English

Owner´s Manual

CE
0499

Water Unit Syncrus G4/G4 A

Cód. 300054900 Rev.00

GNATUS

PRESENTATION OF MANUAL

INSTRUCTIONS FOR USE

Technical Name: Odontological cuspidor

Brand: Gnatus

Trade Name: Water Unit Syncrus G4

Models: G4 / G4 A

Manufacturer / Distribuitor:
GNATUS - EQUIPAMENTOS MÉDICO-ODONTOLÓGICOS LTDA.
Rod. Abrão Assed , Km 53+450m - Cx. Postal 782 CEP 14097-500
Ribeirão Preto - S.P. - Brasil
Fone +55 (16) 2102-5000 - Fax +55 (16) 2102-5001
C.N.P.J. 48.015.119/0001-64 - Insc. Est. 582.329.957.115
www.gnatus.com.br - gnatus@gnatus.com.br
Technical Duties: Gilberto Henrique Canesin Nomelini
CREA-SP: 0600891412

Registration ANVISA nº: 10229030031

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.

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IDENTIFICATION OF 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.

Indication of Equipment

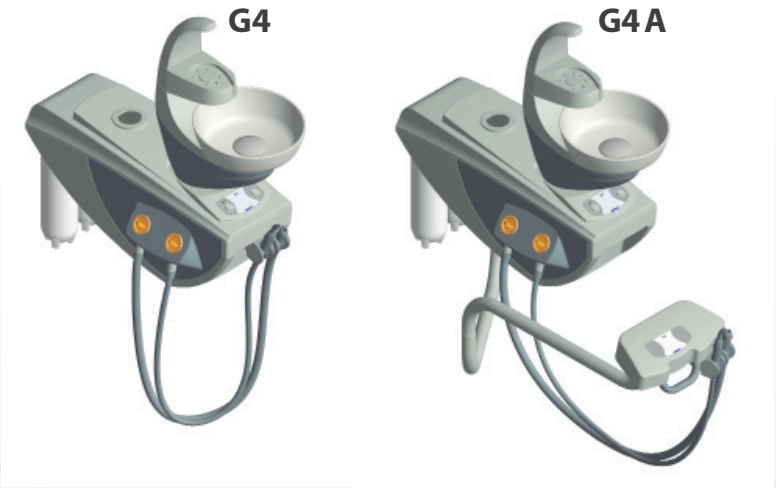
This equipment is for dental use use only. It must be operated and utilized by specialized professional (certified professional, according to the legislation of the country) and following the instructions of the manual. The operation of the equipment required, for the professional, the utilization of 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.

Principles and fundamentals applied to the product functioning

Auxiliary waste collector unit, has suctors which suction is caused by venturi system or vacuum pump with compressed air.

Identification

Technical Name: Odontological cuspidor
Trade Name: Water Unit Syncrus G4
Brand: GNATUS
Models: G4/G4A



IDENTIFICATION OF EQUIPMENT

Equipment Description

Water unit for odontological use, for auxiliary work such as water supply for waste collection and spitting and sucking activation; ambidextrous (for right- and left-handed). Attached to the chair, with electronic control panel which activates the following functions: water in the bowl, water in the cup holder and water heating of the triple syringe (optional).

Set structure built with steel body covered with high impact polystyrene, high brightness flat paint-epoxy based polymerized in a heater at 250°C with phosphatized treatment, corrosion and cleaning materials resistant. Round bowl´s cuspidor, with 253 mm diameter, removable, providing a perfect disinfection.

Upper part of the unit with suitable location for the best spitting position, 180° foldable bowl providing total patient comfort.

Hoses are smooth, rounded, soft and flexible, without grooves or striations. Sucking hoses with quick coupler which easily connect and disconnect without the need for tools.

Water flux regulating system allowing fine-tuning in the bowl and the cup holder water flux.

Double system for water supply (network/reservoir) optional.

Master valve (key for water cut) optional.

Tips support, with wide horizontal movement providing greater ergonomics. Automatic selection of tips through sensitive pneumatic valves, allowing lightness in its trigger. Frontal catcher of easy access, facilitating the movement of the articulated arm (available in the models of units with reach arm).

Programmable timer for water trigging in the cup holder and in the spitting bowl by a time interval set by the professional, providing bigger water savings at the office.

Drain for solids retention, triple syringe (optional), swivel nozzle, removable and autoclavable syringe.

Suctors with automatic triggering, easy to use, that provide an excellent operational performance, allow professionals a better visualization of the surgical field and reduce the risk of contamination by aerosol and greater patient comfort.

