English

Owner´s Manual

CE
0499

Syncrus G8 F Delivery Unit
Cód. 300054894 Rev.00

GNATUS

PRESENTATION OF MANUAL

INSTRUCTIONS FOR USE

EQUIPMENT:

Technical Name: Dental Delivery Units and Accessories
Trade Name: Syncrus G8 F Delivery Unit
Brand: GNATUS

Manufacturer/ Distribuitor:
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Registration ANVISA #: 10229030047

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.

INDEX

INDEX

EQUIPMENT IDENTIFICATION

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.

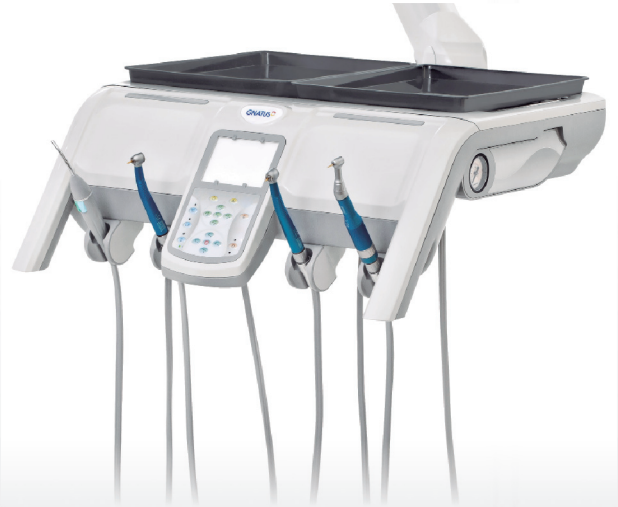
Please, read it and keep this with you.

Identification

Technical Name: Dental Delivery Units and Accessories
Trade Name: Syncrus G8 F Delivery Unit
Brand: GNATUS

kit Laser Hand Identification

Trade Name: Kit Laser Hand
Nº Registro Anvisa: 80051420005
Brand: MM Optics



EQUIPMENT IDENTIFICATION

Principles and fundamentals applied to the product functioning

It has hoses with compressed air and connectors for the hand pieces powering (high and low speed) and water and air output syringe.

Equipment Description

Equipo for odontological use, for syringe trigger and control, rotating instruments and others, providing the best proximity to the surgical camp.

Equipped with side panel and central control panel.

Equipo body built in high impact polyethylene.

Steel structure with surface treatment using nanotechnology. High brightness flat paint, epoxi-based, polymerized in a 250° C heater, resistant to corrosion and cleaning materials.

Removable auxiliary tray (optional), providing perfect disinfection.

Hoses smooth, without grooves or ridges, rounded, soft and flexible.

Interchangeable coupling system, adapted according to the professional needs. Available in FLEX pneumatic and CART (optional) models.

PNEUMATIC FLEX: attached to the chair with horizontal movements, articulated arm with horizontal and vertical movements, with pneumatic locking device for vertical movements, triggered by button located in the body of the equipment, gentle movements due to bushing system made of Teflon with brass.

CART: based on four casters, built in steel with smooth paint and rounded corners.

EN ISO 9001/2000 and EN ISO 13485/2003 Quality System, assuryng the products are manufactured under standart procedures.

Products manufactured in agreement with RDC 59/00 - ANVISA - (Sanitary Surveillance National Agency).

Hand Laser Kit (optional item) - Product Features:
Refer to Owner's Manual - Laser Hand

Digital Control Panel Kit "Bien Air electric microengine " (optional item) - Product Features:
Refer to Owner's Manual - Digital control panel

Bicarbonate Jet "Jet Hand" Kit (optional item) - Product Features:
See Owner's Manual - Jet Hand

EQUIPMENT IDENTIFICATION

Curing light (optional item) – Features of the product:

The Curing Light belongs to the newest generation of **LED** photo-activation devices. This abbreviation stands for ***Light Emitting Diode***, a totally different type of light emission, if compared to conventional halogen equipment.

Unlike traditional devices, which generate wide-spectrum light and heat, this technology uses a cold light of the precise wave length needed to activate various dental products.

LED technology, which was recently introduced in Dentistry, brought about several useful features to those light-curing devices used in composite resin restoration. Besides being more durable, LED technology turned devices more compact, ergonomic and easier to install and transport. The emission of cold light within a precise wave length range ensures the safe cure of camphorquinone-activated composites, preventing dental heating, pulp damage or discomfort for both patient and dentist. Although being relatively new, this technology is nowadays in its second generation. LED safety and efficiency, now allied to high-energy emission, are available to all clinic procedures which require light-curing power, including bleaching treatments.

The light of 440nm-460nm wave length, allied to the high energy emitted by Curing Light, makes possible the multi-functionality of this device:

- **Direct restoration procedures**: composite resins, ionomers and adhesives.
- **Indirect restorations**: adhesive cementation of laminates, inlays, esthetic pins and metal-free crowns.
- **Dental Bleaching**: activation of bleaching gel and polymerization of gingival barriers. Compatible with 35% hydrogen peroxide-based bleaching gels.
- Attachment of braces and orthodontic accessories.
- **Activation of light-cure materials**, such as sealants, surgical cements and covering bases.

Designed and built with cutting-edge technology, it meets the highest standards specified by world's dental authorities.

Operation control display in handpiece, sound alarm with beep every 10 seconds and 4 beeps at the end of the cycle.

Advantages offered by Curing Light:

- 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 Curing Light 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 Curing Light doesn't generate heat since it uses light emitting diodes.

