

NuFONA[®] X3

Dental Operating Unit

Instruction for Use



Important

- The instructions contained in this booklet should be thoroughly read and understood before operating the unit and chair.
- After the installation has been completed, keep this manual in a safe place and refer to it for future maintenance.
- If you have any questions about this Manual or this product, please contact us.
- If manual becomes unreadable or is lost, please request a new manual by contacting your dealer.
- Installation should be conducted by authorized personnel only. Follow instructions on installation manual.

Beyes Dental Inc.

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General Information

1.1 Notes on this Operation Instructions

1.1.1 General information on the Operation Instructions

Please familiarize yourself with the unit by reading through these operation instructions before putting it into operation. It is essential that you comply with the specified warning and safety information.

Keep documents safe. Always keep the Operation Instructions handy in case you or another user require(s) information at a later point in time. The technical documentation is also part of the product.

In case you sell the treatment center, make sure that the Operation Instructions and all other technical documents are attached to it so that its new owner can familiarize himself with its functioning and the specified warning and safety information. The technical documents are a component of the product.

If you reach an impasse despite having thoroughly studied the Operation Instructions, please contact Beyes or your dealer.

1.1.2 Scope of these Operation Instructions

This document describes the full version of your system. It may therefore cover components that are not included in the system you purchased.

1.1.3 Other valid documents

Your treatment center can be equipped with additional components that are described in separate sets of operation instructions. The instructions as well as any warning and safety information contained therein also must be observed.

A separate manual of operation instructions exists for each of the following Beyes products:

- Treatment instruments and accessories
- Operating light
- Monitor

1.1.4 Warranty and liability

To safeguard your warranty claims, please complete the attached "Installation Report/Warranty Passport" together with the service engineer immediately during the installation of your unit.

Maintenance must be performed at scheduled intervals to ensure the operational and functional reliability of your product and to protect the safety and health of patients, users and other persons. For more information, please refer to "5.Care, Cleaning and Maintenance".

The owner is responsible for making sure that all maintenance activities are performed.

As manufacturer of medical electrical equipment, we can assume responsibility for the safety properties of the dental unit only if maintenance and repairs on the dental unit are performed either by Beyes or by personnel which we have expressly authorized and if components of the treatment center are replaced by original spare parts in case of failure.

In the event that the system owner fails to fulfill its obligation to perform maintenance activities, Beyes and its authorized dealers cannot assume any liability for any damage thus incurred.

2.1 Identification of danger levels

To prevent personal injury and material damage, please observe the warning and safety information provided in this document. Such information is highlighted as follows:



DANGER:

An imminent danger that could result in serious bodily injury or death.



WARNING:

A possibly dangerous situation that could result in serious bodily injury or death.



CAUTION:

A possibly dangerous situation that could result in slight bodily injury.

NOTICE

A potentially harmful situation which could lead to damage of the product or an object in its environment.

IMPORTANT:

Application information and other important information.

2.2 Information on the unit

The symbol “Refer to accompanying documents” is affixed on the rating plate.

The accompanying documents are attached to the unit.

“Accompanying documents” symbol:  or 



Connector pins or sockets bearing ESD warning labels must not be touched or interconnected without ESD protective measures. See also “2.17 Electrostatic discharge (ESD)” and “10. Electromagnetic Compatibility (EMC)”.

2.3 On-site installation

The on-site installation must have been performed according to Beyes requirements. The details are described in the document “Installation Instructions”.

2.4 Media quality

The air and water supplies must meet the requirements specified in the Installation Instructions. Use only drinking water and dry, oil-free and hygienically clean air for the water and air supplies of the treatment center. A water softener has to be used if hardness of water is higher than 12° dH (= 2.15 mmol/L). The resulting hardness should be adjusted to 8° dH (= 1.43 mmol/L).

To ensure compliance with the medical and national legal requirements for water from treatment centers, Beyes recommends equipping the treatment center with a disinfection system. As owner of the treatment center, you are responsible for the water quality and may have to take alternative measures to ensure its compliance if you operate the treatment center without a disinfection system.

Safety Instructions

Please contact your specialized dealer or your relevant dental association for the respective national requirements and measures.

Highly immunosuppressed patients should not come in contact with water from the treatment center. The use of sterile solutions is recommended.

2.5 Connection to the public drinking water system

Please always adhere to the national requirements with regard to connecting treatment centers to the public drinking water system.

2.5.1 Treatment center with standard water unit

Provided treatment center is not equipped with a disinfection system, additional measures may be required beyond the unit to protect the public drinking water system.

2.5.2 Treatment center with hygiene package in water unit

The treatment center is equipped with a free discharge in the water supply (isolating distance ≥ 20 mm). This isolates the public drinking water system from the water supplies following free discharge. The requirements of EN 1717 are thereby fulfilled.

2.6 Maintenance and repair

As manufacturer of the dental medical treatment center and in the interest of the operational safety of your system, we stress the importance of having maintenance and repair of this unit performed only by Beyes or by authorized personnel. Furthermore, failed components must always be replaced with original spare parts.

We suggest that you request a certificate showing the nature and extent of the work performed from those who carry out such work; it must contain any changes in rated parameters or working ranges (if applicable), as well as the date, the name of the company and a signature.

Despite the outstanding quality of your treatment center and regular care by the practice team, in the interest of operational safety, it is essential to have preventive maintenance performed at scheduled intervals.

In order to ensure the operational safety and reliability of your treatment center and to avoid damage due to natural wear, you as the system owner must have your system checked regularly by Beyes or by authorized personnel. Furthermore, safety checks must be performed. Please contact your dental dealer to obtain a maintenance offer.

For more information, please refer to "5. Care, Cleaning and Maintenance".

2.7 Trouble-free operation

Use of this unit is permissible only if it works properly without malfunctions. If troublefree operation cannot be ensured, the unit must be taken out of service, checked by authorized technicians for malfunctions and, if necessary, repaired.

2.8 Vacuum system

The suction removal of aluminum and other metal oxides from blasting devices via the amalgam separator and the automatic separator installed in the treatment center is prohibited! This would result in extreme wear and clogging of the vacuum and drain lines.

A separate vacuum system must be used in connection with metal oxide blasting devices. Treatment centers equipped with a central wet suction system are generally suitable for suction removal of the above material. However, make sure you observe the instructions provided by the manufacturer of your vacuum system.

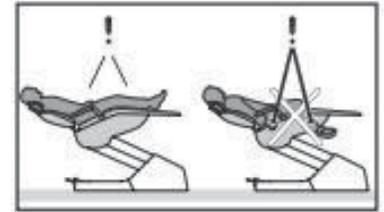
No restrictions apply when using salt blasting devices in connection with Beyes treatment centers. However, in such cases, make sure that the system is subsequently flushed with an adequate amount of water.

2.9 Patient chair

Please observe the maximum load capacity of 200 kg for the patient chair.

The weight distribution complies with the ISO 6875 standard. The safety test is performed with a multiple safety factor according to IEC 60601-1.

The maximum permissible weight of accessories mounted on the patient chair is 5 kg.



2.10 Mode of operation

Continuous operation with intermittent loading corresponding to the dental mode of working.

2.11 Intermittent operation

The motors of the treatment center and of the treatment instruments are designed for intermittent operation corresponding to the dental mode of treatment. Drive motors for patient chair and backrest: max.10% duty cycle, cycle duration 1200s.

2.12 Care and cleaning agents

Unsuitable care and cleaning agents may corrode the surface of the unit. Therefore, use only care and cleaning agents which have been approved by Beyes. For more information, please refer to "5.1.2 Care and cleaning agents".

2.13 Modifications and extensions of the system

Modifications to this system which might affect the safety of the system owner, patients or other persons are prohibited by law. For reasons of product safety, this product may be operated only with original Beyes accessories or third-party accessories expressly approved by Beyes. The user assumes the risk of using non-approved accessories.

2.14 Operation environment Temperature

5 ~ 40°C Relative humidity: 10% ~ 80%

Air pressure: 700 hPa ~ 1060 hPa Maximum height above sea level: 3000 m

2.15 Transportation and storage environment

Temperature: -40 ~ +70°C Relative humidity: 10% ~ 80%

Safety Instructions

2.16 Electromagnetic compatibility (EMC)

This unit complies with the requirements of IEC 60601-1-2.

Medical electrical equipment is subject to special precautionary measures regarding EMC. It must be installed and operated in compliance with the specifications provided in the chapter "10. Electromagnetic Compatibility" for the respective treatment center.

Portable and mobile RF communications equipment may interfere with medical electrical equipment. Therefore, the use of mobile wireless phones in practice or hospital environments must be prohibited.

With video systems

Electromagnetic disturbances in the environment of the treatment center may result in reduced image quality. In such cases, it is advisable to repeat the exposure before saving the image.

When a line drop occurs, the image data stored in the video camera may be lost. Deposit the picture and repeat the exposure. Image artifacts may possibly occur as a result of radio-frequency interference caused by the transmitters of e.g. radio services or radio amateurs.

2.17 Electrostatic discharge (ESD)

Protective measures

Electrostatic discharge from people can damage electronic components when the components are touched. Damaged components usually have to be replaced. Repairs must be performed by qualified personnel.

Measures to protect against ESD include:

- Procedures to avoid electrostatic charging via
 - Air conditioning
 - Air humidification
 - Conductive floor coverings
 - Non-synthetic clothing
- Discharging the electrostatic charges from your own body through contact with
 - The metallic device casing
 - A larger metallic object
 - Another grounded protective ground wire
- Wearing an antistatic band that creates a connection between the body and a protective ground wire.



Areas at risk are indicated on the unit with the ESD warning label:

We recommend that all persons working with this system are made aware of the significance of the ESD warning label. A training course should also be held to inform users about the physics of electrostatic charges.

2.18 Dismantling/installation

When dismantling and reinstalling the treatment center, proceed according to the Installation Instructions for new installation in order to guarantee its proper functioning and stability.

3.1 Standards/approvals

IEC 60601-1	Electrical and mechanical safety
IEC 60601-1-2	Electromagnetic compatibility
IEC 60601-1-6	Usability
IEC 80601-2-60	Particular electrical and mechanical safety
ISO 9168	Hose connectors for air driven dental handpieces
ISO 7494-1	Dental treatment devices
ISO 7494-2	Dental treatment units, water and air supply
ISO 9680	Operating light

3.1.1 Product introduction

For NuFONA-X3 is specially designed to meet the needs of dental professionals. Hygienic treatment is emphasized in the unit design and components are designed for ease of cleaning and maintenance. Concept of the unit is to optimize the work flow for dental practice, as well as provide a very clean and healthy treatment environment for both dentists and patients.

3.1.2 Application range

This dental unit is suitable for diagnosis, treatment and operations in the dental department of clinics and in dental practices.

3.1.3 Intended use

This dental treatment center is intended for diagnosis, therapy and dental treatment of humans by properly trained and qualified personnel.

This device is not intended for operation in areas subject to explosion hazards.

Intended use also includes compliance with this Operation Instructions and the relevant maintenance instructions.

3.1.4 Product function & structure

The dental unit consists of patient chair, water unit, dentist element, dental operating light, assistant element and instruments.

3.1.5 Technical data

Operating light maximum illuminance	≥25000 lux
Load capacity of patient's chair	Max. 200kg
Electrical patient chair maximum carrying capacity	1637 N (= 165 kg)
The highest position of the patient chair from the ground	780 mm
The lowest position of the patient chair from the ground	480 mm
Backrest movement range	115°-180°
Headrest extension range	0-200 mm
Dimensions (length x width x height)	2100 mm×2500 mm×1900 mm
Input power supply	100/115/230 V~, 60 Hz/50Hz
Rated current	3 A at 230 V, 6 A at 115 V, 110 V Max. 6 A for external devices
Air supply pressure	0.69-0.80 MPa / 6.0-8.0 bar
Water supply pressure	0.20-0.40 MPa / 2.0-4.0 bar

Unit Description

Power cable requirement	Type: 227 IEC (RVV) 3 x 1.5 mm ² , according to the standard IEC 60227
Electrical classification	Class I equipment
Device class in accordance	With REGULATION (EU) 2017/745: Class IIa equipment
Degree of protection against electrical shock	Type B applied part for ordinary equipment Type BF applied part for intra oral camera
Degree of protection against ingress water	Ordinary equipment (not protected)
Warranty	3 years

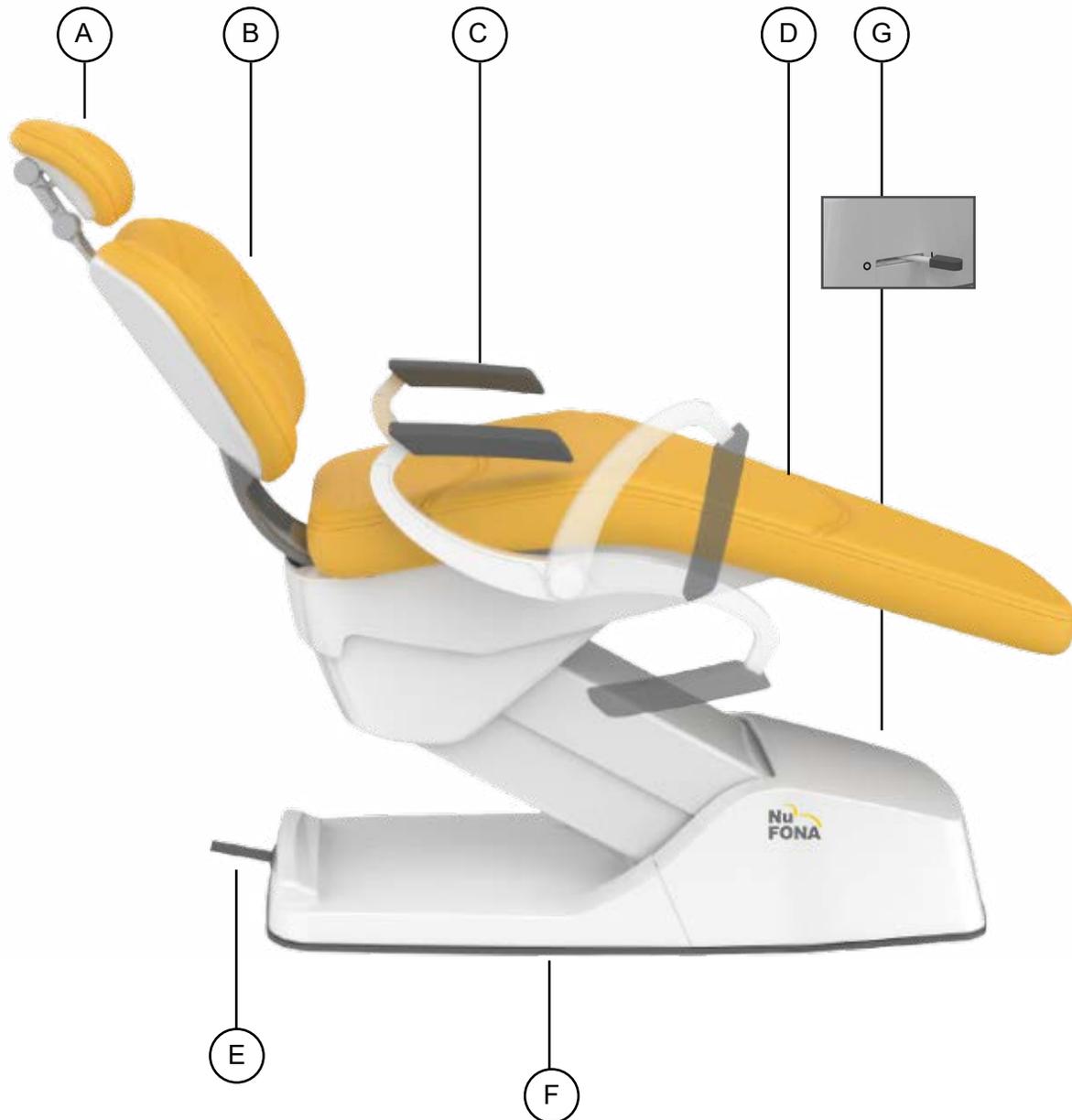
3.2 System overview

A	Assistant element	D	Patient chair
B	Dental operating light	E	Water unit
C	Foot control	F	Dentist element



3.3 Patient chair

The patient chair features a variety of motor adjustment options to optimally adapt the patient's position to the given treatment.



