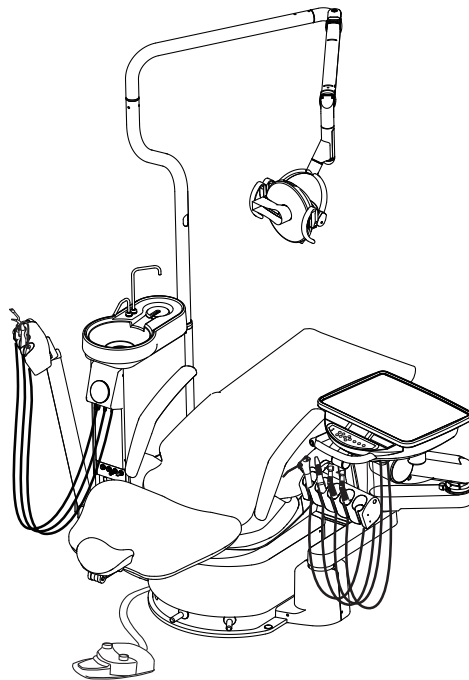


# DENTAL UNIT AND CHAIR

## SP CLEO II

### OPERATING INSTRUCTIONS

This Instruction Manual describes how to use the SP-CLEO II.



#### IMPORTANT

Thoroughly read this Instruction Manual before use, and use the SP-CLEO II according to the instructions.

Keep this Instruction Manual carefully, and read it again whenever it is needed.

This product is a dental unit used for dental care.

People other than dentists and other dental professionals should not use this product.

 **Belmont**



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### Intended Use of the Product

This product is an active therapeutic device intended to administer or exchange energy of electric, air and water for the exclusive use for diagnoses, treatments and relative procedures of dentistry, and its characteristic is not in a potentially hazardous way between such energy and human body, taking account of the nature, the density and site of application of the energy. The product must be operated or handled by the qualified dentists or by dental staffs under the supervision of the dentist. Such dentists or dental staffs should instruct and/or assist the patients to approach to and leave from the product.

Patients should not be allowed to operate or handle the product unless he/she is so instructed. The product is supplied together with the handpieces like electric micromotor, air turbine and/or motor, scaler and so on.

### Environmental Requirements

|                        |                        |                       |
|------------------------|------------------------|-----------------------|
| Ambient Temperature    | Operating +5°C - +40°C | Storage -10°C - +50°C |
| Humidity               | 10 % - 80%             |                       |
| Atmospherical Pressure | 600 hPa - 1060 hPa     |                       |

### Compatibility of Handpieces

Use the compatible handpieces as shown on the attached list for this unit. (List of compatible handpieces).

### Important Notes

In case of the troubles, please contat Takara Belmont offices or your dealers. Do not disassemble or attempt to repair. Disassembly, repair or modifications shoud only be done by a qualified repair technician.

Attempts at disassembly, repair or modifications may lead to abnormal operation and accidents.

### Disposal of residue material

Please request a special contractor when you dispose amalgam.




















































### In case of disposal of equipment

When disposing the unit and chair, appropriately dispose complying with all current applicable regulations and local codes.

In EU area, EU directive 2002/96/EC on waste electrical and electronic equipment (WEEE) is applied on this product. In this directive, environment conscious recycling/abandonment is obligated.



## SYMBOLS


In this manual, on the labels, on the control panel of SP-CLEOII, following symbols are used.  
Confirm the meaning of each symbol.

|   |  |   |   |   |                                     |   |   |
|---|--|---|---|---|-------------------------------------|---|---|
|    | Chair last position  |    | Chair auto return   |    | Chair preset1                       |    | Chair preset2   |
|    | To raise the chair   |    | To lower the chair  |    | To Recline the backrest             |    | To raise the backrest   |
|    | Chair last position  |    | Chair auto return   |    | Chair preset1                       |    | Chair preset2   |
|    | Chair manual control   |    | Chair auto control  |    | To raise te chair                   |    | To Recline the backrest   |
|    | To lower the chair   |    | To raise the backrest                                       |    | Chair manual control                |    | Handpiece coolant spray on/off  |
|    | Handpiece Setting  |    | Fiber optic handpiece light on/off                          |    | Rotation mode select                |    | Micro motor Forward/Reverse select  |
|   | Fiber optic handpiece light on/off                                 |   | Syringe   |   | Function                            |   | Store   |
|  | Minus<br>min.  |  | Plus<br>sec.  |  | Bowl flush                          |  | Cupfiller   |
|  | Dental light on/off  |  | Dental light mode selection                                 |  | Service outlet water flow control   |  | Service outlet (water)  |
|  | Service outlet (air)   |  | Water heater  |  | Water                               |  | Air   |
|  | Protective earth (ground)  |  | Functional earth (ground)                                   |  | Refer to instruction manual/booklet |   |   |
|  | Non-ionizing radiation   |  | Authorized representative in the European community         |  | Manufacturer                        |  | Date of manufacture   |
|  | Caution<br>It means “caution, warnings, or possibility to danger”. |  | Separate collection for electrical and electronic equipment |  | Type B Applied Parts                |  | Autoclave Symbol<br>This symbol on component means that the component can be sterilised with an autoclave at 135°C max. |

## 1. SAFETY PRECAUTIONS

For proper operation, please carefully read through the Safety Precautions before using the product. Items described herein are provided in order to ensure safe and appropriate use of the product, and to prevent property damage or personal injury to the operator and other persons. Furthermore, the precautions describe potential hazards due to improper handling and classify hazards according to degree of damage and level of urgency. Please be sure to read the items and precautions as they both relate to safety.

|  |  |
|--|--|
| <b>Division of caution level</b>   | Magnitude of danger and damage and extent of urgency   |
|  <b>WARNING</b> | This word refers to precautions that if ignored may result in fatal or serious injuries.                   |
|  <b>CAUTION</b> | This word refers to precautions that if ignored may result in minor or moderate injury or property damage. |
| <b>NOTICE</b>  | This word refers to precautions regarding safety.  |

|  <b>WARNING</b>             |  |
|--|--|
| 1. Be sure to switch off the breaker for the equipment when it will not be in use for a long period of time. | When the equipment will not be in use for a long period of time, such as at the end of the day or a non-business day, be sure to switch off the applicable breaker in the office and disconnect the power plug from the outlet. Failure to heed this warning may result in electrical leakage or fire due to deterioration of insulation.  |
| 2. Be sure to turn off the main switch at the end of the day and during break times.                         | Be sure to turn off the main switch at the end of the day and during break times. This will prevent malfunctions and resulting hazards due to accidental contact with the equipment.   |
| 3. Do not attempt to disassemble, repair or modify the equipment.  | Only authorized personnel should disassemble, repair or modify the equipment. Failure to heed this warning may cause an accident, failure, electrical shock, or fire.  |
| 4. Be sure to ground the equipment   | Be sure to ground the equipment firmly and correctly. (To ground the equipment, contact a qualified technician.) Failure to heed this warning may result in electrical shock during failure or electrical leakage.   |
| 5. Pay attention when exposing the equipment to electromagnetic interference.                                | The product may malfunction when exposed to electromagnetic interference. Do not install the product close to communication equipment or an elevator that generates electromagnetic waves. In addition, do not use devices such as a mobile phone that generates electromagnetic waves in the vicinity of the product.   |
| 6. Be sure to turn off the main switch when a high frequency surgical instrument (HF-Surg) is used.          | Use of a HF-Surg may cause the equipment to malfunction due to generated noise. Be sure to turn off the main switch when using the HF-Surg.  |
| 7. Use caution towards patients with a pacemaker.  | Use caution towards patients with a pacemaker. If the patient experiences anything unusual while product is operating, immediately turn off the power of the product and discontinue use.  |
| 8. Never fail to carry out maintenance and inspections.  | Using the product without performing maintenance and inspection programs may result in bodily injury or property damage. Refer to the section for maintenance and inspections.   |
| 9. Be sure to mount the mirror cover.  | The mirror cover for the dental light must be attached whenever the light is used. Touching the light bulb may result in burns. Refer to the operating instructions on the dental light for details.   |
| 10. Be sure to turn off the power when replacing the light bulb.   | The power must be turned off when replacing the dental light bulb. Failure to heed this warning may result in electrical shock.<br>The specified halogen light bulb must be used.<br>The bulb and the bulb holder may be hot. Wait until they become cool before replacing the bulb.<br>Do not touch the halogen bulb with bare hands.<br>Refer to the operating instructions on the dental light for details. |



## 1. SAFETY PRECAUTIONS


### WARNING

|  |
|--|
| 11. Do not place articles weighing 3 kg or more on the instrument table.   |
| Do not place articles weighing 3 kg or more on the instrument table. Failure to heed this warning may result in breakage, malfunction of the table, or an accident.                          |
| 12. Do not apply excessive force to the arms.  |
| Do not mount or apply unnecessary force to the unit arms or the armrests of the patient chair. Failure to heed this warning may cause an accident or the unit to tip over.                   |
| 13. Do not sit on other than seat  |
| When the backrest is at the forward position, do not sit on or place an undue load on the headrest or legrest of dental chair. This could cause the unit to topple or could damage the unit. |
| 14. Do not place a load on the top of the unit.  |
| Do not get on, sit on or place heavy objects on the top of the unit. Damage to the top of the unit may result in physical injury.  |
| 15. Immediately wipe off any water spills or leakage on the floor  |
| Immediately wipe off any water spills or leakage on the floor.<br>Decreased strength of the floor may lead to physical injury including fall, or property damage.                            |
| 16. Take action for power fail   |
| Shut down the main switch of Doctor's table after power fail recovery due to avoid the unexpected movement.  |

### CAUTION

|  |
|--|
| 1. The system must be operated or handled by a qualified dentist or by dental staff under the supervision of a dentist.  |
| Persons other than dentists or other dental professionals must not use the system.   |
| 2. Check safety before operating the product.  |
| Before operating the system, be sure to check that all parts operate normally and safely, and that there are no obstacles in the area.   |
| 3. Pay attention to the patient and children.  |
| Be careful to avoid accidents due to mischief or careless operations by the patient (children in particular).<br>Keep an eye on the patient.   |
| 4. Stop operation of the system when feeling something is wrong.   |
| During inspections, pay attention to any looseness, wobbling, inclination, vibration, abnormal sounds, temperatures, or odors. If something is out of place, even slightly, immediately stop operating the system.                               |
| 5. Do not strongly hit or scrape the system.   |
| Do not strongly hit or scrape the system. Failure to heed this caution may result in breakage of the cover or malfunction of the system.   |
| 6. Be sure to operate the switches by hand.  |
| Except for the footswitch, be sure to operate the switches by hand. Operation of switches by means other than hands may result in breakage or system malfunction.  |
| 7. Take caution when using water other than city water.  |
| The system is designed for use with city water. Use of water other than city water (such as water-line sterilization system) may result in system failure.   |
| 8. Request for flushout of water staying in the unit   |
| In order to maintain the quality of the treatment water to stably supply water to the handpieces, be sure to thoroughly flush out any remaining water in the unit before starting treatment. Refer to the pages for the flushing out procedures. |

