

# Manual do Proprietário

## Owner's Manual

### Manual del Propietario



**Optilight Max (Fotopolimerizador)**

**Optilight Max (Curing Light)**

**Optilight Max (Lámpara de Fotocurado)**

Cód. 300052769 Rev. 04

**GNATUS** 

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## PRESENTATION OF MANUAL

### INSTRUCTIONS FOR USE

**Technical Name:** Equipment for dental bleaching and photopolymerization of resins.

**Brand:** GNATUS

**Model:** Optilight Max

**Trade Name:** Optilight

**Brand:** GNATUS

**Manufacturer/ Distributor:**

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CREA-SP: 0600891412

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### ATTENTION

**For greater safety:**

Read and understand all the instructions contained in these Instructions for Use before installing or operating this Equipment.

**Note:** These Instructions for Use must be read by all the operators of this Equipment.

## DESCRIPTION OF THE EQUIPMENT

### Dear Customer

Congratulations. You have made a good choice when you decided to buy a GNATUS QUALITY product comparable to the best products available in the World. This manual is a general presentation of your product and it will give you important details to help you to solve possible problems.

Please, read it and keep this with you.

### Identification

**Technical Name:** Equipment for dental bleaching and photopolymerization of resins.

**Trade Name:** Optilight Max

**Brand:** GNATUS

### Principles and bases applied to the functioning of the product

It has hoses with compressed air and connectors for the supply of handpieces (high and low rotation) and a syringe with air and water outlet.

### Description of Equipment

The Optilight Max is the latest generation of the appliances of photoactivation by LED light. This short name is the acronym for Light Emitting Diode, a totally different manner of emitting light, when compared with the conventional appliances of halogen light. As opposed to the traditional appliances, which generate light in a wide wave spectrum with great heat, this technology allows a cold light to be emitted, in the precise wavelength for activating the different dental products to which it applies.

LED technology, recently introduced in Dentistry, has brought countless advantages to the curing light appliances for direct restorations in composite resin. Besides being infinitely more durable, the LEDs have made the appliances more compact, ergonomic and easy to install and transport. The emission of cold light at a precise wavelength ensures the polymerization of composites activated by the canforoquinone, without risks of dental heating, pulpal injury or discomfort for operator and patients.

The safety and efficiency of the LEDs, now with high emission power, are available for all the clinical procedures which require power of light for photoactivation.

The wavelength of 420nm - 480nm associated with the high power emitted by the Optilight Max makes the multifunctionality of this appliance feasible:

- **Direct restoring procedures:** composite resins, ionomers and adhesives.
- **Indirect restorations:** adhesive cementing of laminates, inlays, esthetic pegs and metal-free crowns.
- **Activation of photoactivated materials as sealers, surgical cements and lining bases.**

Planned and built using cutting-edge technology, to provide results within the specifications stipulated by the leading world dental authorities.

Endowed with an automatic bivolt switch power supply which allows one to use the equipment at any power supply voltage between 100 and 240V~ - 50/60Hz.

Digital control in the display on the handpiece itself.

Variance of choice of operating time (5,10,15 and 20 seconds).

# DESCRIPTION OF THE EQUIPMENT

It has 3 application modes: Continuous, Ramp and Pulsating:

- **Continuous:** Maximum and continuous mode of light intensity (same luminosity from start to finish of the polymerization).
- **Ramp:** Gradual mode of light intensity; it increases gradually.
- **Pulsed:** Pulsing mode consisting of cycles which oscillate at a fixed frequency.

### Advantages offered by Optilight Max:

- More spectrally-selective light than conventional lamps.\*
- Cold light, it doesn't heat up the resin nor the tooth\*\*
- Light compact equipment that provides handling comfort.
- Low power consumption.
- Longer useful life of the light emitting diode (equivalent to 36.000.000 cycles of 10 seconds).
- It does not use optical filter.
- It does not require forced ventilation, thus avoiding noise emission.
- \* We noted that the light emitted by the Optilight Max is completely contained within the absorption interval of the photo starter, therefore it's 100% used, whereas the conventional equipment running on halogen lamps has non-used wave-length regions.

\*\* The Optilight Max doesn't generate heat since it uses light emitting diodes.

The light conductor is removable, made out of high resistance polymer and of easy maintenance.

Light conductor with fiber optics, rotating, removable and easy to sterilize, with a front protector of the tip against scratches and the accumulation of undesirable residue. The reduced weight of the pen and its anatomic design ensure that the professional's work is more comfortable and practical.

Support for the handpiece, which ensures easy access and handling.

## Physical Principle used by the Optilight Max equipment

The physical principle is the emission of a cold light to polymerize photosensitive substances, as the equipment is endowed with a cold light emitter (LED) with a wavelength between 420 and 480nm (blue light), which has an ideal intensity for being integrated with the canforquinone.

## Indication of the equipment

This equipment is exclusively for dental use, having to be employed and handled by a capacitated person (professional duly regulated, as per the local legislation of the country) observing the instructions contained in this manual.