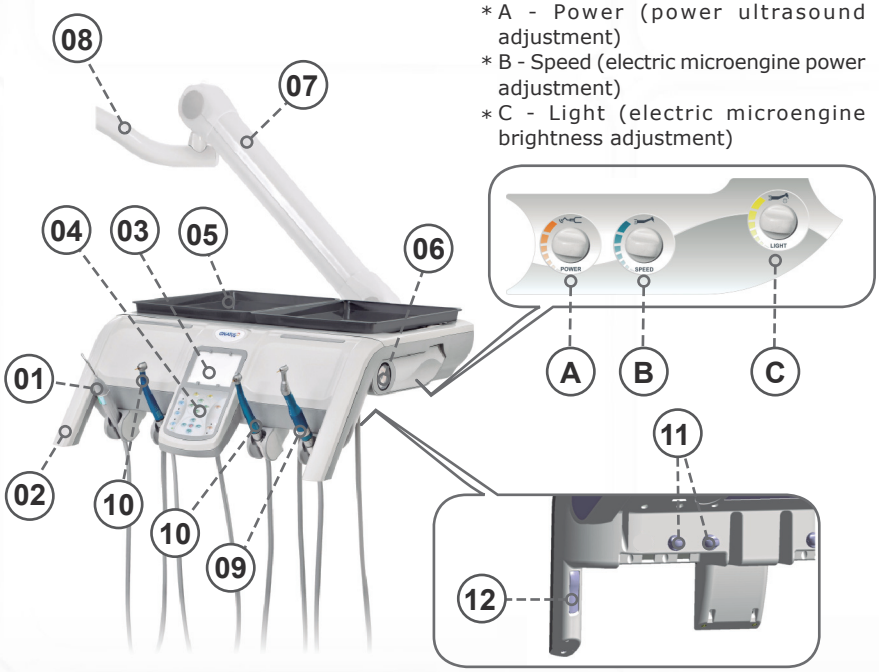
The light conductor is removable, made out of high resistance polymer and of easy maintenance.

Indication of Equipment

This equipment is for dental use use only. It must be operated and utilized by specialized professional (certified professional, according to the legislation of the country) and following the instructions of the manual. The operation of the equipment required, for the professional, the utilization of correct instruments and it should to be in perfect conditions of the use, and to protect the professional, the patients and others, in the eventual danger situation.

MODULES, ACCESSORIES, OPTIONALS AND CONSUMPTION MATERIALS

The content on this page is informative; the equipment can be different from those illustrated.
Therefore, when purchasing the product check the technical compatibility between equipment, coupling and accessories.



* A - Power (power ultrasound adjustment)
* B - Speed (electric microengine power adjustment)
* C - Light (electric microengine brightness adjustment)

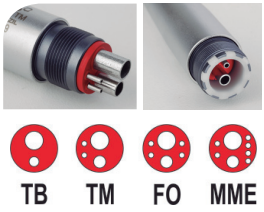
Basic product configuration:
Pneumatic Flex coupling
1- Triple Syringe, 2- High speed TB/TM/FO terminals, 1- Micro engine terminal TB/TM/FO/MME.

01 - Triple Syringe
02 - Bilateral Catcher
03 - Negatoscope
04 - Control Panel
* 05 - Auxiliary Tray
* 06 - Gauge
07 - Articulated arm
08 - Column Arm
* 09 - Terminal microengine
* 10 - High rotation terminals
11 - Water records for FO/MME/Ultrasound
12 - Arm brake valve

* optional item

MODULES, ACCESSORIES, OPTIONALS AND CONSUMPTION MATERIALS

01



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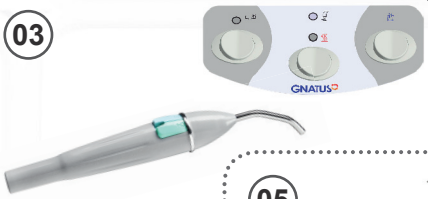

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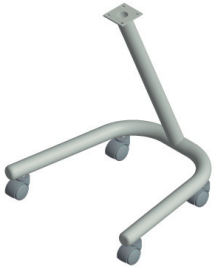

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07

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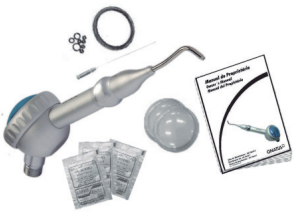

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The drawing illustrates all optional items; therefore, your equipment will consist only of items selected during your purchase option.

MODULES, ACCESSORIES, OPTIONALS AND CONSUMPTION MATERIALS

01 - **Terminals**
- TB: Borden Terminal
- TM: Midwest Terminal
- FO: Optical fiber Terminal
- MME: Electric microengine Terminal

02 – **Photopolymerizes + tip for 3 teeth**

03 - **Water Heater Kit for triple Syringe**

04 - **Auxiliary Tray**

05 – **Cart Coupling**

06 - **Laser hand Kit**
(No registration Anvisa 80051420005)
- Laser Hand
- "patient and professional" protection googles
- Manuals

07 - **Digital control panel MME Bien Air Kit**
- Digital control panel
- Electric micro-engine
- Contra Angle 1:1
- Contra Angle 1:5
- Manual

08 - **Bicarbonate jet "Jet Hand" Kit**
- Bicarbonate Jet
- Plunger
- Reservoir caps
- Sealing Rings
- Bicarbonate Sachet
- Manual

09 - **Ultrasound kit**
- Ultrasound
- Grip key
- Inserts "no. 1, 2, 10P and A120 "

The use of any part, accessory or material not specified or provided in these instructions is of entire responsibility of the user.

The accessories described above can never be commercialized separated from the product.

TECHNICAL SPECIFICATIONS

Technical features of the Delivery Unit and its accessories

General

Model
Syncrus G8 F Delivery Unit
Classification of Equipment as per ANVISA:
Class II
Classification of Equipment as per standard IEC 60601-1:
Protection against Electric Shock - Type B and Class I Equipment (IEC 60601-1)
Degree of safety of application in presence:
Equipment not suited to an anesthetic mixture inflammable with air, oxygen or nitrous oxide.
Mode of Operation
Continuous operation with intermittent load

Power Supply

Power Supply Voltage (coming from dental chair)
127/220 V~ (Selectable)
Frequency
50/60 Hz
Input fuse (coming from dental chair)
5A Delayed action
Voltage in equipment (coming from dental chair)
12 and 24 V~

Other specifications

Inlet air pressure
80 PSI (5,52 BAR)
Inlet air pressure - Syringe
40 PSI (2,76 BAR)
Maximum consumption of air (dental set)
80 l/min
Capacity of water reservoir
1000ml
High rotation air consumption
9 l/min

TECHNICAL SPECIFICATIONS

High rotation water consumption
0,02 l/min
Syringe air consumption
17 l/min
Syringe water consumption
0,1 l/min
Maximum capacity of load applied to trays
2Kg
Net weight (complete version)
26 Kg
Gross weight (versão completa)
31 Kg

Specifications of Optilight LD

Power
5,2VA
Light source
1 LED
Active medium
Semicondutor Led (InGaN)
Wavelength
440nm - 460nm
Timer
90 seconds
Timer alarm
sound alarm with beep every 10 seconds and 4 beeps at the end of the cycle
Activation
Through the hand-piece button
Light conductor
Made out of special polymer, rotational, removable and reuse sable.
Hand-piece body
ABS injected

TECHNICAL SPECIFICATIONS

Specifications of Ultrasound

Frequency of Vibrations of Ultrasound
29,000Hz
Consumption of irrigating liquid
28 ml/min
Power consumed
15VA ±10%
Transducer system
Piezoelectric ceramic

The materials used to produce the equipment are Biocompatible.

