



LumenArc™ Light Source

For Model Number: ZS-LA24W-01N

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Lysol® is a registered trademark of Reckitt Benckiser.

Sōlarc™ is a trademark of Welch Allyn, Inc.

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1 Introduction

This manual describes the setup, installation, start-up, and use of the Zeon® LumenArc™ Light Source.

Indications
















Use of the Zeon LumenArc Light Source is indicated for dental lighting applications requiring a remotely located, high-quality white light. This product must only be used by qualified dental personnel.

Contraindications

The use of the Zeon LumenArc Light Source is contraindicated for applications where high intensity light might burn or damage tissues; such as for neonate transillumination and ophthalmic procedures.

For further contraindications, the user must also consult the operating manual of the instrument being used with the Zeon LumenArc Light Source in the medical procedure.

Symbol Descriptions

	Attention: Read Operating Manual for Warnings, Precautions, and Instructions for Use.		Not AP/APG Equipment
	Light; Lighting; Illumination Intensity		Caution — Hot
IPX0	Not Protected Against the Ingress of Water		Bright Light
	Type BF Applied Part		Alternating Current
	Filter In / Filter Out		Indoor/dry location use only.
	Lamp On		Lamp Off
	Storage Humidity		Transport Temperature
	No user serviceable parts inside.		UL Recognized Component Mark
CE	European CE Mark		Australian (AUS) C-Tick Mark



ITS, Nationally
Recognized Testing
Laboratory (NRTL) Mark



Hazard Warning



Direct Current



TUV, Nationally Recognized Testing
Laboratory (NRTL) Mark



Double Insulation

Warnings

A warning statement in this manual identifies a condition or practice which, if not corrected or discontinued immediately, could lead to patient injury, illness or death.



WARNING RISK OF FIRE. Do not operate on, near, or over combustible material. Operate only on smooth, hard, flat surface. This device is not suitable for use in the presence of a flammable anesthetic mixture. An explosion may result.

WARNING The high intensity light at the front of the light source and at the tip of the Fiber Optic Bundle will create high temperatures and bright light. To minimize the risk of injury, avoid direct viewing or contact with sensitive tissues.

WARNING Do not use for neonate transillumination. Erythema may result.

WARNING To prevent temporary blinding, always plug the fiber optic bundle into the Zeon LumenArc Light Source and set the light intensity control to minimum before turning the power ON.

WARNING If this light source is used during invasive surgery, the failure of a component within the system, causing loss of illumination, may indirectly cause risk to the patient. Therefore, it is recommended to have alternative means of illumination available.

WARNING When the unit is on, never disconnect the fiber optic bundle from the Light Source or the accessory from the end of the fiber bundle. High intensity light from the end of the fiber optic bundle can ignite combustible material.



WARNING RISK OF SHOCK. Do not operate the Light source without a lamp installed. Disconnect power before attempting to change lamp.

WARNING PROVIDE ADEQUATE VENTILATION TO PREVENT OVERHEATING. Do not cover or drape this light source. Provide a 3 inch (7.62 cm) distance between the Zeon LumenArc Light Source and any solid objects.

WARNING Use the Zeon LumenArc approved power supply only. Use of any other power supply will impair the safety and effectiveness of this device.

WARNING Use only non-electrically conductive fiber bundles. Use of conductive fiber bundles will compromise the safety and effectiveness of this device.

Cautions

A caution statement in this manual identifies a condition or practice which, if not corrected or discontinued immediately, could lead to equipment failure, equipment damage, or data loss.



Caution Do not sterilize the Zeon LumenArc Light Source. Refer to Cleaning section for cleaning instructions.

Caution Do not switch the Zeon LumenArc Light Source ON and OFF in rapid succession. Doing so will dramatically shorten lamp life. Allow lamp to cool down 10 to 15 seconds between uses.

Caution Do not operate device without the cover in place. Operate in the horizontal orientation only.

Caution Do not use or store liquids above or on the Zeon LumenArc Light Source.



Caution Allow the lamp to cool before replacing.

Caution Since the Zeon LumenArc Light Source uses a custom lamp, always have a spare lamp available for replacement. USE CAUTION BECAUSE LAMP MAY BE HOT. Allow lamp to cool before replacing.