The user is obliged to only use the equipment in perfect conditions and protect himself/herself, patients and third parties against possible hazards.

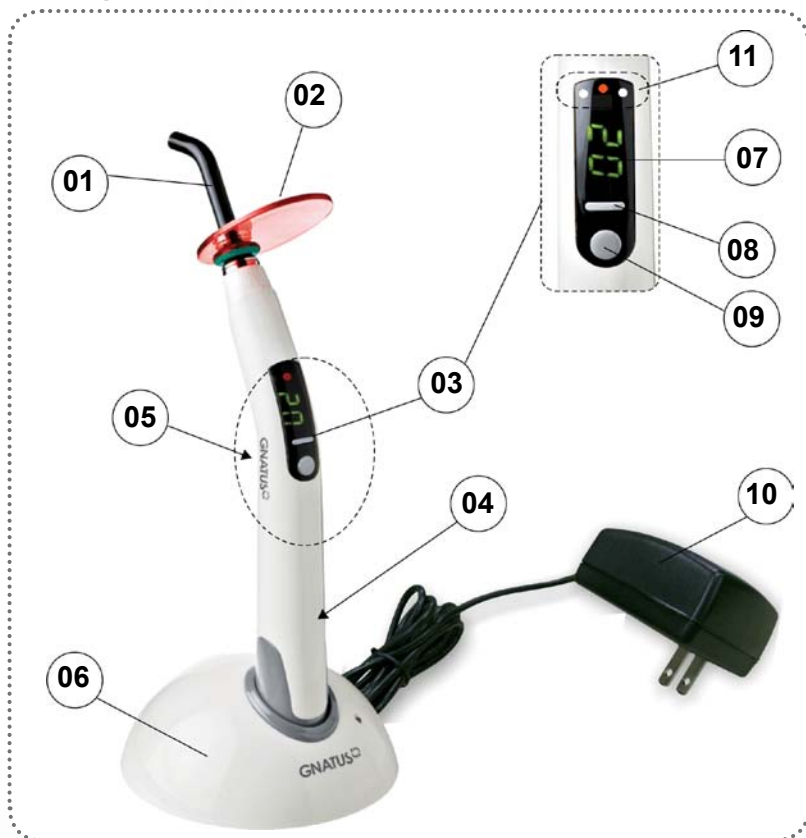
## Purpose of the equipment

This equipment is exclusively for dental use, with the objective of polymerizing photosensitive substances through the emission of blue light.

It was developed to be used in several dental procedures such as: restoring procedures, bonding braces and activating photoactivated materials as sealers, lining bases.

## MODULES, ACCESSORIES, OPTIONS AND MATERIALS OF CONSUMPTION

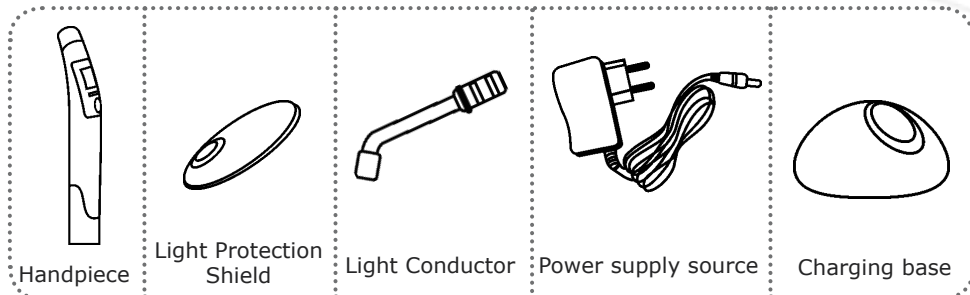
### Optilight Max



- 01 - Light Conductor
- 02 - Light Protection Shield
- 03 - Control Panel
- 04 - Handpiece
- 05 - Button to turn on the equipment and activate / interrupt operation
- 06 - Charging base
- 07 - Display Window
- 08 - Time adjustment button
- 09 - Application mode selection button
- 10 - Power supply source
- 11 - Application mode: Continuous, Ramp and Pulsed

## MODULES, ACCESSORIES, OPTIONS AND MATERIALS OF CONSUMPTION

Accessories which come with the product:



## TECHNICAL SPECIFICATIONS

### Power Supply

Ve: 100 - 240V~ - 50/60Hz

Vs: 5V - 1,5 A

### Frequency

50/60Hz

### Source Power

8VA

### Light Source

1 LED

### Light Power

1200 mW/cm<sup>2</sup> ± 200 mW/cm<sup>2</sup>

Semiconductor LED (InGaN)

