

Installation and Maintenance Manual

CE
0499



Syncrus GL Dental Chair

JULY - 2007

GNATUS 

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PRODUCT DESCRIPTION

Dental chair to accept patient during treatments odontological, with automatic movements, used to work with – position left and right-handed professionals, it starting by a motor DC.

Operated by foot control, which many function in the controls and it work with gradual dental light intensity, seat and backrest movements, return to initial position, and one programmable work position which are set by the dentist.

It is innovative and modern round-edged design. It curved of the backrest, which improves for patient with high comfort but produce also approach of the doctor.

Base with ergonomic design, made of steel, protected by debrun antiskid. It has 2 holes which allows the option of fastening the dental chair to the floor.

Steel-built structure with a resistant, smooth, high-shine, round-edged coating.

It High-shine smooth epoxy coating, polymerized in stove at 250°C, with phosphate process resistant to rust and cleaning products.

The headrest is Bi-articulated anatomic removable with height adjustment, featuring front, rear and longitudinal movements. Optional cervical rest, which improves high patient comfort.

Round edged fixed armrest, designed to ease the patient access and improve the dentist productivity, avoiding unnecessary movements and making cleaning and disinfections much easier.

Ample seamless upholstery, with lumbar rest, mounted on a rigid structure covered with a high-resistant polyurethane cover, this coverage use material plastic and seamless upholstery.

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

Products manufactured in agreement with RDC 59 - ANVISA - (Sanitary Surveillance National Agency) - with guarantees accomplishment hole to the sanitary legislation and according to BPF - (Good Manufacturing Procedures), requested by Mercosul Sanitary authorities.

In order to comply with directive 93/42/EEC for CE Mark purpose, it is defined that the working life of metallic structure this product is estimated in 10 years (life-cycle) provided that the end-user follows the requirements and instructions of this manual.

IMPORTANT:

- 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.

- This equipment can't be used in the presence of inflammable anesthetics or products that may cause explosion.

- After finish life-cycle of the equipment, this equipment is throw way, so it should to be destroye in appropriate area (according to the legislation of the country).

- To guarantee the safe functioning of your equipment, use only the assemble configurations (Dental Chair, Dental and Water Units and Dental Light) supplied by Gnatus authorized Dealers / Technical Assistance.

WARRANTY OF THE EQUIPMENT

This warranty covers product's manufacturing faults for the warranty period and standards specified on the Warranty Certificate. The Warranty Certificate is attached to product, and must be completed by the authorized technician when equipment is installed.

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

GENERAL DATA

Chair for left and right-handed dentists use

Chair was designed for easy installation for left and right handed users, without losing its features.

When the Gnatus authorized technician installs the equipment, tell him whether position you want, and he will make the necessary adjustments.

Current surge protection

Equipment is protected from current surge by 2 fuses of 5 amperes each and it also features internal current surge protection for equipment attached to chair.

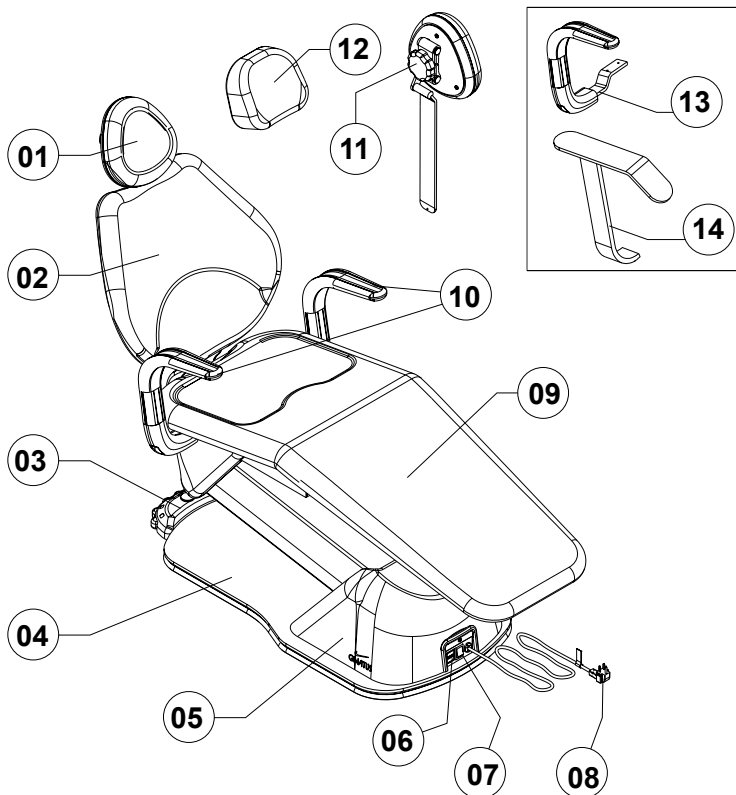
Maintenance of the equipment

The equipment doesn't need preventive maintenance, however when there is any problem that this manual can't solve, ask for an authorized Gnatus technician.

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.

GENERAL DATA - SYNCRUS GL DENTAL CHAIR



NOTE: This dental chair meets the requirements of stability defined by international safety standards which dispenses with fastening it to the floor.

If the customer opts to fasten the chair to the floor, it has 2 holes in the base for this purpose.