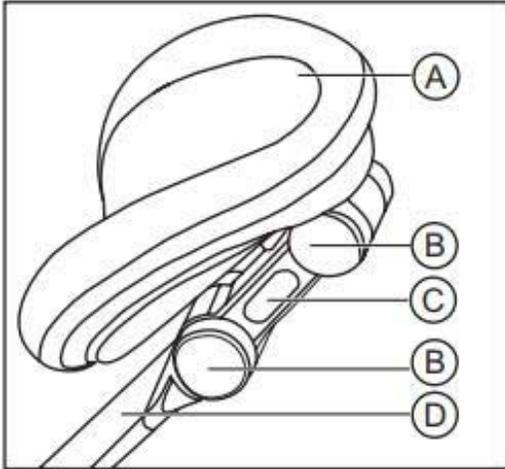
A	Double articulated headrest	E	4-way foot switch
B	Backrest	F	Chair base
C	Armrest	G	General switch
D	Seat		

Unit Description

3.4 Double articulated headrest

The double-articulated headrest is equipped with two rotary joints. They allow the adjustment of head inclination for maxillary/mandibular treatments to a great extent.

The headrest extension can be pulled in or out to suit the height of the patient.

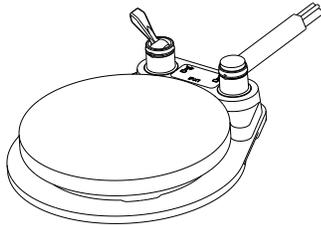


A	Head pad
B	Rotary joints
C	Unlock button (one sided)
D	Support bar for adjustment to patient height

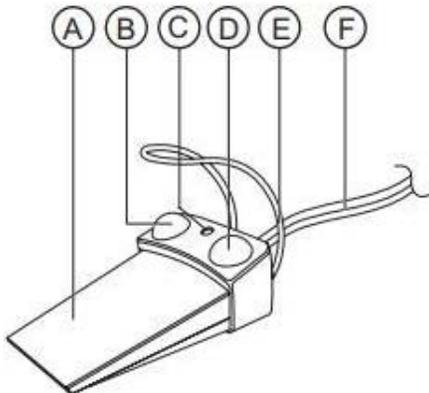
For details, please refer to “4.4.4 Adjusting the double-articulated headrest”.

3.5 Foot control

- Disc foot control



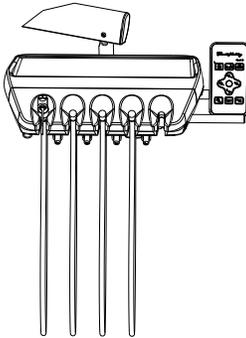
- The instruments can be operated by using a proportional foot control.



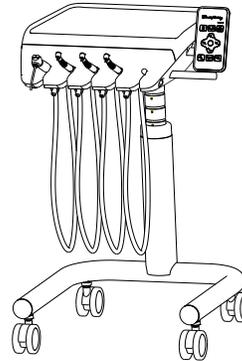
A	Foot pedal as speed control
B	Left button (spray)
C	Coolant indicator
D	Right button (chip blower)
E	Positioning bar
F	Connecting cable

3.6 Dental element

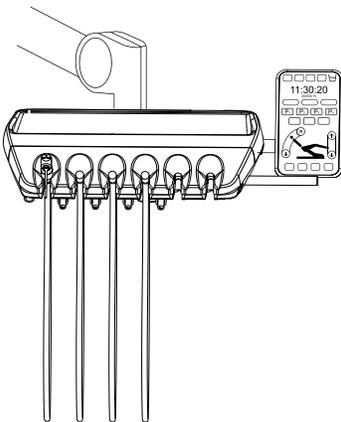
Instrument tray (traditional) with control panel



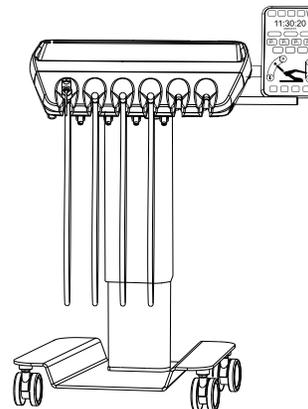
Instrument tray (traditional cart type) with control panel



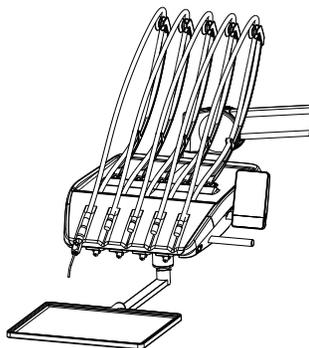
Instrument tray (traditional) with luxury touch display control panel



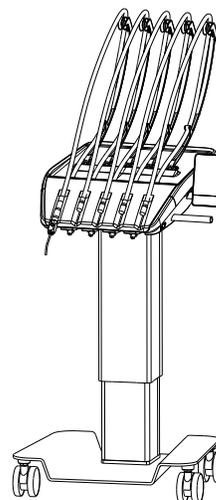
Instrument tray (traditional cart type) with luxury touch display control panel



Instrument tray (continental)



Instrument tray (continental cart type)

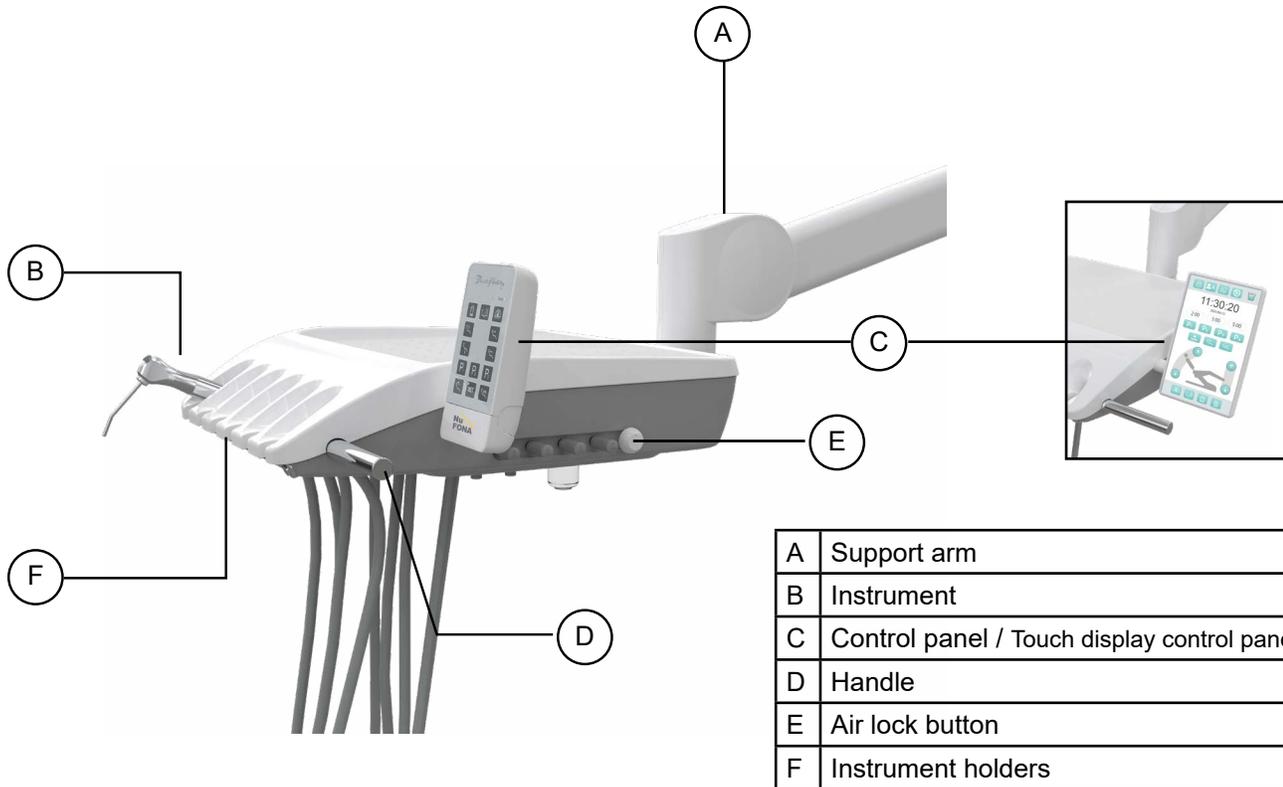


Unit Description

The dentist element is attached to the water unit with a support arm. The dentist element head is held in place by an air locking brake. To release the brake push the button beside the handle.

Hanging hose dentist element

The instruments of the hanging hose dentist element are positioned upright in the instrument holders. The instrument hoses hang freely under the dentist element.



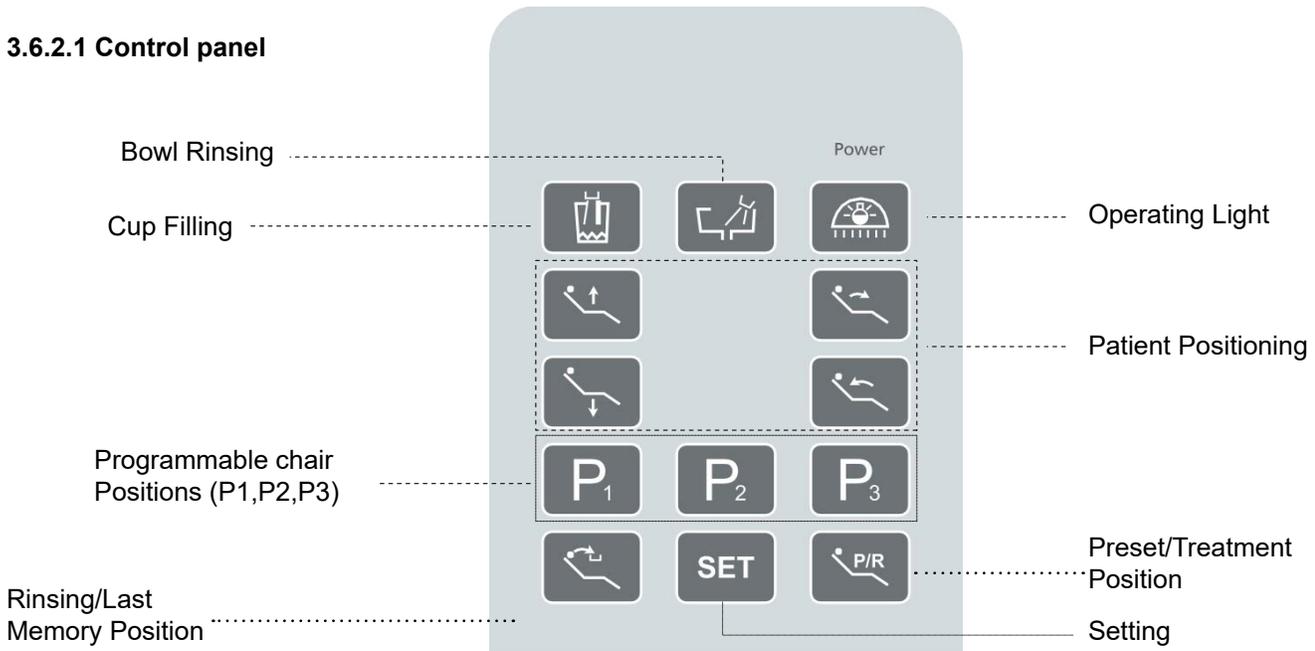
3.6.1 Instrument positions

The following instrument positions are available:

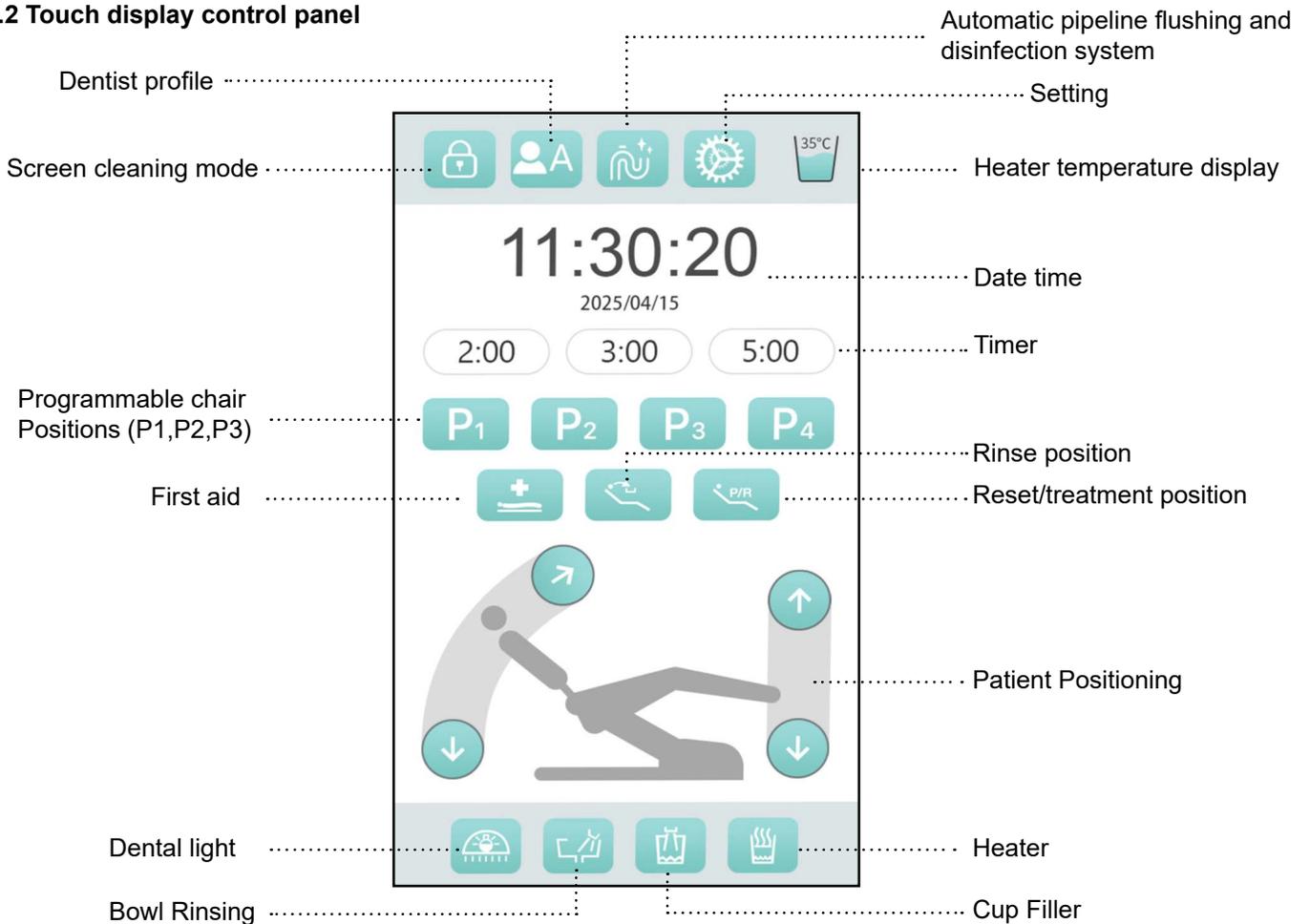
Holder 1	Holder 2	Holder 3	Holder 4	Holder 5	Holder 6 (for X3 master)
3-way syringe	Air-driven handpiece	Air-driven handpiece	Air-driven handpiece	Electric motor	Curing light
	Electric Motor	Electric Motor	Electric motor	Scaler (only if holder 5 is unused)	
			Scaler (only if holder 5 is unused)		

3.6.2 Control panel

3.6.2.1 Control panel



3.6.2.2 Touch display control panel



Unit Description

3.7 Assistant element

The main function of the assistant element is to provide strong and weak suction instruments for the assistant or the doctor.