### Wavelength

420nm - 480nm

### Timer

5,10,15 and 20 seconds

### Time Sounder

a "beep" every 05 seconds

### Activation

Through the handpiece button

## TECHNICAL SPECIFICATIONS

<b>Light Conductor</b>
Optics fiber 100% coherent which guarantees the passage of light without loss.
<b>Handpiece body</b>
Injected in ABS
<b>Net weight</b>
0,39 kg
<b>Gross weight</b>
0,98 kg
<b>Classification of the Product:</b>
As per standard NBR IEC 60601-1
<b>Type of protection against electric shocks</b>
Class II Equipment
<b>Degree of protection against electric shocks</b>
Applied part of Type B
<b>Degree of protection against harmful penetration of water</b>
IPX 0
<b>Degree of safety of application in the presence of an anesthetic mixture inflammable with air, oxygen or nitrous oxide</b>
It is not suitable
<b>Battery of Li-ion</b>
DC 3,7V 2200mAh
<b>Approximate time of recharging battery</b>
3h




# TECHNICAL SPECIFICATIONS

## Eletromagnetic emissions

<b>Guidelines and manufacturer's declaration - electromagnetic immunity</b>			
The Optilight is made to be used in the electromagnetic environments specified below. The client or the user of the Optilight must be sure that it is used in such environment.			
<b>Immunity test</b>	<b>ABNT Test level NBR IEC 60601</b>	<b>Level of compliance</b>	<b>Electromagnetic environment Directives</b>
Electrostatic discharge(ESD) IEC 6100-4-2	± 6 kV Contact ± 8 kV Air	± 6 kV Contact ± 8 kV Air	Floors should be wooden, concrete or ceramic. If the floor is covered with synthetic material, the relative humidity should be at least 30%
Quick electric transitory phases / train of pulses ("Burst") IEC 61000-4-4	± 2 kV in power supply lines ± 1 kV in input / output lines	± 2 kV in power supply lines ± 1 kV in input / output lines	It is advisable that the quality of the power supply should be that of hospital or typical commercial environment
Surges IEC 61000-4-5	± 1 kV lines (s) to lines (s) ± 2kV lines (s) to ground	± 1 kV lines (s) to lines (s) ± 2kV lines (s) to ground	It is advisable that the quality of the power supply should be that of hospital or typical commercial environment
Reduction, interruption and variance of voltage in power supply input lines IEC 61000-4-11	< 5% $U_t$ (>95% drop in $U_t$ ) for 0,5 cycle 40% $U_t$ (60% drop in $U_t$ ) for 5 cycles 70% $U_t$ (30% drop in $U_t$ ) for 25 cycles < 5% $U_t$ (>95% drop in $U_t$ ) for 5s	< 5% $U_t$ (>95% drop in $U_t$ ) for 0,5 cycles 40% $U_t$ (60% drop in $U_t$ ) for 5 cycles 70% $U_t$ (30% drop in $U_t$ ) for 25 cycles < 5% $U_t$ (>95% drop in $U_t$ ) for 5s	The recommended power supply quality is the same as used for commercial or hospital environment. If is required a continuous use during energy supply outages, it is recommended that the equipment be feed by an uninterruptible power supply or a battery.
Magnetic field in frequency of power supply (50/60Hz) IEC 61000-4-8	3 A/m	0,3 A/m	If an image distortion occurs, may be necessary place the equioment far from the supply frequency or to installa magnetic armour. The frequency magnetic field shall be measured at the installment place to assure that it is low enough.
NOTE $U_t$ is the a.c. power supply voltage before the application of the test level			

## TECHNICAL SPECIFICATIONS

<b>Guidelines and manufacturer's declaration - electromagnetic immunity</b>			
The Optilight is made to be used in the electromagnetic environments specified below. The client or the user of the Optilight must be sure that it is used in such environment.			
<b>Immunity test</b>	<b>ABNT test level NBR IEC 60601</b>	<b>Level of compliance</b>	<b>Electromagnetic Environment Directives</b>
RF conducted IEC 61000-4-6  RF radiated IEC 61000-4-3	3 vrms 150 kHz up to 80 MHz  3 V/m 88 MHz up to 2,5 GHz	3 Vrms  3 V/m	It is advisable that portable and mobile RF communication equipment is not used near any part of the equipment, including cables, with a separation distance less than the one recommended, calculated from the equation applicable to the frequency of the transmitter.  Recommended separation distance:  $d = 1,2\sqrt{P}$  $d = 1,2\sqrt{P}$ 80 MHz thru 800MHz $d = 2,3\sqrt{P}$ 800 MHz thru 2,5MHz  Where P is the nominal maximum power of output of the transmitter in watts (W), as per the manufacturer of the transmitter, and d is the recommended separation distance in meters (m).  It is advisable that the field intensity from the RF, transmitter as determined by means of electric inspection on-site, <sup>a</sup> is less than the level of compliance in each frequency range <sup>b</sup> .  There may be interference near the equipment marked with the following symbol:  
NOTE 1 At 80MHz and 800MHz, the highest frequency range applies. NOTE 2 These directives may not be applicable in every situation. The electromagnetic transmission is affected by the absorption and reflection of structures, objects and people.			
<p><sup>a</sup> The field intensities set by the fixed transmitters, such as radio base stations, telephones (mobile phone, wireless) land mobile radio, amateur radio, AM and FM radio transmissions and TV transmissions can not be predicted with accuracy. Due to the RF fixed transmitters is recommended to install an electromagnetic inspection at the local in order to evaluate the electromagnetic environment. If at the place where the equipment is be using the field intensity level exceeds the conformity level for the RF above, is recommended to observe if the operations are normal. Whether abnormal operations are observed, additional procedures shall be necessary such as reorientation or replace the equipment.</p> <p><sup>b</sup> Whether above the frequency range of 150kHz to 80 MHz is recommended a field intensity below than 3 V/m.</p>			