## 1. SAFETY PRECAUTIONS

|  CAUTION |  |
|---|--|
| 9. Cautions when shifting/moving the instrument table:                                    |  |
|   | When moving the instrument table, pay attention to the surrounding area. Failure to heed this warning may result in injuries by the tips of the handpieces.<br>The instrument table must be moved with the handle of the unit.   |
| 10. Do not place hot objects on the instrument table.                                     |  |
|   | Do not place hot objects on the instrument table. Failure to heed this warning may result in deformation or discoloration of the table.  |
| 11. Do not place anything articles on the Doctor's table                                  |  |
|   | Do not place anything articles on the Doctor's table when the table part is moved up and down.   |
| 12. Be sure to wipe chemicals off immediately when spilled on the system.                 |  |
|   | If chemicals or water are spilled on the system, immediately wipe off with a dry, soft towel. Failure to heed this warning may result in system malfunction, electrical leakage, stains, or rust on the equipment.   |
| 13. Take care not to activate the water heater without water in it.                       |  |
|   | Activating the water heater without water in it will burn out the heating element, resulting in fire.  |
| 14. Be sure to use the cover over the scaler tip.   |  |
|   | After using the scaler, be sure to use the designated tip cover (for models with a cover) before placing it in the holder. Without the cover, there is a possibility of injury caused by the scaler tip.   |
| 15. Observe the following when handling handpieces:                                       |  |
|   | Change the rotation speeds of the micro-motor and detach the burr of the handpieces only after motor rotation comes to a complete stop for safety purposes. Refer to the operating instructions that come with each handpiece for details.   |
| 16. Observe the following when handling the film viewer:                                  |  |
|   | Handle the film viewer carefully, since a fluorescent lamp is encased. Be sure to turn off the lamp when not in use.   |
| 17. Pay attention the interference between table and chair                                |  |
|   | The cart type has no safety switch, so pay attention the interference between chair and unit when chair is moved.  |
| 18. Observe the following concerning the cart hose:                                       |  |
|   | Do not tread on the cart hose. Failure to heed this warning may result in damage to the hose, as well as people tripping over.   |
| 19. Cautions when adjusting the height of the cart-type instrument table:                 |  |
|   | After adjusting the height, be sure to fasten the loosened lock screw. Failure to heed this warning may cause the table to shift, resulting in an accident.  |
| 20. Pay attention to entrapment during automatic operation of the treatment unit.         |  |
|   | During automatic operation of the treatment unit, pay attention to surrounding areas before initiating operations. Failure to heed this warning may result in breakage of the backrest, stool, or instrument table. Furthermore, check that the patient is in the correct position and always monitor the patient during system operation. |
| 21. Pay attention during the headrest operation   |  |
|   | Do not allow hands, fingers, or hair to become entangled in the moving parts of the headrest during operation.   |
| 22. Precautions in handling of the gas burner   |  |
|   | Keep the gas burner way from flammable materials. This may cause a fire.<br>Be sure to extinguish the flame and turn off the main valve when the gas burner is not in use.   |
| 23. Caution when cleaning the control panel (membrane switch):                            |  |
|   | Seepage of sterilization liquid into the back of the membrane sheet will cause switch failure. Be sure to use a paper towel applied with sterilization liquid to clean the membrane sheet surface.   |

## 1. SAFETY PRECAUTIONS

### CAUTION

#### 24. Precautions for use of handpieces

Handpieces may have poor spraying performance or generate heat due to the lack of cooling water/cooling air. In the case of the development of heat or an odor of something burning, immediately discontinue use and contact the dealer or our company because burns may occur or dental pulp may be adversely affected.

#### 25. Do not use the water cleaning filter in a setting where freezing is expected

Do not use the water cleaning filter in a setting where freezing is expected. Damage to parts may lead to water leakage.

#### 26. Observe the following when cleaning the Spittoon bowl:

Never use sandpaper, wire wool, or detergents containing abrasive compounds to clean the Spittoon bowl. Do not use overly acidic or alkaline pipe cleaning agents, as they may corrode metals.

#### 27. Pay attention to water discharge when detaching the Spittoon bowl.

When detaching the Spittoon bowl, be sure to turn off the main switch; otherwise, the water supply sensor will sense hands or objects during the detachment, which will activate the bowl flush mechanism. Water may spray out and leak into areas that may cause rust.

#### 28. Caution when cleaning the plastic covers:

When cleaning the plastic covers, use only the disinfectant (Durr FD333) recommended by this company or a diluted neutral detergent, or the plastic cover may crack.  
After cleaning, make sure to wipe off all residue with a dry and soft cloth.

#### 29. Air pressure of the clean water system (optional) must be less than 0.2Mpa.

The air pressure to the clean water system must be regulated to less than 0.2Mpa. Excessive pressure may rupture the clean water system.

#### 30. Do not use water for the clean water system (optional) other than purified water, distilled water or pure water.

For the clean water system use only purified water, distilled water or pure water.  
Do not use such as mouth wash or electrolytic solution which may cause clogging in tubings or adverse effect on inner valves and instruments.

#### 31. Close the water main valve at the end of the day.

Make sure to close the water main valve at the end of the day to prevent a water leakage.

#### 32. Read the documents accompanying the various pieces of equipment

Before use, be sure to carefully read the package inserts and Instruction Manuals accompanying the various pieces of equipment (including optional articles) to ensure proper use.

### NOTICE

#### 1. Troubleshooting and contact information

In the case of any problems, discontinue use, turn off the main switch and contact the dealer or our company.

#### 2. Operational check of the air compressor:

If air is not supplied to the product, the system will not function even if the main switch is turned on.  
Before operating the product, turn on the power to the air compressor.

#### 3. The air turbine must be of the type with a water check valve.

The air turbine must have a water check valve. If the turbine is not the correct type, contact your dealer or our company.

#### 4. Handling of the system during power failure:

If the system stops during operation due to a power failure, place the handpiece in the holder, and turn off the main switch.

#### 5. Function of the flow adjustment valve/knob

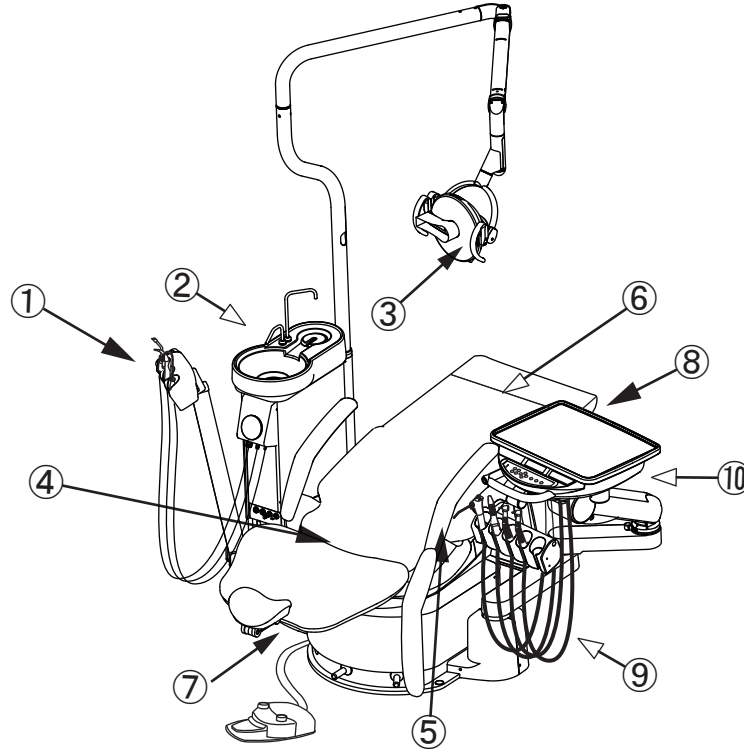
The function of the flow adjustment valve/knob is to regulate, not to stop, air/water flow.  
Do not overly tighten the valve/knob or the knob may break.

## 1.SAFETY PRECAUTIONS

### Caution Points During Operation of the Product

#### Description of Symbol Marks

- ➡ Caution areas (such as moving parts, rotating parts and detachable parts to which caution should be paid)
- ➞ Caution areas that are provided with an emergency stop mechanism



- ① **Be aware of contact with the assistant' s instrument holder.**  
The upper body of the patient must not go over the cuspidor unit.
- ② **The cuspidor unit' s rotation**  
Make sure that the patient does not lean on the cuspidor unit, as pushing on the spittoon bowl causes it to swing outwards.
- ③ **Ensure that the mirror cover is securely in place.**  
The mirror cover must be installed securely.
- ④ **Take care not to be trapped by moving parts of the backrest.**  
Do not put hands or feet into the gap between the backrest and the seat.
- ⑤ **Take care not to be trapped by the armrest.**  
Do not operate the chair with the right armrest swung out 180 degrees.
- ⑥ **Take care not to be trapped by the lower part of the legrest.**  
Do not put your feet under the legrest.
- ⑦ **Take care not to be trapped by moving parts of the headrest.**  
Do not allow hands, fingers, or hair to become entangled in the moving parts of the headrest.
- ⑧ **Take care not to be trapped by the lower part of the seat.**  
Do not put hands or feet into the gap in the lower part of the seat.
- ⑨ **Check the locking mechanism of the primary arm.**  
Check that, when moving the instrument table to the back of the backrest, the chair lock indicator on the control panel (membrane switch) blinks red, and operation of the chair is halted.
- ⑩ **Be aware of interference between the chair and the table.**  
Do not move the table under the moving parts of the chair.

## 2. REQUEST FOR WATER FLUSHOUT (DISCHARGE)

Precautions for water quality safety

E type:Standard

**E**

A type:Option

**A**

### CAUTION


To maintain the water quality for treatment and for stable water supply to the handpieces, ensure to carry out flushout of the residual water in the unit before starting treatment.


At the beginning of the week or in the morning, that is, a long period of idle time, the residual water in tubings and water heater in the unit tends to permit bacteria being propagated.


Ensure to carry out flushout of water lines in the unit before starting treatment, for the safe treatment and for the operation of the handpiece without any problem.

It is also recommended to flush out the residual water in the unit and in handpiece tubings with fresh water, after the treatment in the morning and also in the evening to prevent bacteria propagation.

Standard length of time required for flushout of water lines in the unit

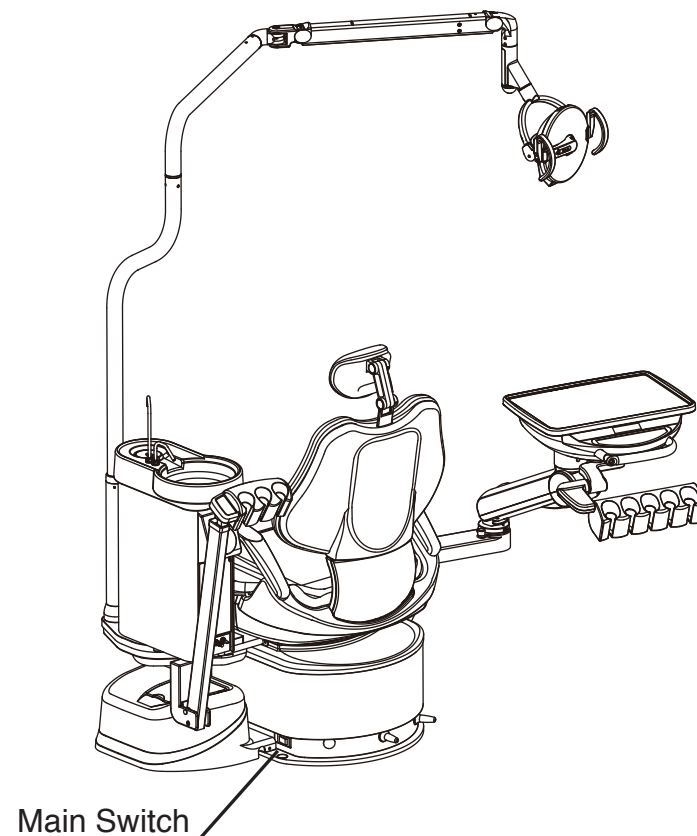
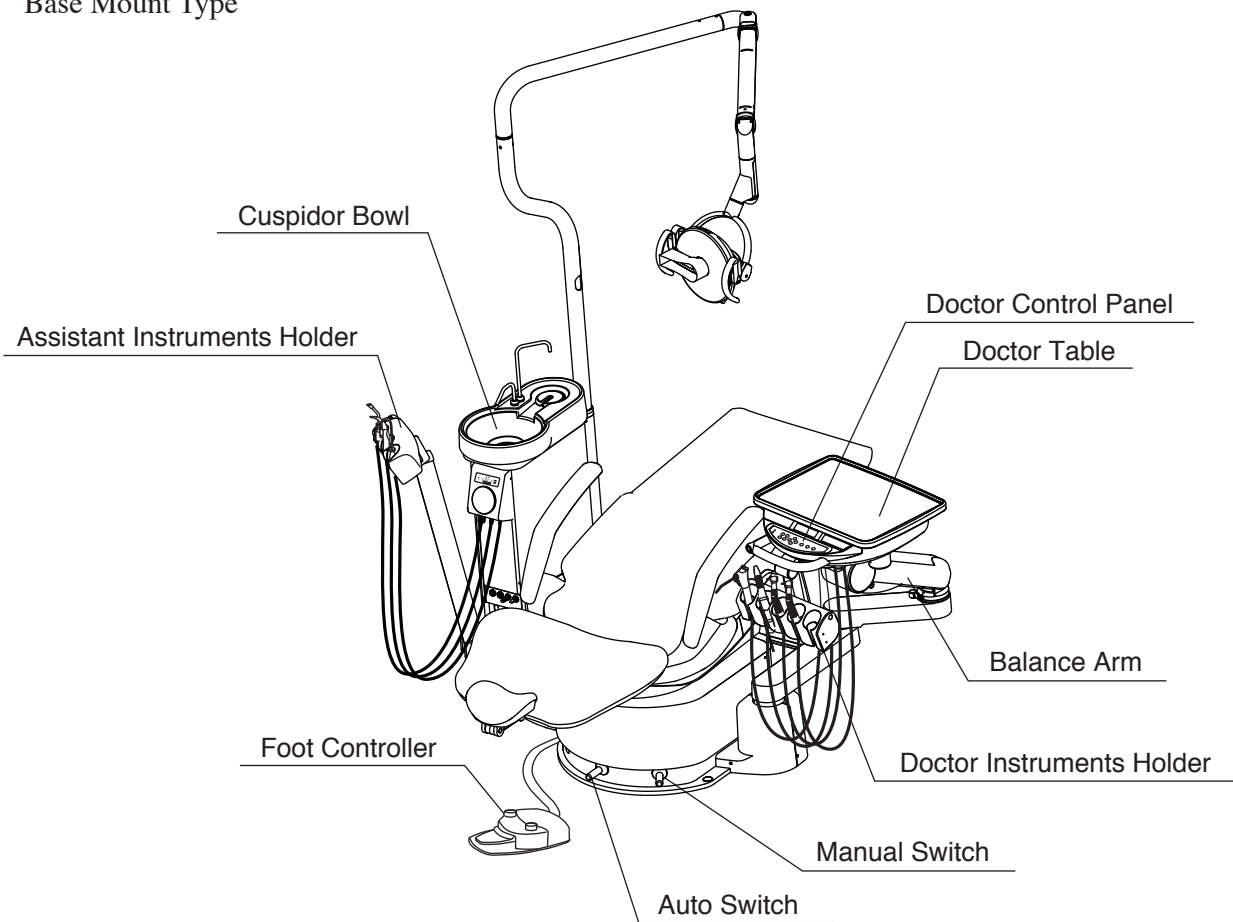
|  |   |
|--|---|
| <b>Handpiece line</b><br>Air Turbine<br>Micro Motor<br>Scaler<br>Syringe (for both doctor / assistant) | About 40 seconds per each of turbine, motor, scaler and syringe.<br>(About 40 seconds also in case of flushout of all of them in a batch.)<br> <b>CAUTION</b><br>Apply flushout to the scaler with the body kept fitted. Failure may result otherwise. |
| <b>Cuspidor line</b><br>Cupfiller (water heater)<br>Bowl flush   | About 5 minutes for cleaning water in cupfiller line.   |