4-claw version (Equipped with the same control panel as the dental element):

3.7.1 Instrument positions

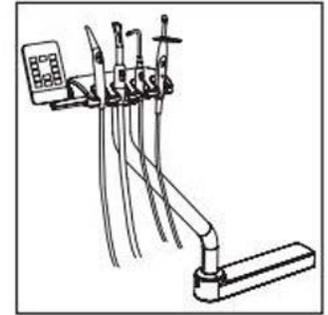
The following instrument positions are available:

4-claw version:

Holder 1	Holder 2	Holder 3	Holder 4 *
3-way syringe	Strong suction	Weak suction	3-way syringe
Curing light			Curing light

*Only one syringe, and curing light in assistant element is possible.

Place either in holder 1 or holder 4.



3.8 Water unit

The water unit always contains a suction filter, cuspidor bowl and fresh water bottle with water supply switch.

When using a dental unit without disinfection system, attention should be paid to the prompt letter in chapter “2.4 Media Quality”



WARNING:

Microorganisms can multiply in the water.
These microorganisms could increase the risk of damage to one's health.

The following features can be optionally chosen: Venturi suction system, wet suction system.



A	Mount for support arm of operating light and dentist element
B	Mount for support arm of monitor
C	Cup filler
D	Bowl rinsing
E	Bowl rinsing
F	Suction hose connection (with filter) for assistant element
G	Fresh water bottle and water supply switch
H	Service door

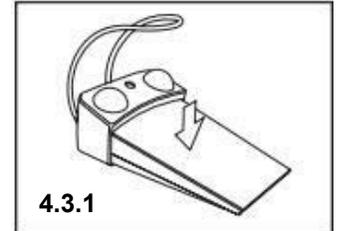
4.1 Initial startup

Please open all the water medical devices, dental cleaners, strong and weak suction and two three-way syringes to flush the water circuit for 20-120 seconds. Open the “Cup filling” and “Bowl rinsing” for at least one minute.



4.2 Turning on/off the treatment center

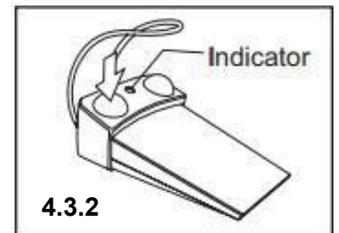
Use the general switch to turn on the installed center, as well as water and air supply. Following turn-on, an automatic self-test is performed. After a long sound of “beep”, the treatment center powers up and establishes operational readiness.



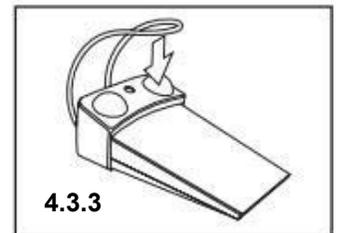
4.3 Foot control

4.3.1. After removing an instrument from its holder, step on the foot control pedal to activate the instrument.

4.3.2. Spray can be activated by stepping on the left button. A green dot beside the button indicates spray is switched on.



4.3.3. While the instrument is removed, the chip blower can be activated by stepping on the right button.



4.4 Patient Chair

4.4.1 Safety Notices



CAUTION

The free space under the patient couch and up to the water unit can be decreased due to chair movements.

Parts of the patient's or user's body may be pinched or crushed.

- Do not allow any limbs to be caught between the chair upholstery and the chair base. Please make sure that the patient's arms and legs rest on the upholstery of the chair.
- Do not place any objects on the base of the chair.



CAUTION

The maximum load capacity of the patient chair is 200kg acc. to ISO 6875 (tested with multiple safety acc. to IEC 60601-1).

If the maximum load capacity is exceeded, a risk of damage to the treatment chair and injury of the patient exists.

- Never allow anyone who weighs more than 200kg to sit on the patient chair.
- The maximum additional weight of accessories mounted on the patient chair is 5 kg.



CAUTION

Do not allow objects to protrude into the movement range of the chair.

There is a risk of crushing the patient and damaging the objects.

- Make sure that no objects such as e.g. windows, drawers or other devices protrude into the movement range of the treatment center.

Operation Instruction

IMPORTANT

Chair interlock

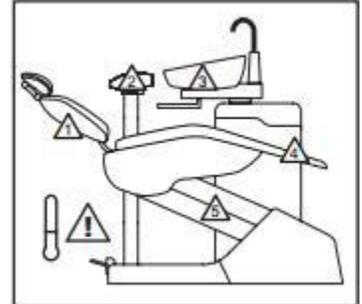
As long as a treatment instrument is activated, all functions for moving the patient chair are disabled for safety reasons.

If chair movement is permanently blocked, please contact your service engineer.

4.4.2 Safety stop

The treatment center is equipped with various safety stops to prevent crushing and damages. The cutoff trigger points are shown in the following illustration:

1	Backrest
2	Cuspidor bowl
3	Footrest
	Lifting or backrest motor overheats



The following occurs when one or more safety switches are triggered:

1. All chair movements stop immediately with a sound of "beep".
2. A correction movement in the opposite direction is executed for approx. two seconds when the safety switch of backrest, footrest or lifting mechanism is triggered.

As long as a safety switch is triggered, the operation of the treatment center is restricted.

If a safety switch is permanently blocked, please contact your service engineer.

4.4.3 Armrests

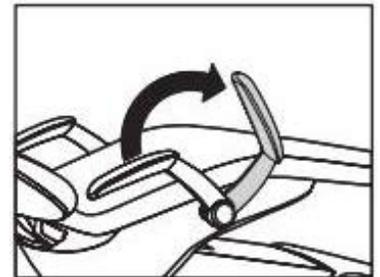
Armrests are available for the patient chair.

Swinging the right armrest forward makes it easier to access the chair.



CAUTION

Always swivel the armrest completely to one of the two end stops. To prevent hazards, do not leave the armrest in the center position.



4.4.4 Adjusting the double-articulated headrest

The double-articulated headrest is equipped with two rotary joints. They facilitate manual adjustment of head inclination for maxillary/mandibular treatments. The headrest extension can be manually pulled in or out to suit the height of the patient.



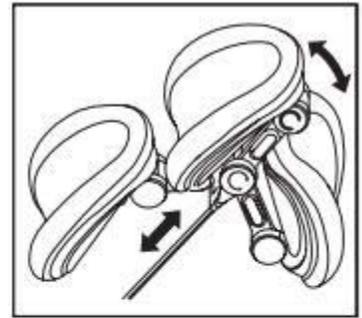
CAUTION

Releasing the lock on the double-articulated headrest neutralizes the holding force of both rotary joints.

If the headrest is not supported when the lock is released, the patient's head might suddenly fall backward.

- Always support the headrest and, in doing so, the patient's head prior to releasing the lock on the double articulated headrest!
- Before releasing the headrest, always ensure that both joints are securely locked.

1. Place one hand under the headrest to support the patient's head.
2. Use the other hand to press the release button.
 - Both rotary joints are now fully flexible.
3. Adjust the headrest to the desired treatment position. Then let go off the release button.
 - Both rotary joints lock into place. Ensure that the joints are securely positioned! The headrest is secure again.



4.4.5 Moving the patient chair via chair programs

The chair programs can be selected via the control keys of the dentist element and the assistant element. You can individually re-program the factory preset chair programs to suit your own requirements, see "4.4.7 Creating chair and positioning programs".

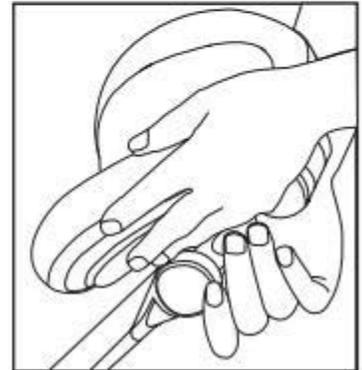


CAUTION

The dentist element, the assistant element and the cuspidor bowl could be positioned within the movement range of the patient chair.

During an automatic program run, such as approaching the entry/exit or mouth rinsing positions, the patient may collide with the dentist element, its support arm, the assistant element, or the cuspidor bowl. The patient is at risk of being crushed.

- Before moving the patient chair, position the dentist element, the assistant element, the dental light and the cuspidor bowl in such a way that a collision with the patient or the patient chair is impossible.



4.4.5.1 Moving the patient chair to the entry/exit position

The following functions are triggered for simple patient entry and exit:

1. The patient chair moves to a low position.
2. The backrest moves to an upright position.



CAUTION

The patient's feet may get caught in the instrument hoses of the dentist element when entering or leaving the patient chair.

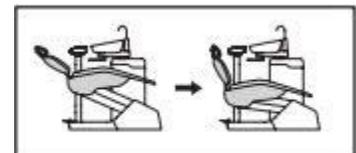
The patient may trip or fall.

- Turn the dentist element outward before the patient enters or leaves.

Via the dentist element or assistant element:

Press the  key.

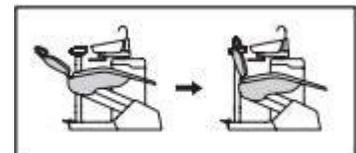
Press the  key again, the patient moves to the previous treating position.



4.4.5.2 Moving the patient chair to the mouth rinsing position

The following functions are triggered in the mouth rinsing position:

The chair moves the patient to an upright position.



Operation Instruction

IMPORTANT

In order to increase the patient's comfort and reduce the risk of cross-contamination during mouth rinsing, it is recommended to integrate following three steps into the workflow:

- Move the patient chair to the mouth rinsing position by pressing the mouth rinsing key on the control panel.
- Place the assistant element head away from the cuspidor bowl before mouth rinsing starts.
- Swivel the cuspidor bowl towards the patient.

Via the dentist element or assistant element:

Press the  key.

In the operation of the mouth rinsing position will also trigger “Bowl rinsing”.



4.4.5.3 Using the last position memory function

The last chair position is stored before the patient chair moves to the mouth rinsing position . When mouth rinsing position key  is pressed again, the chair returns to the previous treatment position.

4.4.5.4 Moving position by using the programmable function

Press the , or  or  key via the control panel at the dental element or assistant element side.

4.4.6 Moving the chair manually



WARNING

The dentist element, the assistant element and the cuspidor bowl could be positioned within the movement range of the patient chair.

When the patient chair is moved, the patient may collide with the dentist element, its support arm, the assistant element or the cuspidor bowl. The patient is at risk of being crushed.

- Before moving the patient chair, position the dentist element, the assistant element and the cuspidor bowl in such a way that a collision with the patient or the patient chair is impossible.

4.4.6.1 Tilting the patient couch

Compensated motion of the seat and backrest without any compression or stretching effects for the patient.

Via control panel on the dentist element or assistant element:

Press the   keys until backrest reaches the desired position.

Via the 4-way foot switch:

Slide the 4-way foot switch to the left or right.

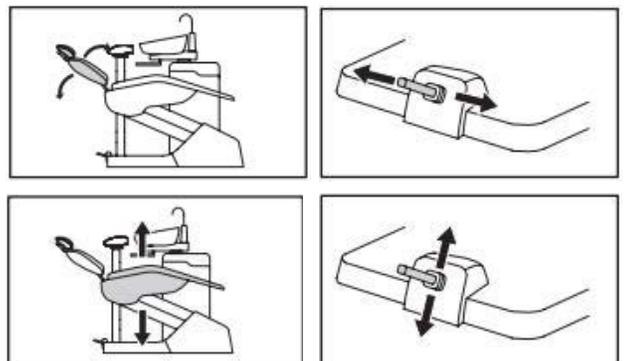
4.4.6.2 Adjusting the chair height

Via control panel on the dentist element or assistant element:

Press the   keys until chair reaches wanted position.

Via the 4-way foot switch:

Slide the 4-way foot switch to the upward or downward position.



4.4.7 Creating chair and positioning programs

The following three chair programs are preset in the factory:



Programs **P₁**, **P₂** and **P₃** can be programmed via the control panel at the dentist element or assistant element side.

1. Move the patient chair to the required treatment position; see "4.4.6 Moving the chair manually".
2. Press **SET** key then **P₁** key and press **SET** key again. Your settings are now stored under the **P₁** key. **P₂** and **P₃** can be programmed the same way.

4.5 Dental element

4.5.1 Maximum load capacity of hanging hose dentist element

The maximum load of the X3 hanging hose dentist element is 2.5 kg (5.5 lbs). A sterilization silicone mat can be placed on top of the dentist element.

4.5.2 Positioning the dentist element

The dentist element is attached to the water unit with a flexible support arm. The support arm is held in place by a pneumatic locking brake. A press button for operating the brake is located beside the handle.

1. Grab the handle and press and hold the brake button. The brake is released.
2. Move the dentist element to the required position and release the brake button. The dentist element is now positioned securely.



WARNING

The dentist element, assistant element and cuspidor could be positioned within the movement range of the patient chair.

There is a risk that the patient may collide with or squeeze the dental element and its support arm, assistant element or cuspidor when running the program, such as when using the entry/exit position and rinsing position.

- Before moving the patient chair, please move the dentist element, assistant element, operating light and cuspidor to a position where there will be no collision with the patient.

4.5.3 Status indicator and keys on the dentist element control panel

4.5.3.1 Power status indicator

When the treatment center is switched on with the general switch the green status LED indicates that the treatment center is ready for operation.

4.5.3.2 Operating light

Turn on / off the operating light.

Briefly press the  key, to switch the operating light on/off.

The brightness of the operating light is also set via key, see "4.8.Dental light".

Operation Instruction

4.5.3.3 Cup filling

Filling the cup

1. Place the cup under the cup filler.
2. Press the  key.
3. Pressing the  key again stops the filling function immediately.

Set the cup filling time

1. Press the  key.
2. Press and hold  the key for the desired fill time, then release to stop.
3. Press the  key again to save the cup filling time setting under the key.

IMPORTANT

- Cup filling function is connected to a water heater.
- The maximum water temperature is 35-38°C.
- After switching on the treatment center the initial heating period is 3 min.
- The interval between two cups of water should not be less than 2 min.
- The recommended cup volume is 80 ml.

4.5.3.4 Bowl rinsing

The bowl rinsing function can be used for rough cleaning of the cuspidor during treatment. The factory setting of the rinsing time is 60 sec.

Switching the bowl rinsing on/off:

1. Press the  key
2. Press the  key again stops the bowl rinsing immediately.

Setting the rinsing time:

1. Press the  key.
2. Press the  key to stops the bowl rinsing immediately.
 - a) once for 5sec bowl rinsing time (confirmed with "beep" sound)
 - b) twice for 10sec bowl rinsing time (confirmed with "beep beep" sound)
 - c) three times for 1min bowl rinsing time (confirmed with "beep beep beep" sound)
 - d) four times for 2min bowl rinsing time (confirmed with "beep beep beep beep" sound)
3. Press the  key again.