## TECHNICAL SPECIFICATIONS

Recommended distances between portable and mobile RF communication equipments and the Optilight			
The Optilight is made to be used in an electromagnetic environment in which RF disturbances are controlled. The client or the user of the Optilight may help preventing electromagnetic interference by keeping a minimal distance between mobile and portable RF communication equipment (transmitters) and the Optilight, as recommended below, in accordance with the maximal voltage output of the communication equipment.			
Transmitter Maximum Output (W)	Separation distance according to transmitter frequency (M)		
	150 kHz to 80 Mhz $d = 1,2\sqrt{P}$	80 kHz to 800° Mhz $d = 1,2\sqrt{P}$	800 kHz to 2,5° GHz $d = 2,3\sqrt{P}$
0,01	0,12	0,12	0,23
0,1	0,38	0,38	0,73
1	1,2	1,2	2,3
10	3,8	3,8	7,3
100	12	12	23
For transmitters with a maximum nominal output power not listed above, the recommended d separation distance in meters (M) can be determined using an equation applicable to the frequency of the transmitter, where P is the transmitter maximum nominal output in watts (W) according to the transmitter manufacturer.			
<b>NOTE 1</b> At 80 MHz and 800 MHz, is applied the separation distance for the higher frequency range.			
<b>NOTE 2</b> These guidelines may not apply to all situations. The absorption and reflection from structures, objects and people affect the electromagnetic propagation.			

## TECHNICAL SPECIFICATIONS

<b>Eletromagnetic emissions</b>		
The Optilight is made to be used in the electromagnetic environments specified below. The client or the user of the Optilight must be sure that it is used in such environment.		
<b>Emission test</b>	<b>Compliance</b>	<b>Eletromagnetic environment - Guide</b>
RF emissions ABNT NBR IEC CISPR 11	Group 1	This equipment uses RF energy only for internal functions. However, its emissions are too low and it's unlikely to cause any interference in the equipments next to it.
RF emissions ABNT NBR IEC CISPR 11	Class B	This equipment is proper to be used in all establishments; including domestic settings and those directly connect to a public low voltage distribution which feeds domestic buildings.
Emissions of harmonics IEC 61000-3-2	Class A	
Fluctuation of Voltage / Emissions of flicker  IEC 61000-3-3	As per	

### Standards applied

**This product was tested and approved as per the standards:**

NBR 60601-1:1997 - Equipamento Eletromédico- Parte 1: Prescrições gerais para segurança;

NBR ISO 14971:2009- Produtos para a saúde - Aplicação de gerenciamento de risco a produtos para a saúde;

EN ISO 13485-2003 - Quality Systems - Medical Devices;

IEC 60601-1-2:2007 - Collateral Standard - Eletromagnetic Compatibility.

EN ISO 9001:2008 - Quality Management System - Requirements

RDC 59/2000 - Boas práticas de fabricação de produtos médicos - ANVISA

## TECHNICAL SPECIFICATIONS

### Dimensions (mm)

#### Optilight Max



## TECHNICAL SPECIFICATIONS

### Packing symbols



Maximum stacking:  
It determines the maximum quantity of boxes which can be stacked during transportation and storage "as per packaging".



Packing to be transported and / or stored avoiding humidity, rains and wet floor.



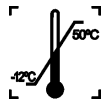
Packing to be transported and / or stored with the harrows up.



The packing must be stored and transported away from direct sun light exposure.



Packing to be transported and / or stored with care (should not suffer drop and neither receive impact).



Temperature limit for the packing to be stored or transported.

### Product symbols



**Note:** It indicates useful information for operation of the product.



Landing (in many parts of the equipment) indicates the condition of being landed.



**Important:** It indicates an instruction of safety for operation of the product. Not following it, can lead to serious danger to the patient.