High power suctor with low voltage individual electric triggering provides lightness and precision during triggering (optional).

Translucent water reservoirs (for syringe and spray tips) and chlorinated water (for Bio-System).

Bio-System: disinfection system, which provides the internal hose and terminals cleaning through liquid bactericide, preventing risk of cross contamination.

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).

Laser Hand Kit (optional item) – Features of the product:
See the Owner's Manual - Laser Hand

Bicarbonate jet (optional item) – Features of the product:
See the Owner's Manual - Jet Hand

IDENTIFICATION OF EQUIPMENT

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.

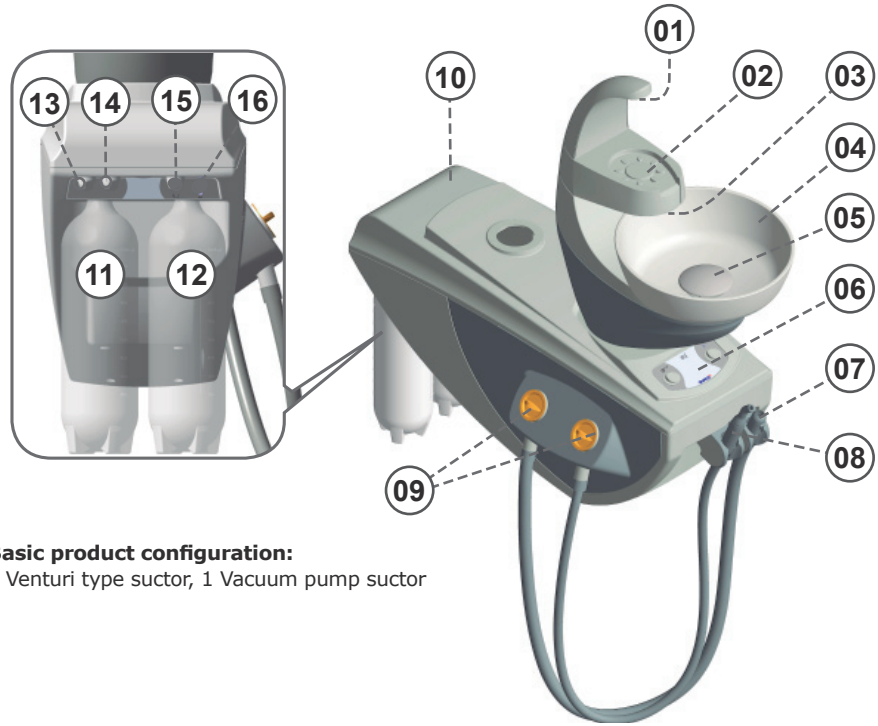
We noted that the light emitted by the Curing Light is completely contained within the absorption interval of the photo starter, therefore it's 100% used, whereas the conventional equipment running on halogen lamps has non-used wave-length regions.

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.

MODULES, ACCESSORIES, OPTIONALS AND CONSUMPTION MATERIALS (G4)

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.



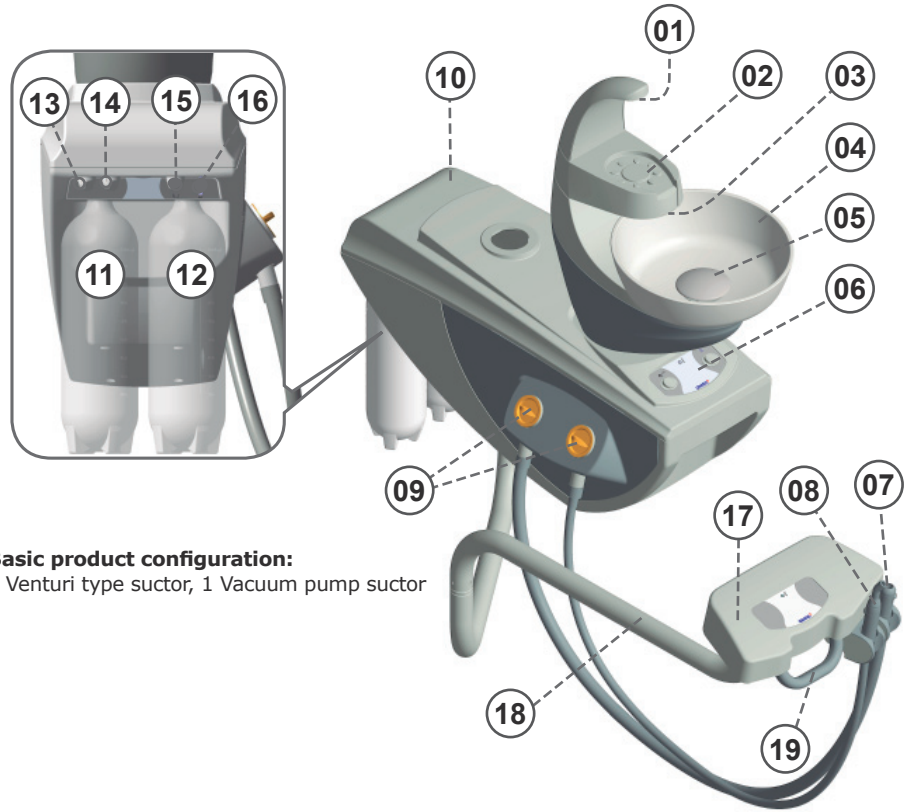
Basic product configuration:
1 Venturi type suctor, 1 Vacuum pump suctor

