

# XCEL™ 255 Slit Lamp

User's Guide



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**Caution: Federal law restricts this device to sale by or on the order of a licensed physician. Rx only.**

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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 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 OR SERIOUS INJURY TO THE OPERATOR OR PATIENT MAY OCCUR.

**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 THIS 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 UNIT MAY OCCUR.

**WARNING:** THIS INSTRUMENT MUST BE PLUGGED INTO AN OUTLET WITH AN EARTH GROUND. DO NOT REMOVE OR DEFEAT THE EARTH GROUND CONNECTION ON POWER INPUT CONNECTOR OR 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:** BECAUSE PROLONGED INTENSE LIGHT EXPOSURE CAN DAMAGE THE RETINA, THE USE OF THE DEVICE FOR OCULAR EXAMINATION SHOULD NOT BE UNNECESSARILY PROLONGED, AND THE BRIGHTNESS SETTING SHOULD NOT EXCEED WHAT IS NEEDED TO PROVIDE CLEAR VISUALIZATION OF THE TARGET STRUCTURES. THIS DEVICE SHOULD BE USED WITH FILTERS THAT ELIMINATE UV RADIATION (<400 NM) AND, WHENEVER POSSIBLE, FILTERS THAT ELIMINATE SHORT-WAVELENGTH BLUE LIGHT (<420 NM).

**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:** 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:** 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.

# Symbol Information

## Symbol Information

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 Applied Part



Alternating Current Power



Protective Earth Connection



ON / OFF



Date of Manufacture

REF

Catalog Number

S/N

Serial Number



Waste of Electrical and Electronic Equipment



Compliance to Medical Device Directive 93/42/EEC



Accompanying Documents must be consulted



Authorized Representative in European Community



Fragile Contents in Shipping Container - handle with care



Keep Dry - Package shall be kept away from rain



This Way Up - Indicates correct upright position of package

# Introduction

Congratulations on your purchase of the Xcel™ 255 Slit Lamp.

This User's guide is designed as a training and reference manual for the operation and maintenance of the instrument. We recommend that you read it carefully prior to use and follow the instructions 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 manual for future reference and to share with other users. Additional copies can be obtained from your authorized Reichert dealer or from the Reichert Customer Service Department at:

Tel: 716-686-4500

Fax: 716-686-4555

Email: reichert.information@ametek.com

## Indications for use

The Xcel 255 Slit Lamp is an AC-powered slit lamp biomicroscope that is intended for use in examining the anterior segment, from the corneal epithelium to the posterior capsule. It is used to aid in the diagnosis of diseases or trauma, which affect the structural properties of the anterior segment of the eye.

## Contraindications

None.

# Setup

## Parts Identification

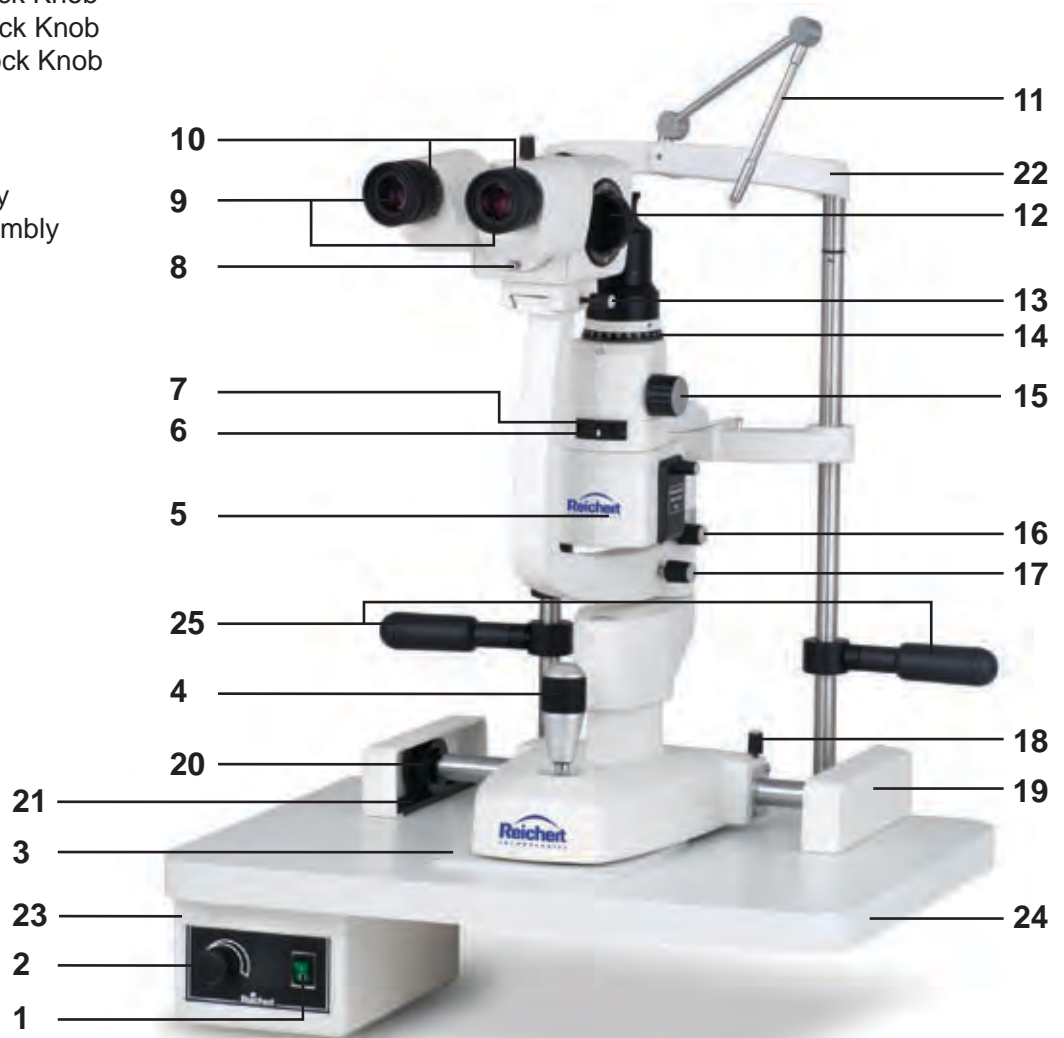
1. On/Off Switch
2. Illumination Level Control
3. Glide Plate
4. Joystick for horizontal and vertical movement
5. Bulb Access Door
6. Filter Dial
7. Slit Length Dial
8. Breath Shield Mount
9. Eyepieces
10. Focusing Rings
11. Fixation Light
12. Magnification Dial
13. Microscope Lock Knob
14. Slit Rotation Scale
15. Slit Width/Rotation Knob
16. Illumination Arm Lock Knob
17. Microscope Arm Lock Knob
18. Instrument Base Lock Knob
19. Guide Rail Covers
20. Geared Rollers
21. Guide Rails
22. Chin Rest Assembly
23. Power Supply Assembly
24. Table Top
25. Patient Handles