B type equipment





Authorized representative in the European Community



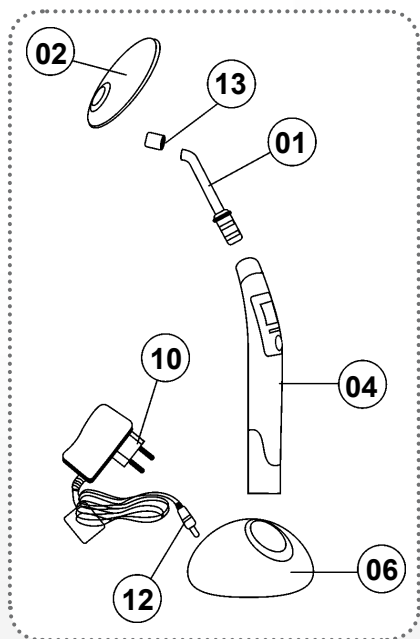
Warning - Consult the manual

## TECHNICAL SPECIFICATIONS

### Content of accessible and non-accessible demarcations

FABRICANTE E RESPONSÁVEL PELA GARANTIA MANUFACTURER AND RESPONSIBLE FOR THE WARRANTY FABRICANTE Y RESPONSABLE POR LA GARANTÍA			
<b>GNATUS</b> GNATUS EQUIPAMENTOS MÉDICO-ODONTOLÓGICOS LTDA. Rod. Abrão Assed, Km 53+450m - Ribeirão Preto - SP - Brasil			
APARELHO	EQUIPMENT	APARATO	OPERAÇÃO OPERATION OPERACIÓN
			RESPONSÁVEL TÉCNICO: Gilberto Henrique Canesin Nomelini CREA-SP: 0600891412
			POT. - POWER 8VA
			<b>IPX0</b>
EQUIPAMENTO DE CLASSE II CLASS II EQUIPMENT EQUIPAMIENTO DE CLASSE II			
NUM. REGISTRO MS:			 

## INSTALLATION OF THE EQUIPMENT

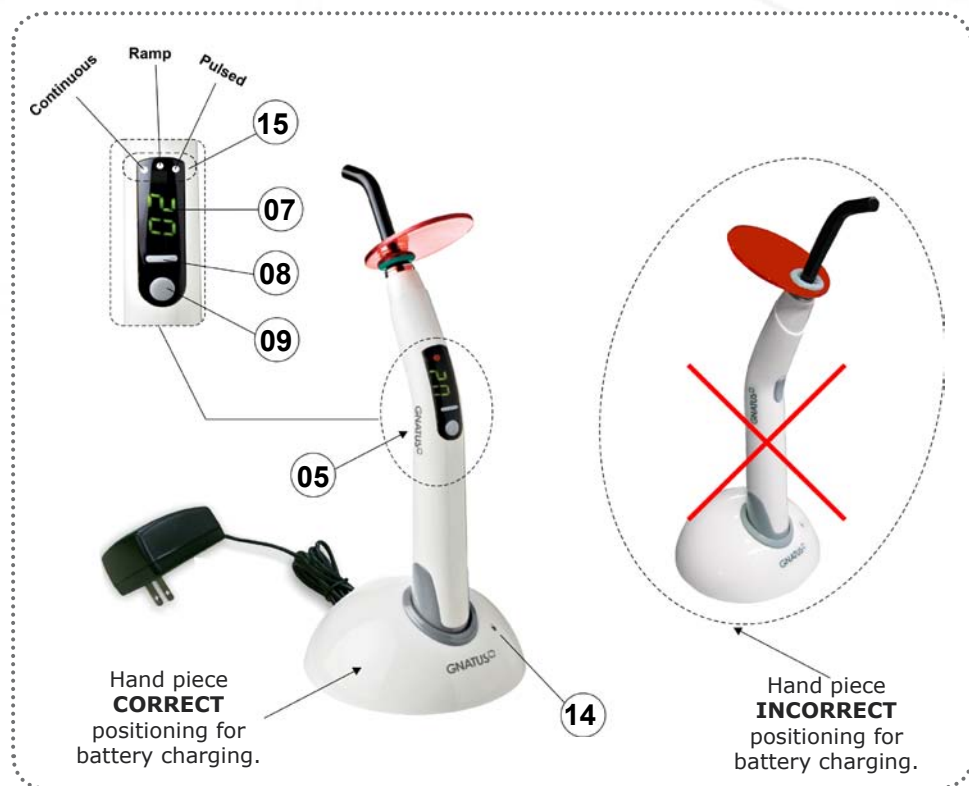


- For your safety the Optilight Max has an automatic bivolt power supply source of 100V~ - 240V~ - 50/60Hz.
- Connect the cable of the power supply source (12) to the charging base (06) and the power supply source (10) in the socket.
- Insert the light conductor (01) in the handpiece (04).
- Remove the protection cover (13) from the light conductor.
- Insert the light protection shield (02) in the light conductor and place the assembled equipment in the charging base.