Electromagnetic Emissions

Eletromagnetic emissions		
The Syncrus G8 F Delivery Unit is made to be used in the electromagnetic environments specified below. The client or the user of the Syncrus G8 F Delivery Unit must be sure that it is used in such environment.		
Emission test	**Compliance**	**Eletromagnetic environment - Guide**
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	

TECHNICAL SPECIFICATIONS

Electromagnetic Emissions

Guidelines and manufacturer's declaration - electromagnetic immunity			
The Syncrus G8 F Delivery Unit is made to be used in the electromagnetic environments specified below. The client or the user of the Syncrus G8 F Delivery Unit must be sure that it is used in such environment.			
Immunity test	**ABNT Test level NBR IEC 60601**	**Level of compliance**	**Electromagnetic environment Directives**
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

Electromagnetic Emissions

Guidelines and manufacturer's declaration - electromagnetic immunity

The Syncrus G8 F Delivery Unit is made to be used in the electromagnetic environments specified below. The client or the user of the Syncrus G8 F Delivery Unit must be sure that it is used in such environment.

Immunity test	ABNT test level NBR IEC 60601	Level of compliance	Electromagnetic Environment Directives
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 fiel intensity from the RF, transmitter as determined by means of electric inspection on-site, [a] is less than the level of compliance in each frequancy range [b]. 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.

a *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.*

b *Whether above the frequency range of 150kHz to 80 MHz is recommended a field intensity below than 3 V/m.*

TECHNICAL SPECIFICATIONS

Electromagnetic Emissions

Recommended distances between portable and mobile RF communication equipments and the Syncrus G8 F Delivery Unit

The Syncrus G8 F Delivery Unit is made to be used in an electromagnetic environment in which RF disturbances are controlled. The client or the user of the Syncrus G8 F Delivery Unit may help preventing electromagnetic interference by keeping a minimal distance between mobile and portable RF communication equipment (transmitters) and the Syncrus G8 F Delivery Unit, 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 800º Mhz $d = 1,2\sqrt{p}$	800 kHz to 2,5º 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.

NOTE 1 *At 80 MHz and 800 MHz, is applied the separation distance for the higher frequency range.*

NOTE 2 *These guidelines may not apply to all situations. The absorption and reflection from structures, objects and people affect the electromagnetic propagation.*

Use of different cables, transducers and accessories from those specified may result in increased emissions or decreased immunity of the equipment.

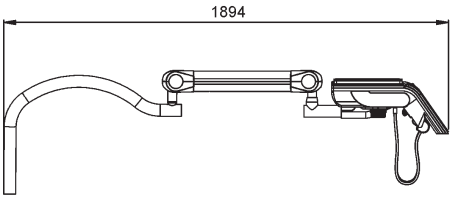
List of pieces and circuit scheme

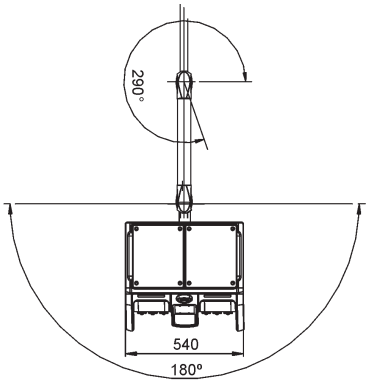
Gnatus Company declares that the supply of the circuit scheme, list of pieces or any other information that propitiate technical attendance for the user, can be request if there is an agreement between the user and Gnatus Company.

TECHNICAL SPECIFICATIONS

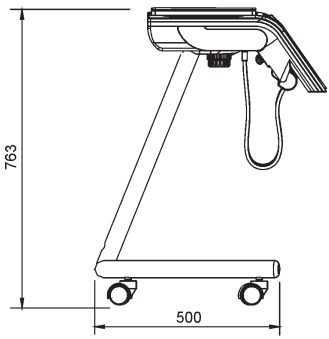
Dimensions (mm)

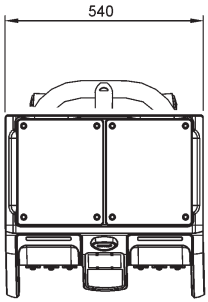
Delivery Unit with FLEX coupling





Delivery Unit with CART coupling





TECHNICAL SPECIFICATIONS

Packing symbols

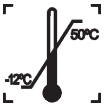
It determines the maximum quantity of boxes which can be stacked during transportation and storage "as per packaging".

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

Careful : It indi cates an important instruction for the operation of the product. Not following it can cause dangerous malfunctioning.

Note: It indi cates useful information for operation of the product.

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

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

It determines to spitting position / last position.

Turned on position

Turned off position

B type equipment

Lift seat.

Lower seat.

Lift backrest.

Lower backrest.

TECHNICAL SPECIFICATIONS

Product symbols


It determines the initial position.

Authorized representative in the European Community

It determines the work position "1".

If determines the work position "2".

If determines the work position "3".

If determines the work position "4".


Bicarbonate Jet


Laser Hand


Warning - Consult the manual


Electric low-speed-motor rotation inverter


X ray view operation


Bio-System operation


Dental Light


High-speed with FO


Curring Light


Triple syringe


Cup filling


Emergency stop


Bowl's water flow

Electric low-speed-motor

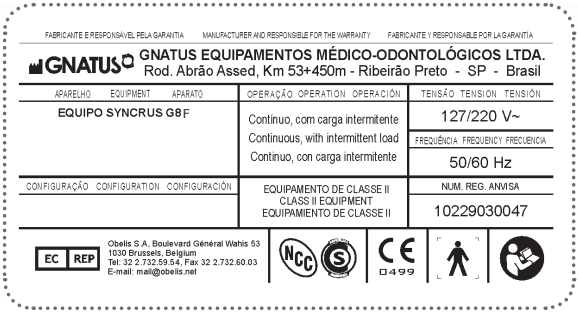

Ultrasound

TECHNICAL SPECIFICATIONS

Standards applied:

NBR 60601-1:1997 - Equipamento Eletromédico- Parte 1: Prescrições gerais para segurança;
NBR ISO 14971:2004- Medical devices - application of risk management medical devices;
NBR ISO 9687: 2005 - Dental equipment - graphical symbols;
EN ISO 13485-2003 - Quality systems - medical devices;
IEC 60601-1-2:2007 - Compatibilidade Eletromagnética.