| Flushout procedure    |   |  |
|--|---|--|
| <b>Handpiece line</b><br>Pick up one handpiece out of the holder, and hold it over the cuspidor bowl with the turbine kept as it is and the contra angle connected to the motor.<br>(In case the flushout function is provided, pick up all the handpieces in a lump from the holder, and hold them on the cuspidor bowl.) | Mode I: For Flushing out the Handpiece water line only<br>As for flushout procedures, please refer to Page 25 selection and operation of flushout Mode I. | Mode II: For Flushing out the cupfiller and cuspidor bowl after handpiece flushout<br>As for flushout procedures, please refer to Page 25 Selection and operation of flushout Mode II. |
| <b>Cuspidor line</b><br>Cupfiller (water heater)<br>Bowl flush   |   |  |

| Flushout procedure   |   |  |
|---|---|--|
| <b>Handpiece line</b><br>Pick up one handpiece out of the holder, and hold it over the cuspidor bowl with the turbine kept as it is and the contra angle connected to the motor.<br>(*In case the flushout function is provided, pick up all the handpieces in a lump from the holder, and hold them over the cuspidor bowl.) | * Applicable when flush-out function was selected as optional.<br>Turn the toggle switch on and flush-out the handpiece             |  |
| <b>Cuspidor line</b><br>Cupfiller (water heater)<br>Bowl flush  | Repeat cupfilling a few times. (at least 3 times)<br>Press the bowl flush switch and keep flushing the cuspidor bowl for 5 minutes. |  |

### 3. OVERVIEW AND MAJOR COMPONENTS

Base Mount Type



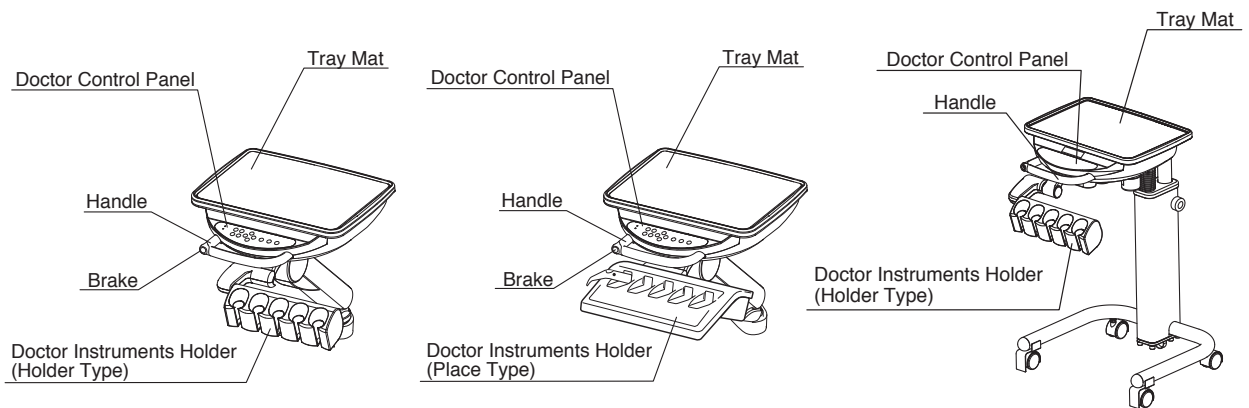
### 3. OVERVIEW AND MAJOR COMPONENTS

#### Docotor Table Section

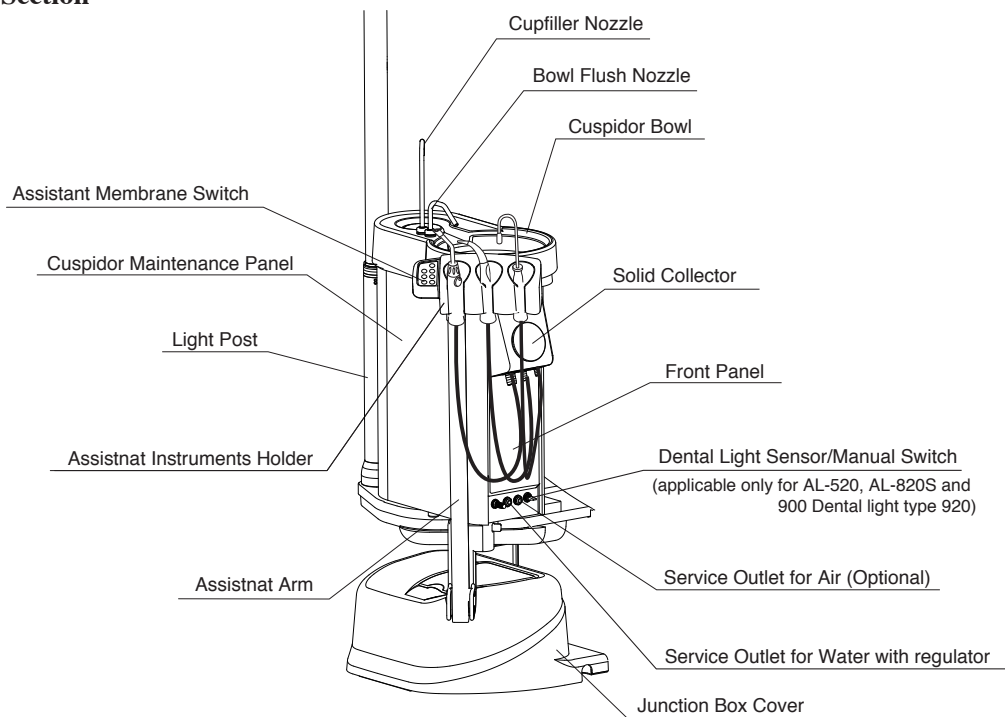
Holder Type **E** **A**

Place Holder Type **E**

Cart Type **E** **A**



#### Cuspidor Section



#### Junction Box Section

Air main valve (inside utility box)

Turn clockwise to close and counter-clockwise to open.

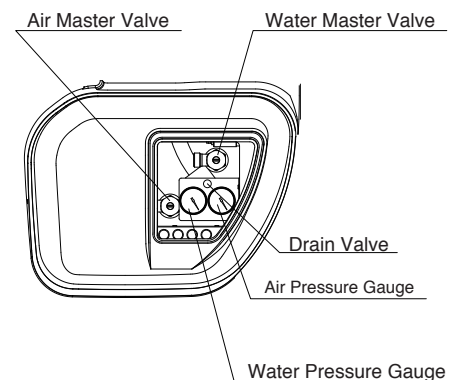
Use a flat head (-) screwdriver for opening/closing.

Water main valve (inside utility box)

Turn clockwise to close and counter-clockwise to open.

Drain valve

This valve is for draining the water in the air filter.

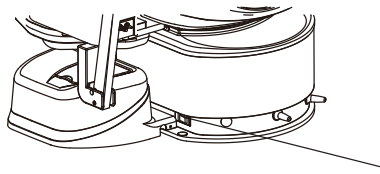




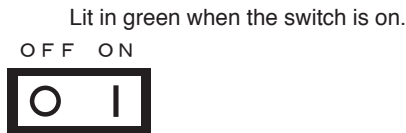
## 4. DESCRIPTION OF OPERATION AND FUNCTIONS OF COMPONENTS

### 1. Chair Section

#### 1-1. Main Switch

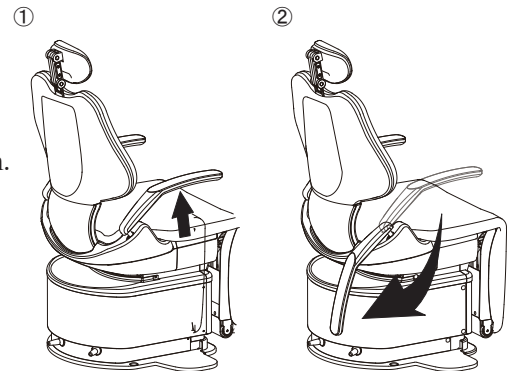


Main Switch



#### 1-2. Armrest

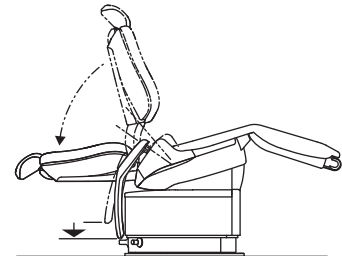
- ① Hold the armrest on the right-hand side, and release the lock by pulling up the armrest diagonally backward (in a direction that is parallel to the armrest axis) by about 1 cm. (The lock is released when the armrest is pulled up to a point where hitting sensation is felt.)
- ② Turn the armrest to 9 o'clock direction. (The armrest can turn by about 180 degrees.)



\* For returning the armrest to the former position, observe the procedure, which is opposite to that of lock release. That is, turn the armrest to the normal working position, and then lock the armrest in position by pushing it down diagonally forward, which is opposite to the direction mentioned in item ① above. Make sure to confirm that the armrest is in the locked safe position before use.

### CAUTION

The armrest approaches the floor when the backrest is tilted as shown to the left. Never operate the chair in the state where the armrest is turned out of the normal working position. A part of the human body or any other article may be caught between the armrest and floor otherwise.



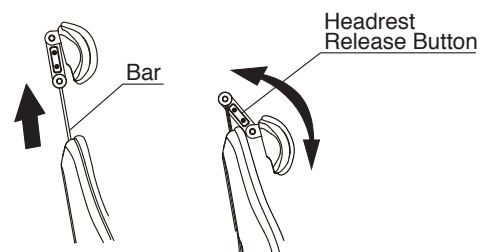
#### 1-3. Headrest

##### 1) Height Adjustment

Press down or pull up the headrest to the desired height.

