XCEL™ 455
Slit Lamp

User's Guide

AMETEK®
ULTRA PRECISION TECHNOLOGIES

Reichert®
TECHNOLOGIES

Caution: Federal law restricts this device to sale by or on the order of a Physician or Practitioner.

Table of Contents

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 THE INTEGRATED FILTERS WHICH PROTECT AGAINST UV RADIATION.

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 (ESD) THAT MAY BE SENSITIVE TO STATIC CHARGES PRODUCED BY THE HUMAN BODY. DO NOT REMOVE THE COVERS WITHOUT TAKING PROPER ESD 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


Accompanying Documents must be consulted


Alternating Current Power


Protective Earth Connection


ON / OFF


2014
Date of Manufacture

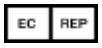
REF
Catalog Number

S/N
Serial Number


Waste of Electrical and Electronic Equipment


Compliance to Medical Device Directive 93/42/EEC

36FS
Underwriter's Laboratories has independently evaluated this device using selected tests from US and Canadian versions of IEC 60601-1 standard, and assigned a control number



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 the purchase of your new Xcel™ 455 Slit Lamp from Reichert Technologies®.

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® distributor 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 455 Slit Lamp is an AC-powered slit lamp biomicroscope that is intended for use in examining the anterior eye 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.

Phototoxicity Information

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).

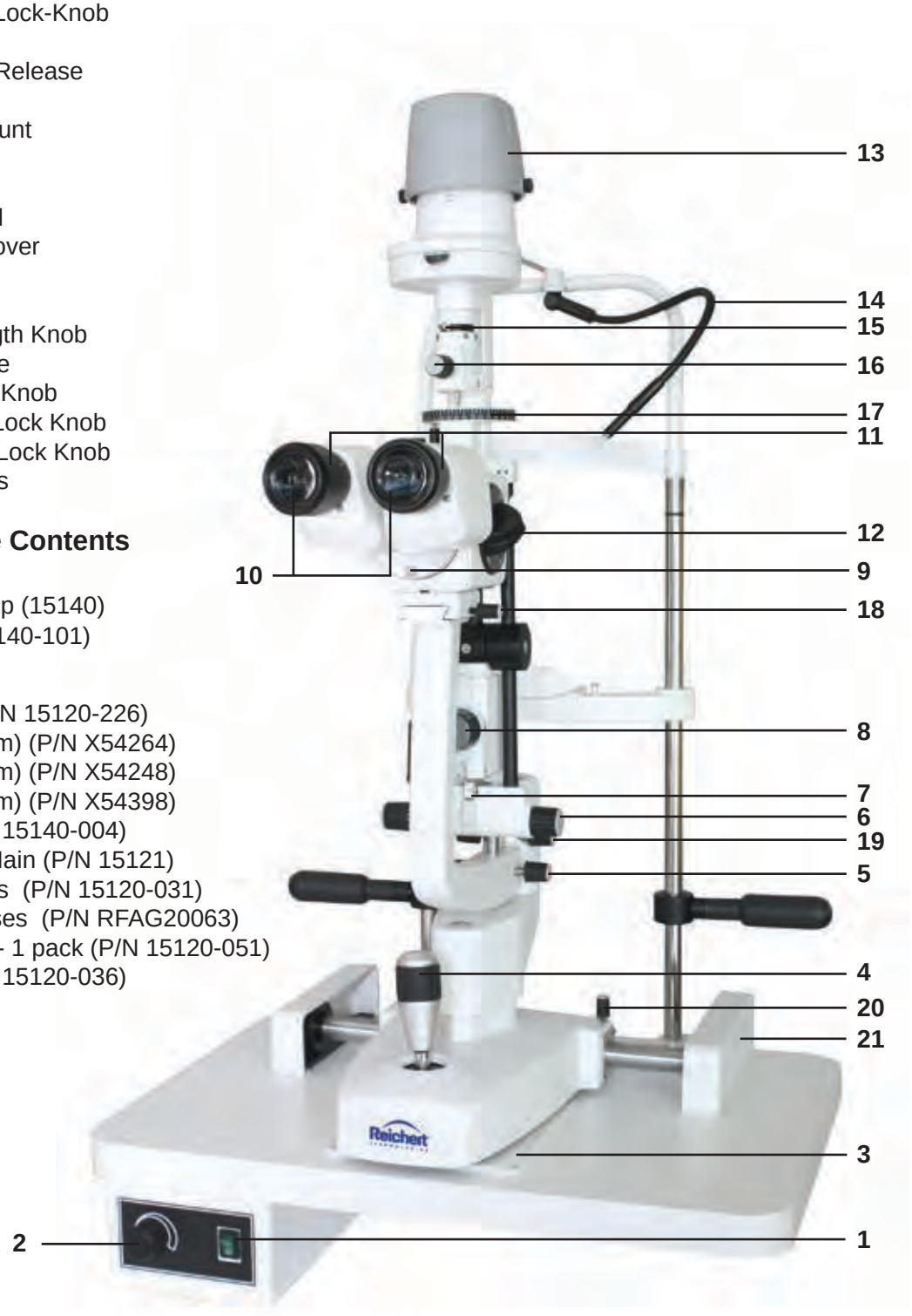
The retinal exposure dose for a photochemical hazard is a product of the radiance and the exposure time. If the value of radiance were reduced in half, twice the time would be needed to reach the maximum exposure limit.