Caution Any changes or modifications made to this device that are not expressly approved by SDS-Orascoptic will void the warranty and may compromise product safety.

Caution United States Federal law restricts this device to sale by or on the order of a health care practitioner.


Caution Only qualified dental personnel should operate the Zeon LumenArc Light Source.

Caution System integrator is responsible for all safety testing, including optical and thermal testing.


Caution It is recommended to test the dental composite with and without the optional filter prior to use with a patient.

2 System Description and Operation

The Zeon LumenArc Light Source is used to supply high quality, white light for optical illumination systems.

1. Verify the power switch is in the OFF position (). Place the light source on a smooth, hard, level surface with at least 3" air clearance between the light source and any solid objects. Plug the power supply into a grounded receptacle.
2. Turn the light intensity control knob to the minimum position (see Figure 1). Plug the fiber optic bundle into the light port and connect the distal end to the instrument.

Note For proper lamp performance, verify the fiber optic bundle is plugged in at all times.

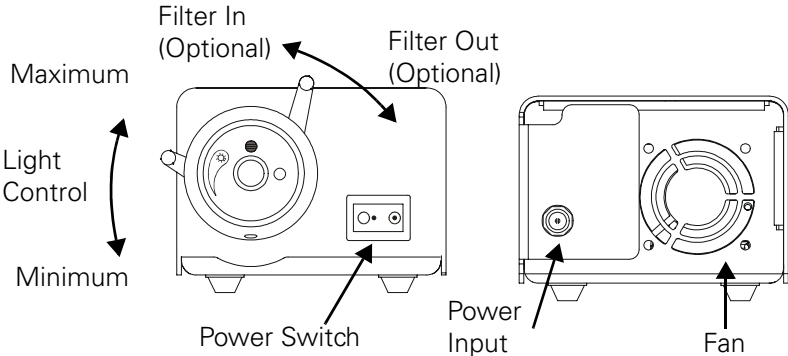
3. Turn the power switch to the ON position (). The lamp will take 10 to 15 seconds to complete the warm-up cycle.
4. Set the light intensity knob to the desired level (see Figure 1).
5. Turn the unit OFF when not in use.

Note Do not restart the Zeon LumenArc Light Source immediately after shutting it off - it may fail to light. If this occurs, turn the power off and wait 10 - 15 seconds before turning the unit back on.

The optional filter blocks light wavelengths that cure some dental composites. For white light, switch the filter out of the light path. When working with dental composites, switch the filter into the light path ([Figure 1](#)).

Note It is recommended to test dental composites with and without the optional filter prior to use with a patient.

Figure 1. Front and Rear View



3 Maintenance

This section provides information to replace a lamp and to clean the Light Source. There are no other serviceable parts within the Light Source.

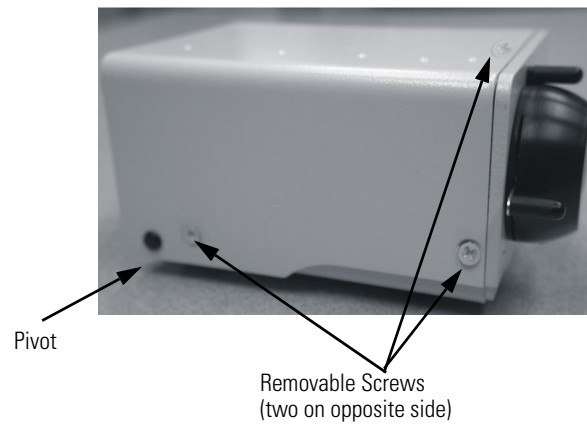
Lamp Replacement



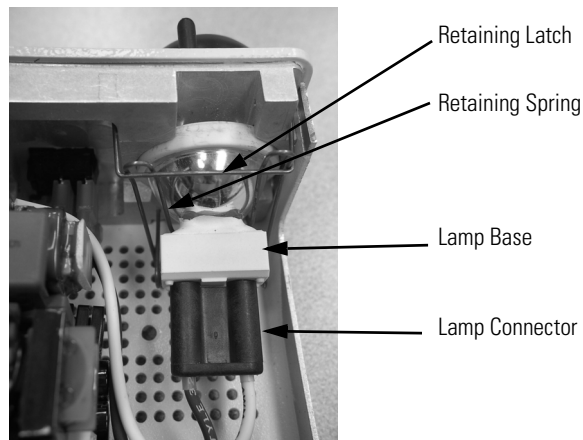
CAUTION: LAMP MAY BE HOT. Allow lamp to cool before handling.
Recommended lamp cooling time is a minimum of 600 seconds/
10 minutes.