##### 2) Angle Adjustment

Grasp the headrest release button on headrest mechanism and move to desired position.



### CAUTION

Before moving the headrest, confirm that the patient is placing his/her head in a normal position, and never leave the patient unsupervised while the headrest is in motion.

Do not use the headrest in a position where the patient feels painful.

Before moving the headrest, confirm that there is no obstacle around it lest a part of the human body or any other article be caught between the headrest and backrest.



## 4. DESCRIPTION OF OPERATION AND FUNCTIONS OF COMPONENTS

### 1-4. Stick Switch

#### Auto Switch

##### 1) Preset Control

The chair has two preset positions.

(Preset-1 and Preset-2) Momentarily depress the auto mode stick switch to left side, the chair will move to the preset-1 position automatically.

(Preset-2 is operated by right side.)

##### 2) Auto Return

Momentarily depress the auto mode stick switch to upward, the chair will return to the initial position.

(The seat is fully lowered and the backrest is in the upright position.),

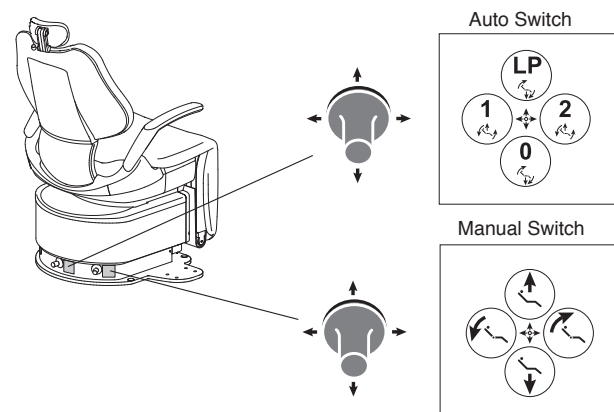
##### 3) Last Position Memory

Momentarily depress the auto mode stick switch to downward at the reclined backrest position (treatment position), the backrest will raise to the mouth rinsing position automatically. Momentarily depress the auto mode stick switch to downward again, the backrest will recline to the previous treatment position automatically.

##### 4) Emergency Stop

During automatic procedure (Preset, Auto return and Last position memory), depress of any side of the stick switch will cancel the automatic movement immediately.

Note : Do not depress the auto mode stick switch for over 3 seconds, because the memorized position in auto mode may be changed.



#### Manual Switch

##### 1) Seat Lifting

Keep depressing the manual mode stick switch to upward until the seat is lifted up to the desired position.

##### 2) Seat Lowering

Keep depressing the manual mode stick switch to downward until the seat is lowered to the desired position.

##### 3) Backrest Reclining

Keep depressing the manual mode stick switch to left side until the backrest is reclined to the desired position.

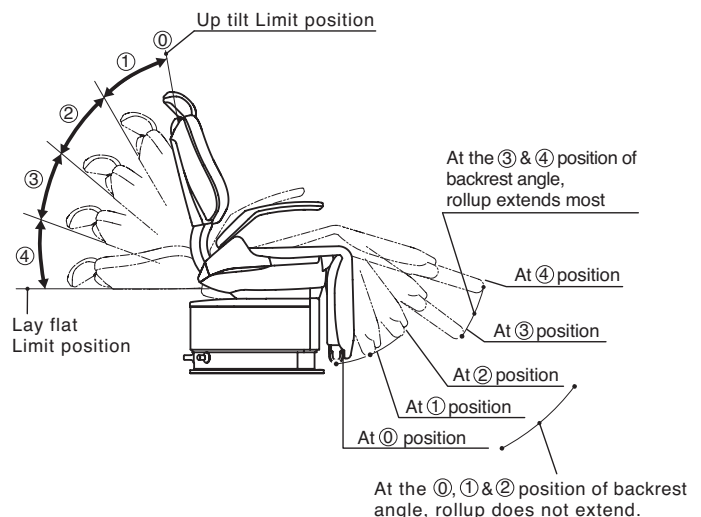
##### 4) Backrest Raising

Keep depressing the manual mode stick switch to right side until the backrest is raised up to the desired position.

Positional relation between Backrest position and Legrest movement/Rollup extension.

1) Legrest raising angle and rollup extension are automatically controlled by backrest angle at preset positions only.

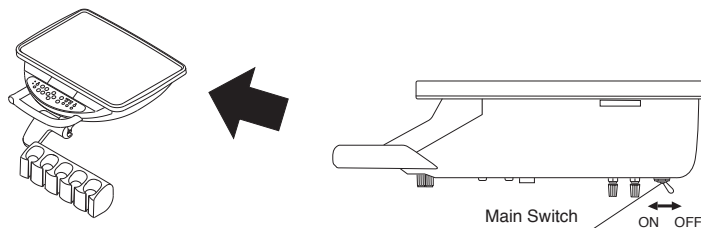
You can't manually raise legrest nor use rollup extension.



## 4. DESCRIPTION OF OPERATION AND FUNCTIONS OF COMPONENTS

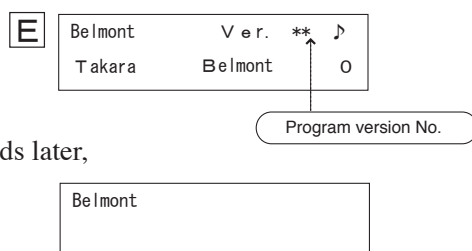
### 2. Doctor Unit Section

#### 2-1. Main switch E A

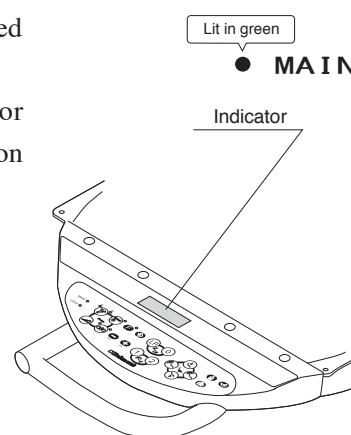


When the main switch is turned on, the MAIN LED on the doctor membrane switch panel lights up in green. This state permits motion of the unit, chair and dental light.. The unit can be moved even while the chair is OFF.

When the main switch is turned on, all the lamps on the doctor membrane switch panel light up, and the following is displayed on the indicator.



A few seconds later,



is displayed and all the functions can be operated.

\* The lamps turn off automatically if the equipment is not used for a certain length of time. But they light up again when any operation is performed.

#### 2-2. Indicator E

If any error arises to the memory, the buzzer sounds and [EEPROM READ ERR] is displayed on the indicator. Once turn off the main switch and then turn on the main switch again. If an error message is still displayed, please contact your dealer or our office.

\* This doctor unit section is actuated by compressed air. Therefore, ensure that the air compressor is working.

#### **Indicator off function**

The indicator is off if no operation is performed for a fixed length of time. This function is provided for preventing fluorescent lamp seizure and for power saving.

1. 120 seconds after steady state display appeared since the main switch (power) was turned on.
2. 30 seconds after normal operation

The indicator is restored when any operation is attempted.

#### **Indicator abnormality and troubleshooting**

There are cases where the display on the indicator becomes abnormal due to noise.

In such a case, turn off the main switch and turn it on again about 5 seconds later.

\* However, there is a possibility where reset does not occur if noise is continuing.

Eliminate the cause for the noise, and then turn on the power again.

If it is not possible to identify the cause for the noise, please contact your dealer or our office.

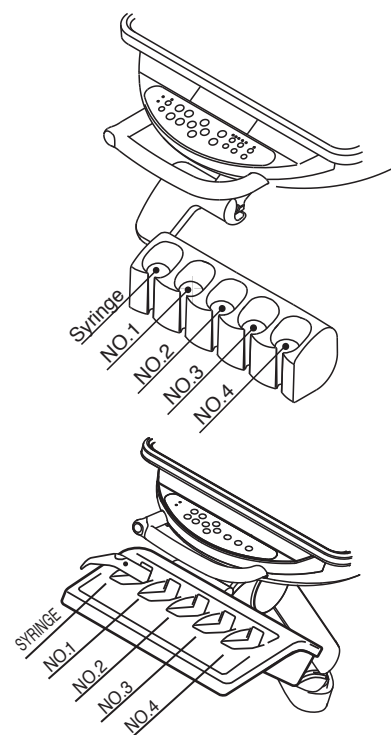
## 4. DESCRIPTION OF OPERATION AND FUNCTIONS OF COMPONENTS

### 2-3. Handpiece E A

When the main switch is turned on, whether handpieces are accurately fitted in instrument holders or not is checked automatically. If any handpiece is not accurately fitted in its instrument holder at this occasion, the subject holder number (counted as No. 1, 2 and so forth from facing left excluding syringe) is displayed on the indicator and the buzzer sounds for a few seconds. Accurately fit the handpiece in the displayed holder.

If the handpiece is accurately fitted while the buzzer sounds (for a few seconds), the buzzer stops, and the section become operative.

If the buzzer stops in the mid-way of the work, turn off the main switch, accurately fit the handpiece and turn on the main switch again about 5 seconds later. Then, use of the section is permitted.



The handpiece is actuated by picking it up from the handpiece holder and operating the foot controller. See pages 25 to 30 for operation of foot controller, micromotor and electric scaler.

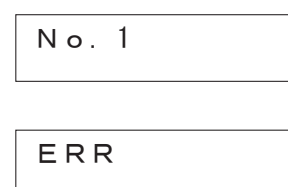
### 2-4. Handpiece priority function (first priority) E

Only one handpiece, which was picked up first of all, is operable.

The holder No. of the operable handpiece is displayed on the indicator.

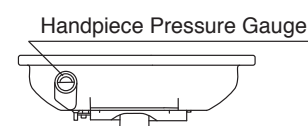
If multiple handpieces are picked up in succession from the holder, and the handpiece that was picked up first is returned to the holder, error display [ERR] appears on the indicator.

If error display appears, the normal state will be restored when all the handpieces are fitted in the holder.



### 2-5. Handpiece air pressure gauge

Displays the handpiece drive air pressure.

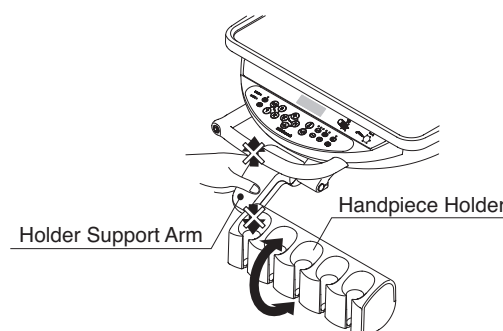


### CAUTION

Holder Support Arm / Handpiece Holder

Do not adjust the holder support arm and handpiece holder.

Because the angle adjustment of the holder is fixed at the point of installation, the holder support arm will be damaged in case it is moved too hard.

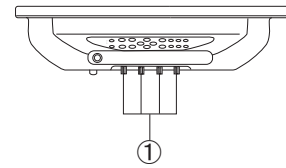


## 4. DESCRIPTION OF OPERATION AND FUNCTIONS OF COMPONENTS

### 2-6. Handpiece spray flow rate control

The handpiece spray flow rate can be adjusted by turning

① knobs (with blue caps) of the doctor section.



Doctor table front arrow view

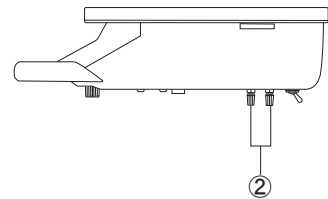
### 2-7. Syringe spray water and air control

The syringe water and air flow rate can be adjusted by turning

② knobs of the doctor section.

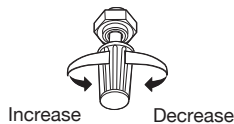
Blue cap ----- Water

Yellow cap --- Air



Doctor table front arrow view

\* With each one of these knobs, the flow rate decreases when the knob is turned clockwise, and the flow rate increases when the knob is turned counterclockwise.



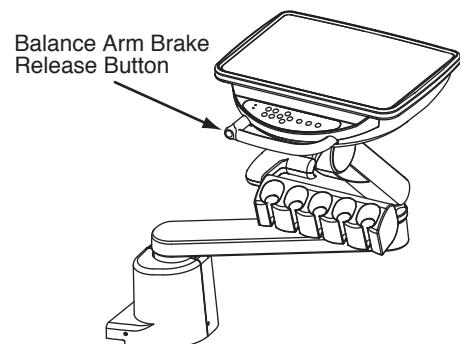
\* The flow rate control knobs are provided for increasing/ decreasing the flow rate, and they are not stop valves.  
Note that the knob will idle if it is shut off with force.