While no acute optical radiation hazards have been identified for slit lamps, it is recommended that the intensity of light directed into the patient's eye be limited to the minimum level which is necessary for diagnosis. Infants, aphakes and persons with diseased eyes will be at greater risk. The risk may also be increased if the person being examined has had any exposure with the same instrument or any other ophthalmic instrument using a visible light source during the previous 24 hours. This will apply particularly if the eye has been exposed to retinal photography.

Features and Functions

Parts Identification

1. On/Off Switch
2. Illumination Level Control
3. Glide Plate
4. Joystick for horizontal and vertical adjustment
5. Microscope Arm Lock-Knob
6. Slit Width Knob
7. Inclination Latch Release
8. Centering Knob
9. Breath Shield Mount
10. Eyepieces
11. Focusing Rings
12. Magnification Dial
13. Lamp Housing Cover
14. Fixation Light
15. Filter Lever
16. Slit Rotation/Length Knob
17. Slit Rotation Scale
18. Microscope Lock Knob
19. Illumination Arm Lock Knob
20. Instrument Base Lock Knob
21. Guide Rail Covers



Xcel 455 Package Contents

- Xcel 455 Slit Lamp (15140)
- User's Guide (15140-101)

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 (P/N 15140-004)
- Halogen Lamp, Main (P/N 15121)
- Guide Rail Covers (P/N 15120-031)
- Replacement Fuses (P/N RFAG20063)
- Chin Rest Paper - 1 pack (P/N 15120-051)
- Power Cord (P/N 15120-036)

Setup

Unpacking and Installation

1. Open the outside shipping box and remove the four (4) 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. Open the box with the Microscope Assembly. Remove the Microscope Assembly, Base Assembly, and Accessories. Refer to Figure SU-3.
7. Remove the accessories and store them in an appropriate place so that when they are needed they will be available. Refer to Figure SU-4.
8. 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-5.
9. 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-6.

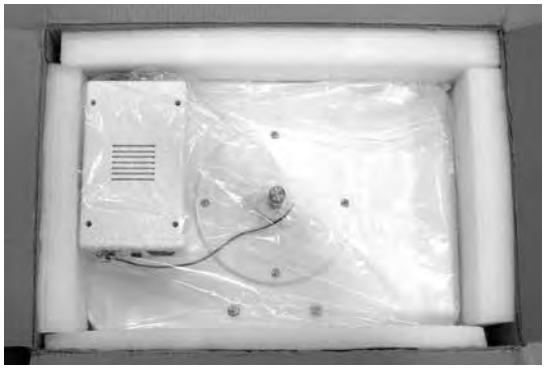


Figure SU-1 Table Top and Electronics

Figure SU-2 Chin Rest Assembly

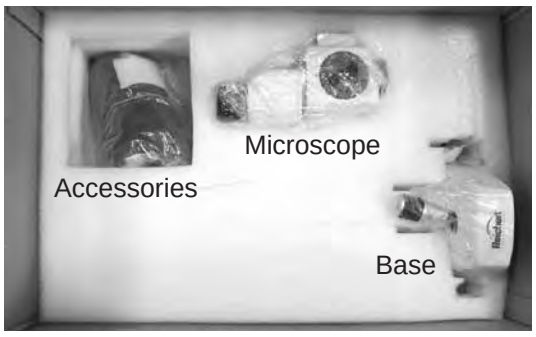


Figure SU-3 Microscope, Base, Accessories

Figure SU-4 Accessories

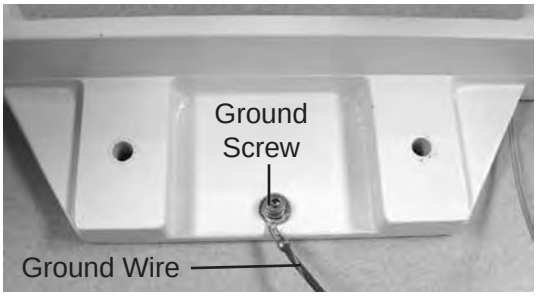


Figure SU-5 Chin Rest Ground

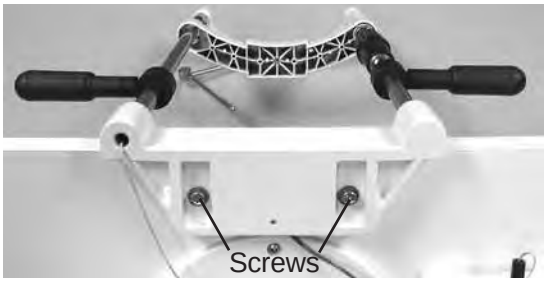


Figure SU-6 Table Top Screws

Unpacking and Installation (continued)

10. Using the 4mm Hex Wrench, adjust the Patient Handles by loosening the 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-7.
11. 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-8.
12. Open the box with the Illumination Assembly and remove it. Refer to Figure SU-9.
13. Using the 5mm Hex Wrench, remove the Screw on the bottom of the Illumination Assembly and Arm.