To Replace the Lamp

1. Turn the Zeon LumenArc Light Source off and unplug the power cord from both the wall outlet and the rear of the unit.
2. Remove the five screws from the Zeon LumenArc Light Source using a #2 phillips head screwdriver. Pivot the cover to expose the lamp.

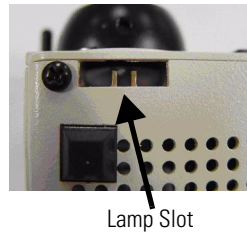
Figure 2. Moving the Top Cover

3. Flip up the retaining latch. Pull the lamp base back and up against the retaining spring to remove the lamp.
4. Remove lamp with harness attached and then disconnect the lamp connector.

Figure 3. Inside the Light Source

5. Replace with Zeon LumenArc replacement lamp AL-BULBS-LA24W-SOL only. DO NOT touch the lamp or the interior reflective surface of the lamp. Skin oils on the lamp will cause premature lamp failure. Hold the lamp by the outside of the reflector or the base only. Remove any grease or fingerprints with a clean Q-tip moistened with alcohol. Do not leave any lint on the lamp.
6. Connect a new lamp to the connector and insert lamp to properly seat the alignment pin located on the bottom of the lamp into the slot located on the lamp bracket.

Figure 4. Bottom View of Lamp Slot



7. Close the retaining latch and replace the cover. Secure the five screws on the Zeon LumenArc Light Source. Reconnect the power supply.

Do not operate the device without the cover in place. Dispose of the lamp according to local, state, and federal laws.

Cleaning



Caution Do not sterilize or immerse the Zeon LumenArc Light Source.

Caution Do not submerge the Zeon LumenArc Light Source in water, cold sterilizants, or in an ultrasonic cleaner.

Caution Do not use an autoclave, chemiclave, glutaraldehyde, iodophor or any other sterilization method, or damage may result.

Clean the Zeon LumenArc Light Source, monthly, or as required as follows:

1. Prior to cleaning, turn power off and disconnect the power cord from both the wall outlet and the Zeon LumenArc Light Source.
2. Clean the external surfaces with a cloth dampened with mild soap and water or use the following cleaning/disinfecting solutions. Always follow the manufacturer's recommendations.
 - A quaternary ammonium disinfectant such as CaviCide®
 - A phenol alcohol-based spray such as Lysol® brand disinfectant

If there are any questions, please contact Customer Service.
3. Wipe the power cord using the same cleaning/disinfecting solutions listed above. Wipe dry with a clean cloth. Care must be taken not to get the plug prongs wet. DO NOT IMMEDIATELY IMMERGE.
4. Do not plug the unit into a wall outlet until it is thoroughly dry.

Repair

For trouble shooting or repair information in the US, contact SDS-Orascoptic at 1-800-369-3698; outside the US, contact your local distributor.



Caution Only qualified personnel can make electrical inspections and repair of the Zeon LumenArc Light Source.

Ordering Information

Zeon LumenArc Light Source with Power Supply:

North America: ZS-LA24W-01N

Power Supply:

North America: AL-POWER-LA24W-001

Replacement Lamp:

AL-BULBS-LA24W-SOL

Troubleshooting

If lamp is not illuminating and...		
Fan Is Not Operating,	Light Source is not plugged into either the wall outlet or the power cord socket.	Plug the power cord into the wall outlet and power cord socket at back of unit.
	Power switch is not turned on.	Depress the "●" side of the power switch.
	Power cord is damaged. This may cause intermittent operation.	Replace the power supply with a new Zeon LumenArc power supply.
	No power is supplied to the wall outlet.	Verify that the wall outlet has power by checking the circuit breaker status and by operating other equipment at that wall outlet.
Fan Is Operating,	The lamp was not able to "cool down" before restarting.	Wait at least 15 seconds after turning the Light Source off before turning it back on.
	The lamp has burned out.	Replace with a new Zeon LumenArc lamp. Refer to the lamp replacement section.
Low Light Output	Lamp is not properly seated in recess.	Remove the lamp and re-install per the lamp replacement instructions. Verify that the lamp is properly seated.
	Light intensity control knob closed.	Verify that light intensity control knob is fully open.