01 - Water conductor cup holder
02 - Cup holder
03 - Water conductor bowl
04 - Bowl
05 - Drain cover
06 - Control Panel
∗07 - Vacuum pump suctor
∗08 - Venturi type suctor
09 - Suctor Filters
10 - Cabinet body
11 - Bio-System Reservoir
12 - Water Reservoir
13 - Water flux regulating cup holders
14 - Water flux Regulating bowl
∗15 - Master valve - releases/block water input
∗16 - Water selector valve - reservoir/network

∗ optional item

MODULES, ACCESSORIES, OPTIONALS AND CONSUMPTION MATERIALS (G4A)

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.



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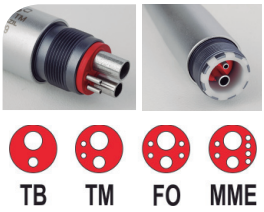
11 - Bio-System Reservoir
12 - Water Reservoir
13 - Water flux regulating cup holders
14 - Water flux Regulating bowl
∗15 - Master valve - releases/block water input
∗16 - Water selector valve - reservoir/network
17 - Cover reach
∗18 - Arm reach
19 - Central Catcher

∗ optional item

MODULES, ACCESSORIES, OPTIONALS AND CONSUMPTION MATERIALS

01



02

03

04

05

06

07

08

The drawing illustrates all optional items. Therefore, your equipment will consist only of the chosen 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 - **Photopolymerizer + tip for 3 teeth**

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

04 - **Bicarbonate jet "Jet Hand" Kit**
- Bicarbonate Jet
- Plunger
- Caps for reservoir
- Sealing Rings
- Bicarbonate Sachet
- Manual

05 - **Suctors**
- Venturi Suctor
- Bigger suctor for vacuum pump
- Smaller suctor for vacuum pump
- Suctor cleaning brush
- Suction cannula

06 - **Arm reach coupling with capacity for 3 tips**

07 **- Arm reach coupling with capacity for 5 tips**

08 - **Kit Water Heater for triple syringe**

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 cannot be commercialized separated from the product.

TECHNICAL SPECIFICATIONS

Technical features of the Delivery Unit and its accessories

General

Model
Water Unit Syncrus G4/G4A
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

Inlet air pressure
80 PSI (5,52 BAR)
Voltage in equipment (coming from dental chair)
12V~ and 24 V~

Other specifications

Capacity of water reservoir
1000ml
High rotation air consumption
9 l/min
High rotation water consumption
0,02 l/min
Inlet air pressure - Syringe
40 PSI (2,76 BAR)
Syringe air consumption
17 l/min
Syringe water consumption
0,1 l/min
Net weight (complete version)
15 Kg

TECHNICAL SPECIFICATIONS

Gross weight (complete version)
21 Kg
Venturi suction system – Maximum vacuum
220 mm/Hg
Venturi suction system – Volumetric displacement
30 l/min
"Bio Vac II Vacuum Pump" suction system – Maximum vacuum
400 mm/Hg
"Bio Vac II Vacuum Pump" suction system – Volumetric displacement
120 l/min
"Bio Vac IV Vacuum Pump" suction system – Maximum vacuum
550 mm/Hg
"Bio Vac IV Vacuum Pump" suction system – Volumetric displacement
350 l/min

Specifications of Curring Light

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

The materials used to produce the equipment are Biocompatible.