### 2-8. Balance arm brake E A

For base mount type

Use this button for releasing the balance arm brake to raise or lower the table.

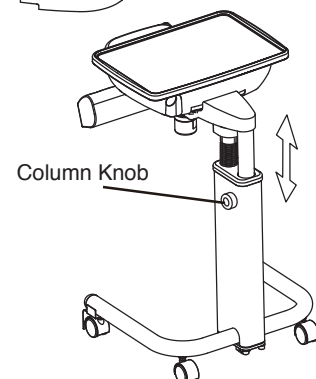
Keep this button pressed while raising or lowering the table.



For cart type

Loosen the column knob to raise or lower the table.

Fix the table in place by firmly tightening the column knob after adjustment.



## CAUTION

Do not place a load of over 3 kg on the table, or table damage, malfunction and failure may be caused.

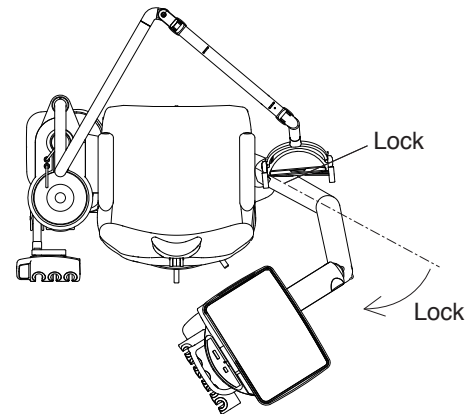
**NOTICE:** Noise might be produced due to impact at the time of table stop if the table is moved upward or downward without pressing the brake release button. Make sure to carry out table height adjustment while the brake release button is pressed.

## 4. DESCRIPTION OF OPERATION AND FUNCTIONS OF COMPONENTS

### 2-9. Motion stop locking device E A

While the doctor table is located behind the chair, auto motion stop lock is applied for preventing damage to the doctor table.

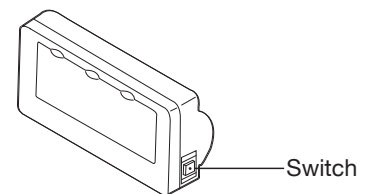
Auto motion stop lock is released when the doctor table is returned to the normal care position.



### 2-10. Intra-oral size filmviewer (optional) E A

The screen light is lit when the switch is pressed, and the screen light is off when the switch is pressed again.

**NOTICE:** Turn off the light when the filmviewer is not used.

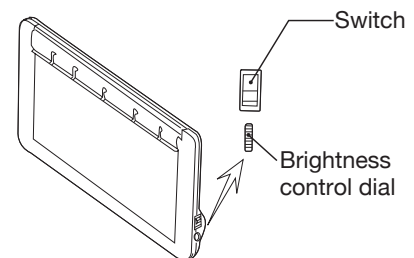


### 2-11. Panorama size filmviewer (optional) E A

The screen light is lit when the switch is turned to the upper position, and the screen light is off when the switch is turned to the lower position.

- The screen brightness increases when the brightness control dial is turned upward, and the screen brightness decreases when the brightness control dial is turned downward.

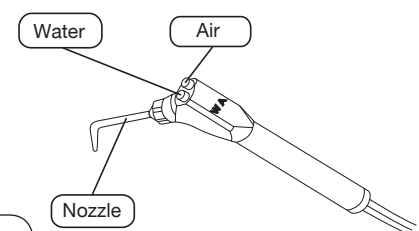
**NOTICE:** Turn off the light when the filmviewer is not used.



### 2-12. Type 77, 3-way syringe E A

Water jets out when the button with W mark is pressed. Air jets out when the button with A mark is pressed. If both buttons are pressed simultaneously, then spray jets out.

The nozzle turns by 360 deg.



### CAUTION

Do not drop the 3-way syringe. (Damage to the syringe and deformation to the nozzle could be caused.)

## 4. DESCRIPTION OF OPERATION AND FUNCTIONS OF COMPONENTS

### 2-13. Foot controller

Type A2 (A Type) **A**

Pedal

The pedal depressing extent can control the turbine rotation speed and air scaler output.

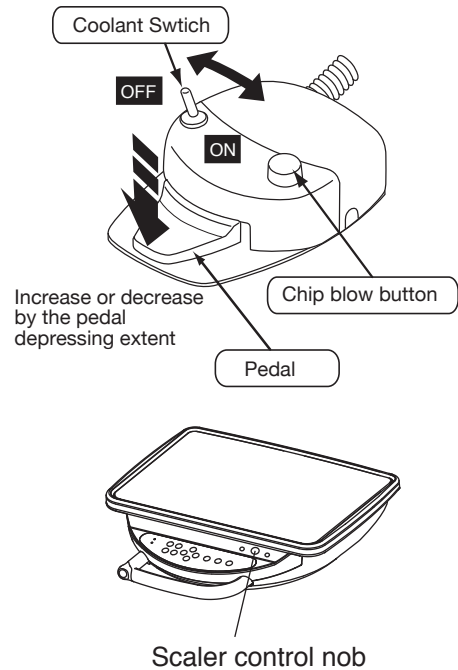
The electric scaler (optional) is activated when the pedal is depressed. Control the output by the scaler output control knob.

Coolant switch

Cooling spray works when the coolant switch is turned to the ON side and a handpiece is then actuated.

Chip blow button

Chip air is delivered out of the turbine when the chip blow button is depressed.



Type SE (E Type) **E**

Pedal

The pedal depressing extent can control the turbine rotation speed and air scaler output.

- The motor rotation is activated when the pedal is depressed. The rotation increases when the pedal is slided to the right, and decreases when the pedal is slided to the left.

The electric scaler output also increases when the pedal is slided to the right, and decreases when the pedal is shifted to the left. The P-MAX scaler does not permit output control during operation. Once stop the operation, control the output, and restart the operation.

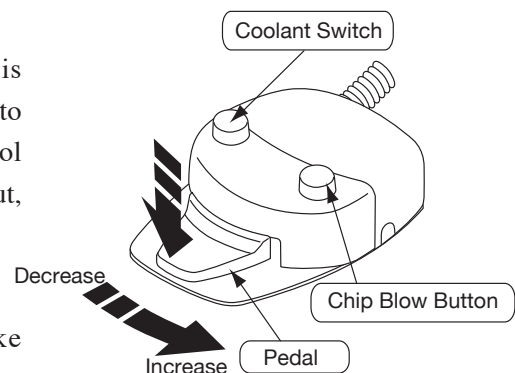
Coolant switch

Depressing the coolant switch turns spray on/off like membrane switch on the table.

4-mode (Water -> Air -> OFF -> Spray) operation can be selected for the motor.

Chip blow switch

Chip air for blowing off the chips jets out of the handpiece when the chip blow switch is depressed.



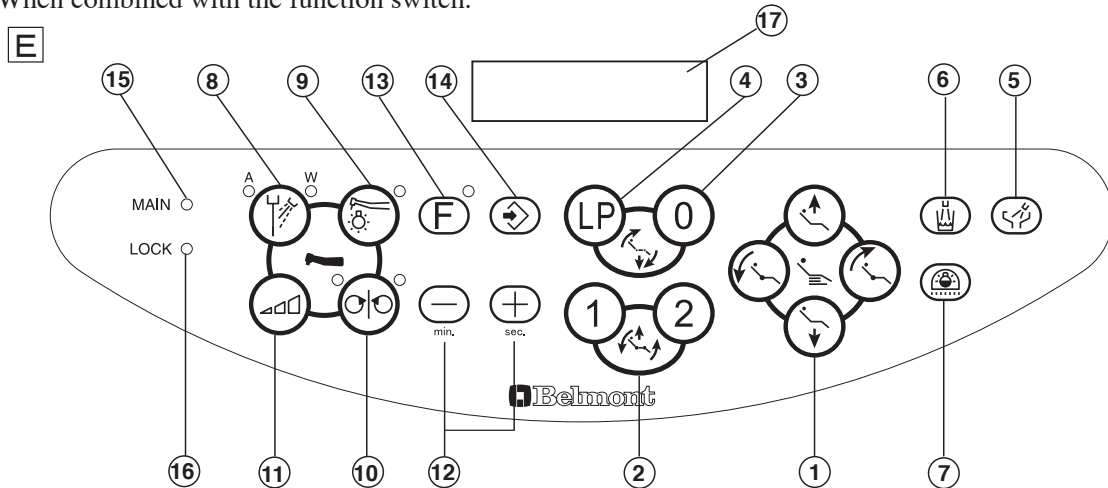
## 4. DESCRIPTION OF OPERATION AND FUNCTIONS OF COMPONENTS

### 2-14. Description of membrane switch panel

An overview of display on the membrane switch panel and each switch on this membrane switch panel is shown in the figure below.

For detailed operating instruction please see pages 14-18.

Each switch on the membrane switch panel provides multiple functions, and various actions can be set when combined with the function switch.



#### ① Chair manual switch

The chair moves while this switch is pressed.

#### ② Chair preset switch

The chair moves to the set position when this switch is pressed.

#### ③ Chair auto return switch

The chair moves to the initial position when this switch is pressed.

#### ④ Chair last position switch

The chair moves to the rinsing position or treatment position each time when this switch is pressed.

#### ⑤ Cuspidor flush switch

Switch for flushing cuspidor bowl.

#### ⑥ Cupfiller switch

Switch for filling water to the cup

#### ⑦ Dental light switch

Switch for turning on the dental light.

#### ⑧ Spray on/off switch

Switch for on/off of handpiece coolant spray.

#### ⑨ Handpiece light switch

Switch for turning on the handpiece fiber-optic light.

#### ⑩ Micromotor forward/reverse select switch

Switch for switching the micromotor rotation direction.

#### ⑪ Rotation mode select switch

Switch for switching between micromotor rotation limit and preset modes.

#### ⑫ (-) (+) switches.

Switches for setting-up mode selection, timer setup and so forth.

#### ⑬ Function switch

Switch for setting-up various operating conditions.

#### ⑭ Store switch

Switch for storing set data.

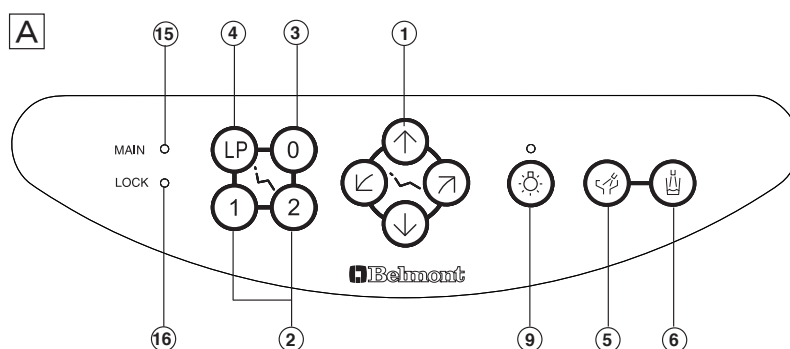
#### ⑮ Main switch indicator lamp

This indicator lights up when the main switch is on.

#### ⑯ Chair motion lock indicator lamp

This indicator lamp is lit while chair motion is locked.



#### ⑰ Indicator





## 4. DESCRIPTION OF OPERATION AND FUNCTIONS OF COMPONENTS



### ① Chair manual switch E A

Switches for manual up/down/backrest reclining of the chair.

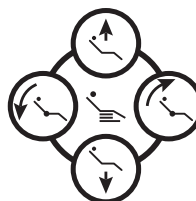
Press   to raise the chair.

Press   to lower the chair.

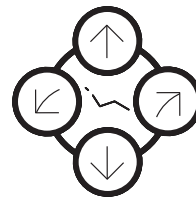
Press   to recline the backrest.

Press   to get up the backrest.

E



A



### ② Chair preset switch E A

Set the chair height and backrest angle in desired position(s), and actuate the chair by either one of these switches.

Press any switches(chair/unit) for stopping the automatic movement.



### ③ Chair auto return switch E A

When this switch is pressed, the chair moves downward to the initial position, and the backrest rises to upright position.

