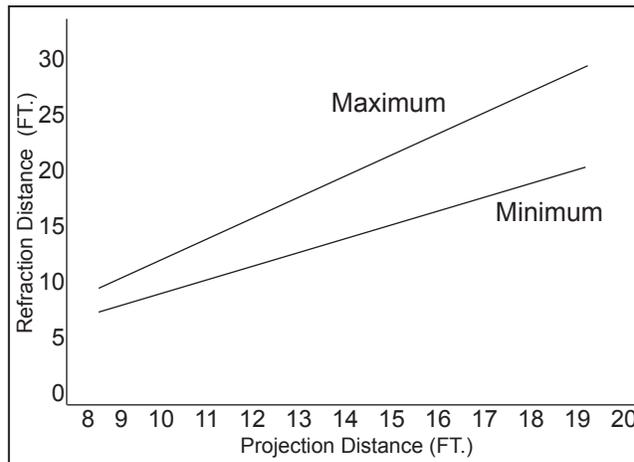


Figure IS-22 Projection Range

PROJECTION DISTANCE		MINIMUM REFRACTING DISTANCE		MAXIMUM REFRACTING DISTANCE	
FT	M	FT	M	FT	M
8	2.5	6.6	2.0	9.9	3.0
9	2.8	7.7	2.4	11.5	3.5
10	3.1	8.7	2.7	13.0	4.0
11	3.4	9.8	3.0	14.5	4.5
12	3.7	10.9	3.4	16.1	5.0
13	4.0	11.9	3.7	17.6	5.4
14	4.3	13.0	4.0	19.1	5.9
15	4.6	14.1	4.3	20.7	6.4
16	4.9	15.1	4.6	22.2	6.8
17	5.2	16.2	4.9	23.7	7.3
18	5.5	17.3	5.3	25.3	7.8
19	5.8	18.3	5.6	26.8	8.2
20	6.2	19.4	6.0	28.3	8.7

Figure IS-23 Projection Range List

Instrument Setup (continued)

Installation & Alignment (continued)

Refracting Room Setup (continued)

4. Check the in and out movement of the outer and inner objective tubes.

Note: It may be necessary to loosen lock screws and to provide freedom of movement.

5. Attach the LongLife POC head to the mount by unscrewing the mounting knobs and inserting the head into the yoke and refitting the knobs into the proper position.
6. Fully tighten the knobs after final adjustment of the system.
7. Insert a character slide into the instrument and project a 20/200 "E" (or other character) onto the screen.
8. Check the three dimensional alignment of the system.

Note: This projection system is optimized when the projector screen is angled to direct light to the patient's head. Turn the projector "ON". Place a mirror on the screen. The light should project where the patient's head would be. Refer to Figure IS-25.

9. Adjust the image positioning on the screen.

Note: It may be necessary to adjust the projector and the screen.

10. Secure the Projector by tightening the Yoke Screws and Mounting Knobs.

-continued-

LETTER SIZING CHART		
REFRACTING DISTANCE		
METERS		FEET
8.53		28
8.23		27
7.92		26
7.62		25
7.32		24
7.01		23
6.71		22
6.40		21
6.10		20
5.79		19
5.49		18
5.18		17
4.88		16
4.57		15
4.27		14
3.96		13
3.66		12
3.35		11
3.05		10
2.74		9
2.44		8
2.14		7