## Xcel 255 Package Contents

- Xcel 255 Slit Lamp (15120)
- User's Guide (15120-101)

### Accessories

- Focusing Rod (P/N 15120-226)
- Hex Wrench - 3mm (P/N X54264)
- Hex Wrench - 4mm (P/N X54248)
- Hex Wrench - 5mm (P/N X54398)
- Dust Cover (15120-225)
- Halogen Lamp, Main (15121)
- Guide Rail Covers (15120-031)
- Replacement Fuses (RFAG20063)
- Chin Rest Paper - 1 pack (15120-051)





## Setup (continued)

### Unpacking and Installation

1. Open the outside shipping box and remove the three (3) inner boxes.
2. Remove the User's Guide and read it.
3. Open the box with the Table Top and Electronics in it. Refer to Figure SU-1.
4. Remove the Table Top from the box and install the Table Top onto the instrument stand and secure it into place as indicated in the user guide for the stand.
5. Open the box with the Chin Rest Assembly and remove it. Refer to Figure SU-2.
6. Using the 3mm Hex Wrench, connect the Ground Wire from the Power Supply to the Chin Rest Assembly using the Ground Screw provided (torque to 7.8 N•m). Refer to Figure SU-3.
7. Using the 5mm Hex Wrench, remove the two Screws from the bottom of the Table Top and attach the Chin Rest Assembly to the Table Top using these Screws. Refer to Figure SU-4.
8. Using the 4mm Hex Wrench, adjust the Patient Handles by loosening the Allen Cap screws that are securing them to the Chinrest Posts. Slide the Patient Handles up or down to the desired height, and secure them in place by tightening the Allen Cap Screws. Refer to Figure SU-5.

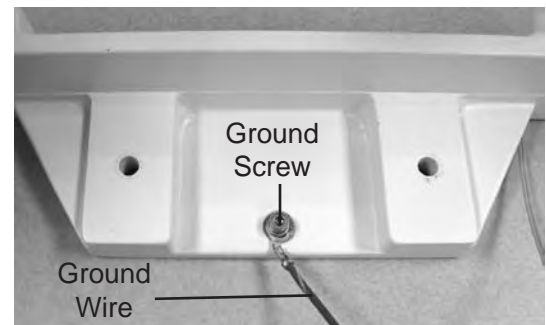
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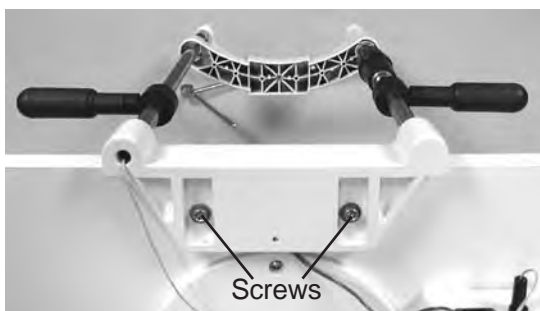
**Figure SU-1 Table Top and Electronics**