Press any switches(chair/unit) for stopping automatic movement.



### ④ Chair last position switch E A

When this switch is pressed in the fine-adjusted treatment position, the chair moves to the rinsing position. When the switch is pressed again, the chair returns to the former treatment position.



#### Preset position setup procedures

1. Move the chair to the treatment position using manual switches.
2. Upon deciding of the desired treatment position, keep pressing preset switch 0, 1 or 2 to be set for about 5 seconds. The buzzer sounds from the chair, and setup has been completed.
3. To change the set position, perform the procedures steps 1 and 2 above.

#### Last position setup procedures

1. Move the chair to the rinsing position using manual switches.
2. Upon deciding the desired rinsing position, keep pressing last position switch LP for about 5 seconds. The buzzer sounds from the chair, and setup has been completed.
3. To change the set position, perform the procedures steps 1 and 2 above.

## ⚠ CAUTION

When operating the chair by the auto return switch, be careful not to nip the stool or the like by the chair backrest. Damage to the backrest, stool and/or doctor table could be caused. Furthermore, at the time of motion of the chair, ensure that the patient is sitting in a normal position and keep your eye on the patient while the chair is in motion.



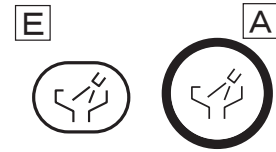
## 4. DESCRIPTION OF OPERATION AND FUNCTIONS OF COMPONENTS

### ⑤ Cuspidor bowl flush switch E A

When this switch is pressed, water comes out of the bowl flush nozzle and flushes the cuspidor bowl. The timer is set for about 5 seconds.

For continuous bowl flushing keep pressing this switch is for 2 seconds or longer.

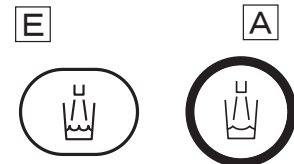
Press the cuspidor flush switch again for stopping flushing.



### ⑥ Cupfiller switch E A

Water is supplied through the cupfiller nozzle when this switch is pressed. Simultaneous with start-up of cupfiller motion, water comes out of the bowl flush nozzle and flushes the cuspidor bowl.

\* The cupfiller is timed for 3 to 4 seconds, and press the switch again to stop in the middle. When the cupfiller switch is pressed, water is supplied automatically for 3 to 4 seconds irrelevant to the water volume in the cup. Watch the overflow. Do not press the switch while the cup is not in place.



### ⑦ Dental light on/off switch E

Switch for on/off the dental light.

\* There are cases where this switch cannot be used depending on the unit specification and the type of dental light.



### ⑧ Spray on/off switch E

Switch for on/pff the handpiece coolant spray.

When a handpiece is picked up and this switch is pressed, either LED A (air) or LED W (water) located on the left-hand side or right-hand side of the switch lights up, and indicates the selected function.

In case of air motor or air turbine, switching between spray (both of LED A and LED W are lit) and OFF occurs when this switch is pressed.

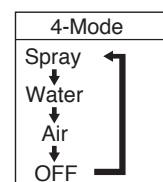
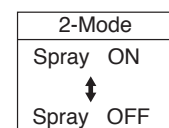
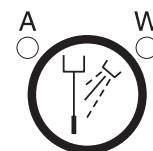
In case of electric scaler, switching between water only (LED W is lit) and OFF occurs when this switch is pressed, regardless of the mode.

In case of micromotor, either the 2-mode or the 4-mode can be selected by mode select setup.

When this switch is pressed in the 2-mode setup, switching between spray and OFF occurs.

In case of 4-mode setup, switching occurs in the sequence indicated below each time when this switch is pressed: Spray to Water only to Air only to OFF

A (AIR) ..... ORANGE  
W (WATER)... GREEN

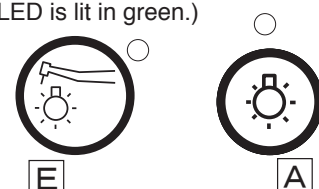


### ⑨ Handpiece light on/off switch E A

Switch for on/off the handpiece light.

Switching between on and off of the handpiece light occurs each time when this switch is pressed.

Case where handpiece light is "ON"  
(LED is lit in green.)

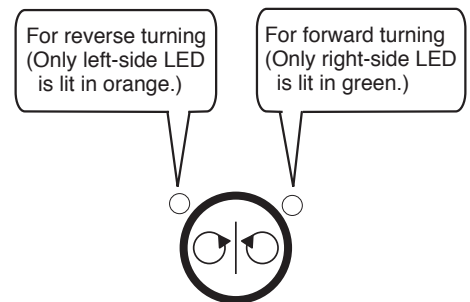


## 4. DESCRIPTION OF OPERATION AND FUNCTIONS OF COMPONENTS

### ⑩ Micromotor forward/reverse select switch E

Use this switch for switching the micromotor rotation direction. Pressing this switch each time changes the direction between forward (clockwise) rotation and reverse (counter-clockwise) rotation.

Forward rotation is preset power is on. In case a micromotor set for reverse rotation is returned to its holder, the LED indicates forward rotation. When such a micromotor is picked up, however, the LED indicates reverse rotation and the alarm buzzer sounds.

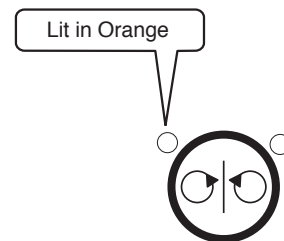


#### \* Handpiece rotation stop function

If a handpiece is picked out of the holder in the state where the foot controller pedal is depressed, the micromotor of this handpiece will not run.

The indicator lamp in the micromotor forward/reverse select switch flickers in orange in this state and thus indicates that the safety mechanism is working.

Make sure to pick up a handpiece first, and then depress the foot controller for operation.



### ⑪ Rotation mode select switch E

This switch is mainly used for switching between micromotor's rotation limit speed and preset rotation speeds (SET 1 to SET 3). Pressing this switch each time changes the speed mode: Limit speed -> SET1 -> SET2 -> SET3 -> Limit speed.

The indicator indicates the selected mode.



### ⑫ (-) (+) switches E

These switches are used mainly for switching the handpiece setup mode.

When the - switch or + switch is pressed, the upper limit of the micromotor rotation speed changes in three steps (or 5 steps).

The indicator indicates the selected mode.



## 4. DESCRIPTION OF OPERATION AND FUNCTIONS OF COMPONENTS

### ⑬ Function switch E

Use this switch for setting various working conditions.

The setup function changes in the sequence indicated below each time when this switch is pressed.

1. Dental timer time setup and motion
2. Doctor number selection
3. Flushout selection and operation
4. Key touch tone selection and change
5. Handpiece light switching-on timing selection
6. Dental timer time-out alarm tone selection
7. Micromotor limit rotation speed selection
8. Micromotor spray mode selection
9. Cupfiller and bowl flush interlocked action selection

\* Do not keep this switch pressed.



### ⑭ Store switch E

Use this switch for storing data and so forth:

1. Store micromotor preset mode. See page 45 for the setup procedure.
2. Store preset timer.
3. Store micromotor recurrence mode at the time of power on.



### ⑯ Chair motion stop function (safety function) A E

The safety mechanism that inhibits chair motion works while any of the following actions is taken. The "LOCK" LED indicator lamp is lit in orange in this state.

Setup is in progress with function switch on the doctor membrane switch panel.

Foot controller is being depressed.

When the doctor table is turned to the back side of the backrest, auto motion of the chair is locked and the chair lock indicator on the table begins to flicker in orange.

LED lit in Orange

**LOCK** ●

## 4. DESCRIPTION OF OPERATION AND FUNCTIONS OF COMPONENTS

### 2-15. Micromotor operation and display

#### 2-15-1. Description of micromotor rotation modes and operation

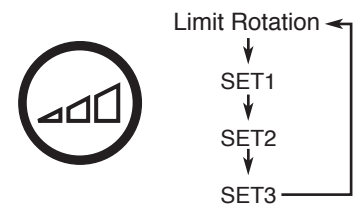
Two modes, that is, limit rotation (limit mode) and preset rotation (preset mode), are available for micromotor rotation. Either one of these modes can be selected by pressing this switch.

The limit mode is a rotation mode providing an upper limit speed in the rotation.

The preset mode (SET1 to SET3) keeps the rotation speed fixed regardless how the the foot controller is operated.


Pressing the switch each time changes the speed mode:



Limit speed -> SET1 -> SET2 -> SET3 -> Limit speed.



#### 2-15-2. Operation for switching to limit rotation (limit mode)

Turn on the main switch and pick up a micromotor from the holder. The rotation mode is displayed on the indicator.

For switching the rotation mode to the limit mode, select the limit mode by pressing the  switch on the membrane switch panel.

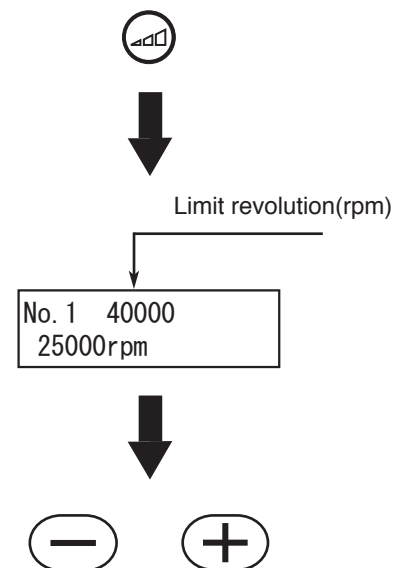
For switching the upper limit in the limit mode, press the  switch or  switch on the membrane switch panel. The rotation upper limit changes in three steps (or 5 steps).

Upper limit of rotation in case of three steps  
10000/20000/40000 rpm


Upper limit of rotation in case of five steps  
5000/10000/20000/30000/40000 rpm



See page 28 for selection of three steps or five steps.


The micromotor rotation speed can be changed in the range of up to the selected upper limit by sliding the foot controller pedal right and left. The rotation speed range varies by the micromotor type.



#### 2-15-3. Operation for switching to preset rotation (preset mode)

For switching from the limit mode to the preset mode, select the preset mode (SET1 to SET3) by pressing the  switch on the membrane switch panel.

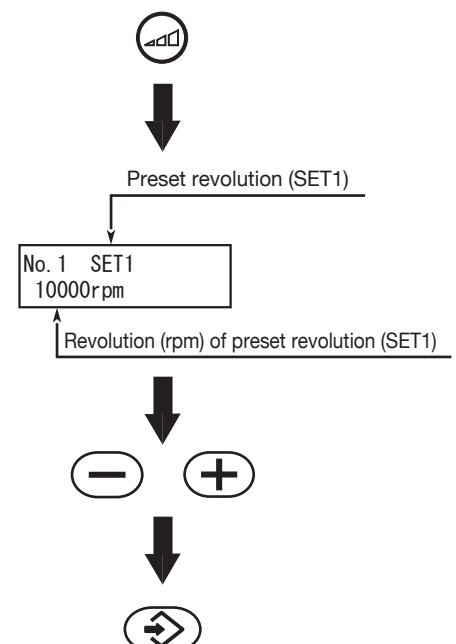
For changing the rotation speed in the preset mode, press the  switch on the membrane switch panel to decrease the rotation, or press the  switch to increase the rotation.

To store the changed rotation, press the  switch. If the main switch is turned off without pressing this store switch, the set value before the change is restored.

See page for details of setup.

The micromotor runs at the fixed rotation speed indicated on the indicator when the foot controller is depressed upon selection of the preset mode (SET1 to SET3).

(The rotation speed shown in the figure is for reference only.)



## 4. DESCRIPTION OF OPERATION AND FUNCTIONS OF COMPONENTS


### 2-15-4. Description of recurrence mode at the time of power on and setup

This recurrence mode is the rotation mode that always appears first when a micromotor is picked up after the main switch is turned on.

It is convenient if a rotation mode frequently used is set as the recurrence mode.

No. 2 SET2  
20000rpm



[Procedure for setup]

1. Turn on the main switch, and pick up a micromotor from the holder.
2. Select a desired rotation mode (limit mode or preset mode) to be set.
3. Press the store switch  for about 2 seconds and the buzzer sounds to confirm that setup of the selected rotation mode has been completed.



