

**LongLife<sup>®</sup>**

**P-O-C**

User's Guide

**Reichert<sup>™</sup>**  
TECHNOLOGIES

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Federal law restricts this device to sale by or on the order of a physician.

ISO 9001 Certified – Reichert products are designed and manufactured under quality processes meeting ISO 9001 requirements.

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# Table of Contents

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Warnings & Cautions .....	4
Symbol Information.....	5
Package Contents .....	6
Instrument Components .....	6
Installation And Alignment .....	7
Slide Selection.....	9
Bulb Life.....	9
Filament Alignment.....	9
Internal Fuse.....	9
Bulb Replacement .....	10
Slide Cleaning .....	10
Screen Cleaning.....	10
Accessory/Part Numbers.....	10
Symbol Information.....	10
Letter Sizing Chart (feet) .....	11
Letter Sizing Chart (meters) .....	12
General Specifications.....	13
Classifications and Standards .....	14
Warranty .....	15

# Warnings & Cautions

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Reichert, Inc. (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 RISK OF INJURY OR DEATH.**

**WARNING:** ANY REPAIR OR SERVICE TO THE LongLife POC MUST BE PERFORMED BY EXPERIENCED PERSONNEL OR DEALERS THAT ARE TRAINED BY REICHERT SO THAT CORRECT OPERATION OF THE LongLife POC IS MAINTAINED.

**WARNING:** DO NOT PLACE FINGERS INTO THE OPENING SURROUNDING THE NOSEPIECE.

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



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

**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:** USE OF ALCOHOL ON THE LIQUID CRYSTAL DISPLAY (LCD) MAY CAUSE DAMAGE TO THE DISPLAY. SEE MAINTENANCE SECTION FOR DETAILED CLEANING INSTRUCTION.

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

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

**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 PRECAUTIONS.

**CAUTION:** MEDICAL ELECTRONIC EQUIPMENT NEEDS SPECIAL PRECAUTIONS REGARDING EMC AND NEEDS TO BE INSTALLED AND PUT INTO SERVICE ACCORDING TO THE EMC INFORMATION PROVIDED IN THE ACCOMPANYING DOCUMENTS.

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

# Symbol Information

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The following symbols appear on the instrument.



Caution symbol indicating important operating and maintenance instructions that are included in this User's Guide.



Type B Product Classification.  
Class 1 Equipment, Continuous Operation.



Alternating Current Power.



Protective Earth Connection.



ON / OFF.



Date of Manufacture.



Catalog Number.



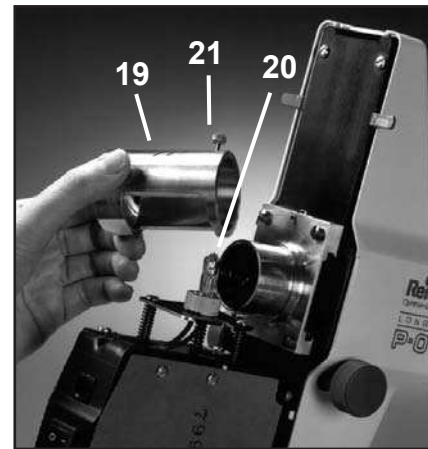
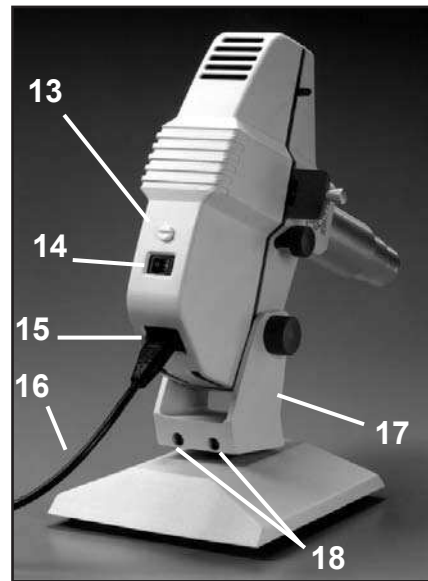
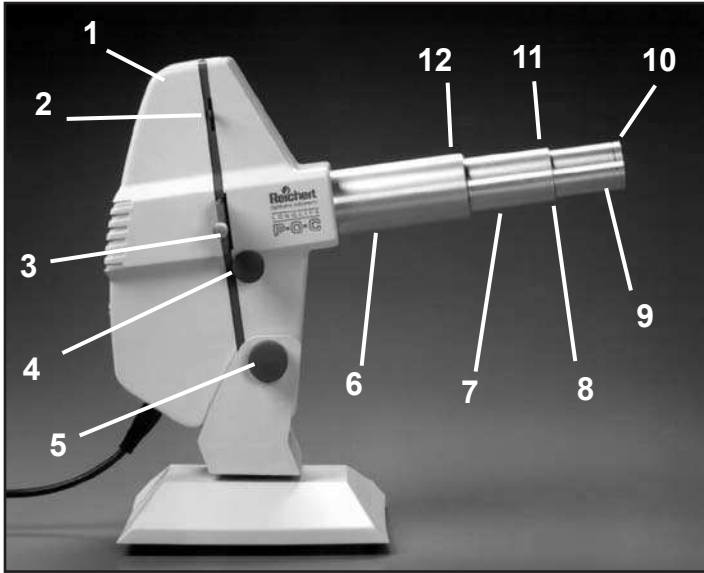
Waste of Electrical and Electronic Equipment.