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

14. Mount the Illumination Assembly and Arm onto the Base Assembly and secure it with the Screw using the 5mm Hex Wrench. Refer to Figure SU-10.

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 aligned properly. Refer to Figure SU-11.

-continued-

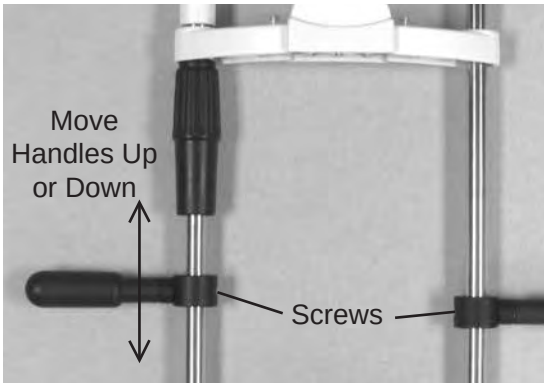


Figure SU-7 Adjusting Patient Handle Height

Figure SU-8 Connections

Figure SU-9 Illumination Assembly

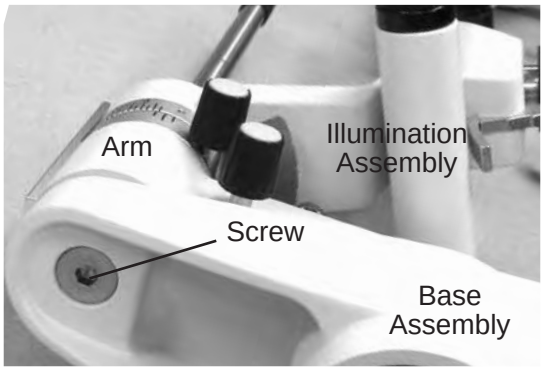


Figure SU-10 Screw

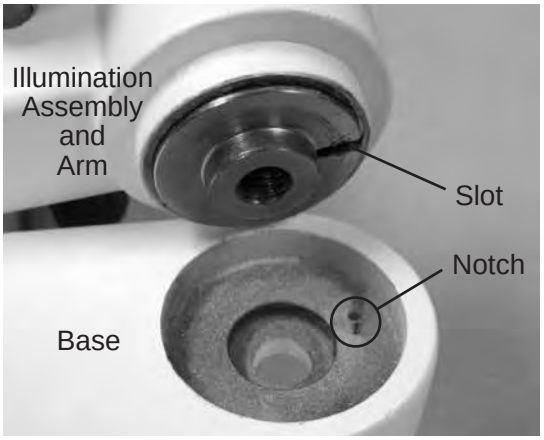


Figure SU-11 Line Up Notch

Unpacking and Installation (continued)

15. Install the Base Assembly onto the tracks of the Table Top and slide the Guide Rail Covers around the tracks. Refer to Figure SU-12.
16. Attach the Base Lamp Wire to the back of the Power Supply Assembly. Refer to Figure SU-8.
17. 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-13.

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.

Figure SU-12 Install Base Assembly

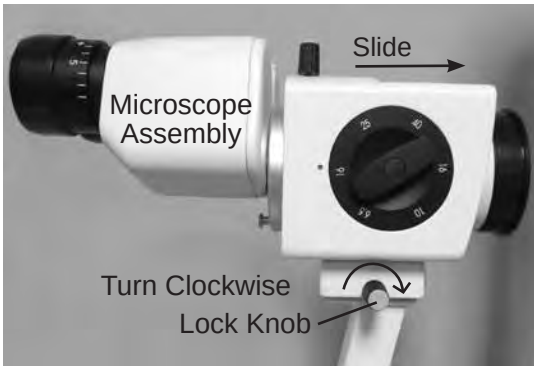


Figure SU-13 Microscope Install

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.

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

2. Activate ON/OFF Switch (I). Refer to Figure SU-14.

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.

Figure SU-14 Power Supply Assembly

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 receptacle.

Operation

1. Turn on the power using the On/Off switch located on the front of the Power Supply Assembly. Brightness can be adjusted by rotating the Illumination Level Control Knob. Refer to Figure SU-14.

Note: The maximum intensity setting is for intermittent use only. Continuous use will shorten the lamp life.

2. Insert the Focusing Rod in the pivot post of the instrument body to make rough PD and focus adjustments. Refer to Figure IN-1.
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.
4. Using the Slit Width Knobs, adjust the projected slit so that the thinnest slit is shown on the Focusing Rod. Refer to Figure IN-2.