### 2-16. Operation and display of electric scaler

When the VARIOS scaler or P-MAX scaler is picked up from the holder, the selected mode is displayed on the indicator, either PERIO, ENDO or SCALING.

For switching the mode, use the  switch or  switch on the membrane switch panel.

The EMS scaler does not provide this mode selection.

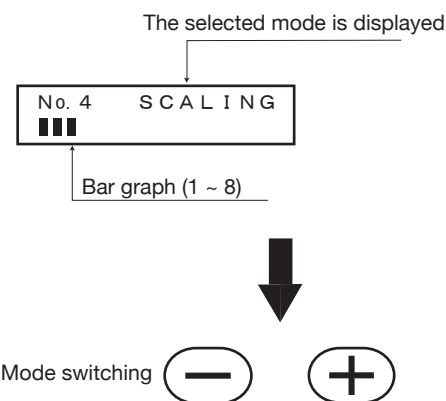
Sliding the foot controller pedal right and left can change the output of the P-MAX scaler.

When the pedal slides to the right-hand end, the output becomes the maximum, and the output is displayed by a bar graph on the indicator even before the operation begins.

The P-MAX scaler does not permit output change during operation. Once stop the motion, adjust the output, and restart the operation.

Sliding the foot controller pedal right and left can change the output of the VARIOS scaler or EMS scaler during operation.

When the pedal slides to the right-hand end, the output becomes the maximum, and the output is displayed by a bar graph on the indicator during the operation.



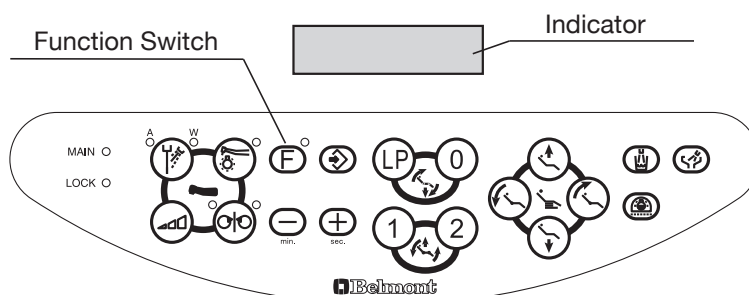
## CAUTION

Carefully read the instruction manual and other documents attached to each scaler before use, and correctly use the scaler

## 4. DESCRIPTION OF OPERATION AND FUNCTIONS OF COMPONENTS

### 2-17. Function switch **E**

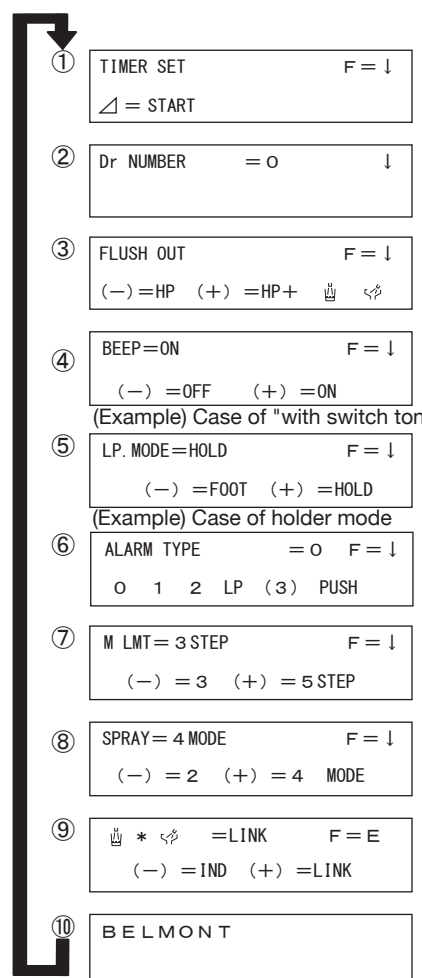
#### 2-17-1. Contents and sequence of function switch



The contents of display on the indicator on the doctor membrane switch panel change sequentially each time when the function switch is pressed to select a desired setup. Contents and sequence of function switch setup are described below.

- ① Setup and operation of dental timer
- ② Selection of doctor number
- ③ Selection and operation of flushout
- ④ Selection and change of key touch tone
- ⑤ Selection of handpiece light switching-on timing
- ⑥ Selection of alarm tone upon time-up of dental timer
- ⑦ Selection of number of steps of micromotor limit rotation speed
- ⑧ Selection of micromotor spray mode
- ⑨ Selection of interlocked action of cupfiller and bowl flush
- ⑩ Return to normal action.

\* Normal action is restored during setup if the next operation is not applied within about 10 seconds.



## 4. DESCRIPTION OF OPERATION AND FUNCTIONS OF COMPONENTS

### ① Setup of dental timer and operation

A subtraction timer is built in.

The maximum settable time is 90 minutes and 50 seconds, and setup in 10-second units is permitted.

Preset of four different times is permitted.

A preset time can be called by chair preset switch ① ② ③ or (LP).

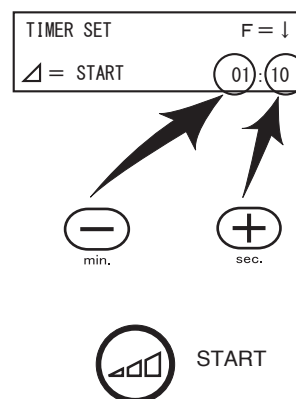
[Operation of timer function]

1. Press the function switch once.
2. Set the desired time.

To increase by 1 minute at a time ... (−) switch  
(Continuous increase occurs if the switch is kept pressed.)

To increase by 10 seconds at a time ... (+) switch  
(Continuous increase occurs if the switch is kept pressed.)

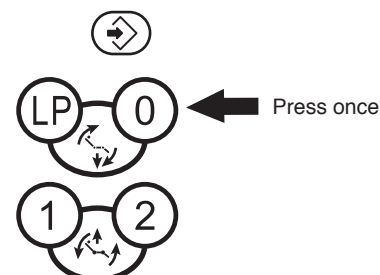
3. Count-down starts when rotation mode select switch (▶) is pressed.
4. When the timer time is reduced to 00:00, the alarm sounds to inform that the set length of time has elapsed.



[Procedure for setup of preset timer]

1. Press the function switch once.
2. Set the desired time.  
To increase by 1 minute at a time ... (−) switch  
To increase by 10 seconds at a time ... (+) switch
3. Press store switch (◀▶).
4. Press one of chair preset switches ① ② ③ and (LP) to be set. Four different preset timers can be set.

After the set time has elapsed



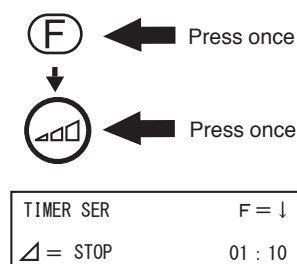
[Procedure for use of preset timer]

1. Press the function switch once.
2. Press the chair preset switch ① ② ③ or (LP) to be called.
3. Start the timer by pressing rotation mode select switch (▶).
4. When the set timer time elapses, the alarm sounds to inform that the set length of time has elapsed.

[Timer cancellation]

This is the procedure for cancellation of the dental timer during countdown action.

1. Press the function switch once.
2. Press rotation mode select switch (▶).



## 4. DESCRIPTION OF OPERATION AND FUNCTIONS OF COMPONENTS

### ② Selection of doctor number

Chair positions and handpiece initial setup for four different doctors can be stored.

Micromotor preset rotation speed, and on/off statue of light pack and spray. (3 positions per each doctor)

Micromotor motion state at the time of power on, and dental light switch on/off state.

Chair preset position. (Up to 3 positions for each doctor)

Dental light intensity. (2 positions, that is, high/low, for each doctor)

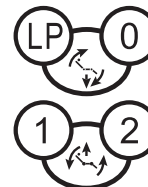
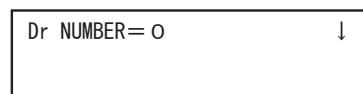
Dental timer preset time.

Light pack residual lighting time.

\* If you want to change setup of the light pack residual lighting time, please contact your dealer or our office.

[Procedure for setup]

1. Press the function switch twice.
2. Press one switch from ① ② ③ and ④ for selection.



- ① . . . Doctor Number= 0
- ② . . . Doctor Number= 1
- ③ . . . Doctor Number= 2
- ④ . . . Doctor Number= 3

### ③ Selection and operation of flushout

A flushout procedure can be selected from two procedures.

[Procedure for operation]

I. Case of flushout of handpiece water line only

1. Press the function switch three times.
2. Press the ⑤ switch.
3. Pick up the handpiece to be flushed, and set it over the cuspidor bowl or the like.
4. Depress the foot controller pedal. Then release the pedal, and the water jets out of the handpiece for 40 seconds .

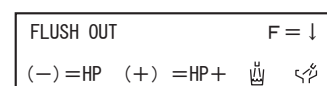
II. Case of flushout of cupfiller and cuspidor bowl after termination of handpiece flushout

1. Press the function switch three times.
2. Press the ⑥ switch.
3. Pick up the handpiece to be flushed, and set it over the cuspidor bowl or the like.
4. Depress the foot controller pedal. Then release the pedal, and the water jets out of the handpiece for 5 minutes.

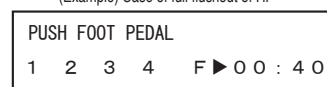
On termination of handpiece flushout, water is delivered out of the cupfiller and cuspidor nozzles simultaneously for 5 minutes for cuspidor bowl flushout.

\* To stop flushout action in mid-way, press any switch or depress the foot controller pedal.

\* Normal action is restored unless the ⑤ or ⑥ switch is pressed within about 10 seconds after the function switch was pressed.

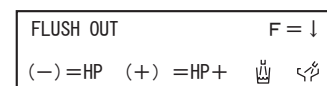


(Example) Case of full flushout of HP

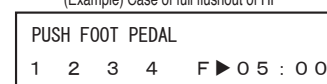


The ID number of the picked up HP is displayed. (HP numbers are 1, 2, 3 and 4 from front left.)

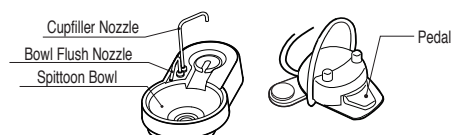
The residual time is displayed. (Starts from 40 seconds.)



(Example) Case of full flushout of HP



The residual time is displayed. (Starts from 5 minutes, and after termination of handpiece flushout, starts from 5 minutes again.)





## 4. DESCRIPTION OF OPERATION AND FUNCTIONS OF COMPONENTS

### ④ Selection and change of key touch tone

With or without beep tone that is issued when a switch is pressed can be selected, and the beep tone frequency (tone quality) can be changed.

(It is not possible to control the volume of the selected frequency.)

[Procedure for setup]

1. Press the function switch four times.
2. Press the relevant setup switches from the following.

- To turn off the tone ----- (—)
- To sound the tone ----- (+)
- To increase the frequency ----- ↻
- To decrease the frequency ----- ↺
- To change the frequency to initial setup -- (0)

[Precautions for change to frequency]

Ensure to press the (+) switch on finishing the frequency change.

The contents of frequency setup are not displayed on the indicator. However, the switch tone sounds each time when the frequency is changed. Confirm the frequency change by hearing the tone.

|          |         |
|----------|---------|
| BEEP=ON  | F = ↓   |
| (—) =OFF | (+) =ON |

(Example) Case of "with switch tone"

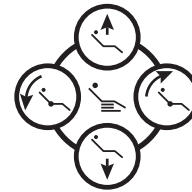
Tone off



Tone on



Frequency High



Frequency Low

Return to initial setup



Press once



### ⑤ Selection of handpiece light on timing

The handpiece light on timing can be selected from the two mode:

#### 1) Rotation mode

The light is turned on while the handpiece is running, and is off upon elapse of the set light remaining time after termination of handpiece running.

#### 2) Holder mode

The light is turned on when the handpiece is picked out of the holder.

|               |           |
|---------------|-----------|
| LP. MODE=HOLD | F = ↓     |
| (—) =FOOT     | (+) =HOLD |

(Example) Case of holder mode

Revolution mode



holder mode



[Procedure for setup]

1. Press the function switch five times.
2. Press the desired setup switch.

Rotation mode ----- (—) switch

Holder mode ----- (+) switch

## 4. DESCRIPTION OF OPERATION AND FUNCTIONS OF COMPONENTS

### ⑥ Selection of alarm sound upon time-up of dental timer

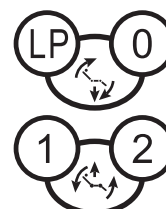
The alarm sounds on termination of timer time after countdown of dental timer.