4.5.3.5 Moving the chair manually

Please refer to chapter “4.4.6 Moving the chair manually”.



4.5.3.6 Activating chair programs

Please refer to chapter see “4.4.7 Creating chair and positioning programs”.



4.5.3.7 Entry/exit position

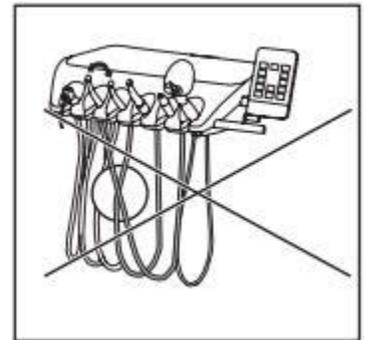
Please refer to chapter “4.4.5.1 Moving the patient chair to the entry/exit position”



4.5.4 Placing the instruments in their holders

Hanging hose dentist element

- Remove the required instrument from its holder. The instrument can be activated via foot control.
- Store the instrument in the holder it came from.
- Always make sure that all instruments are placed in the correct instrument holders. If any instruments are placed in the wrong holders, the instrument programs will not work normal when they are removed from the holders.



Instrument hoses

NOTICE

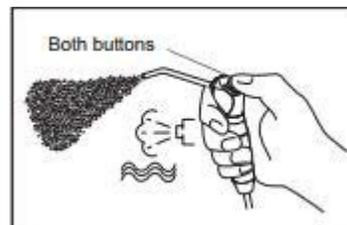
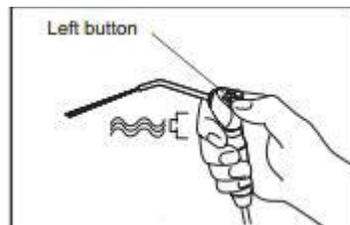
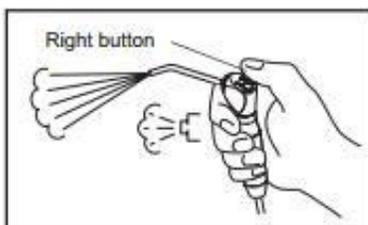
The instrument hoses contain electrical cables and media pipes.

Over-tensioning or pinching the hoses may cause the electrical cables to break and the media pipes to leak.

- Ensure that you do not pull or bend the instrument hoses too much.

4.5.5 Operating the syringe(s)

1. Press the right button: Air flows out of the instrument tip.
2. Press the left button: Water flows out of the instrument tip.
3. Press both buttons simultaneously: Spray flows out of the instrument tip.



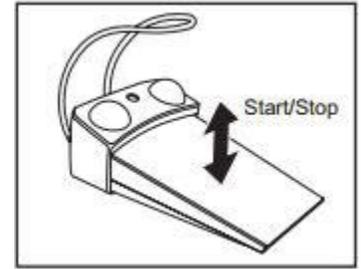
Operation Instruction

4.5.6 General instrument functions

4.5.6.1 Running instruments

Via the foot control

1. Take out instrument from dentist element.
2. Switch coolant on/off through the foot control's left button as required for treatment.
3. Press and hold the foot control to start the operation and release the foot control to stop the operation.



4.5.6.2 Switching the coolant on/off

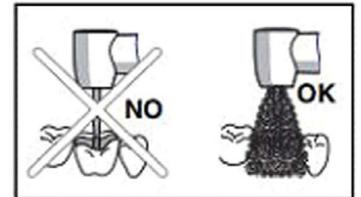


CAUTION

Instrument can be operated without coolant.

Tooth enamel can be damaged by frictional heat.

- Always make sure that the treatment area does not overheat whenever you switch the coolant off.



Switching the coolant on:

Press the left button of the foot control. A green display coolant is on.

Switching the coolant off:

Press the left button on the foot the coolant is off.



4.5.6.3 Setting the spray amount

The spray amount can be adjusted using the water regulators on the right side of the dentist element. The spray amount can be set for each burr drive and scaler individually.

The water regulators 1, 2, 3 control the spray amount of handpieces 2, 3, 4 in proper sequence.

4.5.7 Air-driven handpiece

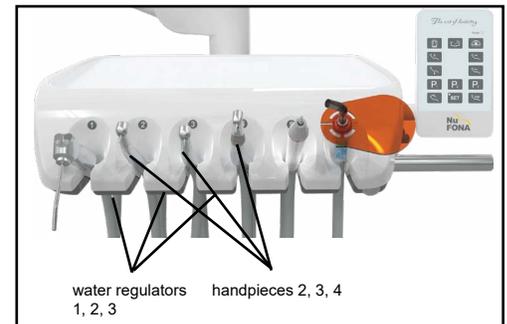
IMPORTANT

Also observe the operation instructions for the different handpieces.

The handpiece hoses are equipped with a standardized coupling according to ISO 9168.

4.5.7.1 Setting the drive air

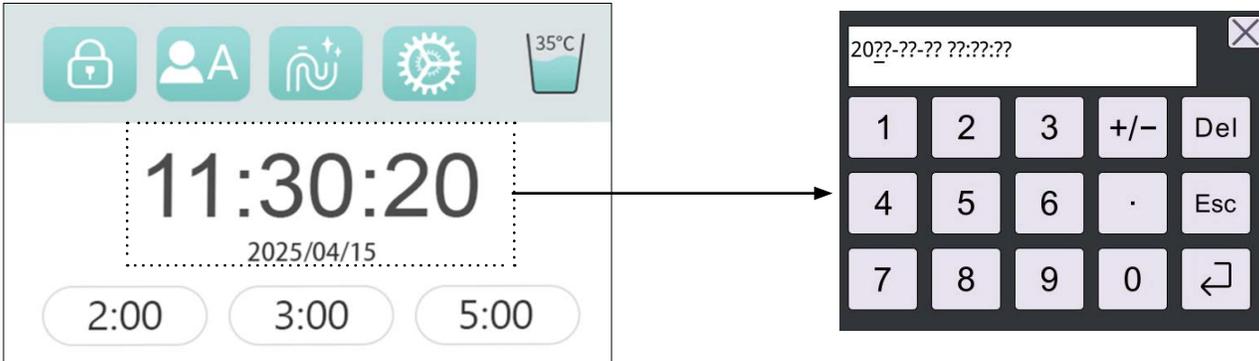
It can be set by a drive air regulator mounted at the bottom of the dentist element. The drive air can be set for each burr drive individually.



4.6 Touch display control panel

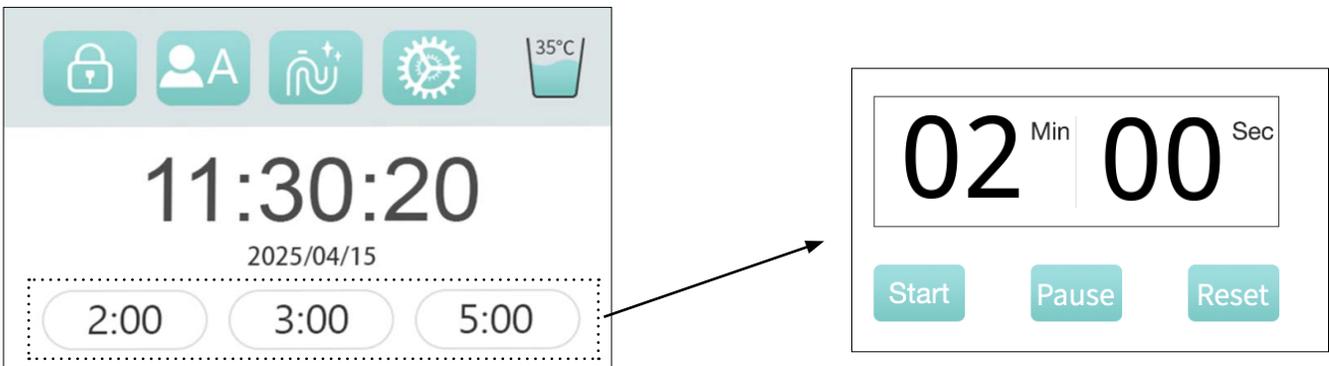
4.6.1 Date and Time setting

Select and hold the clock to adjust time settings.



4.6.2 Customizable timers

Select a countdown timer icon to display the timer screen and start the timer.



You can set a specific time:

- Select and hold a timer icon until the Timer Settings window appears.
- Select Back to save the settings and return to the home screen.



4.6.3 Screen Lock and Screen Saver



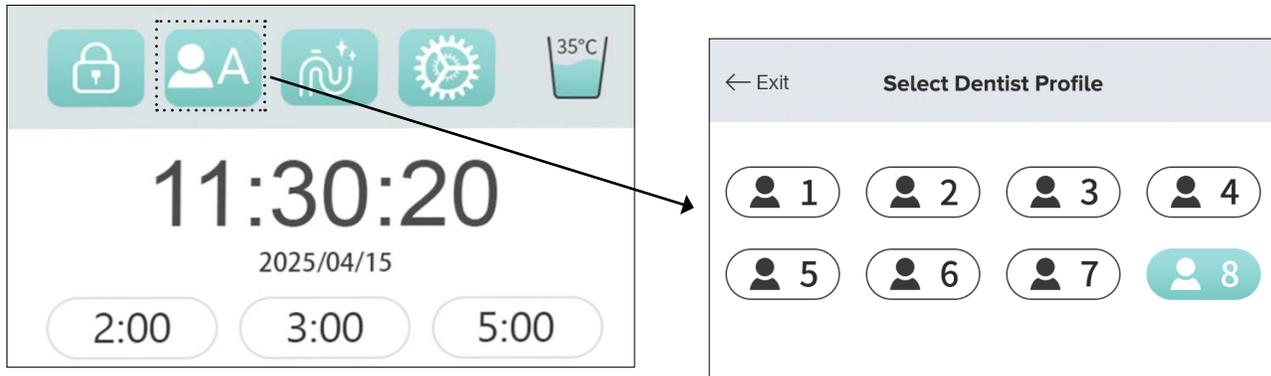
Operation Instruction

Select  at the top of the screen to activate the screen lock .

The screen lock allows you to barrier protect and clean/disinfect the touchscreen without unintentionally activating any commands.

Hold  for 2 seconds to exit.

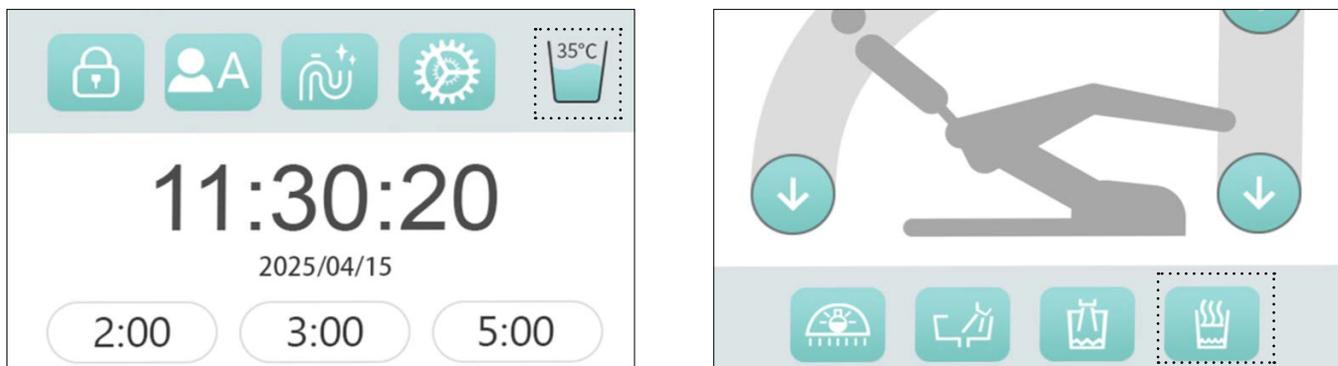
4.6.4 Dentist Profiles



When the system is powered on, it will automatically select the Dentist profile from before the system was shut down.

After selecting the Dentist Profile, most settings adjustments and personalization settings will be saved to that Dentist Profile. Some general settings are applicable to all Dentist Profiles.

4.6.5 Heater

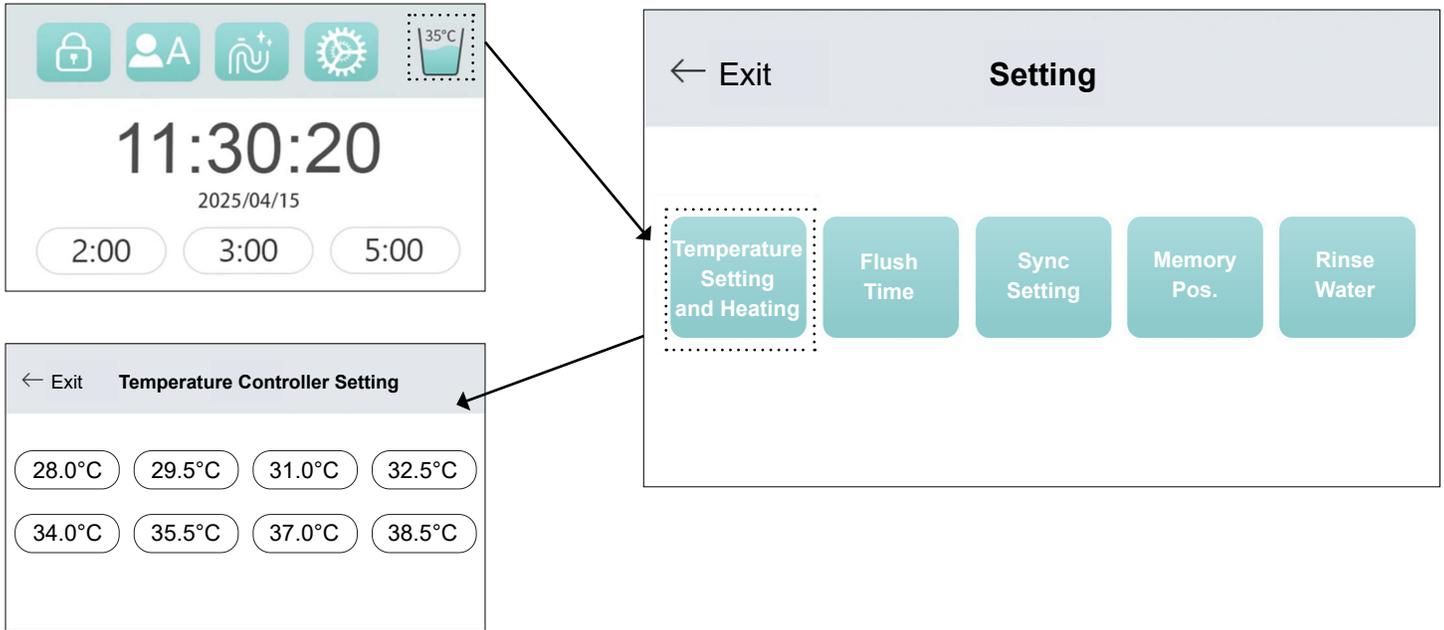


When the system is equipped with a heater and the heater is in the on position,  it displays the temperature of 150mL of water continuously flowing from the supply pipe (the actual temperature may slightly differ from the displayed temperature).