**Charge the battery during 08 hours before using the equipment for the first time.**

## OPERATION OF EQUIPMENT



- Press the button (05) to turn on the equipment.
- Select the application mode pressing the selection button (09), of which the variations are:
  - **Continuous:** Maximum and continuous mode of light intensity (same luminosity from start to finish of the polymerization).
  - **Ramp:** Gradual mode of light intensity; it increases gradually.
  - **Pulsed:** Pulsing mode consisting of cycles which oscillate at a fixed frequency.
- The application mode chosen will be viewed in the sequence of LEDs (15).
- In order to schedule the time press the button (08) and choose the time 5 thru 20 seconds, which will be viewed in the display (07).
  - After selecting the mode of application and the choice of time, take the handpiece to the patient's mouth and position the light guide at a safe distance.
  - In order to start the polymerization cycle, press the start button (05). To interrupt it Just activate it again.



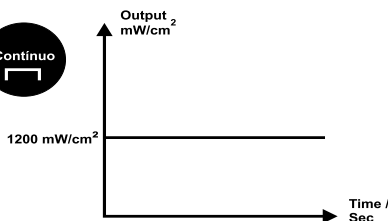
## OPERATION OF EQUIPMENT



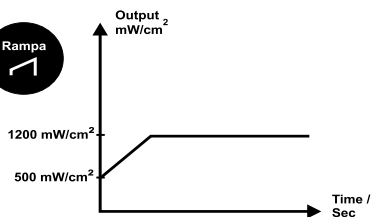
### ATTENTION:

- Recharge the battery when one of the LED continuous, ramp and pulsed are blinking;
- Keep the handpiece in the charging base (connected to the mains power) when not using;
- When the LED of the charging base (14) is indicating red, the battery is being charged;
- The approximate recharging time is 3 hours. After recharging the LED in the charging base (14) it will change to green, indicating the complete recharging;
- The battery does not have a memory effect and can be recharged even if it is not completely discharged.

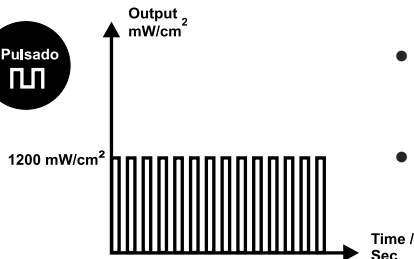
## Application types: Continuous, Ramp and Pulsed



- **Continuous:**  
Maximum and continuous mode of light intensity (same luminosity from start to finish of the polymerization).
- **Maximum power** = 1200 mW/cm<sup>2</sup>\*




- **Ramp:**  
Gradual mode of light intensity, it increases gradually.
- **Gradual increase** = 500 - 1200 mW/cm<sup>2</sup>\*



- **Pulsed:**  
Pulsing mode consisting of cycles which oscillate at a fixed frequency.
- **On/off every 1sec. maximum power** = 1200 mW/cm<sup>2</sup>\*

\* Tolerance is  $\pm 200$  mW/cm<sup>2</sup>

## OPERATION OF EQUIPMENT

 **Automatic disconnection:** The equipment will be turned off automatically to save energy. Thus, if the appliance is not on the charging base and the user does not use it within 3 minutes, the appliance turns off automatically. In order to turn it on again, press the on/off button (05).



### **Instructions for the Use of the Equipment.**

- Never point the blue beam of light at anybody's eyes;
- Protect the visual field using the Light Protection Shield (02)\*;
- The Light Protection Shield (02) aims to filter only the blue light which acts in the photopolymerization of resins to protect one's vision and also allows the ambient illumination to go to the operating field.
- After use always maintain the light conductor (01) protected by the protection cover.

## PRECAUTIONS, RESTRICTIONS AND WARNINGS

### Transportation, storage and operation

This equipment must be transported and stored observing the following directions:

- Avoid falls and impacts;
- Keep it dry, do not expose it to rain, water drops or wet floor;
- Keep it away from water and direct sunlight, and in its original wrapping;
- Don't move it over irregular surfaces, protect it from rain and observe the maximum stack quantity specified in the packaging;
- Transportation and storage temperature range: -12°C to 50°C.
- Ambient temperature range recommended by Gnatius +10 ° C to +35 ° C.



The Equipment maintains its condition of safety and efficacy, provided that it is kept (stored) as mentioned in this instruction for use. Thus, the equipment will not lose or alter its physical and dimensional features.

### Sensitivity to environmental conditions in normal situations of use

- The equipment has been planned not to be sensitive to interference such as magnetic fields, external electrical factors, electrostatic discharge, pressure or variance of pressure, provided that the equipment is installed, maintained, clean, preserved, transported and operated as per this instruction for use.

# PRECAUTIONS, RESTRICTIONS AND WARNINGS

## Recommendations for the dental equipment maintenance.

Your Gnatus equipment has been designed and developed according to the standards of modern technology. Similarly to other kinds of equipment, it requires special care, which is many times neglected due to several reasons and circumstances.

Therefore, here are some important reminders for your daily routine. Try to follow these simple rules, which will save you a lot of time and will avoid unnecessary expenses once they start making part of your working procedure.