Note: The thinnest slit 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 Figures IN-2 and IN-3.
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-4.
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-4.

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

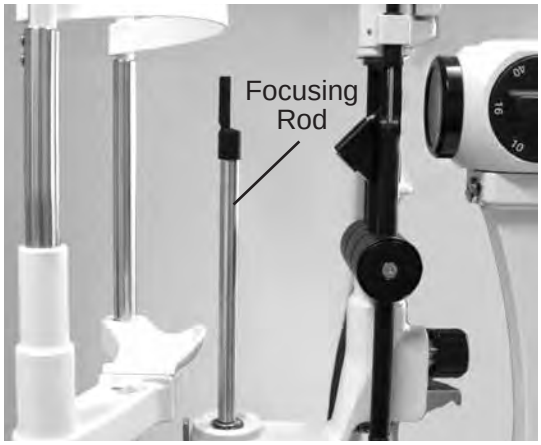


Figure IN-1 Install Focusing Rod

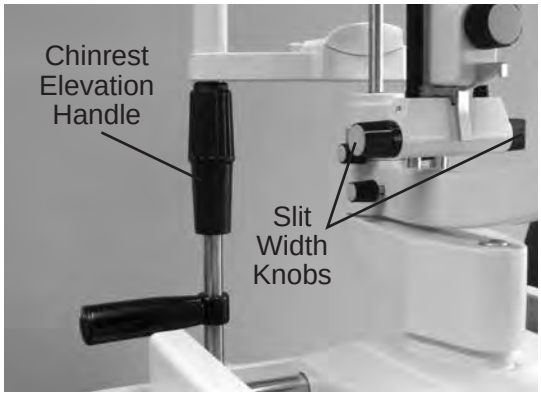


Figure IN-2 Slit Width and Patient Height

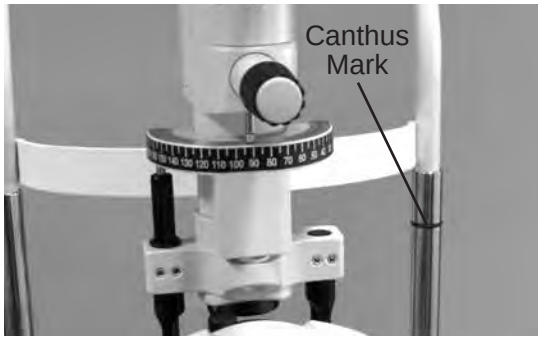


Figure IN-3 Adjust Patient Height

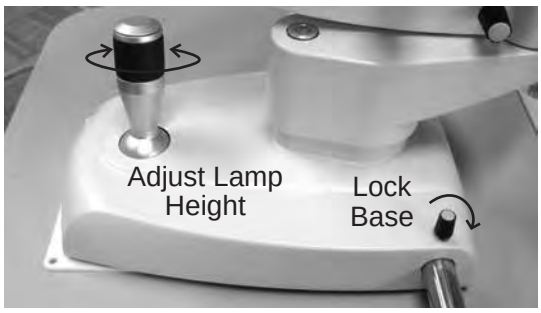


Figure IN-4 Adjust Height

Operation (continued)

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

Note: The magnification of each click-stop position is engraved on the Magnification Dial.

14. The slit width can be adjusted by rotating the Slit Width Knobs. Refer to Figure IN-7.

Adjusting Slit Length

The slit length is adjusted by rotating the Slit Length/ Rotation Dial. The dial has five stops for adjustments. They are 12, 9, 5, 3, 1 and 0.3 mm diameter and continuous length. Refer to Figure IN-8.

Filters

There are five filters that can be used by indexing the Filter Lever to the coordinating Filter Dot. The Filter Dots are color coded. Refer to Figure IN-8. The color coded filters are as follows:

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

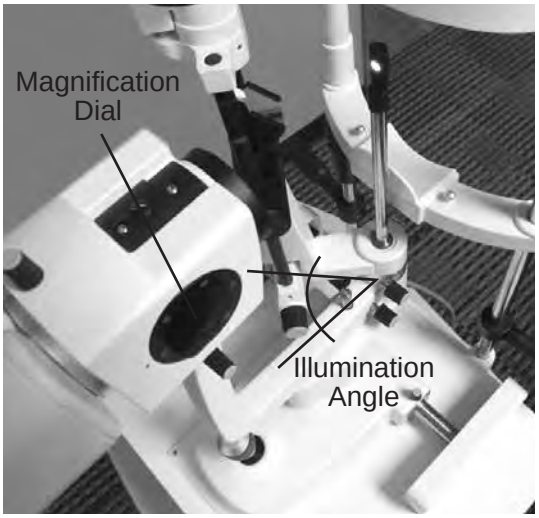


Figure IN-5 Illumination Angle

Figure IN-6 Illumination Angle Scale

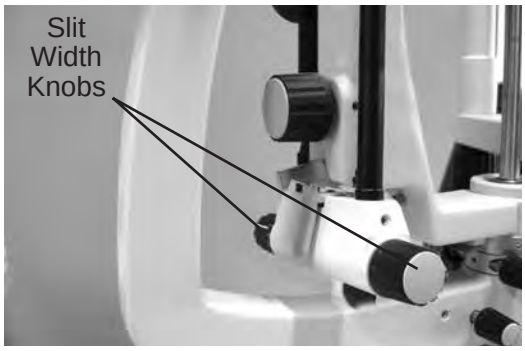


Figure IN-7 Slit Width Adjustment

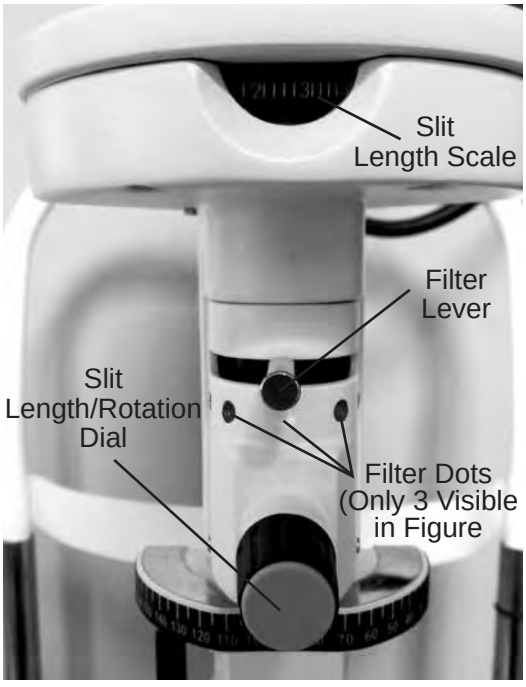


Figure IN-8 Slit Width and Filters

Operation (continued)

Slit Rotation

By grasping the Slit Rotation/Length Knob, the lamp housing can be rotated. This, in turn, rotates the slit from vertical to horizontal in either direction. The slit positions are click-stopped in 45° increments and stopped at 0° and 180° and is indicated by the scale. Refer to Figure IN-9.

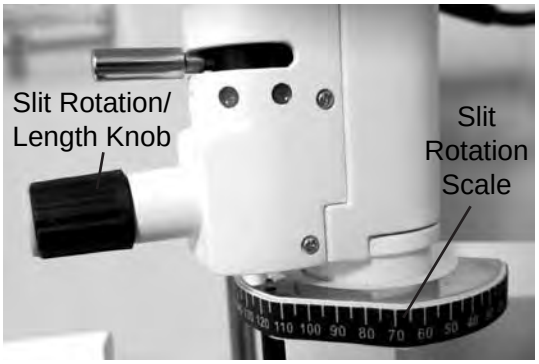


Figure IN-9 Slit Rotation Scale

Illumination Inclination

The Illumination Assembly can be inclined in the horizontal plane in 5° steps for a total of 20°. Tilt the Illumination Assembly by depressing the Inclination Latch Release and pulling the base of the Illumination Assembly toward the operator. Refer to Figure IN-10.

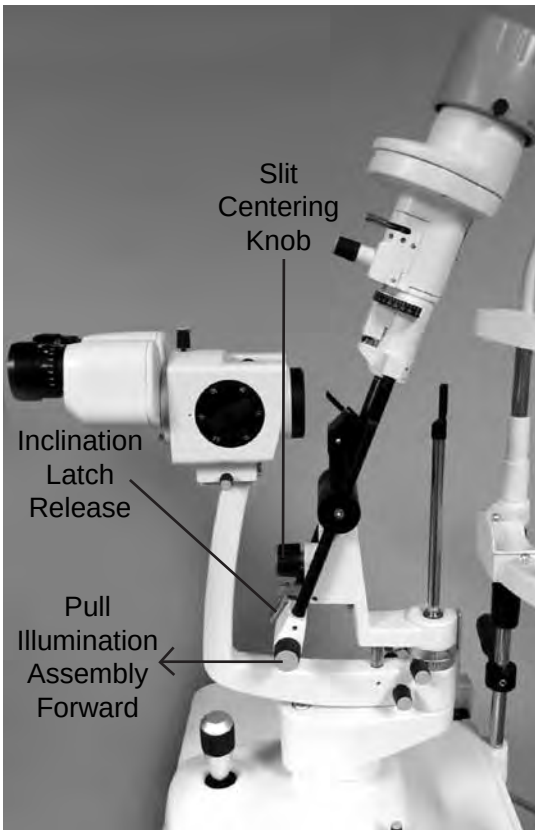


Figure IN-10 Illumination Inclination

Slit Centration

When the centering screw is loosened, the slit can be scanned away from the center of the field of vision for retro-illumination, scleral scatter, *etc*. The slit image is centered again by tightening the screw. Refer to Figure IN-11.