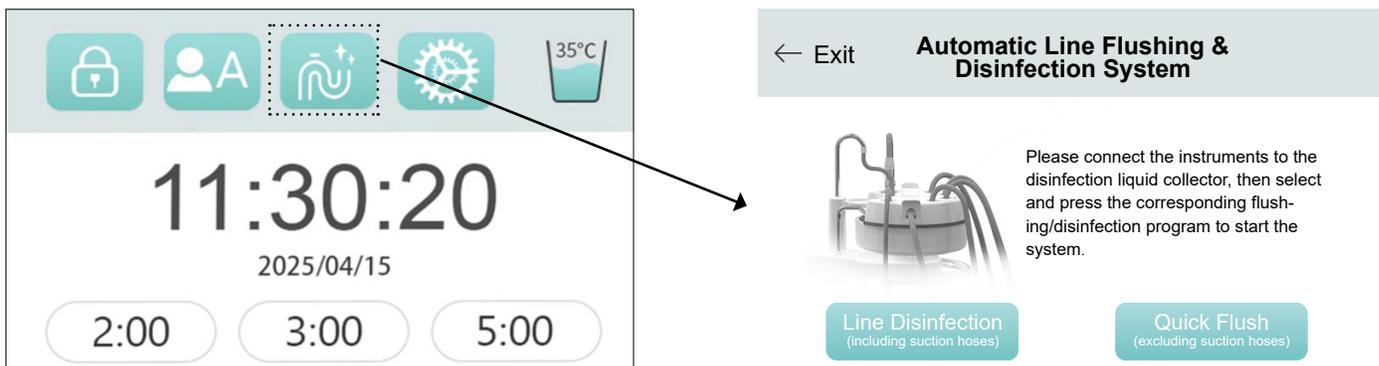
Be careful of burns

Be careful to customize the water temperature of the supply pipe.



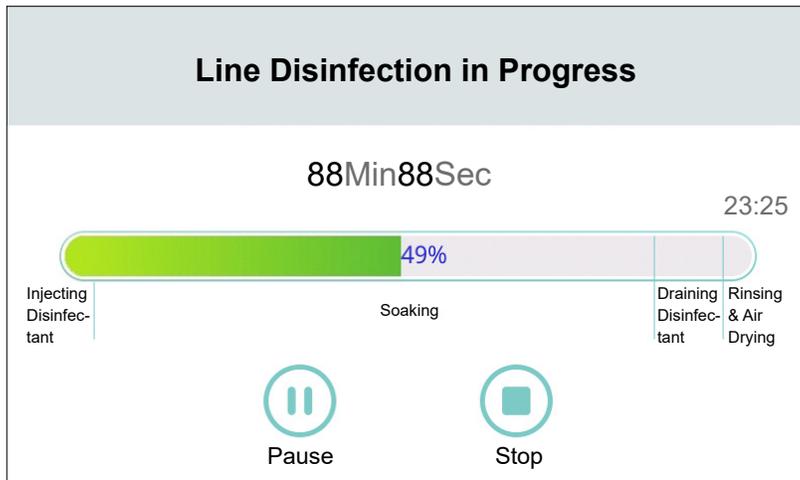
- Press the settings key to enter the settings page.
- Press the heating and temperature key to enter the temperature selection page.
- Choose the desired water temperature.
- Press 'Exit' to save and return to the previous page.

4.6.6 Automatic pipeline flushing and disinfection system (optional configuration)



- When the system is equipped with a pipeline automatic flushing and disinfection system, press  the button to enter the pipeline automatic flushing and disinfection preparation state.
- Select the automatic flushing and disinfection mode to start the system.

Operation Instruction

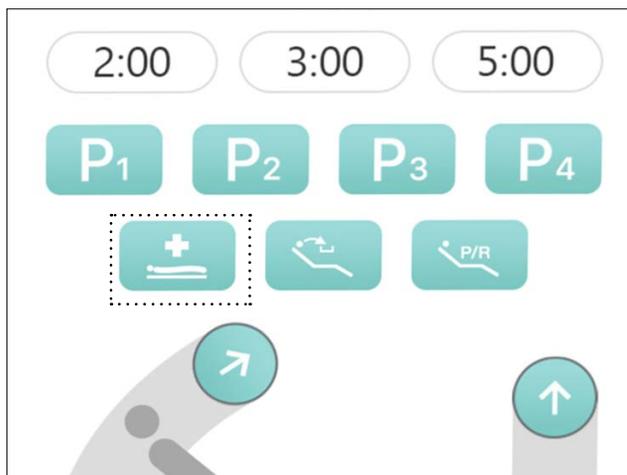


The system can be paused or stopped at any time during operation.

NOTICE

For other information about the automatic flushing and disinfection system for pipelines, refer to its separate user manual.

4.6.7 First Aid Station



Emergency position: When a patient experiences an emergency during examination or treatment and needs

to lie flat for rescue, press  the button, and the dental chair will move at the fastest speed to the lowest

backrest position, with the seat approximately 55cm above the ground. This allows the patient's body to lie flat while maintaining a position with the head low and the legs elevated at about -5° for anti-shock treatment.

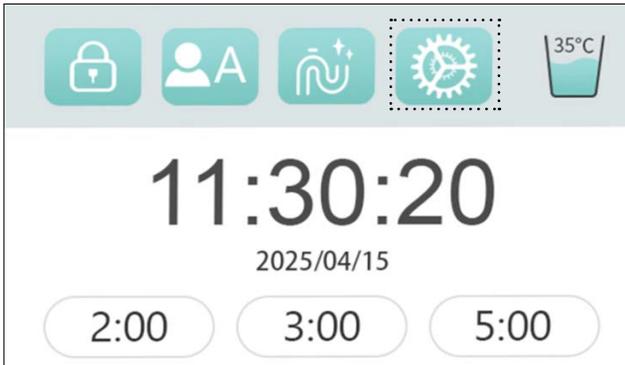


CAUTION

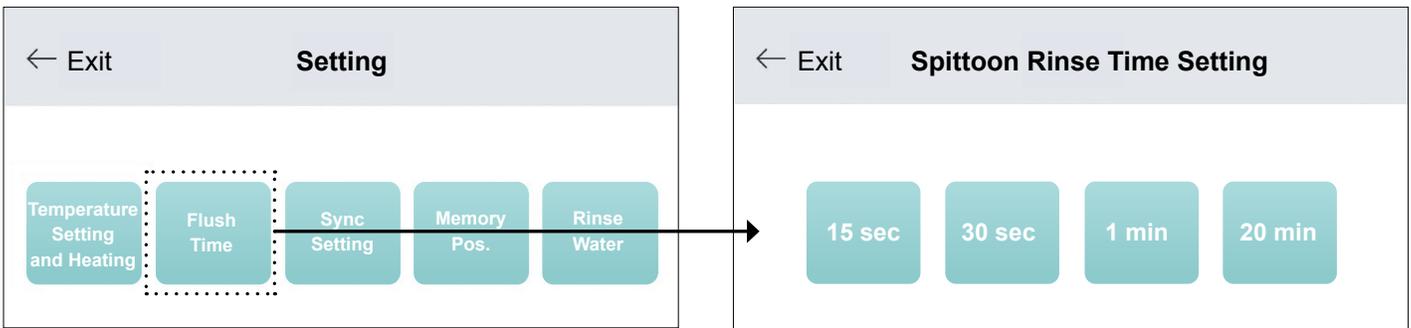
Ensure that the patient is positioned safely before using the manual or preset chair controls. Never leave the patient unattended while the chair is in motion. Always take extra care with small children and patients with limited mobility.

To stop the chair at any point during preset movement, select any chair positioning button on the footswitch or touch control.

4.6.8 Setting

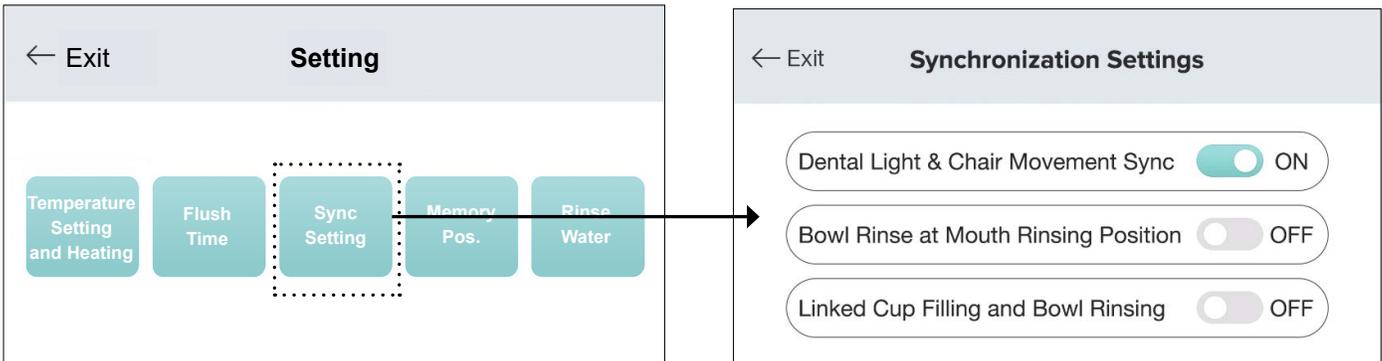


a. Set the sputum bowl flushing time



b. Select a time, press 'Exit' to save and return to the previous page.

c. Automatic synchronization function



Dental Light Auto On/Off Feature

The light turns off when you move the chair. The dental light automatically turns on once chair motion stops.

Bowl Rinse at Mouth Rinsing Position

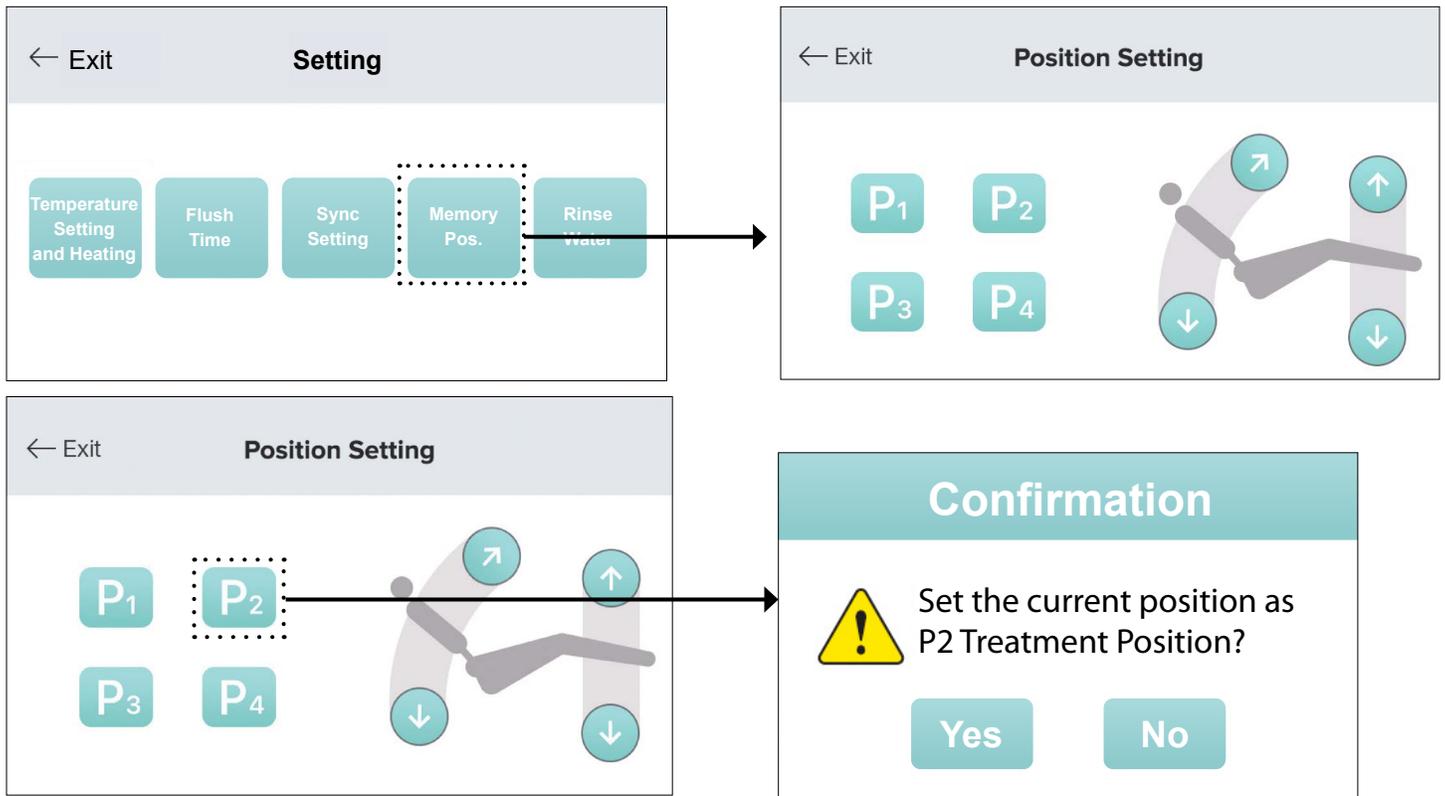
When the dental chair is pressed to the rinsing position, the saliva ejector automatically flushes as the dental chair moves to the rinsing position.

Linked Cup Filling and Bowl Rinsing

When the water cup is activated to be filled with water, the sputum cup is automatically rinsed. To activate the above three automatic sync functions, simply touch the corresponding status icon to switch it to 'ON', and press 'Exit' to save and return to the previous page.

Operation Instruction

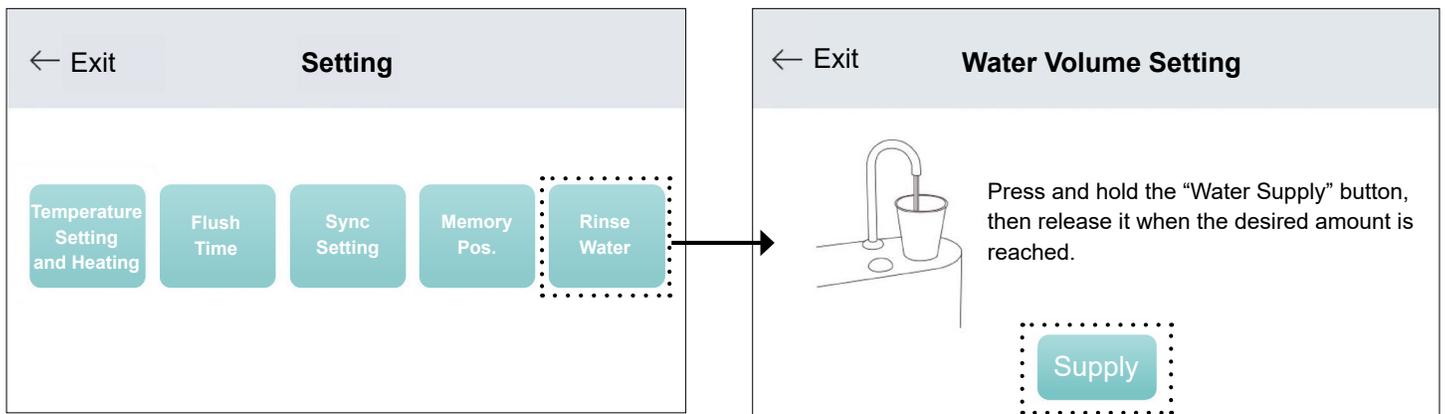
d. Programmable chair position



The chair position information is saved in the current "Dentist Profile", and you can reuse the previous settings by selecting the "Dentist Profile" again.

- Use the manual chair controls to reposition the chair.
- Select the chair position icon you wish to define.
- Press 'Yes' to save.
- Repeat the above process to set other chair positions.

e. Water Supply Time Setting



- Press and hold the "Water Supply" button, then release it when the desired amount is reached.
- Press "Exit" to save and return to the previous page.