## Precautions and warnings “during the installation” of the equipment

- Check the voltage of the equipment upon executing the electrical installation.
- Position the equipment in a place where it will not get wet.
- Install the equipment in a place where it will not be damaged by the pressure, temperature, humidity, direct sunlight, dust, salts, or sulfur compounds.
- The equipment must not undergo inclination, excessive vibrations, or blows (including during transportation and handling).
- This equipment was not planned for use in an environment where vapors, anesthetic mixtures inflammable with air, or oxygen and nitrous oxide can be detected.
- Before the first use and/or after long interruptions from work such as vacations, clean and disinfect the equipment.
- This equipment is not sensitive to electrical, electrostatic and pressure interference, provided that the items of cleaning, maintenance, transportation and operation of this Manual are observed.

However, an electromagnetic environment can interfere with its normal operation.

## Precautions and warnings “during the use” of equipment

- The equipment should only be operated by duly enabled and trained technicians (Dental Surgeons, Capacitated Professionals)
- If any maintenance should be required, only use services of the Gnatus Authorized Technical Assistance.
- Do not expose the plastic parts to contact with chemical substances, use in the routines of dental treatment, such as: acids, mercury, acrylic liquids, amalgams, etc.
- Avoid the light conductor to terminal to touch the resin to be polymerized.
- When using the equipment check if the light conductor output doesn't have residues that might obstruct the light beam.
- Use suitable techniques to minimize the effects of the contracting of the photopolymerized material and also of the temperature in the region applied. These techniques consist of spacing proportional to the effect desired, i.e., withdrawing the tip from the activated region the power and temperature tend to diminish.
- A minimum distance of 10mm between the tip and the tooth is advisable.

# PRECAUTIONS, RESTRICTIONS AND WARNINGS

### **Gnatus shall not be responsible for:**

- Use of the equipment differing from that for which it is intended.
- Damages caused to the equipment, the professional and/or the patient by the incorrect installation and erroneous procedures of maintenance, differing from those described in these Instructions for use which come with the equipment or by the incorrect operation of it.

## **Precautions and warnings "after" the use of equipment**

- Turn off the main switch of the dental set when it is not in use for an extended period of time.
- Always maintain the equipment clean for the next operation.
- Do not modify any part of the equipment. Do not disconnect the cable or other connections without need.
- After using the equipment, clean and disinfect all the parts which may be in contact with the patient.
- Upon noticing irremovable stains, splits or cracks in the light conductor or in the eye protector, replace the damaged components.

## **Precautions and warnings during the "cleaning and disinfection" of the equipment**

- Upon disinfecting the handpiece remove the light conductor, use neutral soap or alcohol 70% vol. Never use iodopovidone, glutaraldehydes, or chlorinated products, as over time, they attack the surface of the body of the instrument. Never submerge the instrument in disinfecting baths.
- The conductor should be cleaned and sterilized at 134°C, before being used on the next patient.
- Before cleaning the equipment, disconnect it from the electrical network.
- Avoid spilling water, even by accident, or other liquids inside the equipment, as it could cause short-circuits.
- Do not use microabrasive material or steel wool in the cleaning, and do not employ organic solvents or detergents which contain solvents such as ether, stain remover, gasoline, etc.

## **Precautions in case of alteration in the functioning of equipment**

- If the equipment has any abnormality, check if the problem is related to any item listed in the topic of unforeseen events (failures, causes and solutions). If it is not possible to resolve the problem, turn off the equipment, remove the power supply cable from the socket and contact your representative (Gnatus).

## **Precautions to be adopted against foreseeable or uncommon risks, related to the deactivation and abandoning of equipment**

In order to avoid environmental contamination or undue use of the Equipment after it has become useless, it should be discarded in the suitable place (as per the local legislation of the country).

- Pay attention to the local legislation of the country for the conditions of installation and disposal of residue.

## PRECAUTIONS, RESTRICTIONS AND WARNINGS

### Additional procedures for reuse

The equipment can be reused in undetermined, i.e. unlimited, quantities, only needing to be cleaned and disinfected.

## CORRECTIVE AND PREVENTIVE MAINTENANCE AND PRESERVATION

### Cleaning and disinfection

Important: Before cleaning or repairing this equipment be sure it is disconnected from mains power.



**The cleaning procedure below should be executed at the start of the working day and after each patient. Always turn off the main switch before executing the procedures of daily maintenance.**

To clean the equipment, we recommend the use of "BactSpray (Reg n° MS: 3.2079.0041.001-5) or any other similar product:

**Active component:** Benzalkonium chloride (tri-quaternary ammonium) Solution 50%..... 0.329%

**Chemical composition:** Butyl Glycol, Decyl polyglucose, Sodium Benzoate, Sodium Nitrate, Essence, Deodorized Propane / Butane, demineralized Water.

For more information concerning cleaning procedures, see manufacturer's instructions.

**WARNING:**

- In order to prevent risks and damages to equipment, make sure that the liquid does not enter into the unit.
- The application of other solvent-based cleaning products or sodium hypochloride isn't recommended, because they may damage the equipment.