01 - Headrest

02 - Backrest

03 - Foot control

04 - Base

05 - Motor lid

06 - Fuse

07 - On/off switch

08 - Inlet cord

09 - Seat

10 - Fixed armrest

11 - Headrest knob



12 - Cervical rest (optional)

13 - Syncrus GLX swivel armrest (optional)

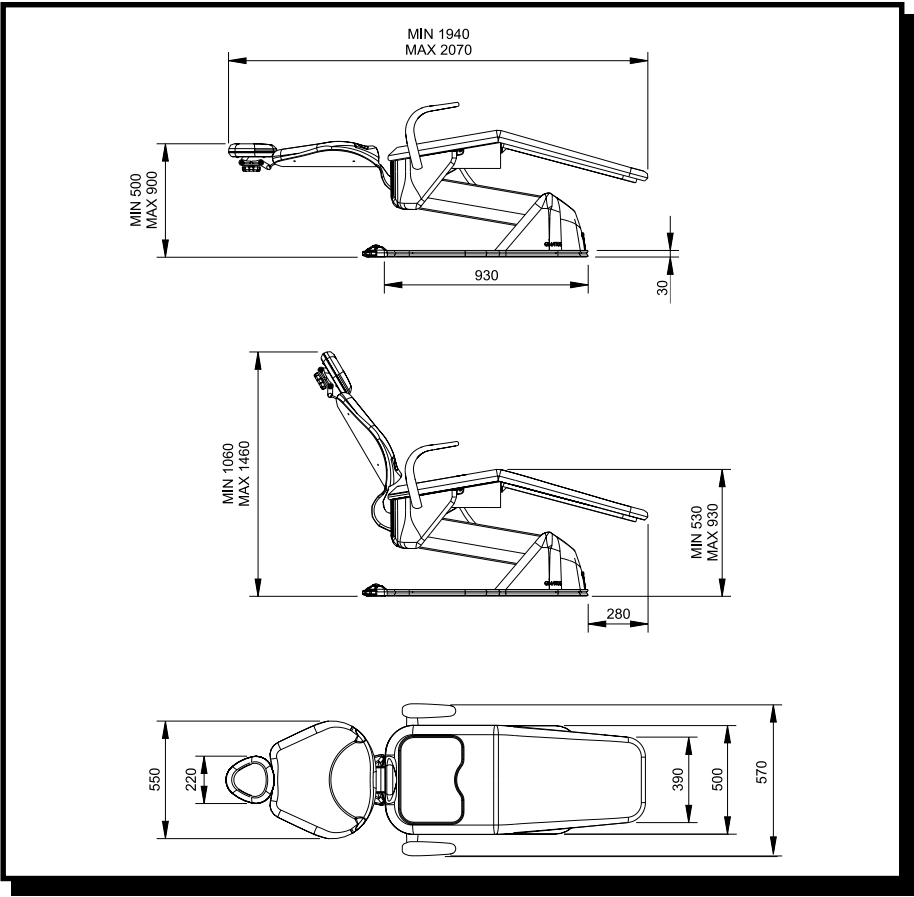
14 - Fixed armrest (optional)

DIMENSIONS (mm)

Content of accessible and non-accessible demarcations

FABRICANTE E RESPONSÁVEL PELA GARANTIA			MANUFACTURER AND RESPONSIBLE FOR THE WARRANTY			FABRICANTE Y RESPONSABLE POR LA GARANTIA		
GNATUS			GNATUS EQUIPAMENTOS MÉDICO-ODONTOLÓGICOS LTDA. Rod. Abrão Assed, Km 53+450m - Ribeirão Preto - SP - Brasil					
APARELHO	EQUIPMENT	APARATO	OPERAÇÃO	OPERATION	OPERACION	FUSÍVEL	FUSE	FUSIBLE
CADEIRA SYNCRUS 127/220V- 50/60Hz			Contínuo, com carga intermitente			5A - AÇÃO RETARDADA		
			T. Lig.: 1 min. - T. Desl.: 4min.			5A - TIME-LAG		
Nº REGISTRO ANVISA: 10229030022			Continuous, with intermittent load			5A - ACCIÓN RETARDADA		
			T. ON: 1 min. - T. OFF 4 min.			IPX0		
			Contínuo, con carga intermitente			EQUIPAMENTO DE CLASSE I		
			Tiempo Encendido: 1 min.			CLASS I EQUIPMENT		
			Tiempo Apagado: 4 min.			EQUIPAMIENTO DE CLASSE I		
Authorized representative with regards to the Directive 93/42 in the European Economic Area: Obelis S.A, Av. De Tervuren 34, bte 44, B-1040, Brussels, Belgium, Tel. 32 2.732.59.54, Fax 32 2.732.60.03 E-mail: mail@obelis.net								
			0499					

Dimensions (mm)



TECHNICAL SPECIFICATIONS

NOMINAL TENSION	FREQUENCY	CONSUMPTION	POWER
127V~	60Hz	1,3A	200VA
220V~	60Hz	0,7A	200VA
220V~	50Hz	0,8A	200VA

- **Product classification:**
According to norm NBR IEC 60601-1
- **Supply voltage**
127/220 V~ Seleccionable
- **Frequency**
50/60 Hz
- **Electric shock protection type:**
Class one equipment.
- **Degree of protection against electric shock:**
B type
- **Operation way**
Continuous with intermittent load: T-on 1min. - T-off 4min.
- **Water leak protection**
IPX0 – All the chair, excepting foot control
IPX1 – foot control
- **Power**
See table above
- **Protection fuses**
F1 e F25A - Time-lag
- **Rising capacity**
200 Kg
- **Delivery unit tray's maximum load capacity**
Syncrus line HS - 1 Kg
Sincrus lines LS and S - 2 Kg
- **Net Weight**
104 Kg
- **Gross Weight**
137,3 Kg
- **Electromagnetic compatibility**
This product was tested and approved in compliance with the following standards:
EN 60601-1 (1990); NBR IEC 601-1 (1994); IEC 61000-4-2 (1999);
Amendment 1 EN 60601-1 (1992); Emenda 1 NBR IEC 601- IEC 61000-4-3 (1998);
Amendment 2 EN 60601-1 (1995); (1994); IEC 61000-4-4 (1995);
Amendment 13 EN 60601-1 (1995); NBR IEC 601-1-2 (1997); IEC 61000-4-5 (1995);
EN 60601-1-2 (2001); CISPR 11, edição 3.1 (1999); IEC 61000-4-6 (1996);
IEC 61000-4-11 (1996);

Special providence or particular conditions for installation

- Check the electric net, it must be compatible with the specified one in the equipment.
- Verify the thread earth, it must be turned off correctly.
- Verify the general key of the equipment in the position "0".