4.7 Assistant element

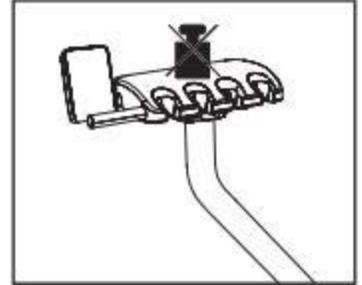
4.7.1 Maximum load capacity

A load is not permitted for the assistant element.



CAUTION:

To prevent injuries caused by falling objects, never place anything on the support arm of the assistant element.



4.7.2 Position concerns



CAUTION:

The assistant element could be positioned too close to the patient chair.

The assistant element instruments can be lifted from their claws and fall during chair movements, hurting the patient or damaging the chair.

- Move the assistant element out of any collision zones before moving the patient chair.



CAUTION

The assistant element can be positioned above or below the patient chair.

The patient could be pinched during chair movements or the chair could be damaged.

- Move the assistant element out of the collision zone before moving the patient chair.

4.7.3 Mounting position

There are two kinds of mounting positions to choose (2 or 4-hand treatment position must be decided by dentist during installation). Refer to chapter “2.6 Maintenance and repair” in case a position change of the assistant element mounting position is desired.

4.7.4 Function keys in the assistant element control panel

The assistant element has the same control panel as the dentist element. For details see “3.6.2.1 Main control panel”.

4.6.5 Suction handpieces

The assistant element is equipped with a maximum of two suction handpieces: strong suction and weak suction (saliva ejector).

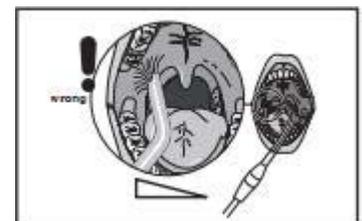
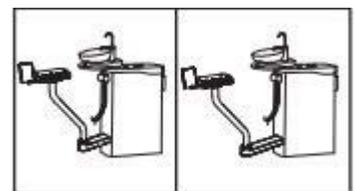


CAUTION

The cannula can attach itself to the oral mucosa.

The patient's oral mucosa is irritated by the vacuum.

- Make sure to hold the suction cannula so the cannula opening cannot attach itself to the oral mucous membranes by accident. It's recommended to use strong suction cannulas with air intake opening or ventilation holes.



Operation Instruction

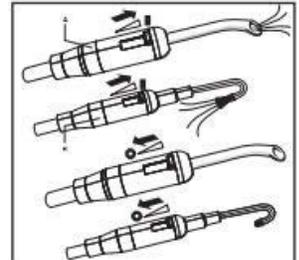
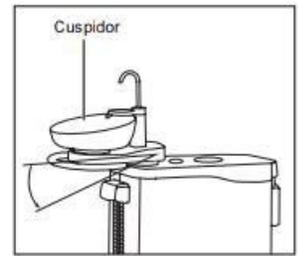
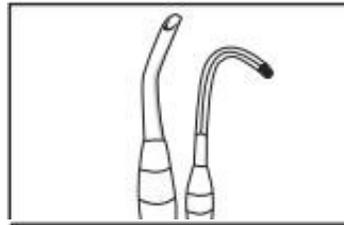
Depending on the suction system installed, different types of suction handpieces are delivered together with the assistant element.

- Venturi Suction: Suction Handpieces without sliders are delivered together with the assistant element.
- Other suction system types: Suction Handpieces with sliders are delivered together with the assistant element.



WARNING

If a interruption of the suction flow occurs, the suction cannula has to be taken out of the patients mouth immediately.



4.8 Water unit

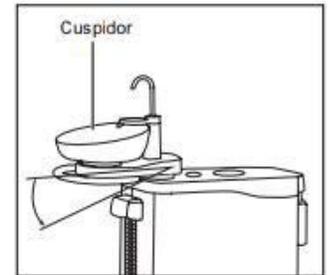
4.8.1 Swiveling the cuspidor bowl

The cuspidor on the water unit can be manually swiveled towards the patient. Swing the cuspidor outward manually before initiating chair movement.

IMPORTANT

Safety stop

Please ensure that the sliders are in the off position if the suction handpiece is not in use.



Collision protection

When starting a programmed movement, the cuspidor should first be moved back to its starting position before the chair moves to the programmed position.

When you press a key for the individual adjustment of the chair, i.e. height adjustment up/down or backrest tilt backward/forward, the cuspidor should first be swivelled back.

4.8.2 Water supply

The treatment center has two methods of water supply:

1. Fresh water bottle supply: The treatment center is supplied by fresh water bottle (all water-carrying instruments and cup filler).
2. City water supply: The treatment center is supplied by city water (all water-carrying instruments and cup filler).



CAUTION

Microorganisms can multiply in the water.

These microorganisms could increase the risk of damage to one's health.

- Beyes recommends never operating the treatment center without disinfectants.
- Check the amount of germs in water of the treatment center at regular intervals. In particular, if no disinfectant is available or if water is used in substitution of disinfectant.



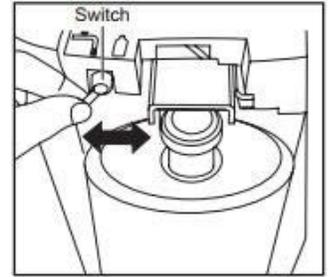
CAUTION

High immunocompromised patients should not get in contact with the water of the treatment center. It is recommended to use sterile fluids.

4.8.2.1 Switching water supply of treatment center between fresh water bottle and city water

A switch is placed beside the fresh water bottle (lift cover to access) to switch the water supply of the treatment center between the fresh water bottle and city water:

- Switch to right side: Fresh water bottle supply 
- Switch to left side: City water supply 



4.8.2.2 Fresh water bottle supply

If the water quality of the city water is not suitable for the treatment of the patients, the treatment center can be supplied by fresh water bottle (all water-carrying instruments and cup filler).

In this case, distilled water - recommended to mix with disinfectant in a 100:1 ratio (1 liter of water, 10 ml disinfectant) - has to be filled into the transparent fresh water bottle. The disinfectant will reduce the microbial growth in the water lines.

4.8.2.1 Switching water supply of treatment center between fresh water bottle and city water

A switch is placed beside the fresh water bottle (lift cover to access) to switch the water supply of the treatment center between the fresh water bottle and city water:

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CAUTION

It is important to empty the fresh water bottle before a longer downtime of the treatment center.

NOTICE: Always fill distilled water in food-grade (< 100 colony forming units / ml), but never drinking water, e.g. from beverage bottles.

Aqua purificata or aqua distillate can be used as distilled water.

IMPORTANT

It is recommended to replace the fresh water bottle yearly.

4.8.3.3 City water supply without permanent water disinfection system

The treatment center is supplied by city water (all water-carrying instruments and cup filler).



WARNING

Running the treatment center with city water supply without permanent water disinfection system should only be done if the water quality is ensured.

4.8.3.4 Refilling bottle

NOTICE: It is not necessary to switch the water supply switch for refilling of the bottle.

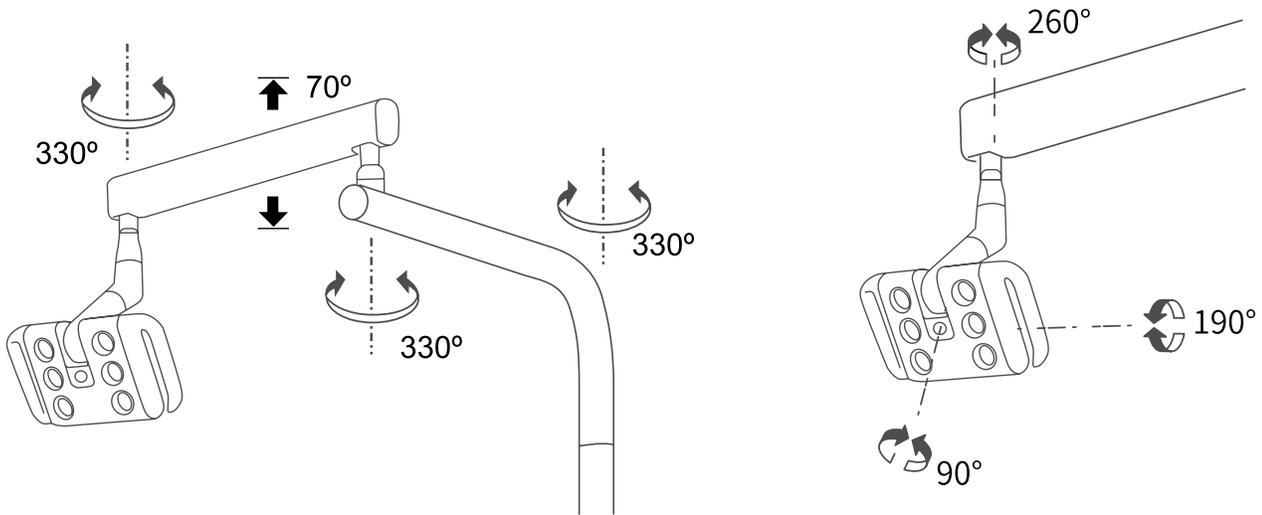
1. Swivel out the bottle at a 45° angle.
2. Screw the bottle out counterclockwise.
3. Fill the bottle according chapter above.
4. Screw the bottle in clockwise.
5. Swivel the bottle back into vertical position.



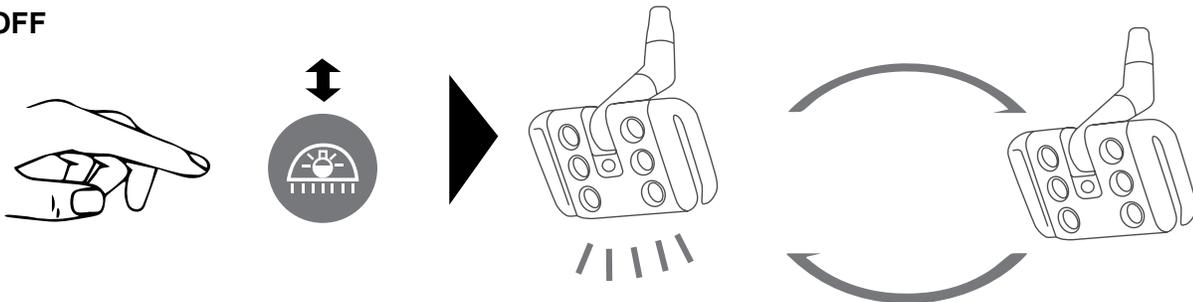
Operation Instruction

4.9 Dental light

Movement

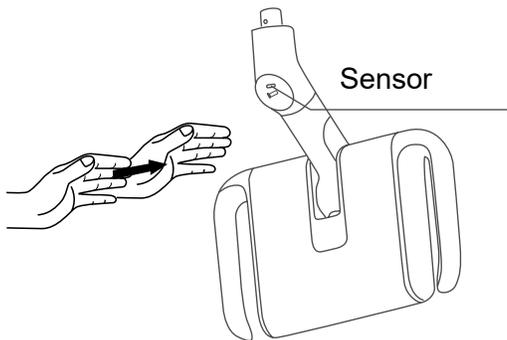


ON/OFF

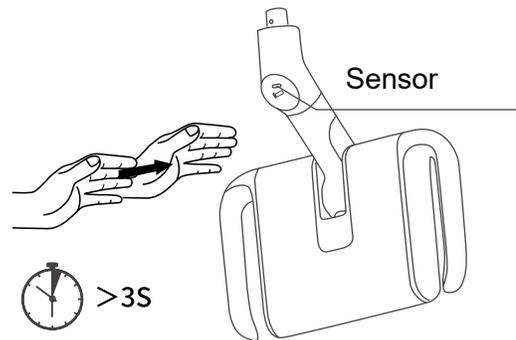


Intensity Adjustment

1. Light mode switching



2. Dimming control



4.10 Monitor

The treatment center can be equipped with a monitor to show images from the intraoral camera or display data from an external computer.

4.9.1 Monitor position



CAUTION

Use only monitors that are approved according to IEC 60950 (office equipment) or IEC 60601-1 (medical devices).

NOTICE

The maximum load capacity of the monitor arm system is 8 kg.

It's not allow to put additional load onto the monitor or the monitor arm.

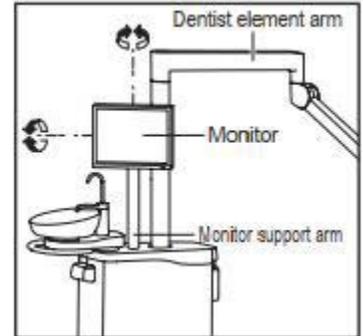
The monitor needs a VESA75 or VESA100 interface.

The monitor needs a VGA input (for intraoral camera) and an Appliance Connector (IEC 60320 C14) local voltage.

The power supply for the monitor will be switched on/off with the general switch.

The monitor should not be bigger than 17" (4:3). Bigger monitors are in danger of colliding with the dentist element arm system.

The monitor can be adjusted by turning around the vertical axis and swiveling around the horizontal axis.



Care, Cleaning and Maintenance

5.1 Basics Malfunctions

5.1.1 Intervals

To maintain the value and safe functioning of your treatment center, it is necessary to have it cared for, cleaned and disinfected by the practice team regularly. This will minimize the risk of contamination for patients and users and ensure proper functioning.

The national requirements and recommendations for hygiene and disinfection must be observed.

IMPORTANT

Care and cleaning intervals

The time intervals specified for disinfection, care and cleaning are reference values.

Please adapt the time intervals to suit your personal method of working and your national requirements.

Intervals	Item
After each patient	Cleaning/disinfecting surfaces
	Disinfecting handles
	Disinfect the tray
	Disinfect the upholstery
	Care for, disinfect and sterilize the treatment instruments
	Care and clean of the operating light (see separate operation instructions for the operating light)
	Clean and disinfect the cuspidor bowl
	Clean the cuspidor filter
	Clean the suction hoses
	Sterilize and disinfect the suction handpieces
	Purging
Daily	Rinsing water lines of the water unit
	Clean suction paths
	Clean the suction hoses
	Disinfect the instrument holder of the dentist element
	Disinfect the instrument holder of the assistant element
Weekly	Clean and care for upholstery
	Clean drains
	Clean the foot control
	Empty and clean back air trap in dentist element
Monthly or as required	Microbiological water test
	Sanitize the treatment center

Care, Cleaning and Maintenance

5.1.2 Care and cleaning agents

NOTICE

Approved care and cleaning agents

Use only care and cleaning agents which have been approved by Beyes.

You will find a list of all agents approved at the time of delivery in the documentation supplied with your treatment center.

A continuously updated list of approved agents ("Care and cleaning agents") can be downloaded from the internet at the address "www.fona.ca".

5.1.3 Microbiological water test

Perform the microbiological water test at regular intervals and after longer periods of disuse > 1 week; see also "2.4 Media quality". Start the checkups in intervals of no more than two weeks and adjust the time intervals depending on the results. In addition to running laboratory tests, you can also use a "Total Count Tester" as a simple means of performing this test.

5.2 Surface

5.2.1 Cleaning/disinfecting surfaces

The surfaces can be spray and wipe disinfected with surface disinfectants.

NOTICE

Medicaments chemically react with the surface of the treatment center.

Due to their high concentrations and the substances they contain, many medicaments can dissolve, etch, bleach, or discolor surfaces.

- Clean any medicament residues off of the unit immediately with a moist cloth!

NOTICE

Liquids can enter the treatment center during cleaning or disinfection.

Electrical components of the treatment center can be destroyed by liquids.

- Do not spray any liquids into the treatment center.
- To clean near openings, first spray the liquid onto a cleaning cloth. Then wipe over the treatment center with the cleaning cloth.

NOTICE

Disinfectants can dissolve dyes in cleaning clothes.

The outer surface of the treatment center may then be discolored by the dye.