Figure IS-24 Not to Scale

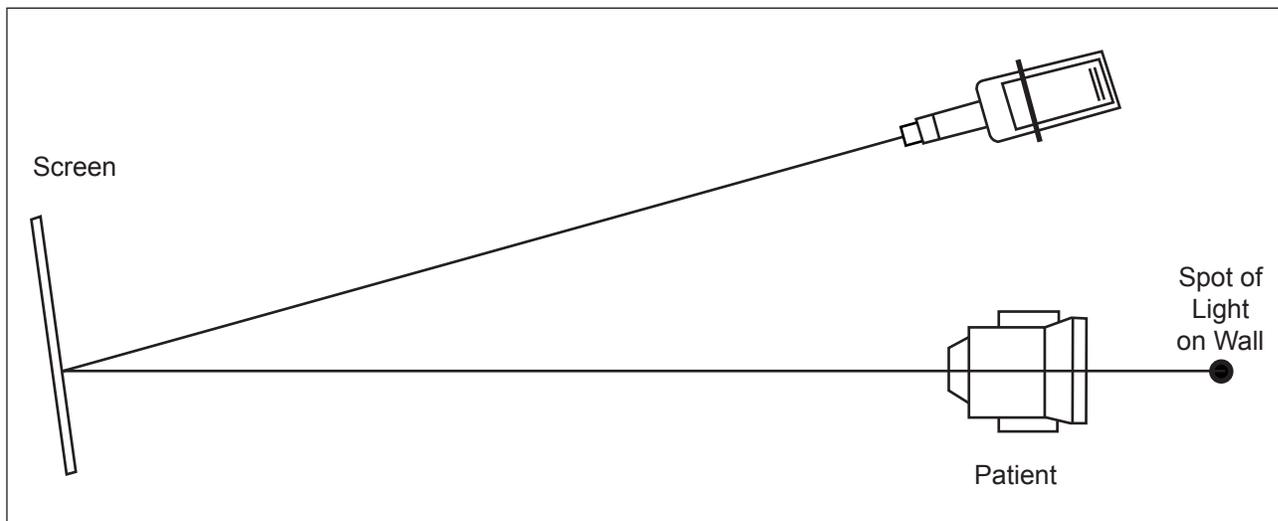


Figure IS-25 Optimum Projection

Instrument Setup (continued)

Installation & Alignment (continued)

Refracting Room Setup (continued)

11. Determine the proper letter size based on the refracting distance used. Refer to Figure IS-24 and the Letter Sizing Chart in the Appendix of this manual.
12. Attach Letter Sizing Chart to the screen.
13. Move the inner and outer objective tubes, usually in opposite directions, until the 20/200 "E" is in sharp focus and fills the bracket on the Letter Sizing Chart. Refer to Figure IS-24.

Note: Figure IS-24 is not to scale. This figure is just an example of a letter being projected onto the sizing chart. Refer to the Appendix section of this manual for accurate sizing charts.

14. Tighten the inner and outer objective lock screws.

Note: To obtain longer refracting distances in small rooms, a mirror system can be used. A high quality front-surface mirror is required. Refer to Figure IS-26 as an example of an arrangement for a short room with full 20 foot refracting distance.

Note: Care should be taken in alignment when using vectographic slides to insure optimum contrast.

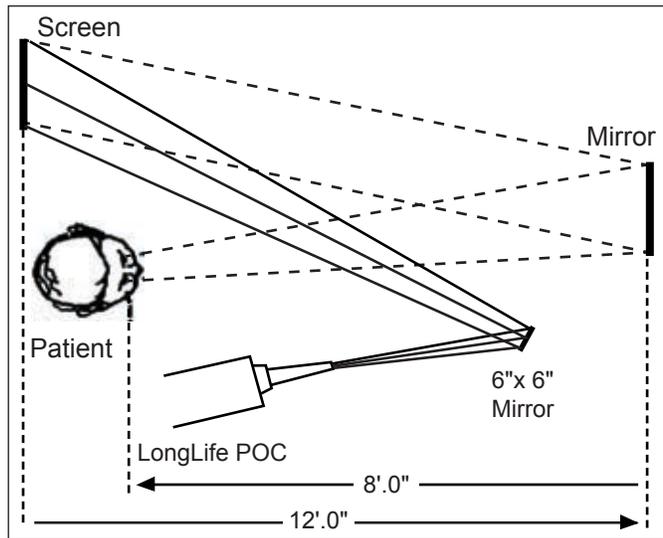


Figure IS-26 Mirror Set Up

Instructions for Use

Turning the Unit On and Off

Plug the instrument into a properly volted outlet. To turn the LongLife POC on, set the On/Off Switch to On. To shut the LongLife POC off, set the ON/OFF switch to OFF.

Note: To maximize the life of the bulb, it is recommended to use the LongLife POC for at least 1 hour.

Note: If after initially using the LongLife POC, and it is not going to be used again for an hour or longer, it is recommended to turn the unit off.

Cross Slide Selection

The Cross Slide contains three apertures which index into position in front of any frame of characters projected from the acuity slide.

The Large Aperture is centrally located on the slide. In this position, an entire frame of characters is projected onto the screen.

By moving the slide to the left or right of the central position, either the Vertical Line Aperture or the Red/Green Filter (Duochrome Test) will be moved into position for projection.

To attach the Cross Slide, unscrew one of the knobs and insert the slide into the slot, through the projector. Refer to Figures IU-1 and IU-2.

Note: When inserting the cross slide, be certain that the Slide Frame faces the rear of the instrument. Refer to Figure IU-1.

The cross slide, as well as the horizontal line selector, may be operated from either the left or the right side of the instrument.

When the horizontal line selector is used with the vertical aperture of the selector slide, projection of single characters is possible.