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.

Transport and storage conditions

- The equipment must be transported and stored with the following observations:
- Carefully, should not suffer drop and neither receive impact.
 - With the side of the arrow upward.
 - With humidity protection, not to expose to rains, sparkling of water or humidified floor.
 - With temperatures from -12°C to 50°C.
 - With maximum piling up of 04 units for storage (DENTAL CHAIR).
 - With maximum piling up of 07 units for storage (UPHOLSTERY).

Standards

This equipment was designed, manufactured and tested in compliance with the following standards:
NBR-IEC série 601-1 Equipamento Eletromédico - Parte 1: Prescrições gerais para segurança;
NBR ISO 6875:1998 - Equipamento odontológico – Cadeira odontológica de paciente;
EN 980:2003 (Ed. 2) - Graphical symbols for use in the labelling of medical devices;
ISO 14971 - Medical devices - application of risk management medical devices;
ISO 9687: 1993 - Dental equipment - graphical symbols;
ISO 13485-2 - Quality systems - medical devices;
ISO 780 - Packaging - pictorial marking for handling goods.

TECHNICAL SPECIFICATIONS

Product symbols



It determines the work position "1".



It determines the initial position.



Lift seat.



Lower seat.



Lift backrest.



Lower backrest.



Dental light operation



Turned off position



B type equipment



Turned on position



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

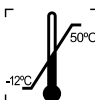


Warning - Consult the manual

Packing symbols



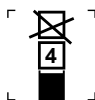
The packing must be stored and transported away from direct sun light exposure.



Temperature limit for the packing to be stored or transported.



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



Packing (dental chair) to be stored with a maximum stack of 4 units.



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



Packing (upholstery) to be stored with a maximum stack of 7 units.



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

ASSEMBLY

Getting ready for installation

First, assemble the chair:

Remove cardboard package and wooden braces;

Remove “unassembled” parts, together with its polyurethane protection, and keep them;

Remove the wooden locks that fix the chair;

Remove the chair from the pallet and place it where it will be installed;



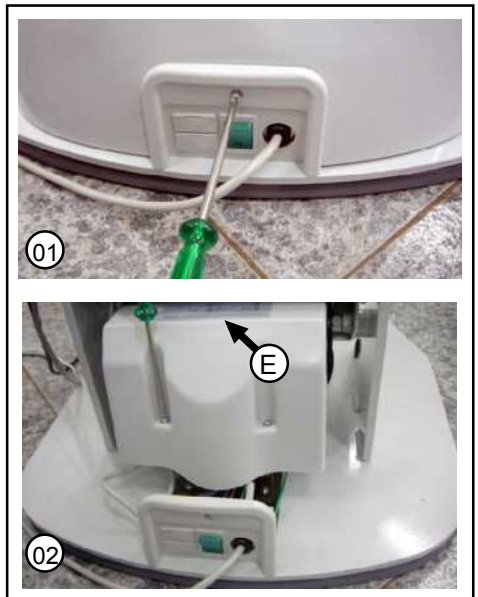
Checking voltage

NOTE: Check the specified voltage, in order to supply electricity to the chair main cord.

If the cord label were not in accordance with the specified voltage, the technician must change the voltage setting in the chair electronic board.

Remove the motor decorative cover (01).

Find the electronic board, removing the protective cover (02);



English

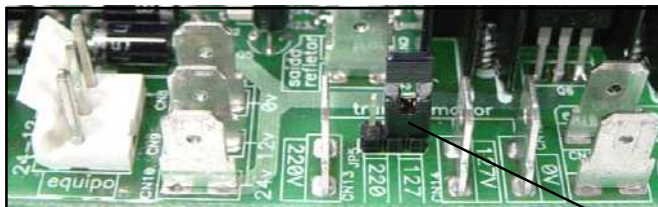
ASSEMBLY

Checking voltage

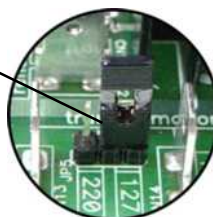
Place the Jumper (JP5 - selector) in accordance o local electricity network (127V~ or 220V~).

WARNING:

Don't change voltage while the device is connected.



Selector voltage
127 / 220V~



Getting ready for installation

Connect the chair main cord to electricity network, turn the main switch on (03) and lift the seat up to its maximum position, using the foot control;

Press the backrest lift button, until the central joint reaches an intermediate position, half-way between lift and lower position. Then turn the main switch off and disconnect the main cord from the network

Chair position for installation (04).



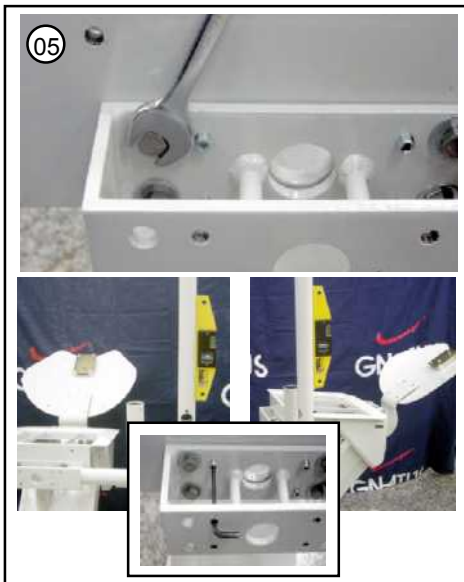
ASSEMBLY

Fixing the column support

(05) - Fix the column support to the chair using the 04 hex bolts, without tightening;

Adjust level in both directions, using the 04 ¼" Allen socket screws;

Tighten the fixing bolts using a 9/16" wrench.



Assembling backrest

(06) - Fix the backrest plate using 04 hex bolts, using a 7/16" wrench, applying the required torque.