- Do not clean or disinfect the treatment center with colored cleaning cloths.
- Remove any dirt and disinfectant residues using a mild commercial cleaning agent.

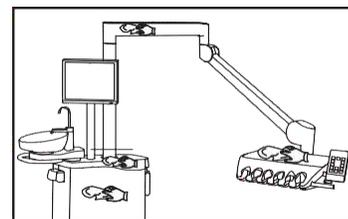
5.2.2 Disinfecting handles

NOTICE

Approved care and cleaning agents

Use only care and cleaning agents which have been approved by Beyes (see "5.1.2 Care and cleaning agents")

The handles of the dentist element, assistant element and dental lamp can be spray and wipe disinfected.



Care, Cleaning and Maintenance

5.2.3 Disinfect, clean and care for the upholstery

For cleaning and disinfecting the upholstery, Beyes recommends special care and cleaning agents.

NOTICE

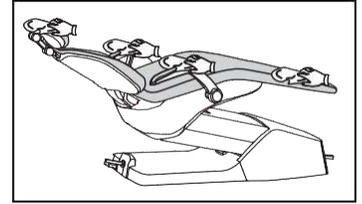
Approved care and cleaning agents:

Use only care and cleaning agents which have been approved by Beyes for the upholstery; see “5.1.2 Care and cleaning agents”.

The upholstery of the patient couch and the headrest can be spray and wipe disinfected.

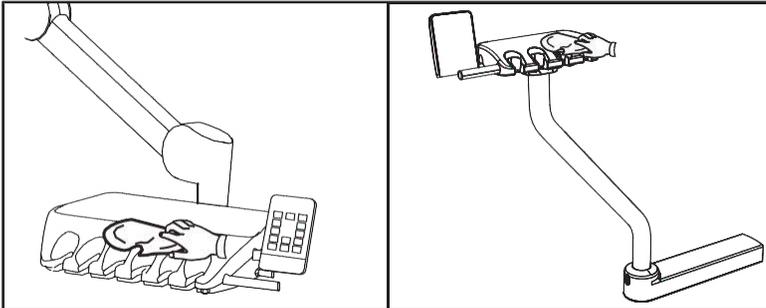
The artificial leather upholstery must be cared for and cleaned regularly (at least 1x week), especially light colored upholstery.

The armrests can also be spray and wipe disinfected using the recommended surface disinfectant.

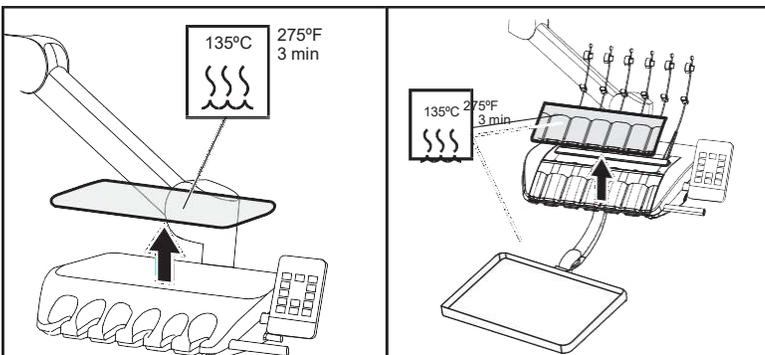


5.2.4 Disinfecting the instrument holder of the dentist element and assistant element

The instrument holder can be disinfected by spraying and wiping.



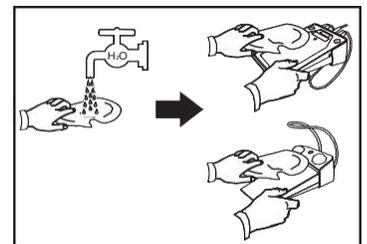
The silicone mat on instrument tray of whip-arm dentist element and on the dentist element can be removed for cleaning and thermal disinfection.



5.2.5 Clean the foot control

Regular cleaning of the foot control improves its stability and operation.

- Clean the top side and bottom plate of the foot control with a moist cloth (water).



Care, cleaning and maintenance

5.2.6 Cleaning and disinfecting the operating light

Remove any dirt and disinfectant residues regularly using a mild commercial cleaning agent.

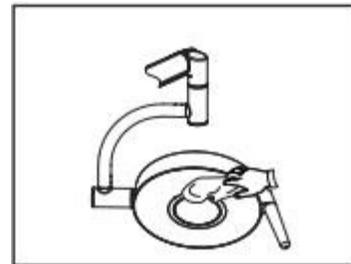
The operating light including the light exit window, the support arms and the handles can be sprayed and wiped with surface disinfectants approved by Beyes.

NOTICE

Medicaments chemically react with the surface of the unit.

Due to their high concentrations and the substances they contain, many medicaments can dissolve, etch, bleach or discolor surfaces.

- Clean any medicament residues off of the unit immediately with a moist cloth!



5.3 Instruments and instrument hoses

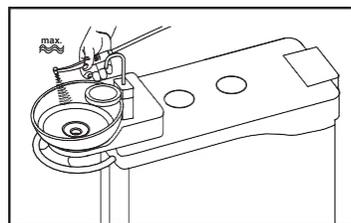
5.3.1 Purging

To reduce the amount of germs, the water paths of the water-carrying instruments of the dentist element and the syringe(s) can be purged with water.

5.3.1.1 Manual purging (water unit without permanent water disinfection system)

Syringe(s)

1. Take out syringe(s) from the holder.
2. Hold the syringe(s) over the cuspidor bowl.
3. Press the left syringe button (water) for 20~120 seconds to purge the water path.
4. Store back the syringe(s) to the holder.



Water-carrying instruments

1. Take out an instrument from the holder.
2. Pull of the handpiece.
3. Set all the instruments to be purged to their maximum water flow rate.
4. Hold the instrument over the cuspidor bowl.
5. Press the foot control for 20~120 seconds to purge the water path.
6. Store back the instrument to the holder.
7. Proceed with the next instrument accordingly.

5.3.2 Instrument hoses

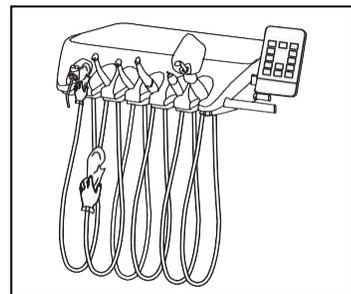
The outside of the instrument hoses can be disinfected by spraying or wiping.

5.3.3 Care for, disinfect and sterilize the instruments

5.3.3.1 Treatment instruments

The procedures required for the following treatment instruments are described in the following separate operating instructions:

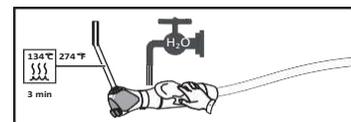
- Beyes motor
- Straight and contra-angle handpieces in various versions
- High-speed handpieces
- Scaler



5.3.3.2 Syringes

Standard syringe:

The standard syringe's nozzle can be sterilized at 134°C, 2.0 bar for 3 min.



Care, Cleaning and Maintenance

5.3.3.3 Oil mist separator

The oil mist separator collects oil contained in high speed exhaust air from the handpiece. The level of the separator should be checked daily and emptied if necessary.

Clean the filter weekly with a mild commercial cleaner.

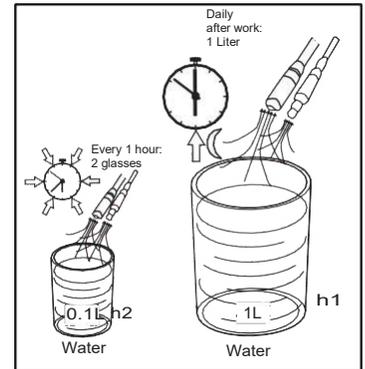


5.4 Suction system

5.4.1 Cleaning the suction hoses

The vacuum system is subjected to septic secretions, saliva and blood daily. Therefore, due to hygienic reasons, the cleaning of the used suction hoses is absolutely necessary after each patient, in particular after each intrusion of blood. For long duration treatments, the suction hose must be cleaned every 60 minutes.

1. Suck 2 cups of water every 60 minutes.
2. Suck 1 liter of water to clean the suction hose after daily use.

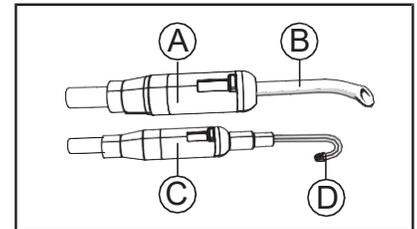


5.4.2 Sterilize and disinfect the suction handpieces

Sterilization/disinfection

All parts of the suction handpieces can be dipping sterilized and immersion disinfected.

A	Strong suction handpiece
B	Suction cannula (using sterilizable or disposable)
C	Weak suction handpiece
D	Salvia sucker (using sterilizable or disposable)



NOTICE

Beyes suction cannulas and salvia suckers are for one time use only.

Greasing suction handpieces

The disconnection points of the suction handpieces must be greased following each thermal disinfection or sterilization process and once a week.



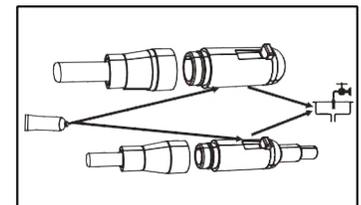
CAUTION

Unsuitable greases

Greases that are not food safe may endanger the patient's health. Rubber materials such as o-rings are corroded by unsuitable greases.

- Do not under any circumstances use vaseline or silicone greases.
- Use only greases approved by Beyes.

1. Take apart the handpieces at their joints.
2. Grease the disconnection points and o-rings of the handpieces.



5.4.3 Clean suction paths

Preparation for cleaning

1. Prepare 1 liter of cleaning solution in a separate container according to the manufacturer's instructions and mix it thoroughly.

Care, cleaning and maintenance

Cleaning procedure

1. Aspirate the cleaning solution with both suction hoses.
2. Allow the cleaning solution to react. Observe the reaction time specified for the cleaning solution by the manufacturer.

Rinsing the cleaning agent

1. Following the cleaning process, aspirate at least 1 liter of water with both suction hoses.

5.4.4 Cleaning and disinfecting the suction hoses

Filters are inserted between the suction hoses and the water unit to filter out solid particles. Depending on the treatment involved, it may also periodically be necessary to remove the trapped solid particles (e.g. amalgam) from the collector due to a decrease in the suction power.



CAUTION

Amalgam residues must not enter the public sewage system.

Amalgam is a mercury compound that is hazardous to water.

- Do not dispose amalgam residues in a sink.
- Collect amalgam residues e.g. in a closed container with water. Dispose amalgam residues, e.g. when replacing the amalgam rotor by filling the amalgam residues into the amalgam rotor or when emptying the sediment container.

The outside of the suction hoses can be disinfected by spraying or wiping.

NOTICE

Powdering suction hoses with talcum

If the surfaces of the hoses have become sticky from disinfectants, clean them with a commercially available dishwashing liquid and then powder them with a light coat of talcum if necessary.



WARNING

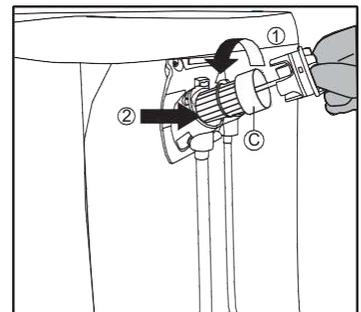
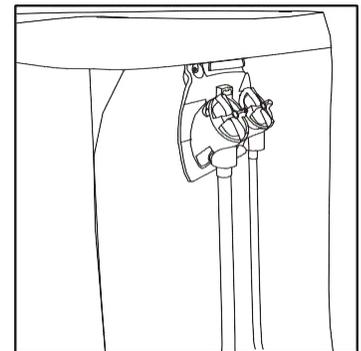
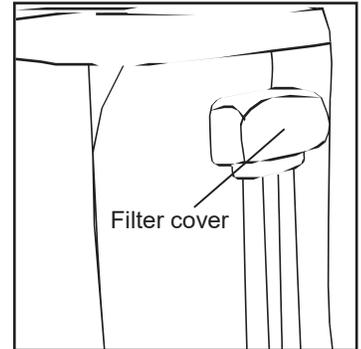
Wear gloves performing the following work.

1. Remove filter cover from the water unit.
2. Rotate filter and pull it out.
3. Take the collectors (C) out of the suction filter holder. Collect the amalgam residues in a glass filled with water.
4. Put back filter into suction filter holder.
5. Proceed the same way with the second suction filter.
6. Install filter cover.

5.5 Components of the water unit

5.5.1 Rinsing water lines of water unit

Microorganisms can grow in the water lines of the treatment center. Use a large amount of water for rinsing the lines prior to starting patient appointments: Activate the "bowl rinsing" and "cup filling" for at least one minute.



Care, Cleaning and Maintenance

5.5.2 Clean the cuspidor filter

The cuspidor filter retains larger solid particles to prevent them from being washed down the drain in the cuspidor bowl.

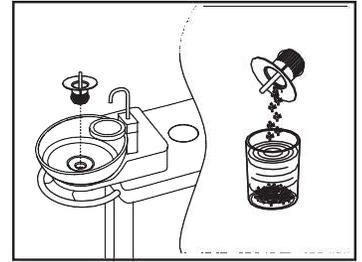


CAUTION

Amalgam residues must not enter the public sewage system.

Amalgam is a mercury compound that is hazardous to water.

- Do not dispose amalgam residues in a sink.
- Collect amalgam residues e.g. in a closed container with water. Dispose amalgam residues, e.g. when replacing the amalgam rotor by filling the amalgam residues into the amalgam rotor.



WARNING

Wear gloves performing the following work.

1. Remove the cuspidor filter from the drain of the cuspidor bowl.
2. Remove the amalgam residues from the cuspidor filter. Amalgam residues must be disposed separately.
3. Clean the cuspidor filter.
4. Reinsert the cuspidor filter.

5.5.3 Clean and disinfect the cuspidor bowl

The cup holder (A) can be sprayed and wiped with surface disinfectants.

The cup filling outlet (B) and bowl rinsing outlet (C) can be detached for cleaning or thermal disinfection.

NOTICE

Approved care and cleaning agents

- Use only care and cleaning agents which have been approved by Beyes; see “5.1.2 Care and cleaning agents”.

Care, Cleaning and Maintenance



CAUTION

If the treatment center is switched on, cup filling and bowl rinsing functions can be activated even with the cuspidor bowl removed. In this case, water would run onto the floor and could enter the treatment center.

- Switch the treatment center off at the general switch before removing the cuspidor bowl.

The cuspidor bowl is attached to the water unit via a bayonet catch and can be removed for thorough cleaning. The bowl rinsing outlet (C) can be left attached when doing this.

1. Remove the cuspidor filter.
2. Hold the cuspidor bowl firmly with both hands. Loosen the bayonet catch by twisting the cuspidor bowl counterclockwise.

A rubber gasket is attached to the bayonet catch of the water unit to seal its closure. Grease this gasket before reinserting the cuspidor bowl. For greases, see "5.1.2 Care and cleaning agents".

Make sure that the bayonet catch snaps into place when you reinsert cuspidor bowl.

After snapping into place, the higher side of the cuspidor bowl must be located below the cup holder.

5.5.4 Cleaning drains

Clean and disinfect the cuspidor bowl with a special cleaning agent. This agent will also care for the drains.

NOTICE

Approved care and cleaning agents

Use only care and cleaning agents which have been approved by Beyes; see "5.1.2 Care and cleaning agents".