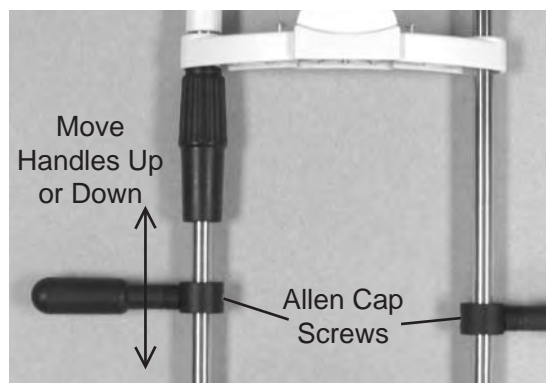
**Figure SU-2 Chin Rest Assembly**



**Figure SU-3 Chin Rest Ground**



**Figure SU-4 Chin Rest Attaching Screws**



**Figure SU-5 Adjusting Patient Handle Height**

## Setup (continued)

### Unpacking and Installation (continued)

9. Attach the Fixation Light Wire from the Chin Rest Assembly into the connector on the back of the Power Supply Assembly. Refer to Figure SU-6.
10. Open the box with the Microscope Assembly. Remove the Microscope Assembly, Base Assembly, and Accessories. Refer to Figure SU-7.
11. Using the 5mm Hex Screw remove the Allen Screw on the bottom of the Illumination Assembly and Arm.

**Note:** The Illumination Assembly and Arm are connected as one piece.

12. Mount the Illumination Assembly and Arm onto the Base Assembly and secure it with the Allen Screw using the 5mm Hex Wrench. Refer to Figure SU-08.

**Note:** There is a Notch in the Base Assembly, and a Slot in the Illumination Assembly. Align the Illumination Assembly and Arm so the Notch goes into the Slot. If the Notch is not aligned properly, the Slit Lamp will not sit flush, and won't be able to focus properly. Refer to Figure SU-09.

13. Install the Base Assembly onto the tracks of the Table Top and slide the Guide Rail Covers around the tracks. Refer to Figure SU-10.
14. Attach the Base Lamp Wire to the back of the Power Supply Assembly. Refer to Figure SU-6.

-continued-

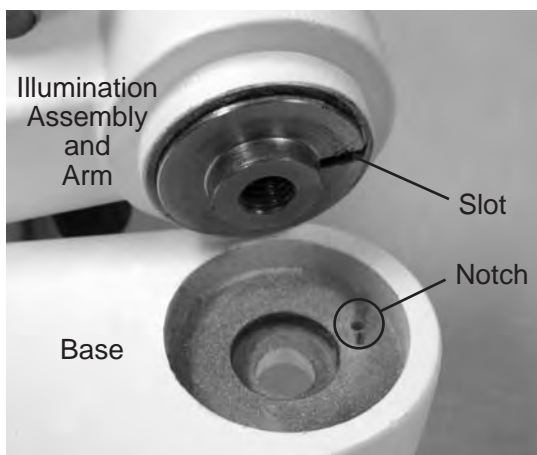


Figure SU-9 Line Up Notch

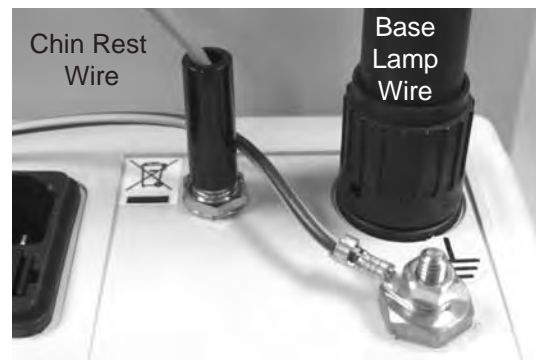


Figure SU-6 Connections

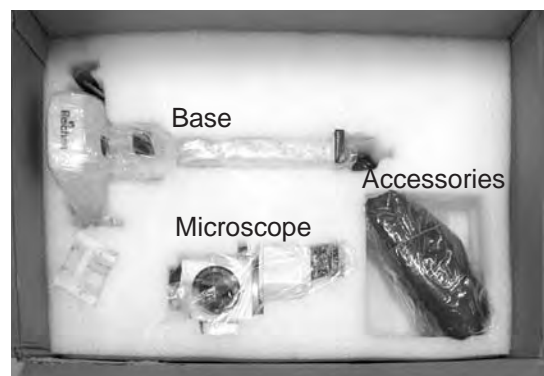


Figure SU-7 Microscope, Base, Accessories

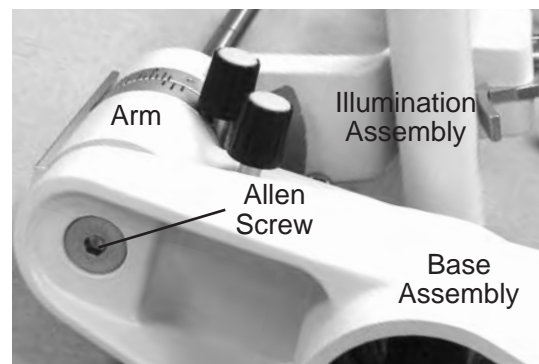


Figure SU-8 Allen Screw

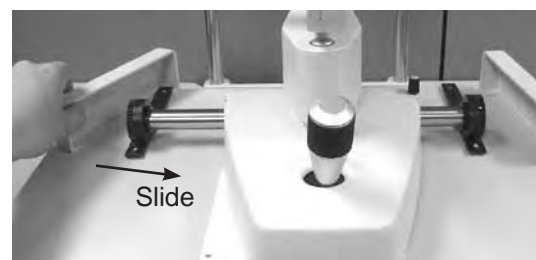


Figure SU-10 Base Install

## Setup (continued)

### Unpacking and Installation (continued)

15. Install the Microscope Assembly onto the top of the Arm by sliding it into position, making sure it is up against the stop. Then, tighten the Lock Knob located on the right side of the Microscope Assembly. Refer to Figure SU-11.