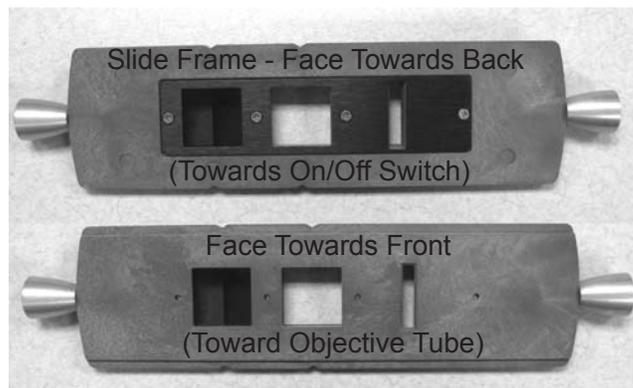


Figure IU-1 Cross Slide



Figure IU-2 Cross Slide Installed

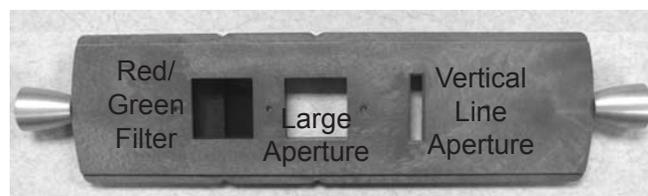


Figure IU-3 Cross Slide

Instructions for Use (continued)

Slide Installation

Install the slide into the top of the LongLife POC and gently lower it into the instrument, until it does not go any further on its own. Refer to Figure IU-4.

Note: The sprockets should face the right side of the LongLife POC when facing the front; the Objective Tube Assembly side. Refer to Figure IU-4.

Note: The flat side should face the back of the unit, towards the On/Off Switch; the side that has the glass attached to it should face the front of the LongLife POC. Refer to Figure IU-4.

Turn the Vertical Motion Slide Control clockwise to pull the slide further into the LongLife POC, and to select the correct slide. Refer to Figure IU-5.

Note: The slide will not be visible from the outside as it goes into the LongLife POC. The slide will be able to be removed when the Vertical Motion Slide Control is turned counter clockwise until the slide comes out of the top again.

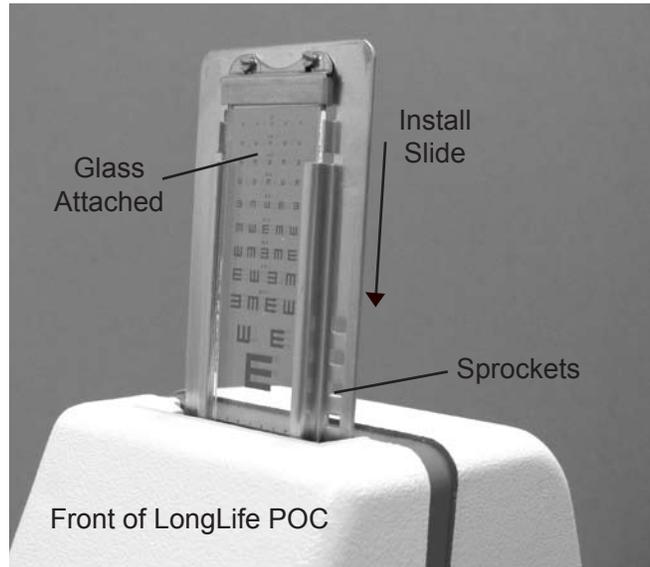


Figure IU-4 Cross Slide

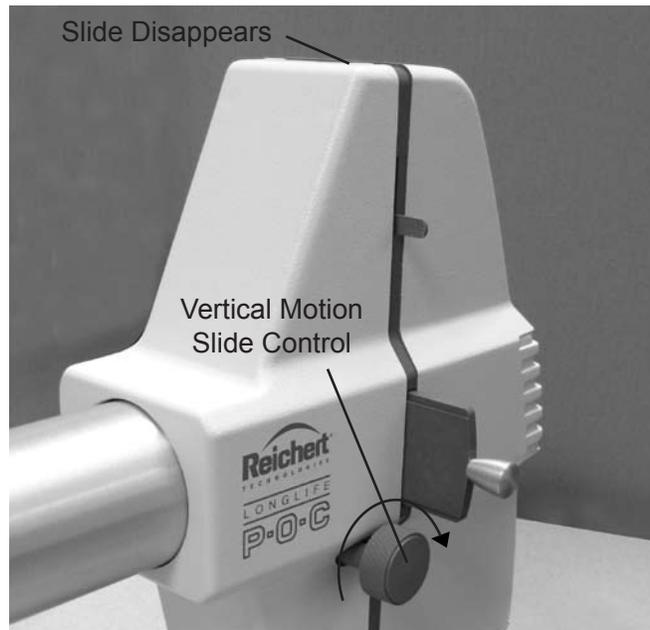


Figure IU-5 Cross Slide

Cleaning & Maintenance

Cleaning

CAUTION: TURN THE POWER OFF TO THE LONGLIFE POC AND UNPLUG THE UNIT BEFORE ATTEMPTING TO CLEAN ANY PART OF THE LONGLIFE POC.

CAUTION: DO NOT USE HARSH CHEMICAL SOLVENTS ON ANY PART OF THE UNIT OR DAMAGE TO THE UNIT MAY OCCUR.