Content of accessible and non-accessible demarcations



INSTALLATION OF EQUIPMENT

The installation of this equipment requires specialized technical assistance (Gnatus).

OBS: These information also make part of the Manual of Installation and Maintenance of the equipment that can be found with the authorized Gnatus technician.

- This equipment shall only be able to be unpacked and installed by a Gnatus authorized technician, under penalty of losing the warranty, as only (s)he has the information, suitable tools and training required to execute this task.
- Gnatus bears no responsibility for damages or accidents caused by poor installation executed by a technician not authorized by Gnatus.
- Only after the equipment has been installed and duly tested by the authorized technician representing Gnatus, will it be ready to start work operations.

OPERATION OF EQUIPMENT

Turning on / off the dental set

- Turn on the main switch of the Dental Chair. All the functions of the equipment will be enabled.
- The main switch has an internal LED which goes on when the dental chair is turned on.

OPERATION OF EQUIPMENT

Positioning

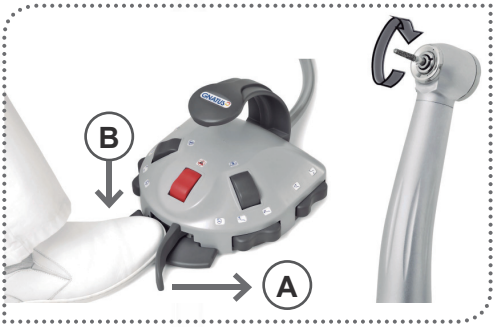
- The arm "item 07, page 08" has horizontal and vertical movements, with a pneumatic locking device.

Maintaining the button "Arm break valve" (13) pressed, place the delivery unit in the desired position holding it by the handle, and release it to fasten it in this position.

Activation of the Terminals

For the functioning of the rotating instruments remove from the support the instrument to be used, trigger the control pedal moving the lever (A) with the feet.

The power (air supply) can be controlled by the operator with higher or lower pressure on the pedal lever (A).



Chip Blower System:

The "chip-blower" system allows the release of the airflow with the stopped turbine (air function).

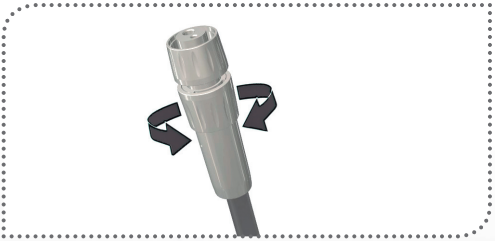
Pressing the (B) key downward, air will trigger on the tips.

Pressing the key (B) downward and moving the lever to the right (A) together, it will trigger the high speed air turbine and water (spray).

Adjustment of Spray of "TB/TM high and low rotation terminals"

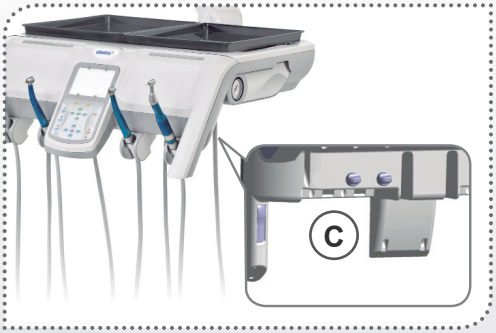
- The adjustment is made via a valve positioned in the terminal. Turn it in a clockwise direction to reduce the spray and in a counter- clockwise direction to increase it.

Note: As the "TB" double terminal does not have a spray this adjustment is not required.



Adjustment of Spray of "MME/FO high and low rotation terminals"

- The adjustment is made via the valves positioned under the box of the delivery unit (C). Turn it in a clockwise direction to reduce the spray and in a counterclockwise direction to increase it.



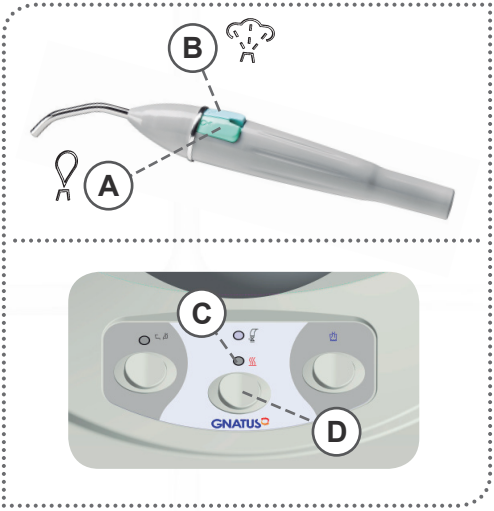
OPERATION OF EQUIPMENT

Use of 3-Way Syringe

Press button (A) for water to come out, (B) for air to come out or both simultaneously to obtain a spray.

Water Heating:

When you turn on the key "hot water activation" (D), LED will light (C), starting to heat water from the syringe. Temperature should remain about 40 °C. To turn off the "water heating activation" function, press key (D) again.

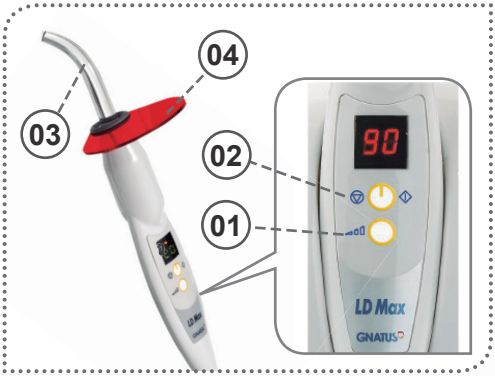


Curing Light Activation

Select application time, press time selection button (01), which values are: 10s (standard mode), 20s, 60s, 80s and 90s.