**Note:** Do not adjust the microscope stop knob behind the base of the microscope or the vertex distance will cause misalignment of focus and require re-calibration of the slit lamp assembly.

16. Remove the accessories and store them in an appropriate place so that when they are needed they will be available. Refer to Figure SU-12.

### Application of Input Power

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

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

1. After the unit is in its secure location, apply the correct input voltage to the instrument using the Power Cord from the Accessory Tray.

**Note:** The power inlet is located on the backside of the Power Supply Assembly.

2. Press down on the “I” located on the ON/OFF Switch. Refer to Figure SU-13.

**Note:** The ON/OFF Switch will illuminate green when there is power to the unit. When the ON/OFF Switch is set to off, the green light will turn off.

### Disconnection of Input Power

1. At any time, the power switch can be set to OFF. The unit does not have a power down sequence. To terminate operation of this instrument, press the ON / OFF switch to the OFF position (O).
2. If this instrument is intended to be OFF for an extended period of time, it can be disconnected from power by detaching the power cord from the its receptacle.

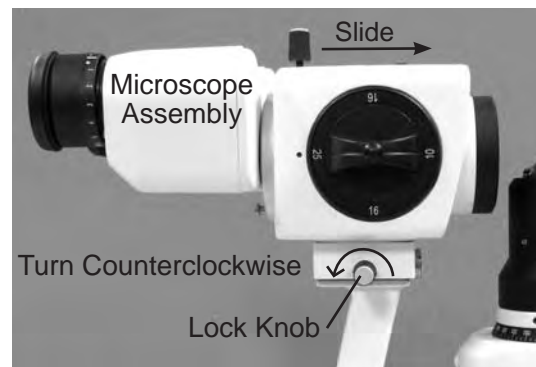


Figure SU-11 Microscope Install



Figure SU-12 Accessories



Figure SU-13 Power Supply Assembly

# Instructions for Use

## Operation

1. Turn on the power using the On/Off switch located on the front of the power supply. Brightness can be adjusted by rotating the illumination level knob.

**Note:** The maximum position is for intermittent use only. Continuous use will shorten lamp life.

2. Insert the Focusing Rod in the pivot post of the instrument body to make rough PD and focus adjustments.
3. Position the light onto the flat surface of the Focusing Rod and adjust the pupillary distance and focus of the eyepieces to suit the needs of the operator. Refer to Figure IN-1.
4. Using the Slit Width Knobs, adjust the projected slit so that the thinnest slit is shown on the Focusing Rod. Refer to Figures IN-1 and IN-4.

**Note:** The thinnest line will allow for greater accuracy.

5. Remove the Focusing Rod.
6. To position a patient, adjust the chinrest height by turning the Chinrest Elevation Handle on the post of the Chin Rest Assembly until the patient's canthus is in line with the Canthus Mark on the chin rest post. Refer to Figure IN-2.
7. Microscope elevation is adjusted by rotating the Joystick and observing the slit image through the Microscope Assembly until the slit is centered on the patient's cornea. Refer to Figure IN-3.
8. Move the slit lamp with the Joystick held firmly and slightly angled toward the patient, until the slit appears sharply on the cornea.

**Note:** The accuracy of this rough adjustment should be checked by the naked eye. The fine adjustment is performed while observing the slit through the microscope.

9. Tilt the Joystick, which is now held lightly at its upper end, until the slit appears sharply at the depth of the eye which is to be observed.
10. The horizontal motion of the base can be locked by tightening the Base Locking Screw. Refer to Figure IN-3.

**Note:** Lock the base whenever the lamp is not in use.

11. The slit width can be adjusted by rotating the Slit Width/Rotation Knob on either side of the instrument. Refer to Figure IN-4.