Electromagnetic Emissions

Eletromagnetic emissions		
The Water Unit is made to be used in the electromagnetic environments specified below. The client or the user of the Water 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	

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

TECHNICAL SPECIFICATIONS

Electromagnetic Emissions

Guidelines and manufacturer's declaration - electromagnetic immunity

The Water Unit is made to be used in the electromagnetic environments specified below. The client or the user of the Water 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	3 vrms 150 kHz up to 80 MHz	3 Vrms	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:
RF radiated IEC 61000-4-3	3 V/m 88 MHz up to 2,5 GHz	3 V/m	

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

Guidelines and manufacturer's declaration - electromagnetic immunity

The Water Unit is made to be used in the electromagnetic environments specified below. The client or the user of the Water 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% *Ut* (>95% drop in *Ut*) for 0,5 cycle 40% *Ut* (60% drop in *Ut*) for 5 cycles 70% *Ut* (30% drop in *Ut*) for 25 cycles < 5%*Ut* (>95% drop in *Ut*) for 5s	< 5% *Ut* (>95% drop in *Ut*) for 0,5 cycles 40% *Ut* (60% drop in *Ut*) for 5 cycles 70% *Ut* (30% drop in *Ut*) for 25 cycles < 5% *Ut* (>95% drop in *Ut*) 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 *Ut* is the a.c. power supply voltage before the application of the test level

TECHNICAL SPECIFICATIONS

Electromagnetic Emissions

Recommended distances between portable and mobile RF communication equipments and the Water Unit

The Water Unit is made to be used in an electromagnetic environment in which RF disturbances are controlled. The client or the user of the Water Unit may help preventing electromagnetic interference by keeping a minimal distance between mobile and portable RF communication equipment (transmitters) and the Water 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.

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.

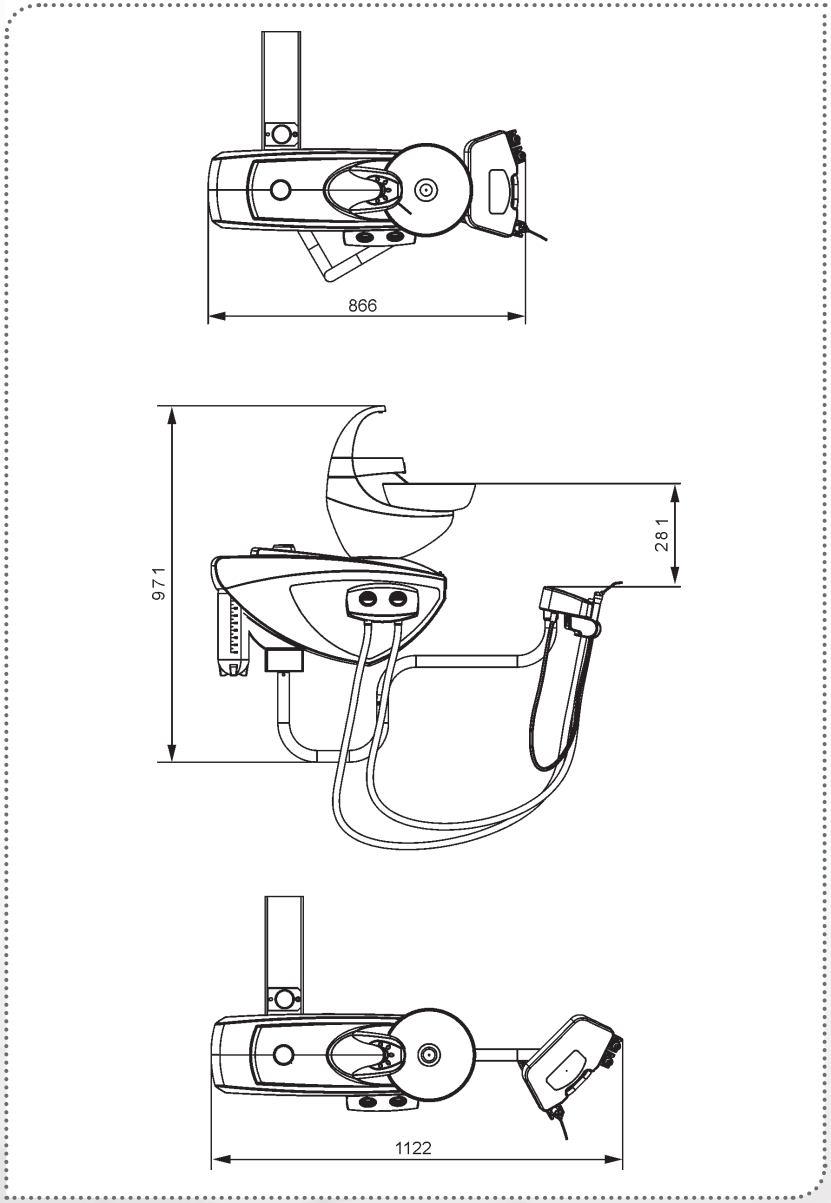
Standards applied:

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.