Assembling seat structure

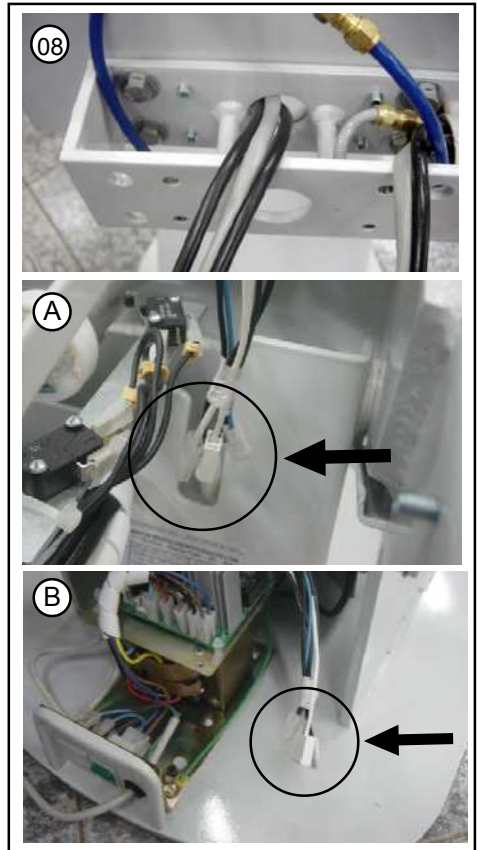
(07) - Fix the seat structure with two allen screws, using a 5/16" allen key, applying the required torque.



ASSEMBLY

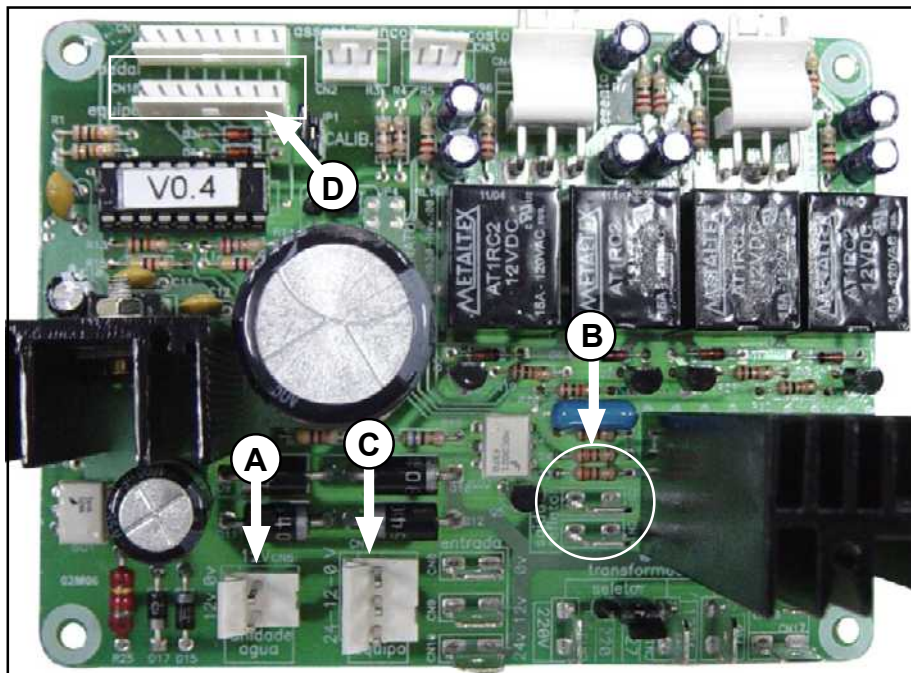
Placing the wires

(08) - Pass the equipment, water unit and spotlight wires through the chair upper part (A) up to the electronic board (B), and place the plastic conduit beside the backrest speed reducer.



ASSEMBLY

Connecting the wires bundles



Loosen the fixing bolts from the transformer plate using an 3/16", and push the assembly forward, in order to improve the access to electrical connections;

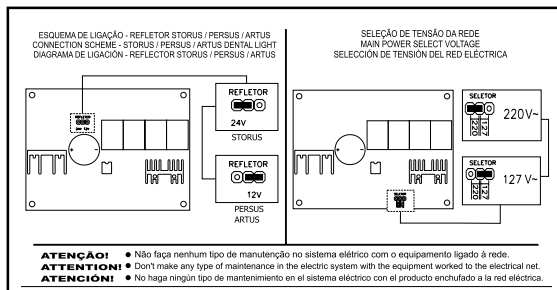
REMEMBER: All electrical connections shall be made with the chair disconnected from the electricity network.

Connect the electric wires from the Water Unit (A), Dental Light (B) and Delivery Unit (C) In case that is PAD Delivery Unit please connect the cable to the connector (D) to Dental Chair board, following the instructions found in it:

Remember that for the Storus spotlight the connections must be changed, as shown in the diagram (E) found in the electronic board cover, because the board is factory-set for **Persus L or Artus L** spotlight;

Tie the wires of the equipment, water unit and spotlight with plastic conduit, and then place the electronic board protective cover and the lower bearing decorative cover.;

Diagram (E)



ASSEMBLY

Arm assembly

(23) - Fix the fixed arm to the chair using the Allen socket screws;

The arm is for both left and right-handed, and its assembly depends on the dentist request. In case of left-handed assembly, the SYNCRUS decorative label shall be removed and placed in the opposite side.

If the optional arm is installed, the SYNCRUS decorative label must be removed and placed forward.

OPTIONAL ASSEMBLY

Assemble the concealable arm, lubricate the joints using grease and fix the armrest to the support. Then place the spring, the metallic support, the nylon washer and the parlock nut. Tighten using a 5/16" nutdriver.