Compliance to Medical Device Directive 93/42/EEC.



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




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## PRODUCT

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This manual should be used in reference to the Reichert LongLife™ Project-O-Chart® Model 12084.

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## PACKAGE CONTENTS

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Contents of the shipping container should include the following:

- 1 LongLife P-O-C™ Head  
(See Instrument Components for detailed listing.)
- 1 Objective Tube
- 1 Power Cord
- 1 Dust Cover
- 1 Cross Slide
- 1 Instruction Manual

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## INSTRUMENT COMPONENTS

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- 1. Rear Cover
- 2. Horizontal Line Selector
- 3. Cross Slide
- 4. Vertical Slide Motion Control
- 5. Mounting Knob
- 6. Support Barrel
- 7. Variable Focus Objective Tube
- 8. Outer Objective
- 9. Inner Objective
- 10. Retaining Ring
- 11. Outer Objective Tube Locking Screw
- 12. Inner Objective Tube Locking Screw
- 13. Rear Cover Fastener
- 14. ON/OFF Switch
- 15. AC Inlet
- 16. Power Cord
- 17. Yoke (Not Supplied)
- 18. Yoke Screws
- 19. Bulb Reflector Housing
- 20. Bulb
- 21. Reflector Housing Screw

## INSTALLATION AND ALIGNMENT

The projector should be installed according to the following procedures:

1. If using a wall mount, it is best to locate a wall stud to support the projector head's weight.
2. 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.

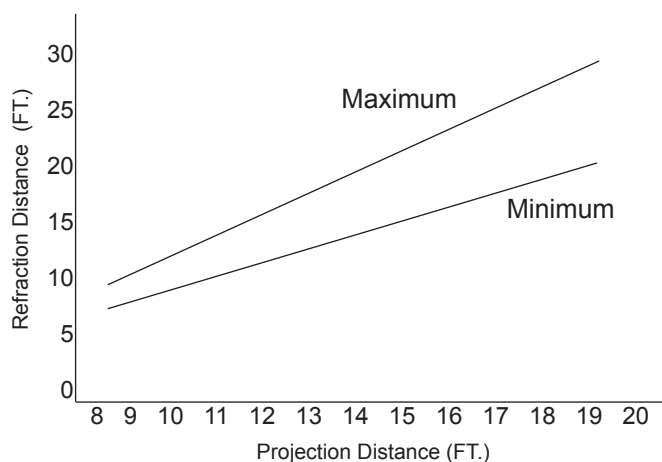
$$LH \text{ (inches or mm)} = RD \text{ (inches or mm)} \times .014545$$

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)

3. Determine the refracting distance by measuring the distance from the patient to the screen. Please refer to Figures 1 and 2 which show combinations of refraction and projection distances achievable with this system.
4. Install the projector screen.

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

## PROJECTION RANGE (FIGURE 1)



## PROJECTION RANGE LIST (FIGURE 2)

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

5. Insert the variable focus objective tube into the support barrel. Do not fully tighten the outer objective lock screw (11) to allow for final focus adjustments. Check the in and out movement of the outer and inner objective tubes (8) and (9). It may be necessary to loosen lock screws (11) and (12) to provide freedom of movement.
6. Attach the LongLife P-O-C head to the mount by unscrewing the mounting knobs (5) inserting the head into the yoke (17) and refitting the knobs into the proper position. 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. 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. See Figure 3.
9. Adjust the image positioning on the screen. It may be necessary to adjust the projector and the screen. Secure projector by tightening yoke screws (18) and mounting knobs.
10. Determine the proper letter size based on the refracting distance used. Refer to Figure 4 and the Letter Sizing Chart on pages 11 & 12.
11. Attach Letter Sizing Chart to the screen.
12. 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 as shown in Figure 4.
13. Tighten the inner and outer objective lock screws.