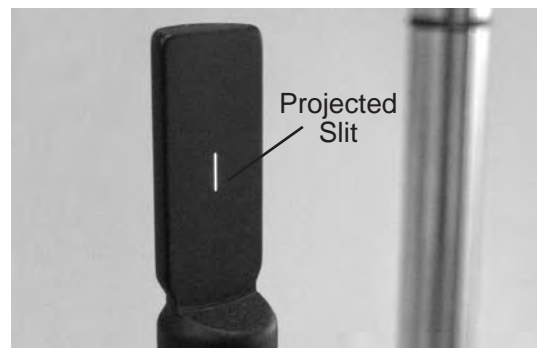


Figure IN-1 Focus on Slit

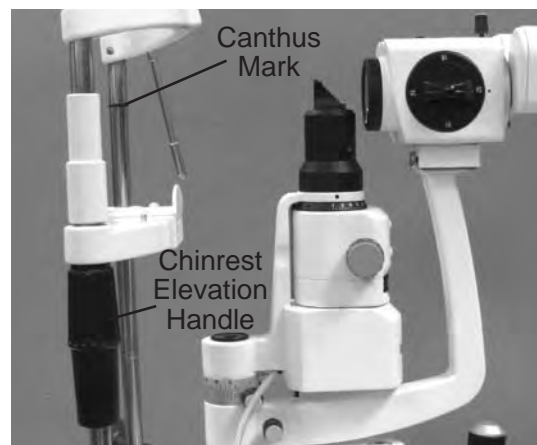


Figure IN-2 Adjust Patient Height

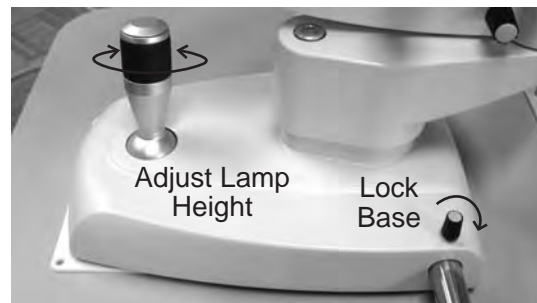


Figure IN-3 Adjust Height

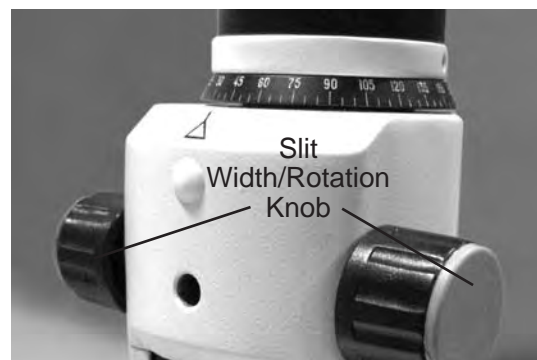


Figure IN-4 Adjust Slit Width

# Instructions for Use (continued)

## Operation (continued)

12. The angle between the illumination system and the microscope can be varied between 0° and 90° to either the left or to the right. Refer to Figure IN-5.
13. The illumination angle is indicated on the Scale of the slit lamp arm. Refer to Figure IN-6.
14. Magnification is altered by rotating the Magnification Dial on the Microscope Assembly. Refer to Figure IN-5.

## Slit Length

The slit length is adjusted by rotating the Slit Length Dial. The dial has five stops for adjustments. They are 0.6, 5.8, 9, 13.5 mm diameter and continuous length. They index into place. Refer to Figure IN-7.

## Filter Dial

The Filter Dial has four positions that index into place, and are color coded to indicate the active filter. Refer to Figure IN-7. The color coded index stops are as follows:

- Blue dot = Cobalt Blue
- Red dot = Heat Absorbing
- White dot = Open
- Green dot = Red-free

## Slit Rotation

Slit rotation is achieved by grasping the Slit Width/Rotation Knob and twisting the slit body to the left or right. The degree of rotation is indicated by the Slit Rotation Scale above the slit body. Refer to Figure IN-8.



Figure IN-5 Illumination Angle



Figure IN-6 Illumination Angle Scale

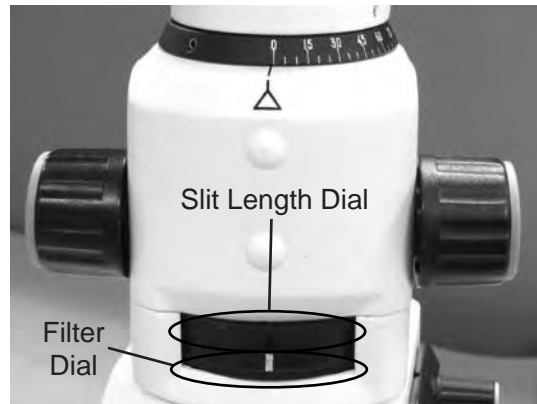


Figure IN-7 Filters and Slit Length

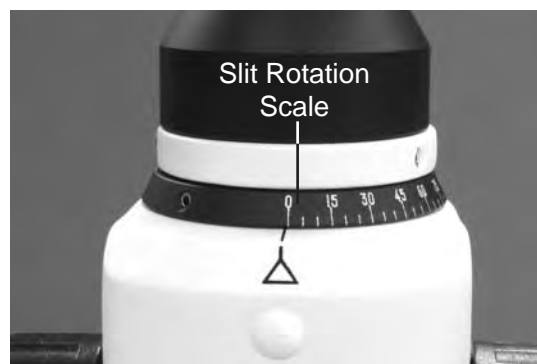


Figure IN-8 Slit Rotation Scale

# Cleaning & Maintenance

**WARNING:** RISK OF ELECTRIC SHOCK. ALWAYS DISCONNECT THE POWER CORD FROM THE WALL AND THE INSTRUMENT BEFORE PERFORMING ANY OF THE FOLLOWING CARE AND MAINTENANCE PROCEDURES.

## External Cleaning

Clean the external surfaces of this instrument using a clean, soft cloth moistened with a mild detergent solution (1 cc of liquid dish soap to one liter of clean, filtered water (filtered below 5 microns)). Refer to Figure MM-1.

## Forehead / Chinrest Preparation

For hygienic reasons, wipe the forehead rest with an alcohol wipe and change the chin rest papers after each patient.