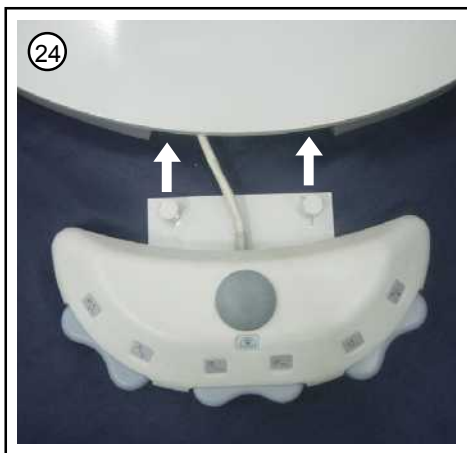
Foot control assembly

(24) - The foot control works fixed to chair base. In order to keep the foot control fixed to chair base, insert the fixing pins into the sockets under the base.

Check all chair movements using the foot control, such as programming and spotlight control;

Stick the instructions labels to the chair foot control.

Clen the equipment using a clean piece of cloth, water and neutral soap.



Configuration of the foot control

It exists possibility of inverting of the functions of the foot control, this resource is usually used for left-handed dentists.

To invert the functions of the foot control of command of the dental chair of right for left-hander to proceed in the following way: Disconnect the dental chair of the power supply.

Locate the jumper JP1 (**calibration Jumper**) and close the connection, uniting the two pins, with the button return zero pressed, switch on the general key of the dental chair, after having the first movement the system will recognize the inversion of the functions of the foot control, of right for left-hander.

ASSEMBLY

Upholstery assembly

Backrest:

(11) - Fix the backrest upholstery to backrest plate with four Allen socket screws, using a 1/8" hex key.

Place the backrest mechanism over the headrest upholstery and fix it using 4 Phillips screws. Then place it beside the backrest, in the headrest guide.

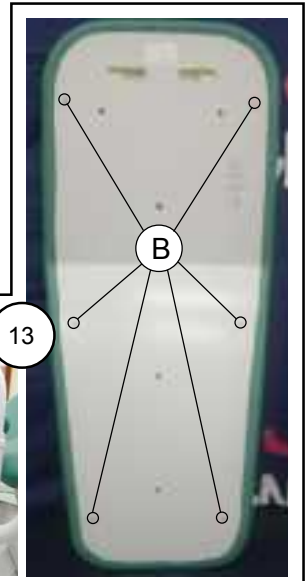
(12) Assemble the cervical support (if required).



Seat:

(13) - Fix the seat upholstery using six Phillips screws, as shown in (B).

At last, fix the feet protection.



OPERATION

For your safety, Syncrus GL Dental chair leaves the producer with the voltage selector jumping positioned at 220V~. Being so be aware that your electric net is compatible before connecting it. If it is 127V~ please invert the position.

Voltage alteration

Turn-off the general key of the dental chair. Remove the finishing cover of the motor. Localize the electronic board removing the protective cover. Position the Jumper (JP5 – selector) according to the voltage of local electric net (127V~ or 220V~)

ATTENTION:

Do not perform the voltage inversion with the dental set connected.

After that, turn-on the equipment.

Foot control operation

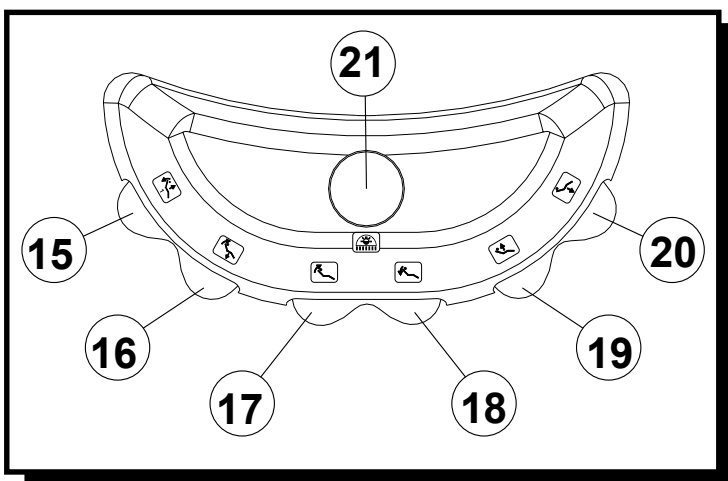
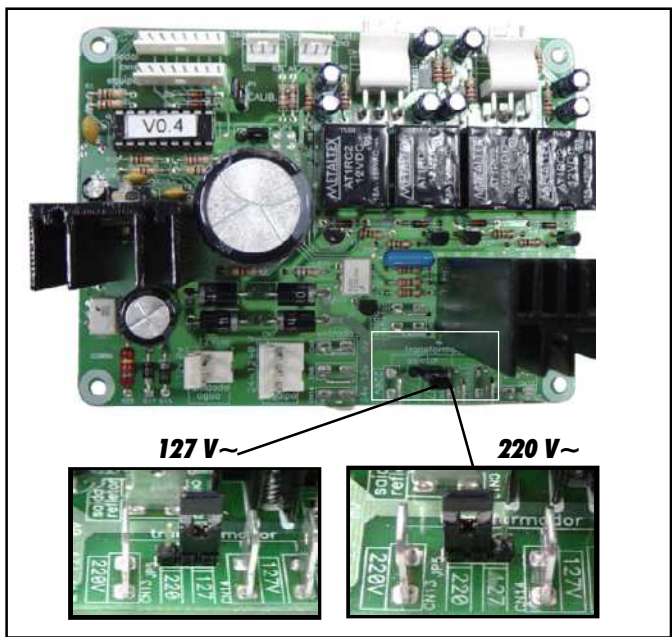
- 15 - Work position 1.
- 16 - Initial position.
- 17 - Lift backrest.
- 18 - Lower backrest.
- 19 - Lift seat.
- 20 - Lower seat.
- 21 - Activation of Dental Light

ATTENTION:

To turn-on the Dental Light, press the button (21). To modify the luminosity, keep it pressed. The luminosity will increase or diminish gradually, according to the specifications of the Dental Light (consult the Dental Light Owner Manual) To turn-off, activate the button (21) again.

After pressing the "Initial position" (16) key any other operation will trigger the "Stop".