TECHNICAL SPECIFICATIONS

Dimensions (mm)

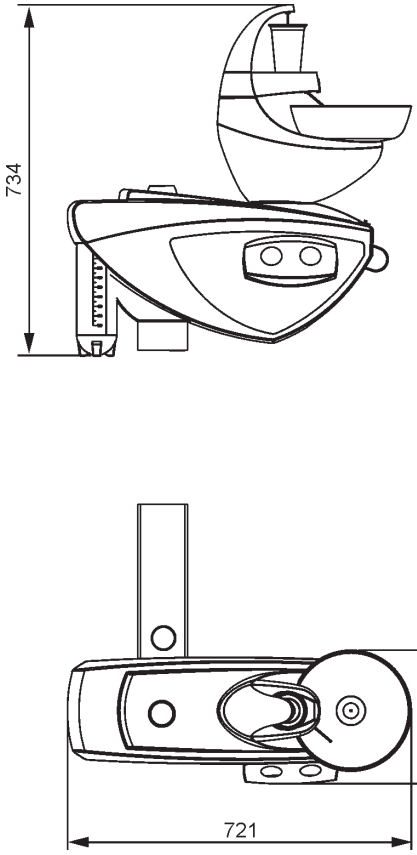
Equipment with coupling "reach arm" G4 A



TECHNICAL SPECIFICATIONS

Dimensions (mm)

Equipment without coupling "reach arm " G4



TECHNICAL SPECIFICATIONS

Packing symbols

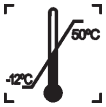
It determines the maximum quantity of boxes which can be stacked during transportation and storage "as per packaging".

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

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

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

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



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.

B type equipment

Laser Hand

High-speed with FO

Curring Light

Triple syringe

BV ejector

Ejector type Venturi

Bicarbonate Jet

Water heating activation

TECHNICAL SPECIFICATIONS

Product symbols

Bowl's water flow

Cup filling

Bowl water flux regulation

Cup holder water flux regulation

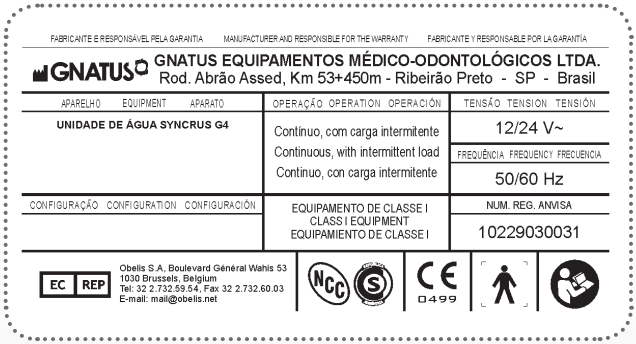
Key switch water supply network/reservoir

Master valve (key for water cut)

Warning - Consult the manual

Authorized representative in the European Community

Content of accessible and non-accessible demarcations



FABRICANTE E RESPONSÁVEL PELA GARANTIA MANUFACTURER AND RESPONSIBLE FOR THE WARRANTY FABRICANTE Y RESPONSABLE POR LA GARANTÍA

GNATUS EQUIPAMENTOS MÉDICO-ODONTOLÓGICOS LTDA.
Rod. Abrão Assed, Km 53+450m - Ribeirão Preto - SP - Brasil

APARELHO EQUIPMENT APARATO	OPERAÇÃO OPERATION OPERACIÓN	TENSÃO TENSION TENSIÓN
UNIDADE DE ÁGUA SYNCRUS G4	Contínuo, com carga intermitente Continuous, with intermittent load Continuo, con carga intermitente	12/24 V~
		FREQUÊNCIA FREQUENCY FRECUENCIA 50/60 Hz
CONFIGURAÇÃO CONFIGURATION CONFIGURACIÓN	EQUIPAMENTO DE CLASSE I CLASS I EQUIPMENT EQUIPAMIENTO DE CLASSE I	NUM. REG. ANVISA 10229030031

EC REP
Obelis S.A, Boulevard Général Wahis 53
1030 Brussels, Belgium
Tel: 32.2.732.59.54, Fax 32 2.732.60.03
E-mail: mail@obelis.net

NCC
CE 0499

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.