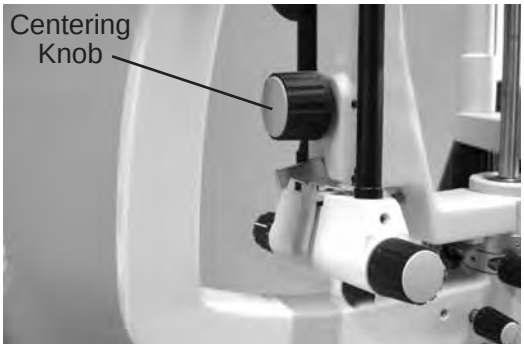


Figure IN-11 Slit Centering

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.

Cleaning

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). Refer to Figure MM-1.

Figure MM-1 Cleaning Main Unit

Forehead / Chinrest Cleaning & Disinfection

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 detergent solution (1 cc of liquid dish soap to one liter of clean, filtered water).

Mirror Cleaning / Replacement

When cleaning the mirror, clean off the mirror using dry air, then gently wipe with a soft lint-free cloth. If replacing the mirror, grasp the narrow shank of the mirror and pull upwards. Replace it with a new one by sliding it in place. Refer to Figure MM-2.

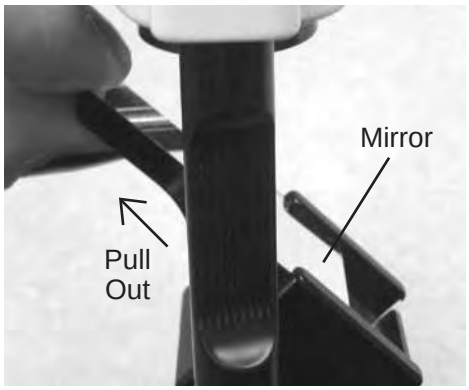


Figure MM-2 Remove Mirror

Cleaning & Maintenance (continued)

Changing The Halogen Lamp

WARNING: NEVER REMOVE A LAMP 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 LAMP.

WARNING: REPLACE HALOGEN LAMP ONLY WITH REICHERT P/N 15121 TO ENSURE PATIENT LIGHT LEVEL SAFETY.

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

1. Remove input power to the instrument.
2. Remove the Lamp Housing Cover by loosening the Two Screws securing the Cover and lifting it straight off. Refer to Figure MM-3.
3. Using a Philips head screwdriver, unscrew the Screw securing the Metal Tab holding the Lamp Holder in place. Refer to Figure MM-4.
4. Gently pull out the Lamp Holder and Lamp. Refer to Figure MM-5.
5. Grip the Lamp by the Metal Disk that is attached to it, and pull it out of the Lamp Holder. Refer to Figure MM-6.
6. Replace the Lamp with a new one and install it by pushing the prongs into the Lamp Holder so that the Notch is positioned to the right. Refer to Figures MM-6 and MM-7.

Note: There is a Cut Out in the Metal Disk on the Lamp. Ensure that the Lamp is placed properly so that the Cut Out fits into the Notch. Refer to Figure MM-7.

7. Secure the Lamp with the Metal Tab and Screw. Refer to Figure MM-4.
8. Install the Lamp Housing Cover and secure it by tightening the Two Screws. Refer to Figure MM-3.

Figure MM-3 Remove Cover

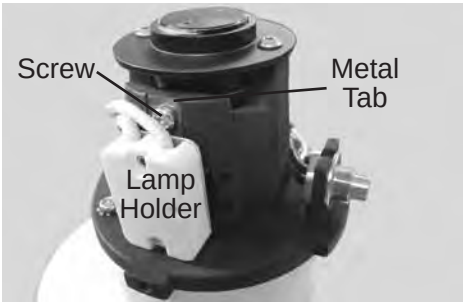


Figure MM-4 Securing Screw

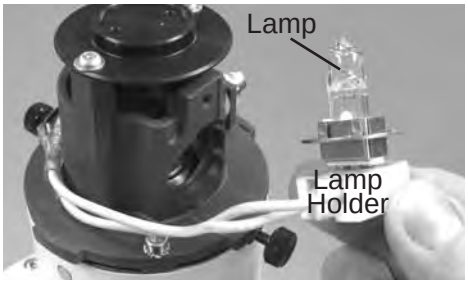


Figure MM-5 Lamp

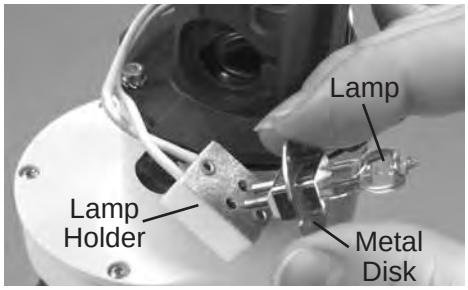


Figure MM-6 New Lamp

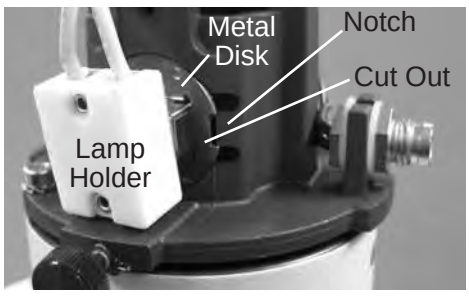


Figure MM-7 Notch

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-8 and MM-9.
3. Open the Door to the Fuse Holder by pulling it down. Refer to Figure MM-9.