Main Unit

When the Main Unit is dirty, wipe it down with a clean, dry cloth. If there are stains that are hard to remove, lightly moisten the soft cloth with a mild soap solution (1 cc of liquid dish soap to one liter of clean, filtered water (filtered below 5 microns)). Refer to Figure MM-1.

Front Objective Lens

Using a lint free cotton swab lightly moistened with a water-based cleaning solution that is safe for lenses, clean the outer lens in the Objective Assembly in a circular motion, starting in the center and working your way out. Repeat this procedure until all the contaminants are gone. Dry the lens using a clean, dry lint free cotton swab, and drying it in a circular motion, starting from the center and working your way out. Refer to Figure MM-2.

Cross Slide

Using a lint free cotton cloth lightly moistened with a water-based cleaning solution that is safe for lenses, gently wipe down both sides of the Cross Slide. To dry it, wipe it down with a clean lint free cotton cloth. Refer to Figure MM-3.

Screen Cleaning

CAUTION: THE SURFACE CANNOT BE REFINISHED EASILY. HANDLE WITH CARE.

The LongLife POC screen has an extremely high reflective characteristic and is very susceptible to abrasive scratches and fingerprints.

Periodic cleaning of the screen is advised. Wipe the screen surface gently with an absorbent cotton cloth lightly dampened with a mild detergent solution (1 cc of liquid dish soap to one liter of clean, filtered water (filtered below 5 microns)).



Figure MM-1 Main Unit

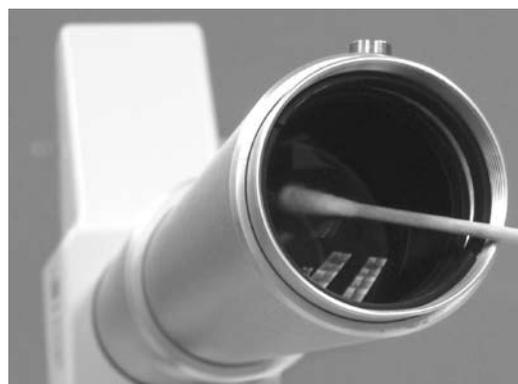


Figure MM-2 Objective Lens

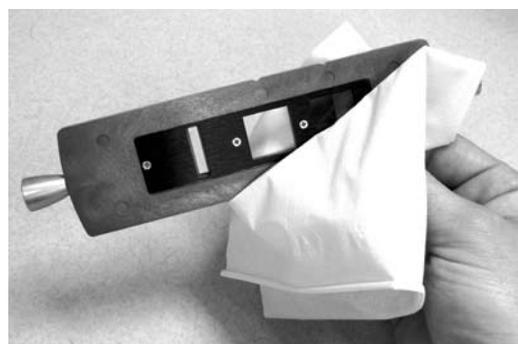


Figure MM-3 Cross Slide

Cleaning & Maintenance (continued)

Cleaning (continued)

Slide Cleaning

Emulsion slides (film between 2 pieces of glass) require special care during cleaning. Newer slides are typically a metallic deposition on glass and can be cleaned more easily.

Note: If you are not sure what kind of slide you have, we suggest you clean it as if it were an emulsion slide.

Emulsion Slides

Dampen a tissue or cotton swab (preferably lint-free) with a glass cleaner. Carefully wipe the surface. Refer to Figure MM-4. Extreme pressure should be avoided as excess liquid may seep between the glass plates. Examine for and remove streaks.

CAUTION: DO NOT IMMERSE IN LIQUID AS IT MAY SEEP BETWEEN THE GLASS PLATES.

Deposition Slides

Use a glass cleaner with a tissue or cotton swab (preferably lint-free). Refer to Figure MM-4.

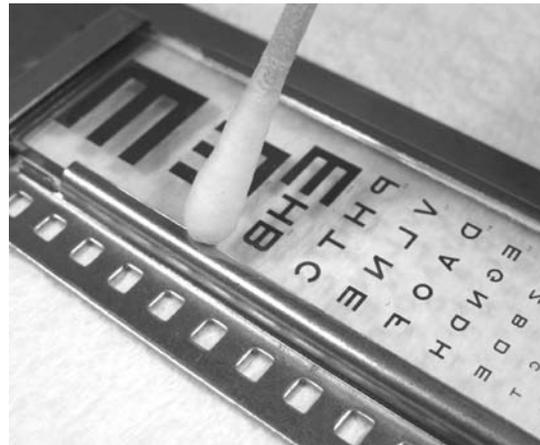


Figure MM-4 Clean Slide

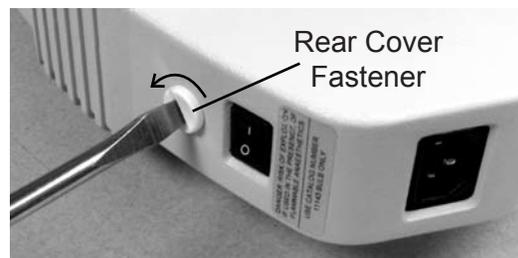


Figure MM-5 Rear Cover Fastener

Fuse Replacement

This instrument contains an internal fuse to assure safe operation and continued high performance. If you need to replace the fuse please follow these procedures:

WARNING: DISCONNECT POWER BEFORE ATTEMPTING THIS REPAIR.