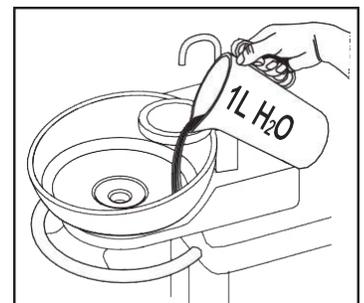
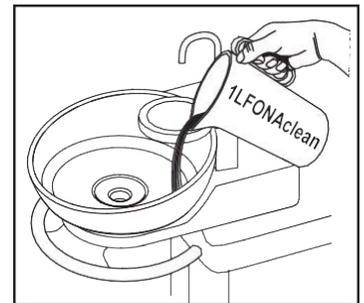
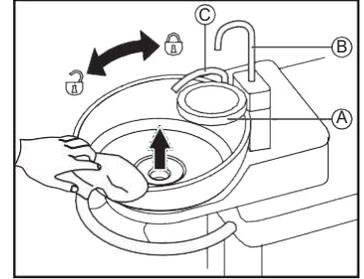
NOTICE

Domestic cleaning agents foam up

Household or other cleaning agents often cause foam and water to be sucked into the dry suction system. This can cause damage to the suction machine.

- Use only care and cleaning agents which have been approved by Beyes; see "5.1.2 Care and cleaning agents".

1. Prepare 1 liter of cleaning solution in a separate container according to the manufacturer's instructions and mix it thoroughly.
2. Pour cleaning solution into the cuspidor and allow the solution to react. Observe the reaction time specified for the cleaning solution by the manufacturer.
3. Rinse away the cleaning solution. To do so, pour at least 1 liter of water into the cuspidor.



Care Storage, Lifetime, Disposal and Restrictions of use

6.1 Inspection and maintenance

An overview of the inspection and maintenance work performed is additionally recorded by the service engineer in the "Installation Report/ Warranty Passport". This document is part of this instruction.

6.2 Safety checks

Medical equipment is designed in such a way that the first occurrence of a fault does not create a hazard to the safety of patients, users or other persons. It is therefore important to detect such faults before a second fault occurs, which might then lead to safety hazards.

For that reason it is essential to perform safety tests every 2 years which aim particularly at detecting electrical faults (e.g. isolation defects). This is done by an authorized service engineer from your dental dealer, most practically together with the work to be performed according to "6.1 Inspection and maintenance".

Safety tests must also be performed and documented during initial startup, after extensions/upgrades (conversion) of your treatment center and after repair work which might affect the electrical safety of the system.



WARNING

The treatment center must not be operated if it has failed to pass the safety tests!

The safety checks include a visual inspection as well as measurements of the protective ground wire connections and the equivalent leakage currents.

The inspections and measurements to be performed are specified in the "6.2 Safety checks". The measured values must be documented there by the service engineer.

6.3 Error messages

Malfunction	Cause analysis	Solution
Power status indicator not on while general switch is already switched on	Main fuse of practice or house is blown	Check the main fuse
	Other causes	Inform your service engineer
Backrest and seat don't move	The safety switch is triggered	Take away obstacles
	Other causes	Inform your service engineer
Control panel doesn't work	One instrument is working or the foot control is pushed	Store back instrument or release foot control
	Other causes	Inform your service engineer
Instrument can not work	Instrument not in the right holder	Put the instrument in the right holder
	Instrument itself is out of service	Check or replace instrument
	Other causes	Inform your service engineer

Care Storage, Lifetime, Disposal and Restrictions of use

No coolant from active instrument	Water supply by water bottle: bottle is empty	Refill the fresh water bottle
	The coolant is switched off through the left button of the foot control	Step on the left button of the foot control to switch on the coolant
	The coolant regulator is set to minimum	Set the coolant regulator as desired
	Other causes	Inform your service engineer
Reduced suction power	Hose blockage	Clean the hose with cold water
	Filter blockage	Clean filter
	Other causes	Inform your service engineer

6.4 Spare parts and consumables

Use only original accessories from Beyes!
Please order the materials specified below from a specialized dental dealer.

Cleaning and care

Care and cleaning agents

Please contact your dental dealer to order the list.

6.5 Disposal

Your product is marked with the adjacent symbol. Within the European Economic Area, this product is subject to Directive 2002/96/EC as well as the corresponding national laws. This directive requires environmentally sound recycling/disposal of the product. The product must not be disposed of as domestic refuse!



Please observe the disposal regulations applicable in your country.

Disposal procedure

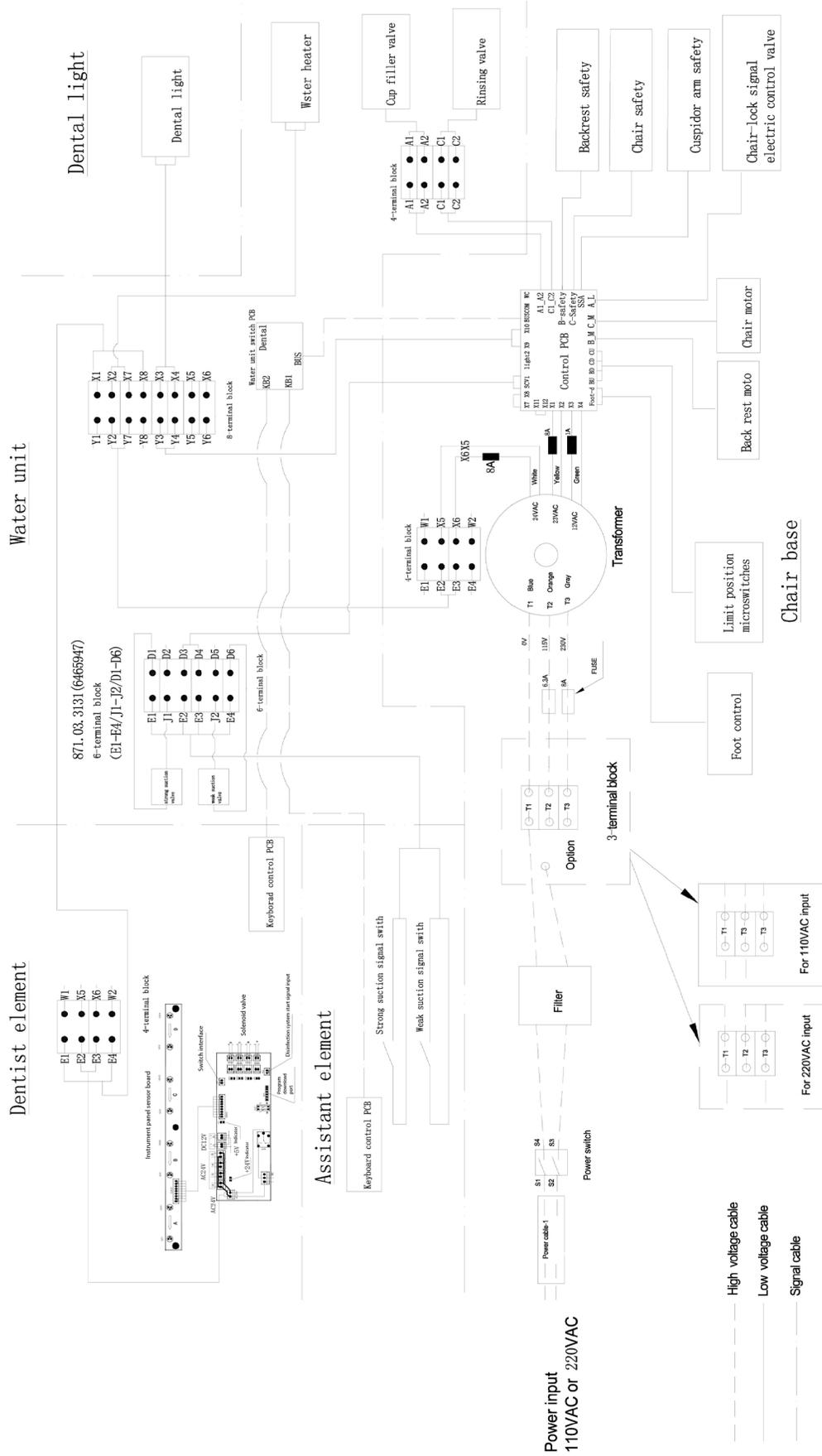
Please note that this product is subject to the stipulations in EC Directive 2002/96 governing waste electrical and electronic equipment and must be disposed of in line with these special requirements within the European Union (EU).

Prior to disassembly/disposal of the product, it must be fully prepared (cleaned/disinfected/sterilized).

Explanation of Symbols Used

Signs	Definition	Signs	Definition
	Switch closed		Add water to cup
	Switch off		Rinsing
	Be careful		Dental light
	Seat upwards		Protective grounding
	Seat downwards		Clean with water
	Back rest forwards		Program seat position
	Back rest backwards		Set up
	Mouthwash position/last memory position		Handpiece water set up
	Entry bit/last memory bit		Bottle water
	Tap water		Production date
	Manufacturer		Type B application part
	Hot water		Foot control waterproof level: IPX1 (Anti dripping)

Air and Water venturi suction



Electromagnetic Compatibility (EMC)

Table 201 - Declaration - Electromagnetic emissions

Guidance and manufacturer's declaration - electromagnetic emissions		
The product is intended for use in the electromagnetic environment specified below. The customer or the user of the product should assure that it is used in such an environment.		
Emissions test	Compliance	Electromagnetic environment - guidance
RF emissions CISPR 11	Group 1	The product must emit electromagnetic energy in order to perform its intended function. Nearby electronic equipment may be affected. The product is suitable for use in all establishments other than domestic and those directly connected to the public low-voltage power supply network that supplied buildings used for domestic purposes.
RF emissions CISPR 11	Class B	
Harmonic emissions IEC 61000-3-2	Not applicable	
Voltage fluctuations / flicker emissions IEC 61000-3-3	Not applicable	

Table 202 - Declaration - Electromagnetic immunity

Guidance and manufacturer's declaration - electromagnetic immunity			
The product is intended for use in the electromagnetic environment specified below. The customer or the user of the product should assure that it is used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Electrostatic discharge(ESD) IEC 61000-4-2	+ 6 kV contact + 8 kV air	+ 6 kV contact + 8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.

Table 204 - Declaration - Electromagnetic Immunity

Guidance and manufacturer's declaration - Electromagnetic emissions			
The product is intended for use in the electromagnetic environment specified below. The customer or the user of the product should assure that it is used in such an environment.			
Anti-interference measurement	Compliance	Compliance level	Electromagnetic Environment - Guidance
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz ~ 80 MHz	3 Vrms	Portable and mobile RF communications equipment should be used no closer to any part of the product, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance $d = \left[\frac{3.5}{V_1} \right]$ $d = \left[\frac{3.5}{E_1} \right] \sqrt{P}, 80 \text{ MHz} \sim 800 \text{ MHz}$ $d = \left[\frac{7}{E_1} \right] \sqrt{P}, 800 \text{ MHz} \sim 2.5 \text{ GHz}$
Radiated RF IEC 61000-4-3	3 V/m 80 MHz ~ 2.5 GHz	3 V/m	

Electromagnetic Compatibility (EMC)

		<p>Where “P” is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and “d” is the recommended separation distance in meters (m).</p> <p>Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey*1, should be less than the compliance level in each frequency range*2.</p> <p>Interference may occur in the vicinity of equipment marked with the following symbol: </p>
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NOTE *1: At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE *2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

- a. Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the product is used exceeds the applicable RF compliance level above, the product should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the Model Number or Type Number - by manufacturer.
- b. Over the frequency range 150 kHz to 80 MHz, field strengths should be less than [Vi] V/m.

Table 206 - Recommended separation distances between portable and mobile RF communications equipment and the product

Recommended separation distances between portable and mobile RF communications equipment and the product.			
The product is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled.			
The customer or the user of the product can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the product as recommended below, according to the maximum output power of the communication equipment.			
Rated maximum output power of transmitter/W	Spacing distance according to transmitter frequency / m		
	150 kHz to 80 MHz $d = \left[\frac{3.5}{E_1} \right] \sqrt{P}$	80 MHz to 800 MHz $d = \left[\frac{3.5}{E_1} \right] \sqrt{P}$	80 MHz to 2.5 GHz $d = \left[\frac{7}{E_1} \right] \sqrt{P}$
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 rated at a maximum output power not listed above, the recommended separation distance d in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where “P” is the maximum output power rating of the transmitter in watts (W) accordable to the transmitter manufacturer.			
NOTE 1: At 80 MHz and 800 MHz, the higher frequency range applies.			
NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			

11.1 Scope of Warranty

BEYES Dental Inc. ('BEYES') warrants to the original retail purchaser that it will be at BEYES discretion to repair or replace components of the dental products manufactured by BEYES (except for components not warranted under 'Exclusions') that are defective in material or workmanship under normal use and service. BEYES' obligation under this limited warranty is limited to the repair or replacement of the applicable components. This limited warranty shall only apply to defects that are reported to BEYES within the applicable warranty period and which, upon examination by Beyes, prove to be defective. This warranty extends only to the first retail purchaser of a product and is not transferable or assignable. Replacement components or products may be used and/or refurbished components or products, provided they are of like quality and specifications as new components or products.

11.2 Applicable Warranty Period

The applicable warranty period, measured from the date of invoice to the original user, shall be as follows:

- 3 years warranty

11.3 Exclusions

This limited warranty does not cover and BEYES shall not be liable for the following;

- (1) defects, damage or other conditions caused, in whole or in part, by misuse, abuse, negligence, alteration, accident, freight damage, negligent storage, tampering or failure to seek and obtain repair or replacement in a timely manner;
- (2) products which are not installed, used, and properly cleaned and maintained as required or recommended in the BEYES 'Installation' and/or 'Installation/Operation Manual' for the applicable product, including the specified structural and operational environment conditions and electrical power requirements;
- (3) products considered to be of a consumable or sterile nature;
- (4) accessories or parts not manufactured by BEYES;
- (5) charges by anyone for adjustments, repairs, replacement parts, installation or other work performed upon or in connection with such products which are not expressly authorized in writing in advance by BEYES;
- (6) costs and expenses of routine maintenance and cleaning;
- (7) representations and warranties made by any person or entity other than BEYES;
- (8) matching of color, grain or texture except to commercially acceptable standards;
- (9) changes in color caused by natural or artificial light;
- (10) custom manufactured products;
- (11) alterations or modifications to the product by any person or entity other than BEYES;
- (12) Products that would otherwise be covered under Sections 1 and 2 of this limited warranty, but are acquired:
 - (i) from a person or entity that is not BEYES or one of its authorized dealers; or
 - (ii) from a BEYES dealer that is not authorized to sell the product at issue in the geographic territory where the purchaser is located, or is not authorized to sell the product at issue within the medical, animal health or dental market, as the case may be, in which purchaser intends to use the product.

11.4 Exclusive Remedy; Consequential Damages Disclaimer

Beyes' obligation under this limited warranty is the repair or replacement of defective parts. Beyes shall not be liable for and hereby disclaims any direct, special, indirect, incidental, exemplary or consequential damages or delays, including, but not limited to, damages for loss of profits or income, loss of use, downtime, cover and employee or independent contractor wages, payments and benefits.

11.5 Warranty Disclaimer

This limited warranty is beyes only warranty and is in lieu of all other warranties, express or implied. Beyes makes no implied warranties of any kind including any implied warranties of merchantability or fitness for a particular purpose. This warranty is limited to the repair or replacement of defective parts.

11.6 Statue of Limitations

No actions may be brought against BEYES for breach of this limited warranty, or implied warranty, if any, or for any other claims arising out of or relating to the products, more than 3 years following expiration of the limited warranty period.



Federal law restricts this device to sale by or on the order of a dentist, physician, or any other practitioner licensed by the law of the states in which he or she practices to use or order the use of this device.

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