INSTALLATION OF EQUIPMENT

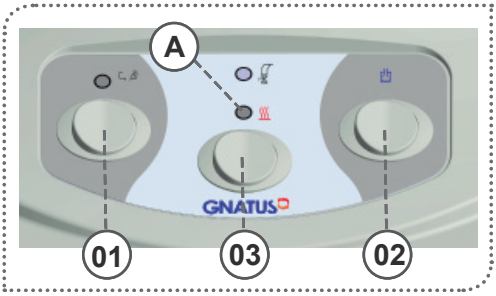
- This equipment shall only be able to be unpacked and installed by a Gnatus authorized technician, under penalty of losing the warranty, as only (s)he has the information, suitable tools and training required to execute this task.

- 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.

EQUIPMENT OPERATION

Control Panel



01 – Water triggering in the Bowl
02 – Water triggering in the cup holder
∗ 03 – Water triggering heating syringe (optional)

WARNING:

To set the time of water flux in the cup holder, press the "water in the cup holder" button (02) for 3 seconds (it will produce a long beep and the LED will flash).

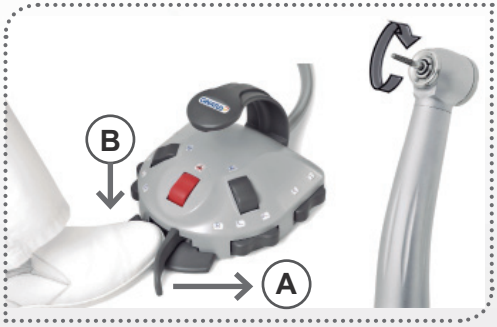
Upon reaching the desired time, press again the button "Water in the cup holder" (02). The flux time is recorded. To set the time of the water flux in the bowl, press the "Water in the bowl" button (01) for 3 seconds (it will produce one long beep and the LED will flash). Upon reaching the desired time, press again "Water in the Bowl" (01). The flux time is recorded.

The settings "Water in cup holder" and "Water in the bowl" have a water flux timeout, 1 minute for the water in the cup holder and 4 minutes for the water in the bowl.

When turning the key "triggering heating water syringe" (03), the LED will turn on (A) starting the heating of syringe water. The temperature must remain around 40º C. To turn off the "trigger water heating", press (03) again.

Terminal Triggering

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).

EQUIPMENT OPERATION

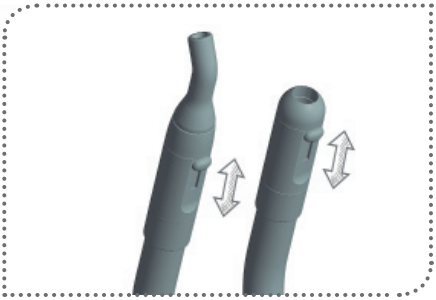
Adjustment of Spray of "TB/TM high and low rotation terminals"

- 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.

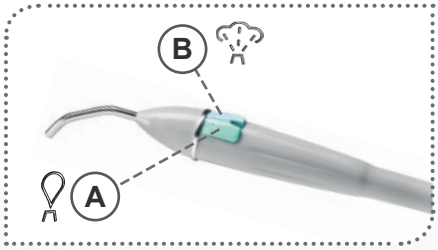
Ejectors operation

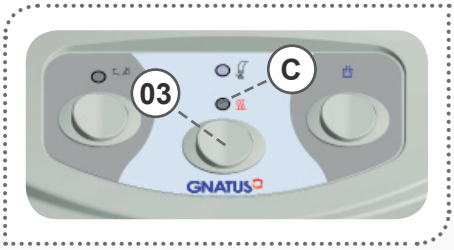
The ejectors (both BV and Venturi) start working automatically when retired from the tips support the BV ejectors feature suction flow adjustment , and its regulated moving the lever located at the ejector up or down.



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" (03), 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 (03) again.

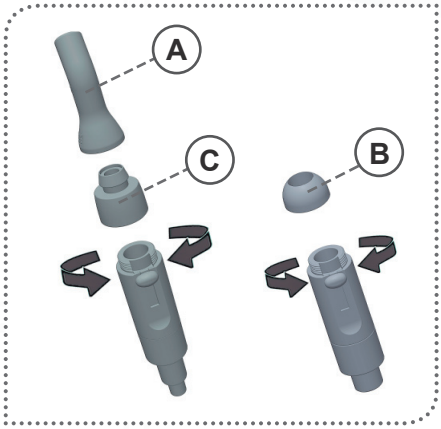
EQUIPMENT OPERATION

Replacement of the standard of cannula coupling

If there is the necessity of using the 6.5mm (A) cannula in the BV suctor, make the replacement of the cannula coupling, as the procedure below:

• Remove the coupling of 11 mm (B) by unscrewing it from.