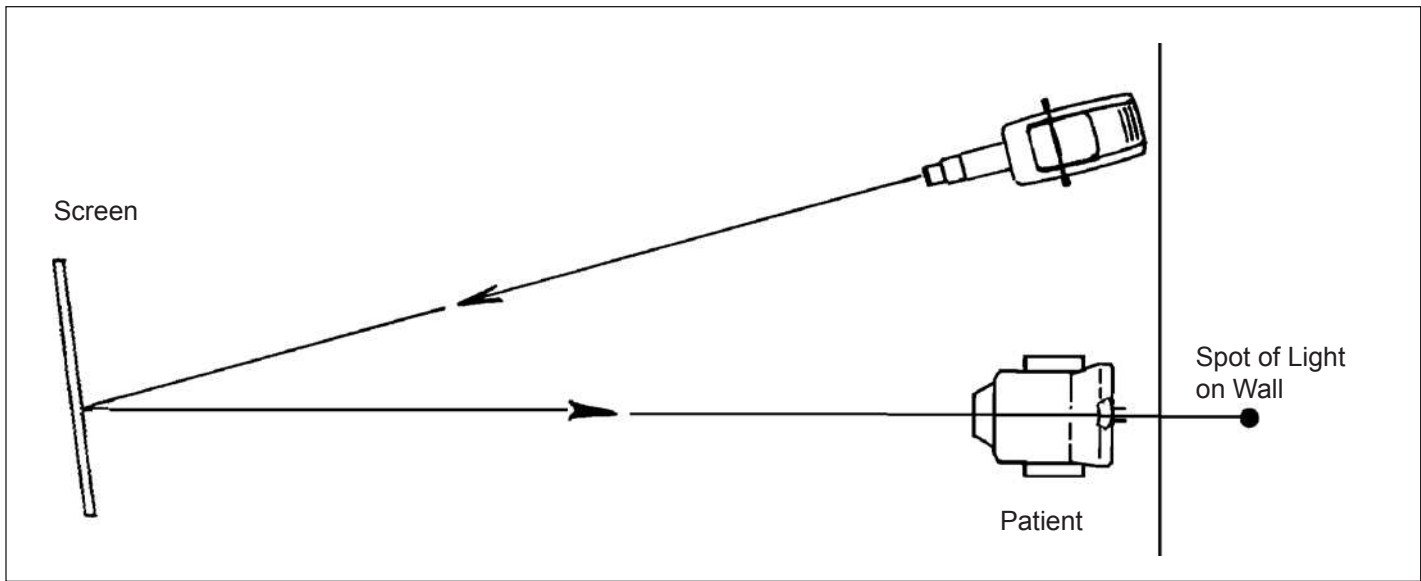


FIGURE 3

**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	

NOT TO SCALE

FIGURE 4 (Not to Scale - See pages 11 & 12 for sizing charts)

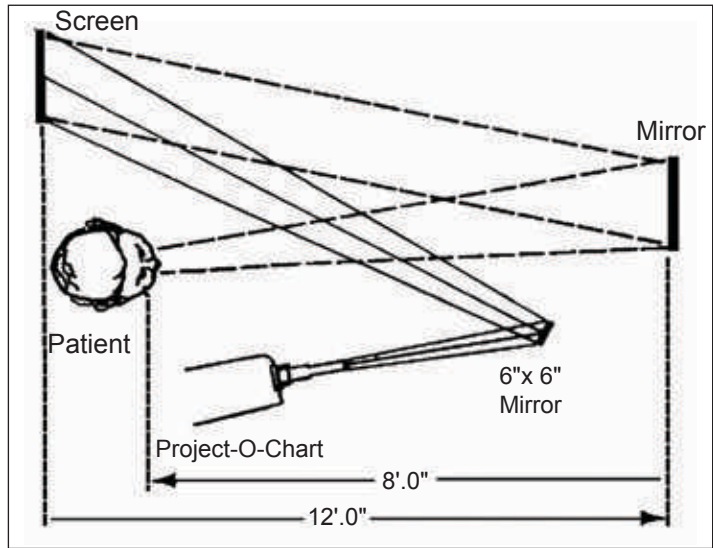


FIGURE 5

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



NOTE: To obtain longer refracting distances in small rooms, a mirror system can be used. A high quality front-surface mirror is required. See Figure 5 as an example of an arrangement for a short room with full 20 foot refracting distance.

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## SLIDE SELECTION

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The cross slide (3) 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 and green filters (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. When inserting the cross slide, be certain that the frame holding the filters faces towards the rear of the instrument and that the index notches face upward.

The cross slide, as well as the horizontal line selector (2), 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.

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## BULB LIFE

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The LongLife P-O-C uses the 11143 Halogen Bulb (20) to produce a superb combination of brightness and long bulb life.