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.

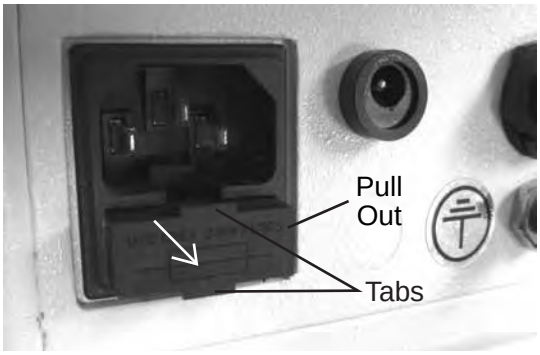


Figure MM-8 Pull Out

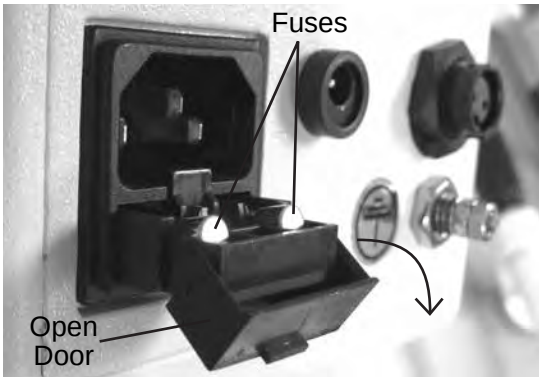


Figure MM-9 Open Fuse Door

Troubleshooting

The following chart outlines some common issues with the Xcel 455 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 455 Slit Lamp.	Check the outlet to ensure proper power in being supplied.
	Defective Power Cord.	Replace the Power Cord.
	Lamp may be blown out.	Replace the Lamp.
	Defective Power Supply.	Replace the Power Supply Assembly.
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 Assembly.
Light too dim.	Incorrect wattage for lamp being used.	Replace with the proper lamp.
	Lamp not installed properly.	Check lamp and ensure notch lines up with lamp 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.
	Lamp not installed properly.	Check lamp and ensure notch lines up with lamp housing.

The following is a checklist of items that need to be assessed in order to determine if the Xcel 455 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 15140

Physical Dimensions

Size (From Tabletop):
- Height: 26.0 in. (66.0 cm)
- Width: 18.0 in. (45.7 cm)
- Depth: 13.5 in. (34.3 cm)

Weight, unpacked: 39.3 lbs (17.8 Kg)
Weight, packed: 65 lbs (29.5 Kg)

Electrical

- Voltage: 100V-240 VAC
- Power Input (max): 56-73 VA
- Frequency: 50/60 Hz
- Fuses: Time-Lag (1.6A, 250V), 5x20 mm, (P/N RFAG20063)
- Halogen Lamp: P/N 15121 (6V, 20 W)

Operational Conditions

Environmental:

The environmental conditions are as follows:

Operating:

Temperature 10° C (50° F) to 35° C (95° F)

Relative Humidity: 30% to 75%

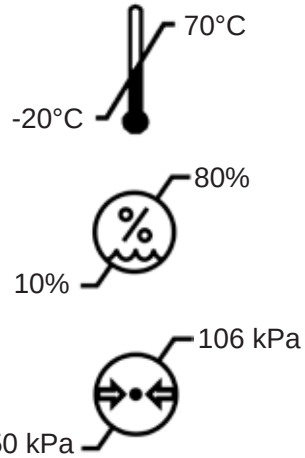
Atmospheric Pressure: 80 kPa (23.6 in. Hg) to 106 kPa (31.3 in. Hg)

Transportation & Storage:

Temperature -20° C (-4° F) to 70° C (158° F)

Relative Humidity: 10% to 80%

Atmospheric Pressure: 50 kPa (14.8 in. Hg) to 106 kPa (31.3 in. Hg)



Optics

Microscope	Galilean
Mag Change	5 Step Drum Rotation
Eyepiece	12.5X
Mag Ratio	6.5X, 10X, 16X, 25X, 40X
PD Range	49 - 78 mm
Diopter Adjustment	+/- 6 D
Slit Illumination	6V 20W Halogen
Slit Width	0 - 12 mm
Slit Length	1.5 - 12.5 mm
Slit Apertures	0.3, 1, 3, 5, 9, 12 mm
Slit Rotation	0° - 180°
Slit Inclines	-5°, -10°, -15°, -20°
Filters	Red Free, Heat Absorbing, Cobalt Blue, Neutral Density
Working Distance	< 370 mm
Illuminance Range	0 to > 50000 lux