The Syncrus chair features one programmable working position. Just move the chair to the desired position and press the button "1" (15) for 3 seconds.



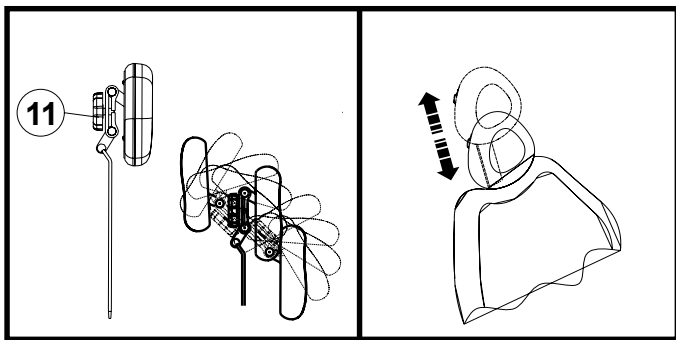
OPERATION

Headrest

To move the headrest, loose knob (11), turn it anticlockwise until desired position is reached and fix it turning it clockwise.

To adjust height just move it vertically.

Syncrus GL Dental Chair

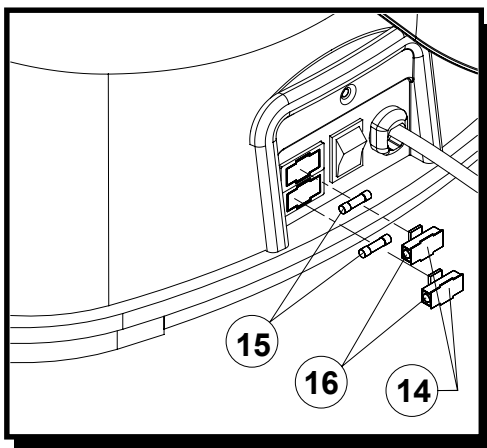


ADJUSTMENTS AND REPAIRS

Replacing the fuse

With the aid of a screw-driver, loosen the fuse holder cover (14) and then replace the Fuse (15) to the spare fuse (16).

Note: The spare fuse (16) comes with the equipment, after making the first change it is advisable that there always be a spare fuse (5A).



English

ADJUSTMENTS AND REPAIRS

Programming the chair (reset)

Disconnect the chair cord from electricity supply.

Find the JP1 jumper, and join the two pins.

Turn the chair on. The chair will start the adjustment automatically, setting the maximum and minimum height, moving the seat and the backrest. After the adjustment the seat will be positioned at its maximum height and the backrest at its minimum position;

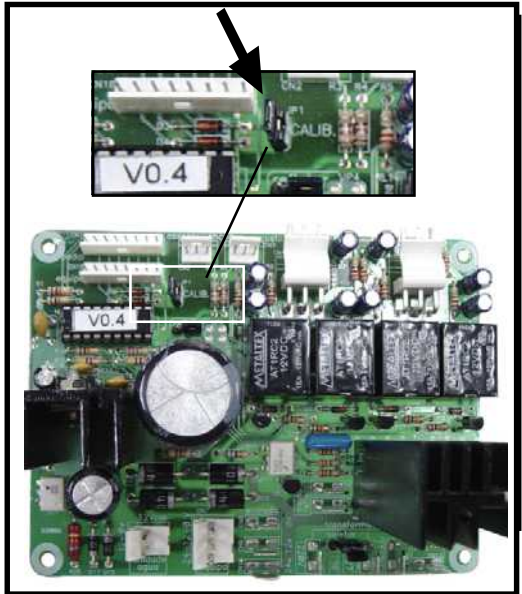
Turn the chair off.

Set the JP1 jumper back to its former position.

NOTE: After this procedure the adjustment will be stored in the electronic board memory, making unnecessary future adjustments. If during operation occurs a breakdown, and the chair loses its minimum and maximum adjustment, it will be automatically made by the chair.

When is needed the chair programming?

- Board replacement
- Speed reducer replacement
- Encoder replacement
- Switches replacement
- Chair abnormal operation



Speed reducer / Electronic board

- When the main switch is turned on, a short beep is heard (it can be disconnected if the Jumper number 1 were open).

- Jumper 2 open - Normal operation

- Jumper 2 closed - Reprogramming (memory reset).

It set the safety and working course ends (it recognizes the microswitches and the optical sensors).

NOTE: Use only for the maintenance, adjustment and replacement of the position sensors (any of them).

- With the main switch turned off, change the Jumper 2 position to closed. Turn the main switch on. The chair will automatically start some movements in order to detect the end of course switches (safety), and seat and backrest lowering and lifting movements.

- The electronic system configures the end of course position, setting the distance between the working and safety parameters.

- While reprogramming, when the lowering end of course is set (the lower microswitch is activated), a yellow LED is

turned on in the motors black box, and when the lifting safety switch is activated, a green LED is turned on in the above mentioned box.

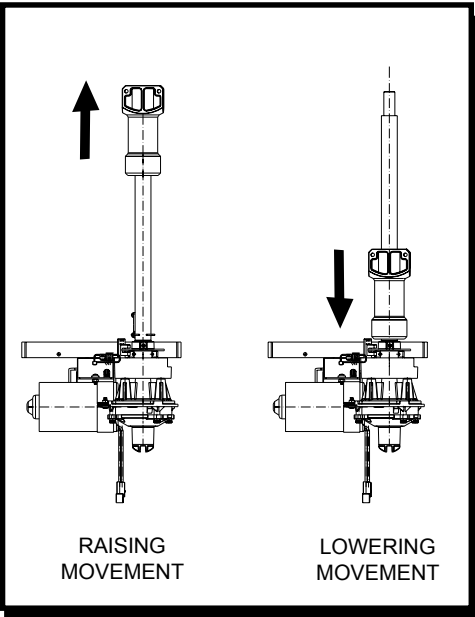
- Foot control function change: The Jumpers 03 and 04 feature 3 terminals each. If the terminals 01 and 02 were closed, the unit will operate in the RIGHT-HANDED mode, and if the terminals 02 and 03 were closed, it will operate in LEFT-HANDED mode. All changes made to jumper setting must be made with the main switch turned off.