## Cleaning the Glide Plate

If the Glide Plate is dirty it may cause a rough feeling when maneuvering the base of the slit lamp. Clean the Glide Plate with a soft cloth lightly dampened with a mild soap and water solution.

## Changing The Halogen Bulb

**WARNING:** NEVER REMOVE A BULB THAT HAS RECENTLY BEEN IN USE AS IT WILL BE VERY HOT. WAIT UNTIL IT HAS COOLED AND USE GLOVES OR A THICK CLOTH WHEN HANDLING ANY HALOGEN BULB.

**WARNING:** NEVER TOUCH A HALOGEN BULB WITH BARE HANDS AS FINGERPRINTS WILL SHORTEN THE BULB LIFE.

1. Remove input power to the instrument.
2. Open the bulb door.
3. Swing the Retaining Spring away from the Bulb. Refer to Figure MM-2.
4. Pull the Bulb Holder and Bulb from the unit. Refer to Figure MM-3.
5. Replace the Bulb with the correct Bulb as indicated in the [Specifications](#) section of this manual.
6. Place the Bulb Holder back into the lamp housing.

**Note:** Position the Bulb Holder so the Cut Out in the metal collar of the Bulb lines up with the Notch in the lamp housing. Refer to Figure MM-4.

7. Move the Retaining Spring back into its original position. Refer to Figure MM-2.
8. Close the bulb door.



Figure MM-1 Cleaning Main Unit

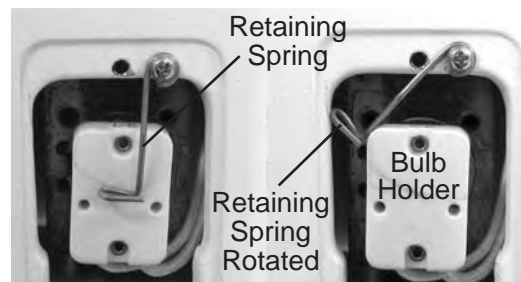


Figure MM-2 Securing Wire

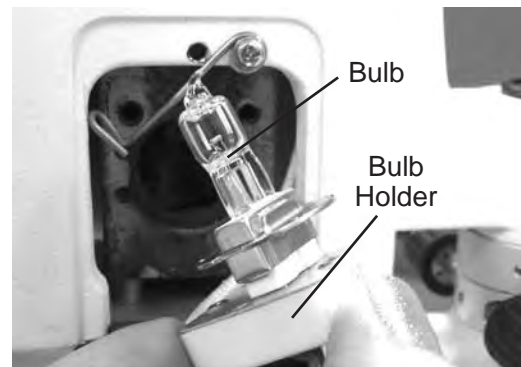


Figure MM-3 Bulb

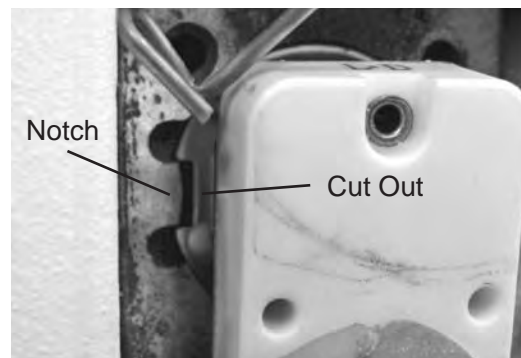


Figure MM-4 Notches

## Cleaning & Maintenance (continued)

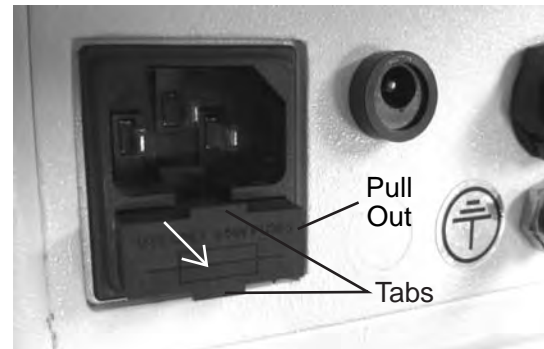
### Fuse Replacement

Replace the fuses in the Power Input Module with the fuses indicated in the Specifications section of this manual.

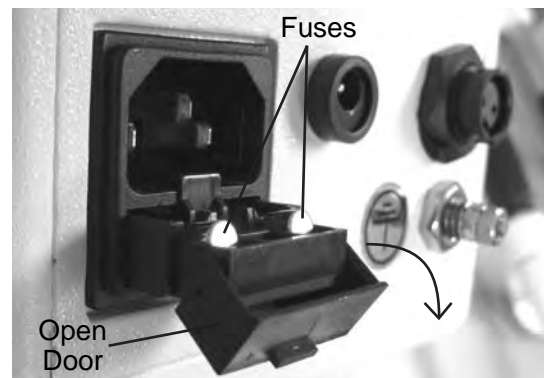
1. Remove input power to the instrument.
2. Press down on the top tab in the middle of the Power Input Module to release the Fuse Holder, and gently pull out the Fuse Holder by gripping the two small tabs. Refer to Figures MM-5 and MM-6.
3. Open the Door to the Fuse Holder by pulling it down. Refer to Figure MM-6.