CAUTION: DO NOT REMOVE LENSES FROM THE OBJECTIVE BARRELS.

1. Turn the Instrument "OFF" and unplug the power cord from the wall and the instrument.
2. Using a flat head screwdriver, turn the Rear Cover Fastener a quarter turn counter-clockwise. Refer to Figure MM-5.

Note: A 'click' will sound when the Rear Cover Fastener is fully disengaged.

3. Pull the Rear Cover straight out. The Rear Cover Fastener will be attached to the Rear Cover and will come out with the Rear Cover. Refer to Figure MM-6.

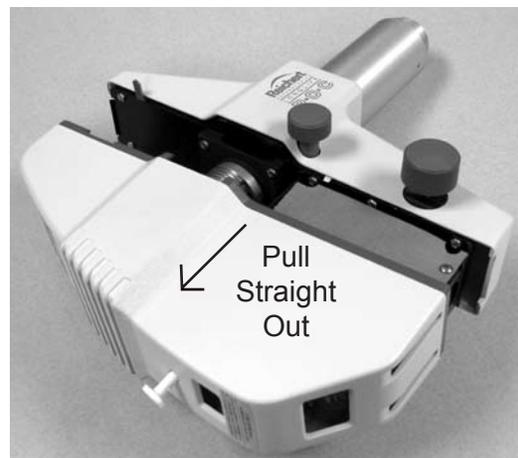


Figure MM-6 Remove Rear Cover

-continued-

Cleaning & Maintenance (continued)

Fuse Replacement (continued)

4. Locate fuse in lower portion of the electrical assembly. Refer to Figure MM-7.
5. Gently remove the fuse from the holder. Refer to Figure MM-7.
6. Replace the fuse with a fuse of the same size and rating.

Note: The size and rating is printed in a triangular label underneath the fuse or on the fuse itself.

7. Install the Rear Cover.
8. Using a flat head screwdriver, secure the Rear Cover with the Rear Cover Fastener.

Bulb Replacement

WARNING: DISCONNECT POWER BEFORE ATTEMPTING THIS REPAIR.

Note: Use only Reichert specified Halogen Bulbs.

1. Remove the Rear Cover. Refer to [Fuse Replacement](#) steps 1 to 3.
2. Remove bulb reflector housing by loosening the Captive Screw. Refer to Figure MM-8.
3. Pull housing back and lift away to uncover bulb. Refer to Figure MM-9.

WARNING: DO NOT TOUCH THE BULB HOUSING OR THE BULB UNTIL THEY HAVE COOLED COMPLETELY. DO NOT TOUCH THE GLASS OF THE NEW BULB AS FINGERPRINTS WILL SHORTEN THE BULB LIFE.

4. To remove the bulb, grasp the glass envelope with a thick cloth and pull the bulb upwards.
5. To replace, grasp the glass envelope with a thick cloth and insert the pins straight into the socket and gently push down until fully seated. Refer to Figure MM-10.
6. Replace the bulb reflector housing and the cover.
7. Plug the power cord into the instrument and then into the wall. The projector is now ready for use.