To initiate a polymerization cycle, press the timer trigger (02), which generates a short beep every 10 seconds and a 4 beeps at the end of cycle.

To interrupt a polymerization cycle just activate the timer trigger again (02).



IMPORTANT:

Keep the light conductor tip (03) at least 2mm away from the restoration.

Keep the light conductor (03) always protected by an expendable PVC film, which must be changed for every patient. This procedure protects the light conductor from scratches and other residues.

Use the polymerization time recommended by the compound resin manufacturer and always perform restorations in incremental layers with a maximum thickness of 2mm.

WARNING:

Never aim the blue light beam towards the eyes.

Use the eyesight protection (04).

In order to protect the eyes, the eyesight protection (04) filters only the blue light used for the resins polimerization, and it allows ambient light to pass through.

OPERATION OF EQUIPMENT

Laser Hand

The "Laser Hand Kit" is low intensity (780nm) and provides relief of acute and chronic pain, and speeds repair of damaged tissue by means of biostimulation effects of radiation.

Eminently analgesic, anti-inflammatory and biomodulation effect.

Applications:

- Inflammations;
- Oral mucous lesions;
- Dental hypersensitivity;
- Analgesia;
- Paresthesia;
- Alveolitis and pericoronitis;
- Acceleration of post surgical and injury cicatrisation;
- Decrease of edemas, bruising and scabbing;
- Distension, muscular spraining and articular pain;
- Acupuncture (optional).

Activation of the "Laser Hand"

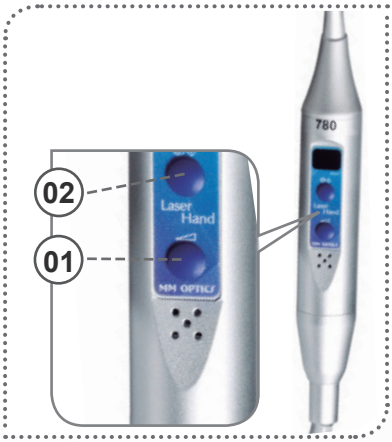
Turn on the main unit power switch, which will automatically turn on the laser.

To select application time, press the time selection button (01) with variations of: 01s to 90s. Maintain pressure on the key until desired time selection, which can be at 1-second intervals (1s, 2s, 3s, 4s, 5s, 6s, 7s...) or 10-second intervals (10s, 20s, 30s, 40s, 50s..).

To start, press timer activation button (02). A single beep will be heard, followed by 5 beeps at each conclusion.

The laser will remain active with a 10-minute program. After 10 minutes, a beep will inform that the laser is in standby mode.

To restart the cycle, press the key (02) which will sound 2 beeps and the last programmed selection will appear on the screen. To interrupt the cycle, press button (02).



Note: For a new program, in case desired time is less than the previous program, press (01) until the start of time "00".

WARNING: Never direct the red light towards eyes.

EQUIPMENT OPERATION

Ultrasound Trigger

Remove the ultrasound hand piece from the holder;

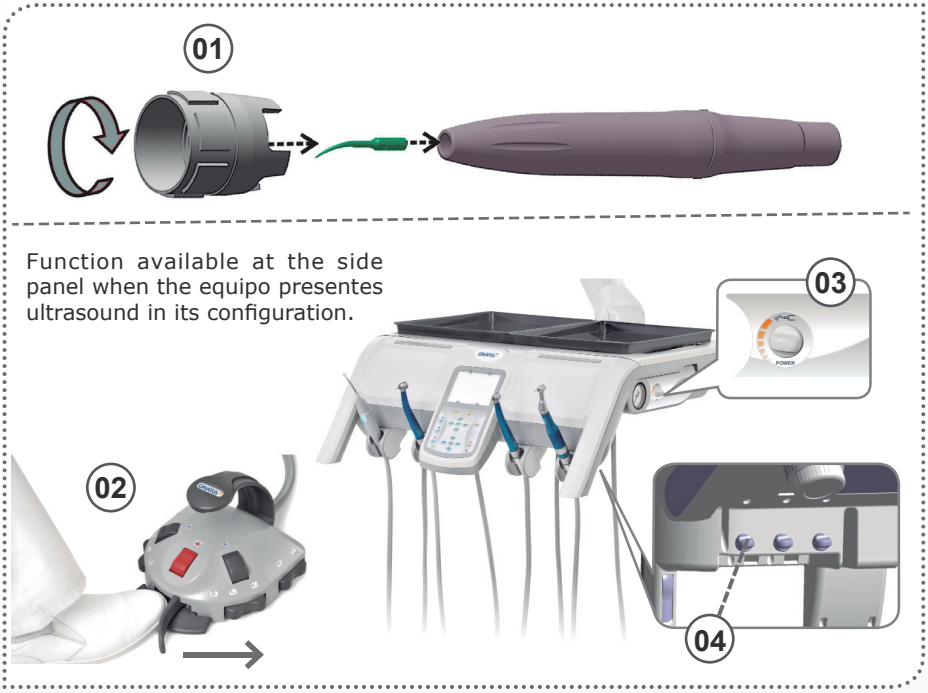
Choose the appropriate insert for the wanted operation according to "Techniques and Applications";

Screw the chosen insert in the hand piece with the aid of clamping key (01) and a small grip;

Trigger the control pedal shifting the lever with the feet (02) and place the selector power (03) in accordance with the sensitivity of operation.

Adjust the water flow through the record (04) located at the inferior part of the equipo.

At the end of the procedure release the lever from the pedal, letting it return to its original position. Place the hand piece in the holder.



IMPORTANT RECOMMENDATION

The shape and the weight of each insert are important facts to obtain a maximum performance of the generator of ultrasounds, the operator attention to these two characteristics, will assure the maintenance of the best performances of the units, however, we recommended that the structure of the insert is not altered (limiting it or twisting it), in the same way the aging of an inserted drives to an alteration of its original characteristic, becoming it ineffective.

Any insert that has been damaged by use or accidental impact should be changed.

OPERATION OF EQUIPMENT

Bicarbonate Jet "Jet Hand"

For further information, please see the Jet Hand manual which comes with the product.

Technical and applications

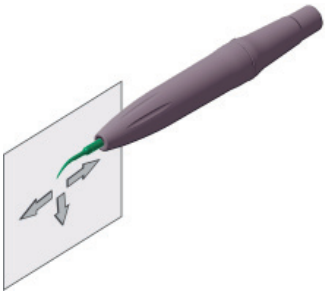
All the inserts of the Ultrasound have the particularity of vibrating in an only plane (front vibrations to back, and in the axis of the insert).