**Note:** The Fuses will pop up when the door is open, making removal easier.

4. Install new fuses into the Fuse Holder that is indicated in the Specification section of this manual.
5. Install the Fuse Holder by closing the door, and pushing the Fuse Holder back until it snaps into place.



**Figure MM-5 Pull Out**



**Figure MM-6 Open Fuse Door**

# Troubleshooting

The following chart outlines some common issues with the Xcel 255 Slit Lamp 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
Lamp won't turn on.	Incorrect input power supplied to the Xcel 255 Slit Lamp.	Check the outlet to ensure proper power is being supplied.
	Defective Power Cord.	Replace the Power Cord.
	Bulb may be blown out.	Replace Bulb.
	Defective Power Supply.	Replace the Power Supply.
Slit Lamp won't move.	Rubber stopper may be attached under the joystick.	Remove the rubber stopper.
	Base Lock Screw may be tightened.	Loosen the Base Lock Screw.
Rough base movement.	Rubber stopper may be attached under the joystick.	Remove the rubber stopper.
	Bearings may be damaged.	Replace the base.
	Shaft may be damaged.	Replace the base.
Fixation light does not light up.	Fixation Light Harness not plugged into the Power Supply Assembly.	Ensure the Fixation Light Harness is properly seated in the Power Supply Assembly.
	Defective Power Supply.	Replace the Power Supply.
Light too dim.	Incorrect wattage for bulb being used.	Replace with the proper Bulb.
	Bulb not installed properly.	Check bulb and ensure notch lines up with bulb housing.
Double slit visible in microscope.	Microscope not focused on focusing rod before use.	Install focusing rod and check to ensure microscope is focused on it.
	Bulb not installed properly.	Check bulb and ensure notch lines up with bulb housing.


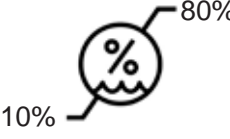

The following is a checklist of items that need to be assessed in order to determine if the Xcel 255 Slit Lamp requires servicing.

- Check the outside of the slit lamp for any damage or missing components.
- Inspect the power cord for damage.
- Test the lamp by turning the lamp on and turning the light all the way to it's brightest setting, and all the way down to it's lowest setting.
- Check to ensure all switches are functioning properly.
- Check the Filters by cycling through all the options.
- Check the Slit Wheel by cycling through all the options.
- Check the base movement.



# Specifications

## Catalog Number 15120

<b>Physical Dimensions</b>	
Size:	Weight, unpacked: 23.0 lbs. (10.4 Kg)
Height: 19.8 in. (50.2 cm)	Weight, packed: 52 lbs (23.64 Kg)
Width: 10.5 in. (26.7 cm)	
Depth: 14.0 in. (35.6 cm)	
<b>Electrical</b>	
Voltage: 100-240 VAC	
Power Input: Max 56-73VA	
Frequency: 50/60 Hz	
Fuses: T 1.6A L 250V	
Halogen Bulb: P/N 15121 (6V, 20 W)	
<b>Operational Conditions</b>	
<b>Environmental:</b>	
The environmental conditions are as follows:	
<b>Operating:</b>	
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)	
<b>Transportation &amp; Storage:</b>	
Temperature -20° C (-4° 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)	
Exposure to extreme temperature conditions indicated above must not exceed 15 weeks.	
<b>Microscope</b>	Galilean
<b>Mag Change</b>	3 Step Drum Rotation
<b>Eyepiece</b>	12.5X
<b>Mag Ratio</b>	10X 16X 25X
<b>PD Range</b>	54 - 75 mm
<b>Diopter Adjustment</b>	+/- 5
Slit Illumination	6V 20W Halogen
Slit Width	0 - 13.5 mm
Slit Length	0 - 13.5 mm
Slit Apertures	0.6, 5.8, 9, 13.5 mm
Slit Rotation	0° - 180°
Filters	Red Free, Heat Absorbing, Cobalt Blue

# Specifications (continued)

<b>Movement Ranges</b>	
Longitudinal (In/Out)	90mm
Lateral (Left/Right)	107mm
Vertical (Up/Down)	30mm
Chinrest Range	80mm
Table Dimensions	18 1/2" x 12 10/16" (465 mm x 316 mm)

### **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.

Due to a policy of continuous development, we reserve the right to change specifications without notice.

# Guidance Tables


<b>Table 201 – Guidance and Manufacturer’s Declaration</b> <b>Electromagnetic Emissions</b> <b>All Equipment and Systems</b>		
<b>Guidance and Manufacturer’s Declaration – Electromagnetic Emissions</b>		
The Xcel 255 is intended for use in the electromagnetic environment specified below. The customer or user of the Xcel 255 should ensure that it is used in such an environment.		
<b>Emissions Test</b>	<b>Compliance</b>	<b>Electromagnetic Environment</b> - Guidance -
RF Emissions CISPR 11	Group 1 Class B	The Xcel 255 uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
Harmonics IEC 61000-3-2	Class A	The Xcel 255 is suitable for use in all establishments, including domestic, and those directly connected to the public low-voltage power network that supplies buildings used for domestic purposes.
Flicker IEC 61000-3-3	Complies	