COMPONENTS / TROUBLESHOOTING

Speed reducer

The speed reducer is formed by an electric motor connected to a speed reducing mechanism. They're used when low-speed and noiseless operation is required.

It has a worm gear and main gear mechanism, with parallel input and output shafts (output rpm = motor rpm / reduction rate). The SYNCRUS speed reducers operate with 24VDC. Shaft rotation is reversible, through the change of voltage polarity. The limit of the working course is electronically controlled by the chair's program. The position of a speed-reducer is controlled by its encoder, which counts each shaft turn and send this information to the control board. For each speed reducer there are 2 safety limit micro-switches, which are activated if memory where erased or when the chair is programmed.



Problem:	Probable Cause:	Solution:
- Backrest / seat moves only a minimum and the limit beep is heard.	- Encoder does not transmit information to control board.	- Check the encoder electric connections - Using compressed air, clean the encoder reader. - Replacer encoder.
- When the foot control is activated, the mechanism does not move, only the beep is heard (seat and backrest lowering or raising movement).	- Inadequate relays' input current contact in the electronic board.	- Check electric connection from transformer to electronic board.
- When the foot control is pressed, the seat/backrest lowering or raising movement, it only moves a short distance (only one turn).	- The encoders are not reading (motion sensors).	- Check the encoder's electric connection, in the electronic board.

COMPONENTS / TROUBLESHOOTING

Foot control

When the buttons are pressed, they send a signal to the electronic board which controls the chair movements and the lamp brightness.

Abnormal situation:

Feet control does not activate chair.

Causes:

- Broken or disconnected connection.

Solution:

- Replace or connect wires (check board connection)

Electronic board

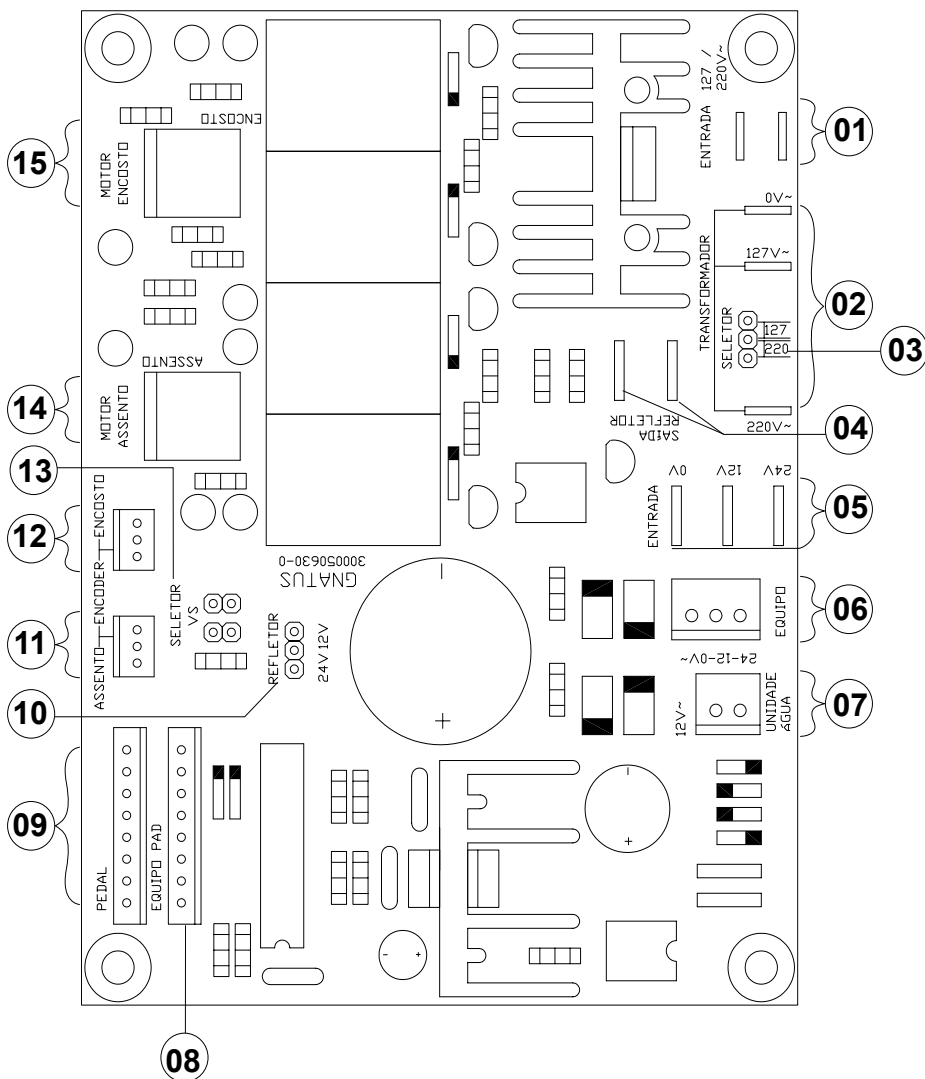
The electronic board controls the functions of the chair, lamp, water unit and equipment. It features a programmable micro-switch. Manual input voltage detection and change, from:

127V~ = 105 a 140V~.

220V~ = 180 a 242V~.

It also features a reprogramming function (memory reset) which sets the course safety limit (it detects the micro-switches) and operating (encoders), which are electronically set by the microprocessor. Foot control's functions can be changed to be operated in left-hand mode.