The lateral vibrations common to other destartarizators don't exit, the rectilinear displacement favors more precise approach of the tooth and of the gum.

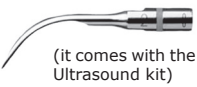
The enamel and the cement are protected of the inutile shocks.

Inside of this main plane of vibration, the end of each insert is driven by small vibratory movements.

To abtain the maximum performance ot the Ultrasound the operator should pay attention to the specific vibrations regulations of each insert.



Periodontics

Insert Nº 1 "Removal of supragengival calculus" Tip Nº1 is used for lingual, buccal and approximal supragingival scaling. Recommended for the removal of gross calculus. Recommended power setting: 10-50%.	 (it comes with the Ultrasound kit)
Insert Nº 2 "Removal of supragengival calculus" Tip Nº2 is used for lingual and buccal supragingival scaling. Recommended for the removal of gross calculus. Recommended power setting: 10-100%.	 (it comes with the Ultrasound kit)
Insert Nº 10-P "Universal" Tip 10-P is used for lingual and buccal supragingival scaling. It's one of the most popular Tips and is recommended for the removal of heavy calculus. Recommended power setting: 10-70%.	 (it comes with the Ultrasound kit)
Insert Nº H-3 "Universal" Tip H-3 was designed for subgingival scaling and can also be used on furcations. Recommended power setting: 10-70%.	 (optional item)

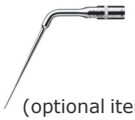
Endodontia

Insert Nº ET-20 "Preparation of canal" Tip ET-20 is used in the pulp chamber for removing pulp stones, dentin and old fillings. Length: 17 mm. Recommended power setting: 10-25%.	 (optional item)

OPERATION OF EQUIPMENT

Endodontia

Insert Nº ET-40 "Preparation of canal"
Tip ET-40 is used in the coronal and apical part of root canals. Among other things the tip can be used to remove posts, widen calcified canals and remove hard fillings. Length: 24 mm.
Recommended power setting: 10-15%.


(optional item)

Inserto Nº S-04 "Preparo do canal"
Tip S-04 is made of titanium and has no diamond coating. Its primary area of use is the isolation and removal of broken instruments. Length: 24 mm.
Recommended power setting: 10-15%.


(optional item)

Insert Nº S12-90 "Apical surgery"
Tip S12-90 is angled at 110° and is used in combination with the instrument holders A-120 and A-90 With the aid of the instrument holder, the S12-90 can be precisely positioned at the angle needed for the treatment.
Recommended power setting: 10-50%.


(optional item)

Insert Nº P-14 "Apical surgery"
Tip P-14 is angled at 100° and it's also used in combination with the instrument holders A-120 and A-90. It has a slimmer design and is therefore better suited for small roots.
Recommended power setting: 10-50%.


(optional item)

Insert Nº A-120 "Removal of broken instruments"
Tip A-120 is a holder for files and instruments with a diameter of 0.8 mm. It can be used with implant tips and AP tips. A-120 has an angle of 120°.
Recommended power setting: 10-50%.


(it comes with the Ultrasound kit)

Insert Nº A-90 "Removal of broken instruments"
Tip A-90 is a holder for files and instruments with a diameter of 0.8 mm. It can be used with implant tips and AP tips. It has an angle of 90°.
Recommended power setting: 10-50%.

(optional item)

Dentistry and Prosthesis

Insert Nº 5-AE "Removal of posts and crowns"
Tip 5-AE is used for removing crowns and inlays. Its small diameter enables access to difficult-to-reach areas.
Recommended power setting: 10-100%.


(optional item)

Insert Nº 6-A "Amalgam condensation"
Tip 6-A is used for amalgam condensation.
Recommended power setting: 10-50%.

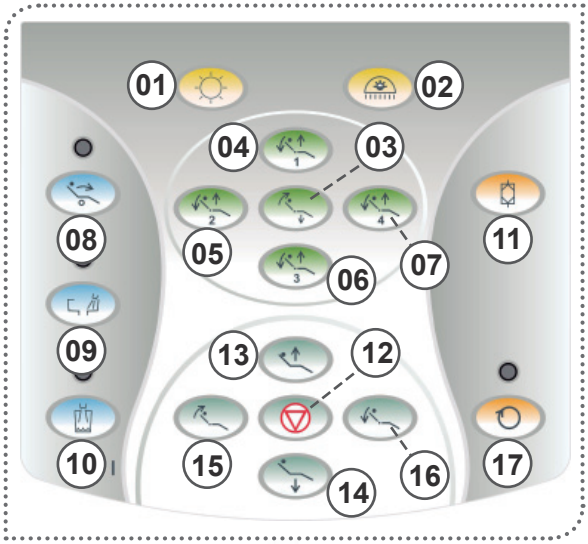

(optional item)

OPERATION OF EQUIPMENT

Equipment activation by the delivery unit panel

Description:

01 - X ray view operation
02 - Activation of the dental light
03 - Initial position
04 - Work position "1"
05 - Work position "2"
06 - Work position "3"
07 - Work position "4"
08 - Spitting position / last position.
09 - Bowl's water flow
10 - Cup filling
11 - Bio-System operation
12 - Emergency stop
13 - Rise seat
14 - Lower backrest
15 - Rise backrest
16 - Lower backrest
* 17 - Electric low-speed-motor rotation inverter



* optional
Available in equipment configured with electric micromotor.

Warning:

To preset the cup filling time, press the "Cup filling" key (10) for 3 seconds (a long beep will be heard and the LED will keep blinking).

When the desired time is reached, press the "Cup filling" key again. The cup filling time is then set.

To preset the bowl's water flow, pres the "Bowl water" key (09) for 3 seconds (a long beep will be heard and the LED will keep blinking).

When the desired time is reached, press the "Bowl water" key again. The cup filling time is then set.

The "Cup filling" and "Bowl water" time functions have a limited preset flow time, 1 minute for the cup filling and 4 minutes for the bowl's water flow.

When the key "Last position/Spitting position" (08) is pressed, the dental light will go off (if it was on), the bowl will drain (for the preset time, and if it was not programmed yet, for four minutes) and the backrest will go up to the spitting position. When pressed again, the backrest will return to the last position and the dental light will go on (if it was on).