## Guidance Tables (continued)

<b>Table 202 – Guidance and Manufacturer’s Declaration</b> <b>Electromagnetic Immunity</b> <b>All Equipment and Systems</b>			
<b>Guidance and Manufacturer’s Declaration – Electromagnetic Immunity</b>			
The Xcel 255 is intended for use in electromagnetic environment specified below. The customer or user of the Xcel 255 should ensure that it is used in such an environment.			
<b>Immunity Test</b>	<b>IEC 60601 Test Level</b>	<b>Compliance Level</b>	<b>Electromagnetic Environment - Guidance</b>
ESD EN/IEC 61000-4-2	±6kV Contact ±8kV Air	±6kV Contact ±8kV Air	Floors should be wood, concrete or ceramic tile. If floors are synthetic, the R/H should be at least 30%.
EFT EN/IEC 61000-4-4	±2kV Mains ±1kV I/Os	±2kV Mains ±1kV I/Os	Mains power quality should be that of a typical commercial or hospital environment.
Surge EN/IEC 61000-4-5	±1kV Differential ±2kV Common	±1kV Differential ±2kV Common	Mains power quality should be that of a typical commercial or hospital environment.
Voltage Dips/Dropout EN/IEC 61000-4-11	>95% Dip for 0.5 Cycle 60% Dip for 5 Cycles 30% Dip for 25 Cycles >95% Dip for 5 Seconds	>95% Dip for 0.5 Cycle 60% Dip for 5 Cycles 30% Dip for 25 Cycles Note 1	Mains power quality should be that of a typical commercial or hospital environment. If the user of the Xcel 255 requires continued operation during power mains interruptions, it is recommended that the Xcel 255 be powered from an uninterruptible power supply or battery.
Power Frequency 50/60Hz Magnetic Field EN/IEC 61000-4-8	3A/m	3A/m	Power frequency magnetic fields should be that of a typical commercial or hospital environment.

**Note 1:** During a 5 second loss of power, the Xcel 255 powers off, but recovers once power is restored; meeting the manufacturers performance requirements.

# Guidance Tables (continued)

<b>Table 204 – Guidance and Manufacturer’s Declaration</b> <b>Electromagnetic Immunity</b> <b>Equipment and Systems that are NOT Life-supporting</b>			
<b>Guidance and Manufacturer’s Declaration – Electromagnetic Immunity</b>			
The Xcel 255 is intended for use in the electromagnetic environment specified below. The customer or user of the Xcel 255 should ensure that it is used in such an environment.			
<b>Immunity Test</b>	<b>IEC 60601 Test Level</b>	<b>Compliance Level</b>	<b>Electromagnetic Environment - Guidance</b>
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz	(V1) = 3 Vrms	Portable and mobile RF communications equipment should be used no closer to any part of the Xcel 255, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.
Radiated RF IEC 61000-4-3	80 MHz to 2.5 GHz @ 3V/m	(E1) = 3 V/m	Recommended Separation Distance:  $d=(3.5/V1)(\text{Sqrt } P)$  $d=(3.5/E1)(\text{Sqrt } P)$ 80 to 800 MHz  $d=(7/E1)(\text{Sqrt } P)$ 800 MHz to 2.5 GHz  Where P is the max output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m).  Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, should be less than the compliance levels in each frequency range. (V1 and E1)  Interference may occur in the vicinity of equipment marked with the following symbol.  
Note 1: At 80 MHz and 800 MHz, the higher frequency range applies.			
Note 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			
* Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. The measured field strength in the location in which the ME Equipment or ME System should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the ME Equipment or ME System.			
* Over the frequency range 150 kHz to 80 MHz, field strengths should be less than [V1] V/m.			

## Guidance Tables (continued)

<b>Table 206 – Recommended Separation Distances between Portable and Mobile RF Communications Equipment and the Xcel 255 for ME Equipment and ME Systems that are NOT Life-supporting.</b> <b>Guidance and Manufacturer’s Declaration - Electromagnetic Immunity</b>			
<b>Recommended Separation Distances for between Portable and Mobile RF Communications Equipment and the Xcel 255</b>			
<p>The Xcel 255 is intended for use in the electromagnetic environment in which radiated RF disturbances are controlled. The customer or user of the Xcel 255 can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF Communications Equipment (transmitters) and the Xcel 255 as recommended below, according to the maximum output power of the communications equipment.</p>			
<b>Max Output Power of Transmitter (W)</b>	<b>Separation (m) 150kHz to 80 MHz</b> $d=(3.5/\sqrt{f})(\sqrt{P})$	<b>Separation (m) 80 to 800 MHz</b> $d=(3.5/\sqrt{f})(\sqrt{P})$	<b>Separation (m) 800MHz to 2.5GHz</b> $d=(7/\sqrt{f})(\sqrt{P})$
0.01	0.1166	0.1166	0.2333
0.1	0.3689	0.3689	0.7378
1	1.1666	1.1666	2.3333
10	3.6893	3.6893	7.3786
100	11.6666	11.6666	23.3333
<p>For transmitters rated at a maximum output power not listed above, the recommended separation distance (d) in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (w) according to the transmitter manufacturer.</p> <p>Note 1: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.</p> <p>Note 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects, and people.</p>			

# 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.



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