4 Specifications

Electrical

Input Voltage: 100 - 240 VAC, 50 - 60 Hz
Input Current: 1A (@ 100 VAC)
Leakage Current: less than 100 microamps

Dimensions

5.8" (14.73 cm) (L) x 3.5" (8.89 cm) (W) x 2.8" (7.11 cm) (H)

Illumination System

Zeon LumenArc Sōlarc Lamp
Lamp: 60 Volts, 24 watts

Environment

Operating:

Temperature: 50° F (10° C) to 86° F (30° C)
Humidity: 15 to 95% RH non-condensing

Transport/Storage:

Temperature: -4° F (-20° C) to 120° F (49° C)
Humidity: 15 - 95% RH non-condensing
Atmospheric pressure: 700 hpa to 1060 hpa

Equipment Classification

Mode of Operation: Continuous Operation
System Classification: Class II
Type BF Applied Part
Ingress of Water: IPXØ
Not AP/APG Equipment

Patents

This product is covered by the following patents:

5,144,201; 5,083,059; 5,138,228; 5,117,154; 5,420,477; 5,539,273

Approvals



EN/IEC 60601-1
UL60601-1
CAN/CSA C22.2 No. 601.1-M90



AS3200.1
JIS T0601/J1000
IEC60601-1-2
EN55011



The CE mark on this product indicates it has been tested to and conforms with the provisions noted within the 93/42/EEC Medical Device Directive.

Authorized Representative:
European Union
Kerr Italia SpA, Via Passanti, 332
I-84018 Scafati (SA) Italy

Emissions and Immunity Information

Guidance and Manufacturer's Declaration - Emissions

The Model Number ZS-LA24W-01N is intended for use in the electromagnetic environment specified below. The customer or user of the Model Number ZS-LA24W-01N should ensure that it is used in such an environment.

Emissions Test	Compliance	Electromagnetic Environment - Guidance
RF Emissions CISPR11	Class B Group 1	The Model Number ZS-LA24W-01N 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.
RF Emissions CISPR22, FCC part 15	Class B	The Model Number ZS-LA24W-01N 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.
Harmonic Emissions IEC 61000-3-2	Class A	For use domestically and in Canada. The unit was tested for harmonic emissions at 230 VAC / 50 Hz as there are no limits set for harmonics emissions below 220 VAC.
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Section 5	For use domestically and in Canada. However, unit was tested for Flicker at 230VAC/50Hz.
		The Model Number ZS-LA24W-01N is suitable for use in all establishments, including domestic, and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.

Radiated and Conducted Emissions were tested using the Elgar power source. It complies with the EN55022 Class B limits and FCC part 15 which has same limits as EN55011 Group 1, Class B. Harmonics and Flicker was tested at 230VAC/50Hz, which is within the device's rated input voltage and power frequency.

Guidance and Manufacturer's Declaration - Immunity.

The Model Number ZS-LA24W-01N is intended for use in the electromagnetic environment specified below. The customer or user of the Model Number ZS-LA24W-01N 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 ±1kV	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1kV Differential ±2kV Common	±1kV ±2kV	Mains power quality should be that of a typical commercial or hospital environment.
Power Frequency 50/60Hz Magnetic Field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be that of a typical commercial or hospital environment.
Voltage Dips, short interruptions and voltage variations on power supply input lines 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.

ESD, EFT, and Surge testing were performed using the Schaffner BestEMC multi tester. The power was supplied using the Elgar power source. Voltage Dips were tested at 100 VAC/50Hz and 240 VAC/50 Hz. Magnetic Immunity was tested at 50 and 60 Hz.