After pressing the "Last position/spitting position" key (08), any other operation will trigger the "Stop", and automatically the backrest current position will be defined as "Last position".

When the "Emergency stop" (12) key is pressed, the LED will be on and all chair movements are interrupted until pressed again (12).

It has 4 programmable working positions. To program, just position the chair and the reflector at the desired intensity and keep the chosen working position key pressed for 3 seconds, the chair will produce a long bip determining that the position was already programmed.

OPERATION OF EQUIPMENT

Use and applications (Digital control panel kit)

To turn on the "Optima MX int", just take out the electric micromotor terminal from the support where it is coupled and chose the operation option:

- Operative (contra angle 1:5);
- Endo (contra angle 1:1).

To turn off, put back the terminal to the equipment's support.

- Digital control panel with rotation system;
- High torque micromotor;
- Contra angle 1:1;
- Contra angle 1:5;
- Allows reduction of the number of instruments. It is possible to cover most operations with only two contra angles;
- Wide speed range (100 to 40.000 rpm with CA 1:1 and 500 to 200.000 rpm with CA 1:5);
- Maintains constant selected speed;
- 40 programs available (20 preset).

Rotation System;

OPERATION OF EQUIPMENT

How to provision the reservoirs

Water - Syringe / Handpieces

Remove the reservoir (01) uncoiling it on clockwise and make the replacement of water. After the replacement put it back coiling on anticlockwise. Always use filtered water or aseptic products.

Bio-System

Remove the reservoir (02) uncoiling it on clockwise and make the replacement. Use a chlorinated water solution 1:500

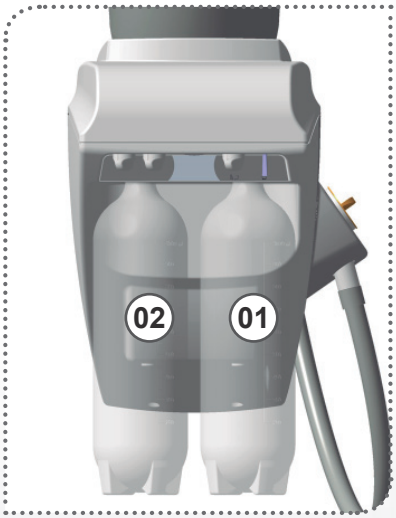
Preparing the solution:

From a solution of hypochlorite of sodium at 1%, a solution of chlorine at 500 p.p.m. is prepared.

How to prepare the solution: Take 25ml of hypochlorite of sodium at 1% and dilute it in 500 ml of water (1 to 20). Such solution should be prepared daily.

IMPORTANT:

Follow this proportion strictly to avoid damages in the equipment and to have an efficient result in the disinfection.



Supply through the Water Unit

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 it 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 Gnatus +10 ° C to +35 ° C.

The Equipment maintains its condition of safety and efficacy, provided that it is maintained (stored) as mentioned in this instruction of 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 and warnings "during the installation" of quipment

- The equipment should only be installed by Gnatus authorized technical assistance or technicians.
- Position the unit in a place where it will not get wet.
- Install the unit in a place where it will not be damaged by the pressure, temperature, humidity, direct sunlight, dust, salts, or sulfur compounds.
- The unit should not be submitted to 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; eliminate air and water deposited in the internal hoses.

These information also make part of the Manual of Installation and Maintenance of the equipment that can be found with the authorized Gnatus technician.

PRECAUTIONS, RESTRICTIONS AND WARNINGS

Recommendations for the dental equipment maintenance

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

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 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.
- The equipment has been manufactured to handle both continuous and intermittent operation; so follow the cycles described in these Instructions for Use.
- Although this equipment has been planned in accordance with the standards of electromagnetic compatibility, it can, in very extreme conditions, cause interference with other equipment. Do not use this equipment together with other devices very sensitive to interference or with devices which create high electromagnetic disturbance.
- 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.

Bicarbonate Jet:

- It is not advisable to use this equipment in patients who have serious renal or respiratory alterations, or who undergo hemodialysis. These cases should be followed be followed by a doctor.
- We recommend the use of a mask and goggles for applying the bicarbonate jet.
- Avoid leaving sodium bicarbonate in the container for long periods without use.

The effect of residual humidity in the air may alter the properties of the powder and cause blocking.

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, RESTRICTIONS AND WARNINGS

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

Unit:

- Before cleaning the equipment, turn off the main switch.
- Avoid spilling water, even accidentally, or other liquids inside the equipment, which could cause short circuits.
- Do not use microabrasive material or steel wool when cleaning, or employ organic solvents or detergents which contain solvents such as ether, stain remover, gasoline etc.

Curring Light:

- The equipment and the light conductor cannot be placed in the oven or autoclaves.
- The conductor can't be immersed in solvents or substances that contain acetone in its composition.
- Avoid the light conductor to terminal to touch the resin to be polymerized.
- When using the Curring Light check if the light conductor output doesn't have residues that might obstruct the light beam.

Ultrasound:

- After use, remove the insert to avoid damage.
- The part should be packaged duly clean.
- Do not sterilize the transducer in contact with other types of material.
- The inserts should be cleaned beforehand eliminating all the resin residue.
- After removing the insert from the transducer, it should be disinfected with surgical spirit and taken to be sterilized in autoclave.

Bicarbonate Jet:

For further information, please see the Jet Hand manual which comes with the product.

Laser Hand:

For further information, please see the Laser Hand manual which comes with the product.

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.

CORRECTIVE AND PREVENTIVE MAINTENANCE AND PRESERVATION

Additional procedures for reuse

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

Cleaning

Important: In order to execute cleaning or any type of maintenance, ensure that the equipment is disconnected from the electrical network.

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 nº 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: The registration at the Ministry of Health of the "BactSpray" is executed separately from the product described in this manual, as the "BactSpray" is not manufactured by Gnatus.

Disinfection

Use clean and soft cloth dampened in alcohol 70% to disinfection of the equipment. Never use corrosive disinfectants or solvents.

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

CORRECTIVE AND PREVENTIVE MAINTENANCE AND PRESERVATION

Cleaning

Curring Light

The light conductor cleaning and the optical protector must be done using only neutral soap and cotton. To the exterior of the pen use neutral soap or alcohol 70% vol.