Electronic board



COMPONENTS / TROUBLESHOOTING

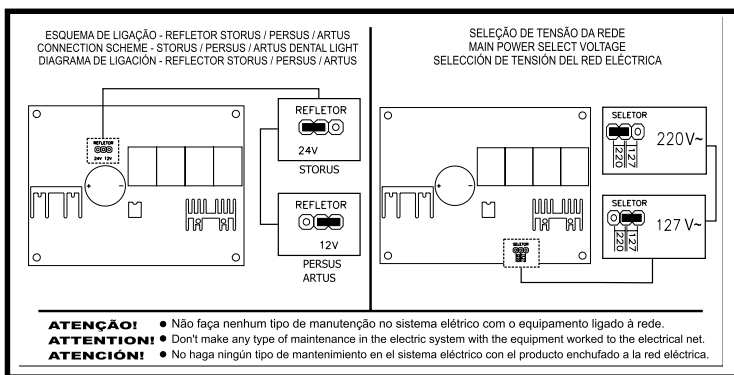
Electronic board

- 01 - Electronic board energy supply.

NOTE: Before reaching this point, electricity pass through the 5A fuses, then through the On/Off switch and finally the electronic board (01);

- 02 - Electricity connection for 0V 12V~ and 220 V~ transformers;

NOTE: The jumper identified as selector is for changing the chair voltage. It shall be set to the same voltage of the chair supply cord.



- 03 - Voltage selector jumper;

- 04 - Voltage source from electronic board to spotlight supply cord;

- 05 - Transformer voltage source and voltage inlet for electronic board with 0V 12V~ and 24V~.

NOTE: When connecting the energy outlet wires, consider the following color codes:

- Black - 0 V
- Yellow - 12V~
- Blue - 24V~

- 06 - Voltage source from electronic board to equipment with 0V, 12V~ e 24V~;

NOTE: Voltage between wires.

- Black - 0 V
- Blue - 12V~
- White - 24V~

NOTE: If it's only found a PP wire (white parallel wire) we only have 12V~.

- 07 - Voltage source to water unit (solenoid valves);

NOTE: Voltage between black and blue wires = 12V~.

- 08 - Connection for electrical PAD Delivery Unit;

NOTE: Electronic board Diagram, page 24.

- 09 - Connection for electrical foot control;

NOTE: Foot control Diagram, page 25.

COMPONENTS / TROUBLESHOOTING

- 10 - Voltage jumper selector for 12V~ e 24V~ spotlight (Note: Automatic detection).
Whe the chair adjustment is made with this jumper closed;
- 11 - Seat encoder connection (sensor);
- 12 - Backrest encoder connection (sensor);
- 13 - J P1 - Open - Normal operation;
J P1 - Closed - Reprogramming (memory reset - adjustment). It reprogrammes the end of course and safety (detects micro switches and optical sensors).
- 13 - Electronic board voltage source for seat linear actuator;
Note: Voltage between wires:
Green and White - Lifting + 24 V with load
Green and Black - Lowering + 24 V with load
- 13 - Electronic board voltage source for backrest linear actuator;
Note: Voltage between wires
Green and White - Lifting + 24 V with load
Green and Black - Lowering + 24 V with load

Problem:	Probable Cause:	Solution:
- Chair is not working.	- Plug disconnected from socket. - Power cut. - Main switch is off. - Burned fuse(s).	- Connect plug to socket. - Wait until power is back. - Switch the main switch on. - Replace fuse(s)

English

CLEANING

Cleaning the equipment

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

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

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

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

WARNING:

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

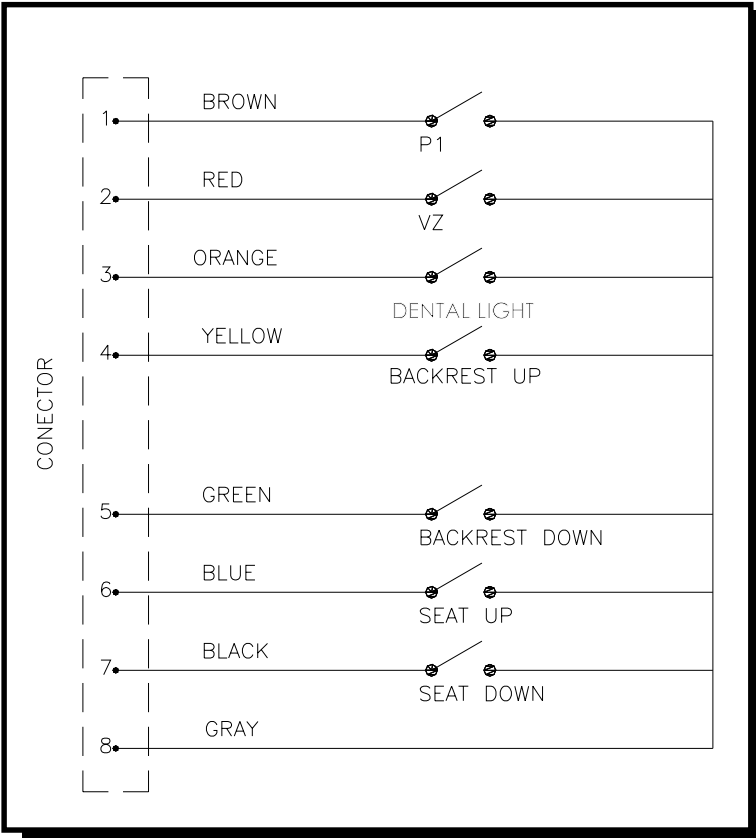


ELECTRICAL DIAGRAM SYNCRUS GL DENTAL CHAIR SYNCRUS GL IN THE BOX DENTAL CHAIR



DIAGRAMS

DIAGRAMA ELÉTRICO DO PEDAL



English

Este produto atende aos requisitos da diretiva 93/42/EEC (com marcação CE).
This equipment is in accordance with requirements of directive 93/42/EEC (with CE mark).
Este producto atende a los requisitos de la directiva 93/42/EEC (con la marca CE).

Authorized representative with regards to the Directive - 93/42 in the European Economic Area:
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NUM. REG. MS: 10229030022

Fabricante/ Distribuidor: Manufacturer/ Distributor

GNATUS 

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

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