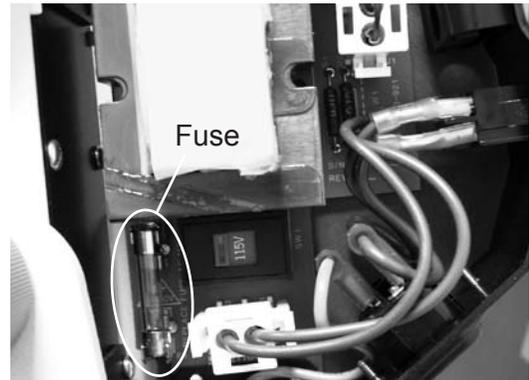


Figure MM-7 Fuse Location

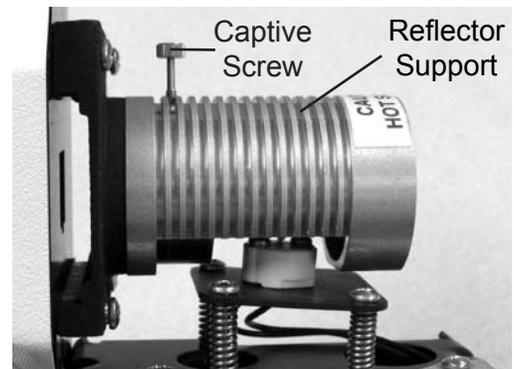


Figure MM-8 Reflector Support

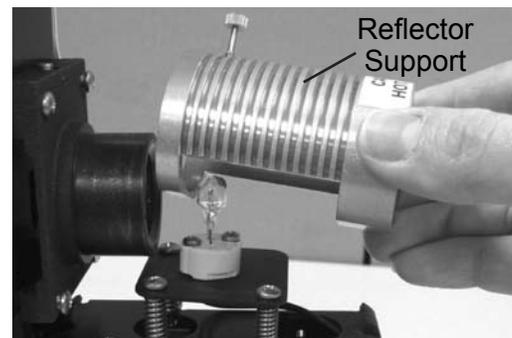


Figure MM-9 Remove Reflector Support

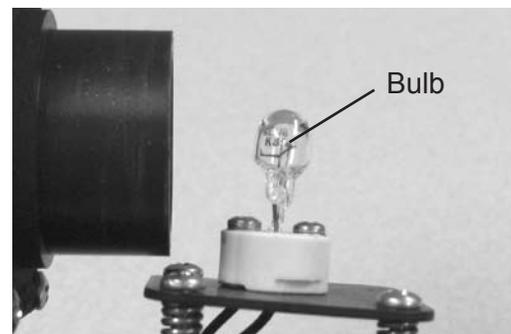


Figure MM-10 Bulb

Cleaning & Maintenance (continued)

Filament Alignment

There should be no need to align the filament. Should you want to align or check the alignment of the bulb's filament proceed as follows:

WARNING: DISCONNECT POWER BEFORE ATTEMPTING THIS REPAIR.

1. Remove the Rear Cover. Refer to [Fuse Replacement](#) steps 1 to 3.
2. Reconnect power cord to projector and wall outlet.
3. Mark inner and outer objective tubes to identify their positions.
4. Loosen locking screws and slide both tubes into unit as far as possible.

WARNING: DO NOT REMOVE BULB REFLECTOR HOUSING AS THE LAMP IS VERY BRIGHT AND INJURY TO THE OPERATOR MAY OCCUR.

5. Turn on the projector and hold a card or piece of paper 1" (25mm) in front of the objective tube. Refer to Figure MM-11.
6. Adjust the 3 Adjustment Screws located on the bulb base so that the image of the filament is centered and in best focus. Refer to Figures MM-11 and MM-12.
7. Remove the Card, and observe the light against the screen.
8. Check for even fill of screen with no noticeable darkening in any corner of the screen. If darkening occurs, readjust the three adjustment screws to correct any darkening.
9. Reposition the objective tubes to their previous position and tighten lock screws.
10. Attach the rear cover.

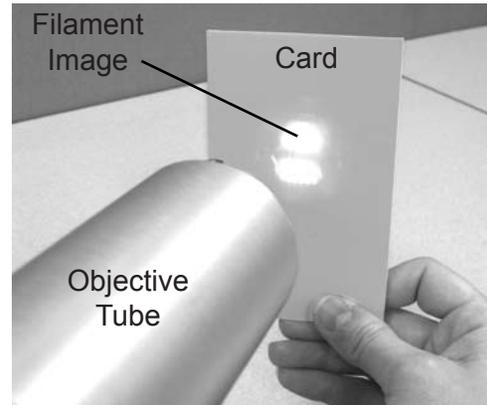


Figure MM-11 Filament Image

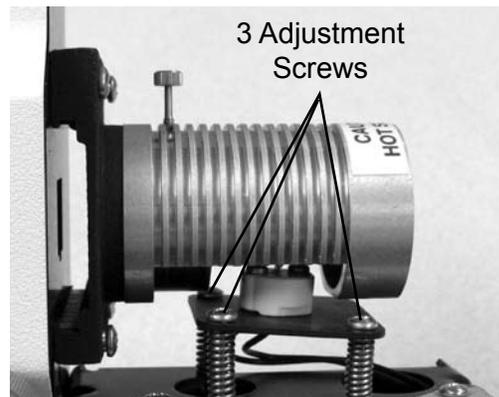


Figure MM-12 Reflector Support

Troubleshooting

The following chart outlines some common issues with the LongLife POC and some steps you can take to correct the issue. If problems persist, please contact the Reichert as listed in the [Introduction](#) section of this manual.