Specifications (continued)

Field of View

Magnification	Field of View (mm)
6.5 X	37.0
10 X	24.0
16X	15.0
25X	9.5
40X	6.0

Movement Ranges

Longitudinal (In/Out)	4.3 in. (110 mm)
Lateral (Left/Right)	4.3 in. (110 mm)
Vertical (Up/Down)	1.2 in. (30 mm)
Chinrest Range	2.8 in. (70 mm)
Table Dimensions	18.3 in. x 12.6 in. (465 mm x 320 mm)

Compliance

This slit lamp complies with:

IEC 60601-1
ISO 10939
ISO 15004-1
ISO 15004-2

Device Classification

Protection: Class I
Ingress Protection Rating: IXP0
Instrument Type: (IEC 60601-1) B
Operating Mode: Continuous
US FDA: Class II 21 CFR 886.1850
EU Medical Device Directive: Class I, Rule 12
CAN CMDR: Class I Rule 7, Clause 1

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

Table 201 – Guidance and Manufacturer's Declaration

Electromagnetic Emissions

All Equipment and Systems

Guidance and Manufacturer's Declaration – Electromagnetic Emissions

The Xcel 455 is intended for use in the electromagnetic environment specified below. The customer or user of the Xcel 455 should ensure that it is used in such an environment.

Emissions Test	Compliance	Electromagnetic Environment - Guidance -
RF Emissions CISPR 11	Group 1 Class A	The Xcel 455 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 455 is suitable for use in all establishments, other than domestic, and those connected directly to the public low-voltage power network that supplies buildings used for domestic purposes.
Flicker IEC 61000-3-3	Complies	

Table 202 – Guidance and Manufacturer's Declaration

Electromagnetic Immunity

All Equipment and Systems

Guidance and Manufacturer's Declaration – Electromagnetic Immunity

The Xcel 455 is intended for use in the electromagnetic environment specified below. The customer or user of the Xcel 455 should ensure that it is used in such an environment.

Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment - Guidance
ESD 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 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 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 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 >95% Dip for 5 Seconds	Mains power quality should be that of a typical commercial or hospital environment. If the user of the Xcel 455 requires continued operation during power mains interruptions, it is recommended that the Xcel 455 be powered from an uninterruptible power supply or battery.
Power Frequency 50/60Hz Magnetic Field IEC 61000-4-8	3A/m	3A/m	Power frequency magnetic fields should be that of a typical commercial or hospital environment.

Table 204 – Guidance and Manufacturer's Declaration

Electromagnetic Immunity

Equipment and Systems that are NOT Life-supporting

Guidance and Manufacturer's Declaration – Electromagnetic Immunity

The Xcel 455 is intended for use in the electromagnetic environment specified below. The customer or user of the Xcel 455 should ensure that it is used in such an environment.

Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment - Guidance
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz	(V1) = 3 Vrms	Portable and mobile RF communications equipment should be no closer to any part of the Xcel 455, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended Separation Distance: d=(3.5/V1)(Sqrt P) d=(3.5/E1)(Sqrt P) 80 to 800 MHz d=(7/E1)(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 level in each frequency range. Interference may occur in the vicinity of equipment marked with the following 
Radiated RF IEC 61000-4-3	80 MHz to 2.5 GHz @ 3V/m	(E1) = 3 V/m	

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 many 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 then [V1] V/m.

Table 206 – Recommended Separation Distances between Portable and Mobile RF Communications Equipment and the XCEL 455 for ME Equipment and ME Systems that are NOT Life-supporting.

Guidance and Manufacturer's Declaration - Electromagnetic Immunity

Recommended Separation Distances between

Portable and Mobile RF Communications Equipment and the Xcel 455

The Xcel 455 is intended for use in the electromagnetic environment in which radiated RF disturbances are controlled. The customer or user of the Xcel 455 can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF Communications Equipment (transmitters) and the Xcel 455 as recommended below, according to the maximum output power of the communications equipment.

Max Output Power of Transmitter (W)	Separation (m) 150kHz to 80 MHz d=(3.5/V1)(Sqrt P)	Separation (m) 80 to 800 MHz d=(3.5/E1)(Sqrt P)	Separation (m) 800MHz to 2.5GHz d=(7/E1)(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

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.

Note 1: At 80 MHz and 800 MHz, the separation distance for 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.

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, Lamps, 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.

Notes

Notes

Reichert®
TECHNOLOGIES

MERCOFRAMES OPTICAL CORP.

5555 NW 74 AVE. Miami, FL 33166 /mercoframes
sales@mercoframes.net www.mercoframes.com
305-882-0120 Whatsapp www.mercoframesusa.com

CE

15140-101 Rev. B

May 27, 2014

AMETEK®
ULTRA PRECISION TECHNOLOGIES