• Screw the coupling of 6.5 mm (C) in the aspirator BV set and attach the coupling tube.



Coupling of tube of 6.5 mm

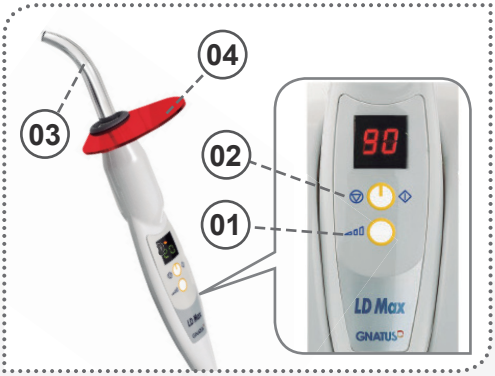
The curve of the coupling of the cannula was designed for better handling, but can also be cut at the location indicated with the aid of a knife.

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.

EQUIPMENT OPERATION

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.

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"

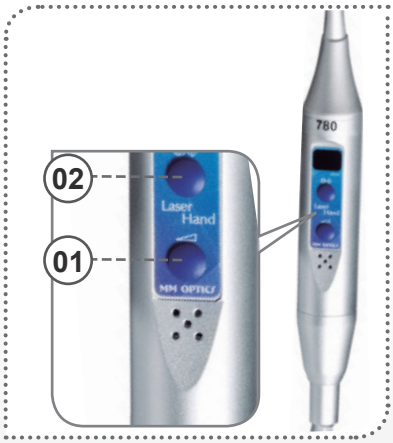
Turn on the main unit power switch, which will automatically turn on the laser.

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 (01). 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.

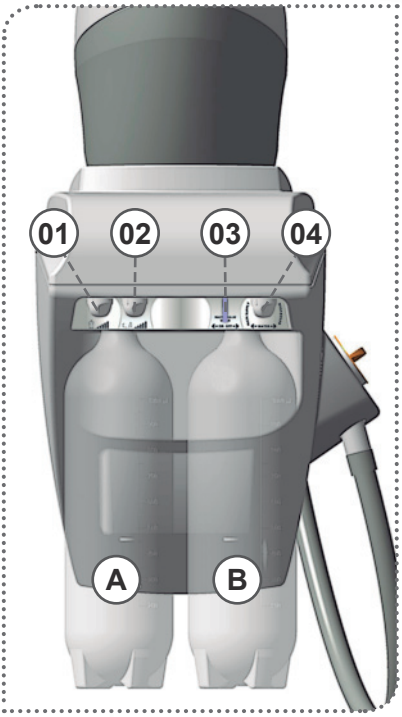
EQUIPMENT OPERATION

Water flow adjustment

01 - Cup filler adjustment

02 - Bowl flush adjustment

To regulate the bowl flush and cup filling water flow, use the bowl flush adjustment (02) and the cup filler flow adjustment (01), to increase flow, turn it anticlockwise, to decrease, turn in clockwise.



Regulation of the water selecting valve

To regulate this kind of water feeding, please use the selecting valve (04) to select the feeding through the reservoir and turn around in the clockwise sense. To select the feedign through the net, turn around counter clockwise sense.

Master Valve

The master valve is a safety device that aims to block / release the entry of water to the dental set. It is of utmost importance to have interrupted the water supply to the dental set in the end of the working day, which can be done through the key (ON/OFF - 03)

How to provision the reservoirs

Water - Syringe/Handpieces

Remove the reservoir (B) 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 (A) 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.

Bicarbonate Jet "Jet Hand"

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

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

Unidad:

- 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.

Amalgam collecting vessel, filters and drains:

- To prevent infection risks, use protective gloves during amalgam collecting vessel replacement and when handling filters and drains. Dispose wastes and contaminated products in biological waste.

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.

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 and Disinfection

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

Gnatus suggests performing a daily suction of the clearance and disinfectant solution, avoiding the risk of cross contamination and increasing equipment service life. To perform the disinfection of your equipment we recommend the use of the "Sugclean" (MS Reg. No.: 31.080.003-2) product.

• **Indication:** It is indicated for clearance of sucker and hose suction system. It is important to perform the suction solution in all suction terminals, which it is also important to be open. Then, remove suckers from hose for asepsis.