Chart of Common Errors

ISSUE	PROBABLE CAUSE	POSSIBLE SOLUTION
Unit won't turn on.	Incorrect input power supplied to the LongLife POC.	Check the outlet to ensure proper power is being supplied.
	Defective Power Cord.	Replace the Power Cord.
	Bulb may be blown out.	Replace the Bulb.
	Fuse may be blown out.	Replace the Fuse.
	Incorrect voltage selected on Power Supply.	Set the correct input voltage on the Power Supply.
Light projected is dim or unevenly lit.	Incorrect wattage for bulb being used.	Replace with the proper Bulb.
	Filament is not aligned properly.	Realign the filament.
	Front Objective Lens is dirty.	Clean the Front Objective lens.
	Screen is dirty.	Clean the Screen.
	Incorrect Screen being used.	Be sure an appropriate screen is being used.
	Slides are dirty.	Clean the Slides.
	Mirror(s) surface(s) are dirty.	Clean the mirror(s).
Projected letters are the incorrect size or cannot focus properly.	Mirror(s) being used in setup are not first surface mirrors.	Install only first surface mirrors.
	Incorrect refraction and/or projection distances used during setup of the LongLife POC.	Reinstall the LongLife POC according to the minimum and maximum refraction distance chart in the Instrument Setup section of this manual.
	Objective tubes not set to the right distances.	Adjust the Projection Tubes until the projected letters are in sharp focus.
	Mirror(s) surface(s) are dirty.	Clean the mirror(s).

Classifications & Standards

The Reichert LongLife POC is designed and manufactured in the USA according to the following equipment and classifications and standards:

Technical Standards	93/42/EEC IEC 60601-1
Equipment Classification per EN 60601-1	Class I. Refer to Note 1.
Classification according to Directive 93/42/EEC	Class I Equipment
IPX Classification	IPX0 Equipment Refer to Note 2.
Continuous Operation Equipment	Yes

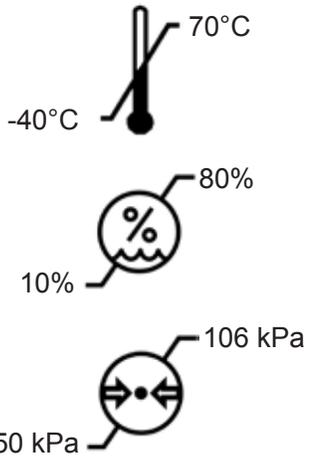
Note 1: Class I Equipment is equipment in which protection against electric shock does not rely on basic insulation only, but which includes an additional safety precaution in that means are provided for the connection of the equipment to a protective earth conductor in the fixed wiring of the installation in such a way which accessible metal parts cannot become live in the event of a failure of the basic insulation.

Note 2: IPX0 Equipment is ordinary equipment enclosed without protection against ingress of water.

Specifications

Catalog Number 12084

<p>Physical Dimensions</p> <p>Size: Weight, unpacked: 4.37 lbs (2.0 Kg) Weight, packed: 9.0 lbs (4.08 Kg)</p> <p>Height: 11.75 in (29.8 cm) (with table mount) 15.50 in (39.4 cm)</p> <p>Width: 4.50 in (11.4 cm) (with table mount) 7.75 in (19.7 cm)</p> <p>Depth: 12.25 in (31.1 cm) (with table mount) 15.75 in (40.0 cm)</p>	
<p>Electrical</p> <p>110 V Operation</p> <p>Voltage: 115 VAC Power Input: Max 32 VA Frequency: 50/60 Hz Fuse: Time-Lag (0.5A, 250V), 5x20mm, RoHS (P/N W FAG10018) Halogen Bulb: P/N 11143 (6V, 20W)</p>	<p>Electrical</p> <p>230 V Operation</p> <p>Voltage: 230 VAC Power Input: Max 32 VA Frequency: 50/60 Hz Fuse: Time-Lag (0.3A, 250V), 5x20mm, RoHS (P/N W FAG20001)</p>
<p>Operational Conditions</p> <p>Environmental: The environmental conditions are as follows:</p> <p>Operating: Temperature: 10° C (50° F) to 35° C (95° F) Relative Humidity: 30% to 75% Atmospheric Pressure: 80 kPa (23.6 in. Hg) to 106 kPa (31.3 in. Hg)</p> <p>Transportation & Storage: Temperature: -40° C (-40° F) to +70° C (158° F). Relative Humidity: 10% to 80% (non-condensing) Atmospheric Pressure: 50 kPa (14.8 in. Hg) to 106 kPa (31.3 in. Hg)</p> <p>Exposure to extreme temperature conditions indicated above must not exceed 15 weeks.</p>	



Disposal

This product does not generate any environmentally hazardous residues. At the end of its product life, follow your local laws and ordinances regarding the proper disposal of this equipment.

Software Revision

There is no software installed in this unit.

Warranty

This product is warranted by Reichert Technologies against defective material and workmanship under normal use for a period of one year from the date of invoice to the original purchaser. (An authorized dealer shall not be considered an original purchaser.) Under this warranty, Reichert's sole obligation is to repair or replace the defective part or product at Reichert's discretion.