Never use any other chemical based product than previous mentioned, because along the time these products attack the surface of the instrument.

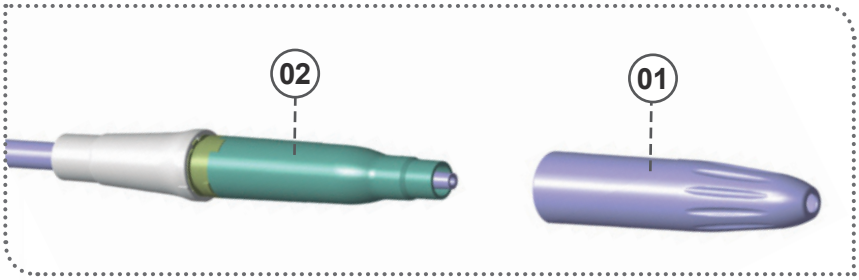
Never immerse the instrument in disinfection baths.

Ultrasound

The device is reusable in unspecified quantities, ie endless, only requiring cleaning and disinfecting.

Cleaning of terminal, transductor cover and hose:
We recommend using a clean cloth, dampened with water and mild soap.

Autoclavable:
Transducer-Cover, inserts and key are autoclavable under the following conditions:
- Maximum temperature of 134 º C.



Transducer cover sterilization:
Remove the insert from the transducer.
Carefully remove the cover (01) from the transducer (02) then take it to autoclaving (packed).

Recommendations for autoclave sterilization:

- The piece must be properly packed clean.
- Do not sterilize the transducer cover in contact with other materials.
- The inserts must be cleaned earlier eliminating all resin residues.
- After removing the insert from the transducer, it should be disinfected with surgical alcohol and taken to autoclave for sterilization.
- The material of the transducer cover was developed to support up to 200 cycles of autoclaving, provided the recommendations are done according to stated above.

CAUTION: Never expose the transducer covers to any type of oil because it can modify the structure of the material compromising it´s useful life.

Laser Hand:

For further information, please see the Laser Hand manual which comes with the product.

CORRECTIVE AND PREVENTIVE MAINTENANCE AND PRESERVATION

Cleaning

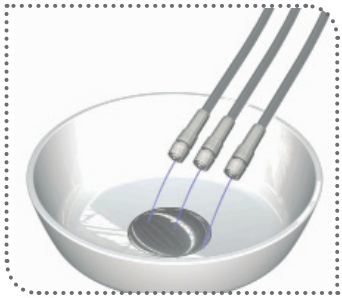
Bicarbonate Jet "Jet Hand"

For further information, please see the Jet Hand manual which comes with the product.

Reservoirs

It's highly recommended the cleaning of the water reservoirs, using chlorinated water solution 1:500 (as described previously).

Bio-System



Remove the terminal hand parts. Take the hand parts of terminals to the sink or tank of water unit.

Completely open the spray register of the terminals. Press the Bio-System triggering button for some seconds, located under the coupling panel reaching arm of the water unit, to perform the disinfection of internal components with bactericidal liquid. Then, trigger the control pedal for a few seconds to perform rinsing in order to remove chemical residues of bactericidal liquid internally retained in the components of water unit.

Important: This procedure should be done in the beginning of the workday and after each patient.

Triple syringe

Only the syringe tip is autoclavable (01). The other pieces must be cleaned using a piece of cotton wool and alcohol 70% vol. Never use a hot air sterilizer.

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.

Problem	Probable cause	Solution
Delivery Unit -Handpiece is not working.	-Compressor disconnected.	-Plug the compressor in.
-Handpiece with low speed.	-Inlet pressure below specified (80 PSI).	-Adjust inlet pressure (80 PSI).
-No water from handpiece spray.	-Insufficient air pressure from compressor. -Reservoir run out of water. -Closed terminal.	-Adjust air flow. -Put filtered water in reservoir. -Open terminal.
-No water from syringe.	-Reservoir run out of water. -Compressor disconnected.	-Put filtered water in reservoir. -Plug compressor in.
-When Bio-system is operated no disinfectant come from handpiece terminals.	-Bio-system reservoir run out of water. - Chair fuse burned. -Main or chair switch is off	-Put disinfectant in the reservoir. - Turn off the chair from mains power and request a Technician presence. -Switch main/chair switch on.

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.

Problem	Probable cause	Solution
- X ray view does not work	-Chair's fuse burned. -Main switch is off.	-Turn off the chair from mains power and request a Technician presence. -Switch the main switch on.
Curring Light -Equipment's not working.	-Power cut. -Chair's fuse burned.	-Check power supply. -Turn off the chair from mains power and request a Technician presence.
-Equipment is not polymerizing resins.	-Resin is not appropriate for LED's photopolymerizer wave length range.	-Get the indicated resin for the photopolymerizer's wave length range, one with contains photoinitiators based on camphorquinone.
Ultrasound -The equipment doesn't work.	-Chair's fuse burned	-Turn off the chair from mains power and request a Technician presence.
-Lack of power to the ultrasound.	-Deformed insert. -Loosen insert. -Bad utilization (incorrect attack angle).	-Change the insert. -Hold the insert with the key -See item "Technical and applications".
-There is no water in the hand piece.	-Inadequate alimentacion pressure water. -Bad regulating of the water flux.	-Correct the water filter. -Adjust the water flux through the actuator.
Bicarbonate Jet	- For further information, please see the Bicarbonate Jet "Jet Hand" manual which comes with the product.	
Laser Hand	- For further information, please see the Laser Hand manual which comes with the product.	

WARRANTY OF EQUIPMENT

This equipment is covered by the warranty terms counting from the date of installation, as specifi ed 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 doe snot 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 Certifi cate comes with the product and must be filled in upon the date of installation by the Gnatus Authorized Technician.
- Queries and information: GNATUS Help Desk (+55) 16 2102-5000 / SAC: 0800-7015-054.
- 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 spedific tools for the correct maintenance of your equipment.
Doubts and information: GNATUS Call center (55-16) 2102-5000 / SAC: 0800-7015-054.

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NUM. REG. ANVISA: 10229030047

Manufacturer / Distribuitor:

GNATUS

Technical Duties:
Gilberto Henrique Canesin Nomelini – CREA-SP: 0600891412

EQUIPAMENTOS MÉDICO-ODONTOLÓGICOS LTDA.

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