• **Preparing the Solution:** Add "Sugclean" 30mL in 1 liter of water. Aspirate the solution with maximum power of the suckers, and also put the liquid in the water unit bowl.

In the first use of "Sugclean" product, we suggest adding 60mL of concentrated product in 1 liter of water during the first 5 days in order to remove accumulated residues.

• **Composition:**

• Active Drug: Phosphoric Acid 13.6%

• Excipients: Isopropyl Alcohol, Acidulant, Dye and Thickener.

Warning: do not use foaming product.

NOTE: The registration at the Ministry of Health of the "Sugclean" is executed separately from the product described in this manual, as the "Sugclean" is not manufactured by Gnatus.

Fig.A

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.

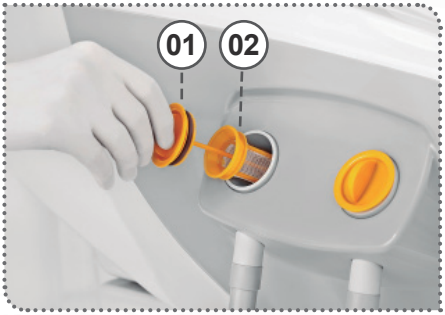
Reservoirs

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

CORRECTIVE AND PREVENTIVE MAINTENANCE AND PRESERVATION

Cleaning of the sucker and filters

After the suction of the solution through the suctor, take the lid (01) and the filter (02) and wash them in running water.



Cleaning of the drain

Pull the drain (03) with a tweezer, clean and disinfect it.

Warning: Always use protection gloves when manipulating filters and drainages.

Discard waste and contaminated products in biological waste containers.

Basin cleaning

In order to obtain better results in the clean the bowl in your water unit, we strong recommedn the use of the product **"Easy-Off Bang"** or similar, nº Reg. MS: 3.00227-0.

Chemical composition: Glycolic Acid, Maleic Anhydride, Citric Acid, Ethoxyled Fatty Alcohol, Essence and Water.

Apply the **"Easy-Off Bang"** in the water unit bowl along with a smooth cloth up to clean it.

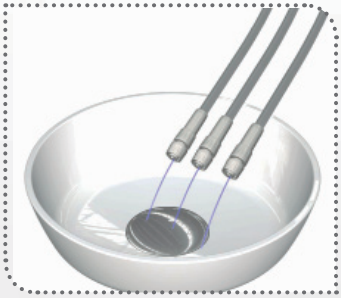
If you want additional information regarding cleaness, please look at the instructions from the product.

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.



CORRECTIVE AND PREVENTIVE MAINTENANCE AND PRESERVATION

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.

Laser Hand

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

Bicarbonate Jet "Jet Hand"

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

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
Water Unit -Ejector without suction.	-Insufficient air pressure from compressor. -Filter clogged with particles. -Filter lid misplaced.	-Adjust air flow. -Remove and clean filter. -Remove lid and place it correctly.
-Handpiece with low speed.	-Inlet pressure below specified (80 PSI).	-Adjust inlet pressure (80 PSI).

UNFORESEEN EVENTS – SOLUTION OF PROBLEMS

Problem	Probable cause	Solution
-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.
-Handpiece is not working.	-Compressor disconnected.	-Plug the compressor in.
-No water from syringe.	-Reservoir run out of water. -Compressor disconnected.	-Put filtered water in reservoir. -Plug compressor in.
- Bowl's water flow and cup filling are not operating.	- Lack of water - Water valve is closed - Power cut - Chair fuse burned. -Chair's main switch is off or terminal box is disconnected.	- Check the water supply - Open the water valve - Check the energy supply - Turn off the chair from mains power and request a Technician presence. - Switch the main switch on or connect the terminal box.
-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.
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.
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.

EC REP Obelis S.A, Boulevard *Général Wahis 53*, 1030 Brussels, Belgium,
Tel: +(32) 2 732-59-54 Fax: +(32) 2 732-60-03 E-mail: mail@obelis.net

NUM. REG. ANVISA: 10229030031

Manufacturer / Distribuitor:

GNATUS

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

EQUIPAMENTOS MÉDICO-ODONTOLÓGICOS LTDA.
Rod. Abrão Assed , Km 53+450m - Cx. Postal 782
CEP 14097-500 - Ribeirão Preto - S.P. - Brasil
Fone (16) 2102-5000 - Fax (16) 2102-5001
SAC: 0800-7015-054
C.N.P.J. 48.015.119/0001-64 - Insc. Est. 582.329.957.115
www.gnatus.com.br - gnatus@gnatus.com.br
SAC@gnatus.com.br