This warranty applies to new products and does not apply to a product that has been tampered with, altered in any way, misused, damaged by accident or negligence, or which has had the serial number removed, altered or effaced. Nor shall this warranty be extended to a product installed or operated in a manner not in accordance with the applicable Reichert instruction manual, nor to a product which has been sold, serviced, installed or repaired other than by a Reichert factory, Technical Service Center, or authorized Reichert Dealer.

Lamps, bulbs, charts, cards and other expendable items are not covered by this warranty.

All claims under this warranty must be in writing and directed to the Reichert factory, Technical Service Center, or authorized instrument dealer making the original sale and must be accompanied by a copy of the purchaser's invoice.

This warranty is in lieu of all other warranties implied or expressed. All implied warranties of merchantability or fitness for a particular use are hereby disclaimed. No representative or other person is authorized to make any other obligations for Reichert. Reichert shall not be liable for any special, incidental, or consequent damages for any negligence, breach of warranty, strict liability or any other damages resulting from or relating to design, manufacture, sale, use or handling of the product.

PATENT WARRANTY

If notified promptly in writing of any action brought against the purchaser based on a claim that the instrument infringes a U.S. Patent, Reichert will defend such action at its expense and will pay costs and damages awarded in any such action, provided that Reichert shall have sole control of the defense of any such action with information and assistance (at Reichert's expense) for such defense, and of all negotiation for the settlement and compromise thereof.

PRODUCT CHANGES

Reichert reserves the right to make changes in design or to make additions to or improvements in its products without obligation to add such to products previously manufactured.

CLAIMS FOR SHORTAGES

We use extreme care in selection, checking, rechecking and packing to eliminate the possibility of error. If any shipping errors are discovered:

1. Carefully go through the packing materials to be sure nothing was inadvertently overlooked when the unit was unpacked.
2. Call the dealer you purchased the product from and report the shortage. The materials are packed at the factory and none should be missing if the box has never been opened.
3. Claims must be filed within 30 days of purchase.

CLAIMS FOR DAMAGES IN TRANSIT

Our shipping responsibility ceases with the safe delivery in good condition to the transportation company. Claims for loss or damage in transit should be made promptly and directly to the transportation company.

If, upon delivery, the outside of the packing case shows evidence of rough handling or damage, the transportation company's agent should be requested to make a "Received in Bad Order" notation on the delivery receipt. If within 48 hours of delivery, concealed damage is noted upon unpacking the shipment and no exterior evidence of rough handling is apparent, the transportation company should be requested to make out a "Bad Order" report. This procedure is necessary in order for the dealer to maintain the right of recovery from the carrier.

Appendix

Available Slides



11077



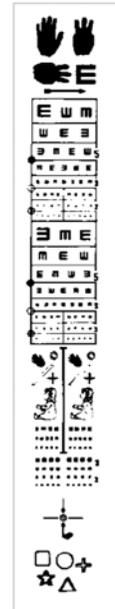
11103



11193



11194



11246



11170



11118



11113



11192



11180

- 11077 Child Visual Acuity Slide with Test Card
- 11103 Variety Slide with Vertical Lines of Letters for Vergence, Including Duochrome Test
- 11193 M-1 Style Adult/Child Astigmatic Duochrome Slide
- 11194 Non-Memory Letter Combination Slide
- 11246 Child Slide

- 11170 Color Recognition, Numerical and Illiterate Slide
- 11118 Famous Worth Four Dot Test, Multiple 20/20 Lines, Reversible Red and Green Spectacles.
- 11113 Popular Combination of Letters, Numbers, and Illiterate E's
- 11192 M-2 Style Adult/Child Acuity Slide
- 11180 Variety Slide Including 20/25 and Multiple 20/20 Lines

LETTER SIZING CHART

REFRACTING DISTANCE	
FEET	
28	28
27	27
26	26
25	25
24	24
23	23
22	22
21	21
20	20
19	19
18	18
17	17
16	16
15	15
14	14
13	13
12	12
11	11
10	10
9	9
8	8
7	7

Appendix (continued)

LETTER SIZING CHART

REFRACTING DISTANCE		
METERS		
9.00		9.00
	8.75	8.75
8.50		8.50
	8.25	8.25
8.00		8.00
	7.75	7.75
7.50		7.50
	7.25	7.25
7.00		7.00
	6.75	6.75
6.50		6.50
	6.25	6.25
6.00		6.00
	5.75	5.75
5.50		5.50
	5.25	5.25
5.00		5.00
	4.75	4.75
4.50		4.50
	4.25	4.25
4.00		4.00
	3.75	3.75
3.50		3.50
	3.25	3.25
3.00		3.00
	2.75	2.75
2.50		2.50
	2.25	2.25
2.00		2.00



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