**Note: Use gloves and other systems of protection, during the disinfection.**



**Attention: Do not use any disinfectant spray, as the vapor may be inflammable, or it may cause injury.**

### Disinfection and sterilization

- Use clean and soft cloth dampened in alcohol 70% to disinfection of the equipment.
  - Never use corrosive disinfectants or solvents.
- The light conductor should only be sterilized in the following conditions:
- Maximum temperature of 134°C.
  - The light conductor should be duly clean when it is packaged.
  - Do not sterilize the light conductor in contact with other types of material.

# CORRECTIVE AND PREVENTIVE MAINTENANCE AND PRESERVATION

## Preventive Maintenance

The equipment should be calibrated routinely, as per the legislation in force in the country. But never with a period exceeding 3 years.

In order to protect your equipment, seek Gnatus technical assistance for periodic revisions of preventive maintenance.

## Corrective Maintenance

If the equipment has any abnormality, check if the problem is related to any of the items listed in the item Unforeseen Events (situation, cause and solution).

If it is not possible to solve the problem, turn off the equipment, and request Gnatus technical assistance.

## UNFORESEEN EVENTS – SOLUTION OF PROBLEMS

**⚠** Upon coming across any problem in operation, follow the instructions below to check and repair the problem, and/or get in touch with your representative.

Imprevist	Probable Cause	Solution
<ul style="list-style-type: none"> <li>- The Curing Light does not work.</li> </ul>	<ul style="list-style-type: none"> <li>- Battery in the handpiece without charge.</li> <li>- Overheating protection activated "error code: oU.</li> <li>- LED damaged "error code: Er.</li> </ul>	<ul style="list-style-type: none"> <li>- Recharge the handpiece on the base for 3 hours.</li> <li>- Wait a few minutes.</li> <li>- Get in touch with the Gnatus technical assistance.</li> </ul>
<ul style="list-style-type: none"> <li>- The equipment is not polymerizing the resins.</li> </ul>	<ul style="list-style-type: none"> <li>- Resin not appropriate for the wavelength range of the LED curing lights.</li> <li>- Light conductor fastened incorrectly.</li> <li>- Residue of resin in the light conductor.</li> <li>- Light conductor with protection cover.</li> </ul>	<ul style="list-style-type: none"> <li>- Acquire the appropriate resin for the wavelength of the curing light, i.e., which contain photoinitiators with canforoquinone.</li> <li>- Fasten the light conductor correctly.</li> <li>- Clean the light conductor.</li> <li>- Remove the protection cover from the light conductor.</li> </ul>

## UNFORESEEN EVENTS – SOLUTION OF PROBLEMS

<ul style="list-style-type: none"><li>- Inadequate luminous power.</li></ul>	<ul style="list-style-type: none"><li>- Light conductor fastened incorrectly.</li><li>- Problems with the light conductor.</li><li>- Reduced capacity of the battery.</li></ul>	<ul style="list-style-type: none"><li>- Fasten the light conductor correctly.</li><li>- Replace the light conductor.</li><li>- Get in touch with the Gnatius technical assistance.</li></ul>
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## WARRANTY OF EQUIPMENT

This equipment is covered by the warranty terms counting from the date of installation, as specified below; provided that the defect has occurred in normal conditions of use and that the equipment has not remained stored for more than 06 months counting from the issue date of the sales document until the date of the actual installation.

- WARRANTY TERMS: Verify the guarantee certificate;

- LOSS OF THE WARRANTY:

A) Attempt to repair using an inadequate tool or by unauthorized technicians;

B) Installation of the equipment by an unauthorized technician;

C) Damage arising from inappropriate storage or signs of infringement;

D) Incorrect use of the equipment;

E) Use of a cleaning product not indicated by the factory;

F) Falls or blows which the equipment may undergo or lack of observation of an compliance with the guidelines of the Owner's Manual, which was delivered with the present document, together with the equipment. Repair or replacement of parts during the warranty period shall not extend the validity term of their warranty.

- This warranty does not exempt the customer from paying the service charge for the visit and the travel expenses of the technician, except when the customer sends the equipment to execute the maintenance inside the establishment of the technical assistance.

"Consumer Defense Code - art. 50, unique paragraph".

- The Warranty Certificate comes with the product and must be filled in upon the date of installation by the Gnatius Authorized Technician.

- Queries and information: GNATUS Help Desk (+55) 16 2102-5000.

- Check the warranty term attached to this manual.

## FINAL CONSIDERATIONS

The most important aspect related to equipment care is that concerning spare parts.

To guarantee the life span of your equipment, use only **original Gnatus spare parts**. They are sure to follow the technical specifications and standards required by Gnatus.

We must also point out to you our chain of authorized dealers. Only dealers that make part of this chain will be able to keep your equipment constantly new for they count on technical assistants who have been trained and on specific tools for the correct maintenance of your equipment.

Doubts and information: GNATUS Call center (55-16) 2102-5000.