Guidance and Manufacturer's Declaration - Immunity

The Model Number ZS-LA24W-01N is intended for use in the electromagnetic environment specified below. The customer or user of the Model Number ZS-LA24W-01N 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 80MHz	3 Vrms	Portable and mobile communications equipment should be separated from the EUT by no less than the distances calculated/listed below: $D = 0.35(\sqrt{P})$ $D = 0.35(\sqrt{P})$ 80 to 800 MHz $D = 0.7(\sqrt{P})$ 800 MHz to 2.5 GHz Where P is the max power in watts and D is the recommended separation distance in meters. Field strengths from fixed transmitters, as determined by an electromagnetic site survey, should be less than 10Vrms or 10V/m. Interference may occur in the vicinity of equipment containing a transmitter.
Radiated RF IEC 61000-4-3	3 Vrms 80 MHz to 2.5 GHz	3 V/m	

Conducted RFI and Radiated RFI testing was performed on the EUT. The light output was monitored for changes in intensity and color.

Recommended Separations Distances between portable and mobile RF Communications equipment and the Model Number ZS-LA24W-01N.

The Model Number ZS-LA24W-01N is intended for use in the electromagnetic environment in which radiated disturbances are controlled. The customer or user of the Model Number ZS-LA24W-01N can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF Communications Equipment and the Model Number ZS-LA24W-01N as recommended below, according to the maximum output power of the communications equipment

Max Output Power (Watts)	Separation (m) 150kHz to 80MHz	Separation (m) 80 to 800MHz	Separation (m) 800MHz to 2.5GHz
	$D = \left(\frac{3.5}{V1}\right)(\sqrt{P})$	$D = \left(\frac{3.5}{V1}\right)(\sqrt{P})$	$D = \left(\frac{3.5}{E1}\right)(\sqrt{P})$
0.01	0.035	0.035	0.07
0.1	0.111	0.111	0.221
1	0.35	0.35	0.7
10	1.107	1.107	2.214
100	3.5	3.5	7.0

5 Warranty And Service

SDS-Orascoptic, a division of Kerr Corporation, warrants the Zeon LumenArc Light Source, when new, to be free of defects in material and workmanship, as a limited warranty, and to perform in accordance with manufacturer's specifications, when subject to normal use and service from SDS-Orascoptic or its authorized agent for a period of one year from the date of purchase (the "Warranty Period"). The Warranty Period begins on the original date of purchase.

At its sole discretion, SDS-Orascoptic will either repair or replace the complete product with either a new or refurbished equivalent product, or repair or replace any components found to be defective, excluding the lamp and fuses, FOB at the SDS-Orascoptic facility in Middleton, Wisconsin, USA. It shall be the purchaser's responsibility to return the product, in appropriate packing materials, so as to prevent accidental breakage in transit, and sufficiently cleaned and disinfected, directly to SDS-Orascoptic. SDS-Orascoptic reserves the right, at its sole discretion, to refuse to repair or replace the product if the product is deemed to be unsanitary. It will be the responsibility of the purchaser to arrange for the product to be returned to the purchaser for appropriate cleaning and sanitation, and the purchaser shall be responsible for all shipping charges.

This Warranty does not cover the Solarc Lamp, or breakage or failure due to tampering, misuse, neglect, accidents, improper installation, modification, shipping, or to improper

maintenance, service or cleaning procedures. This Warranty is also void if the Zeon LumenArc Light Source is not used in accordance with manufacturer's recommendations or instructions, if serviced by other than SDS-Orascoptic or its authorized agent, or if the serial number has been removed or altered in any way.

In no event shall SDS-Orascoptic's liability be greater than the original purchase price of the product. Nor Shall SDS-Orascoptic be held liable for consequential or special damages, or for transportation, installation, adjustment or other expenses, which may arise in connection with such products or parts. This product warranty applies only to customers in the United States of America (USA), Canada or to units sold to and by authorized and approved international dealers. This Warranty is non-transferable and shall only apply to the original purchaser of the product, as exclusively contained in SDS-Orascoptic's records. THIS WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ALL OTHER STATEMENTS, WARRANTIES OR GUARANTEES, EXPRESS OR IMPLIED, BY SDS ORASCOPTIC OR ITS AUTHORIZED REPRESENTATIVE, INCLUDING WARRANTIES WITH RESPECT TO DESCRIPTION, QUALITY, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. The limits and exclusions contained herein shall apply unless otherwise prohibited by applicable law.

CE



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