You can maximize the bulb's useful life by following these guidelines:

1. After turning the unit "ON", use it for at least one hour.
2. If you do not plan to use the projector for at least an hour, turn the unit "OFF".
3. Regardless of the bulb's expected life, it is good practice to always have a spare bulb available.

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## FILAMENT ALIGNMENT

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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:

1. Turn "OFF" the projector and disconnect power cord from projector and wall.
2. Remove the rear cover.
3. Reconnect power cord to projector and wall outlet.
4. Mark inner and outer objective tubes to identify their positions.
5. Loosen locking screws and slide both tubes into unit as far as possible.

WARNING: DO NOT REMOVE BULB REFLECTOR HOUSING (19). LAMP IS VERY BRIGHT AND MAY POSSIBLY EXPLODE.



6. Turn on the projector and hold a card or piece of paper 1" (25mm) in front of the objective tube.
7. Adjust the three adjustment screws located on the bulb base so that the image of the filament is centered and in best focus.
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.

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## INTERNAL FUSE

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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:

1. Turn the projector "OFF"
2. Unplug the power cord from the wall and the instrument.
3. Remove the rear cover as described in the section on Bulb Replacement (see page 8).
4. Locate fuse in lower portion of the electrical assembly.
5. Remove the fuse cover and gently remove the fuse from the holder.
6. Replace the fuse with a fuse of the same size and rating. The size and rating is printed in a triangular label underneath the fuse or on the fuse itself.

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## CARE OF THE INSTRUMENT

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This projector requires very little care. The exterior housing is can be cleaned with any mild soap or detergent. Occasionally wipe the slides and focusing tube with a soft clean dry cloth.

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## BULB REPLACEMENT

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### DO NOT REMOVE LENSES FROM THE OBJECTIVE BARRELS.

NOTE: Use only Reichert specified Hallogen Bulbs.

1. Turn the Instrument "OFF" and unplug the power cord from the wall and the instrument.
2. Remove the back cover by inserting a tool into the rear cover fastener (13) and turning a quarter turn counterclockwise.
3. Remove bulb reflector housing by loosening screw (21). Then pull housing back and lift away to uncover bulb (See Figure 6).

**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.
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 6

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## SLIDE CLEANING

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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.

**IMPORTANT:** 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 tissue (preferably lint-free) with a glass cleaner. Carefully wipe surface. Extreme pressure should be avoided as excess liquid may seep between the glass plates. Examine for and remove streaks.

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

**DEPOSITION SLIDES:** Use a glass cleaner with a tissue (preferably lint-free).

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## SCREEN CLEANING

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The REICHERT PROJECT-O-CHART screen has an extremely high reflective characteristic and is very susceptible to abrasive scratches and fingerprints. **HANDLE WITH CARE.**

**THE SURFACE CANNOT BE REFINISHED EASILY** Periodic cleaning of the screen is advised: Use a mild detergent solution, wiping screen surface gently with dampened absorbent cotton.

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## ACCESSORY/PART NUMBERS

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12090	Table Mount
12091	Wall Mount
12092	Instrument Stand Mount
12096	Floor Stand
12094	Yoke
11808	P-O-C Screen

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

LETTER SIZING CHART

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

# General Specifications

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## Instrument Data:

Height:	11.75 in	(29.8 cm)
(with table mount)	15.50 in	(39.4 cm)
Width:	4.50 in	(11.4 cm)
(with table mount)	7.75 in	(19.7 cm)
Depth:	12.25 in	(31.1 cm)
(with table mount)	15.75 in	(40.0 cm)
Weight, unpacked:	4.37 lbs	(2.0 kg)
Voltage:	115 VAC	
Frequency:	50/60 Hz	

## Environmental:

Operating Temperature	10°C to 35°C
Transportation & Storage Temperature:	-40°C to +70°C
Relative Humidity:	10% to 80% (non-condensing)
Atmospheric Pressure:	50 to 106 kilopascals

## 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.

# Classifications and Standards

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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
Equipment Classification per EN 60601-1	Class I. Refer to Note 1.
Degree of Protection against Electrical Shock per EN60601-1-1	Type B Equipment Refer to Note 2.
Classification according to Directive 93/42/EEC	Class IIa Equipment
IPX Classification	IPX0 Equipment Refer to Note 3.
Continuous Operation Equipment	Yes
ISO 9001, ISO 13485 Certified	Yes

Note 1: Class 1 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: Type B Equipment provides an adequate degree of protection against electrical shock, particularly regarding allowable leakage currents and reliability of the protective earth connection.

Note 3: IPX0 Equipment is ordinary equipment enclosed without protection against ingress of water.

# Warranty

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This product is warranted by Reichert, Inc. 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.

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