Four alarm patterns are provided, and even in case where multiple chairs are installed in the same room, the chair from which the alarm sounds can be easily identified if different alarm patterns are set.

[Procedure for setup]

1. Press the function switch six times.
2. Press a desired chair setup switch from ① ② and ③ .

|               |   |   |    |     |      |       |
|---------------|---|---|----|-----|------|-------|
| ALARM TYPE= 0 |   |   |    |     |      | F = ↓ |
| 0             | 1 | 2 | LP | (3) | PUSH |       |



### ⑦ Selection of number of steps of micromotor limit rotation

The number of steps of micromotor limit rotation can be selected from 3 steps and 5 steps.

Case of 3 steps

Case of 5 steps

(The rotation values indicated above are given for reference only.)

[Procedure for setup]

1. Press the function switch seven times .
2. Press the desired setup switch.
  - 3 steps --- ① switch
  - 5 steps --- ② switch

|               |              |       |
|---------------|--------------|-------|
| M LMT= 3 STEP |              | F = ↓ |
| (-) = 3       | (+) = 5 STEP |       |

(Example) Case where revolution is of "3 steps"



### ⑧ Selection of micromotor spray mode

Case of 2 modes

Micromotor spray on/off only.

Case of 4 modes

Micromotor spray on/off, water only and air only.

[Procedure for setup]

1. Press the function switch eight times.
2. Press the desired setup switch.
  - 2 modes --- ① switch
  - 4 modes --- ② switch

|                |         |       |
|----------------|---------|-------|
| SPRAY = 2 MODE |         | F = ↓ |
| (-) = 2        | (+) = 4 | MODE  |

Example) Case of micromotor spray 2-modes



## 4. DESCRIPTION OF OPERATION AND FUNCTIONS OF COMPONENTS

### ⑨ Selection of interlocked action of cupfiller and bowl flush

Selection is permitted from two procedures.

Case of non-interlock

Flushout of the cuspidor bowl is not implemented even after start-up of cupfiller.

Case of interlock



Flushout of the cuspidor bowl is implemented simultaneously with start-up of cupfiller.

[Procedure for setup]

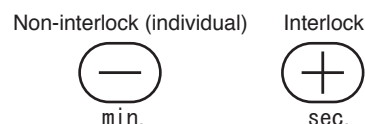
1. Press the function switch nine times.
2. Press the desired setup switch.

Non-interlock --- (−) switch

Interlock ----- (+) switch

|   |   |        |            |
|---|---|--------|------------|
|  |  | = LINK | F = E      |
| (−)   |   | = IND  | (+) = LINK |

(Example) Case of interlock




### 2-18. Setup of micromotor preset mode

The micromotor preset mode causes the micromotor to run at a preset rotation regardless of the foot controller pedal depressing extent.

The micromotor preset mode permits memory setup of SET1 to SET3.

[Procedure for setup]

1. Pick up a micromotor from the holder.
2. For memory setup of preset mode SET1, press rotation mode select switch  until SET1 is displayed on the indicator.
3. SET1 is displayed on the indicator, and at the same time, the rotation set in SET1 is displayed.

The micromotor runs at this displayed rotation (value for reference).

4. To change the rotation, press the (−) switch or (+) switch.

The numerical value displayed on the indicator changes.

5. To store the rotation after change, press the  switch.

The set value before change is restored if the main switch is off without pressing this switch.

6. Memory setup of each of preset mode SET2 and SET2 can be implemented by observing the procedure described in step 2 and subsequent above.



Preset revolution (SET1)

No. 1 SET1  
10000rpm

Revolution (rpm) of  
preset revolution (SET1)



For changing  
the revolution



For storing

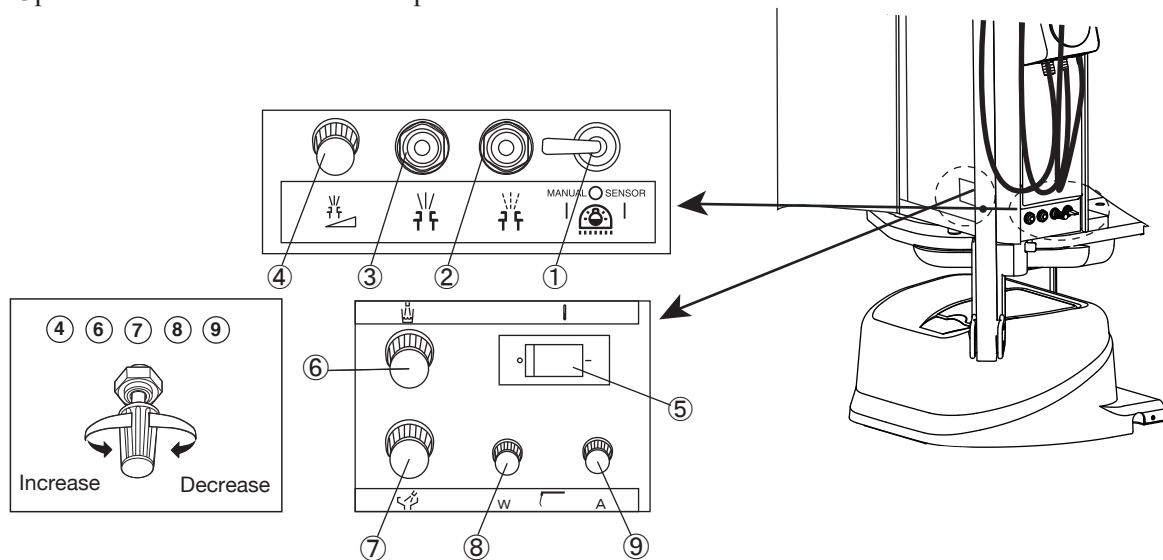
### CAUTION

Do not change the rotation while the micromotor is running.

## 4. DESCRIPTION OF OPERATION AND FUNCTIONS OF COMPONENTS

### 3. Cuspidor unit section

#### 3-1. Operation and functions of control panel section



#### ① Dental light select switch (optional)

Switch for changing the AL-520 / AL-820S / 900 Dental light (Type 920) lighting mode. Either sensor mode or manual mode can be selected.

#### ② Service outlet (air) (optional)

Use this outlet to supply air to external equipment.

#### ③ Service outlet (water)

Use this outlet to supply water to external equipment.

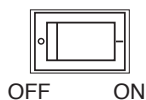
#### ④ Service outlet water flow control

Use this knob to control the water flow rate supplied to outside. The flow rate decreases when the knob is turned clockwise, and the flow rate increases when the knob is turned counterclockwise.

#### ⑤ Water heater switch

Switch for turning on/off the cupfiller water heater.

The cupfiller water is heated to warm water when this switch is turned on.



**NOTICE:** Water drips from the cupfiller nozzle when the water in the water heater is heated. This phenomenon is not a sign of failure.

### **CAUTION**

To prevent damage to the water heater caused by heating without water, ensure that the cup is filled with water before turning on the water heater switch. The heating element will burn out if the water heater is switched on without water.

#### ⑥ Cupfiller control knob

Use this knob for controlling the cupfiller water flow rate. The flow rate decreases when the knob is turned clockwise, and the flow rate increases when the knob is turned counterclockwise.

## 4. DESCRIPTION OF OPERATION AND FUNCTIONS OF COMPONENTS

### ⑦ Bowl flush control knob

Use this knob for controlling the bowl flush water flow rate. The flow rate decreases when the knob is turned clockwise, and the flow rate increases when the knob is turned counterclockwise.

### ⑧ Syringe water control

Make adjustment of syringe water by the syringe water control knob (with blue cap). The flow rate decreases when the knob is turned clockwise, and the flow rate increases when the knob is turned counterclockwise.

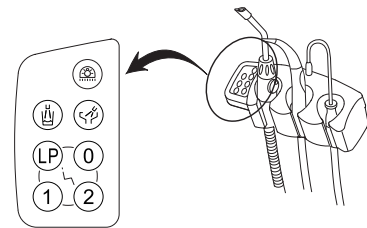
### ⑨ Syringe air control

Make adjustment of syringe air by the syringe air control knob (with yellow cap). The flow rate decreases when the knob is turned clockwise, and the flow rate increases when the knob is turned counterclockwise.

**NOTICE:** The water and air flow rate control knobs are provided for increasing/decreasing the flow rate, and they are not stop valves. Note that the knobs will become idle if they are shut off too strongly.

### 3-2. Assistant membrane switch panel

The operation and functions of the assistant membrane switch panel are the same as those on the membrane switch panel in the doctor unit section.

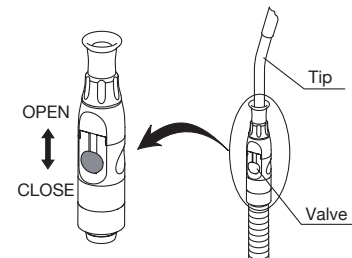


### 3-3. Vacuum handpiece

Suction begins when the vacuum handpiece is taken out of the holder.

In case of the central vacuum system, suction will not stop immediately after the vacuum handpiece was returned to the holder, but suction will continue for about 3 seconds by the function of delay circuit.

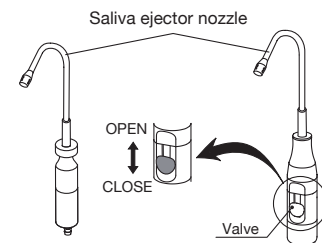
Opening or closing the valve can control the suction flow rate.



### 3-4. Saliva ejector handpiece

Suction begins when the saliva ejector handpiece is taken out of the holder, and suction terminates when the saliva ejector handpiece is returned to the holder.

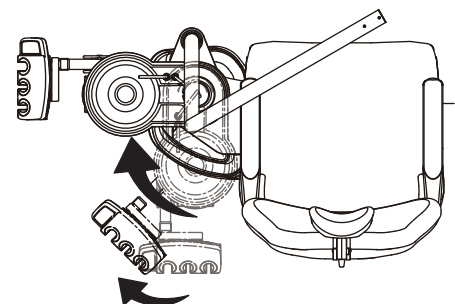
- In case the saliva ejector handpiece is equipped with a valve, opening or closing the valve can control the suction flow rate.



### 3-5. Cuspidor Rotation

The cuspidor unit turns clockwise by 90 degrees.

The assistant instruments holder further turns clockwise by 45 degrees in addition to 90 degrees turn of the cuspidor unit.

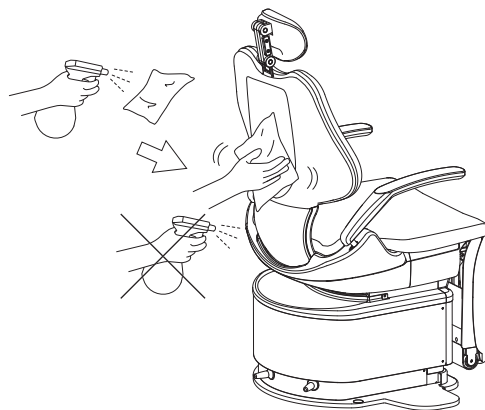


## 5. CARE AND MAINTANANCE

### 1. Chair Section

#### Chair Cleaning

- The surface of the chair's seating area is made of synthetic leather. Apply dry wiping or wipe the surface with cloth moistened with either water or diluted neutral detergent for the care.
- If the color of clothing or belt remained on the synthetic leather, wipe it off with cloth moistened with diluted neutral detergent as soon as possible, to avoid its penetration caused by plasticizer.
- In case the synthetic leather is wiped with a wet cloth, fully wipe off the moisture. If it remains, hydrolytic degradation may be accelerated. Do not use solvent or bleach.
- Apply dry wiping using a dry and soft cloth to metallic areas. If any metallic area is wetted, wipe off the moisture as soon as possible. It will rust otherwise.
- Wipe the resin cover with a wet and soft cloth.



#### Chair Sterilization

- Use FD333 made by Durr or ethanol as sprayed to a soft cloth or paper towel for cleaning and sterilization of the product exterior. Do not operate the product until the liquid used for sterilization has fully dried up.

### CAUTION

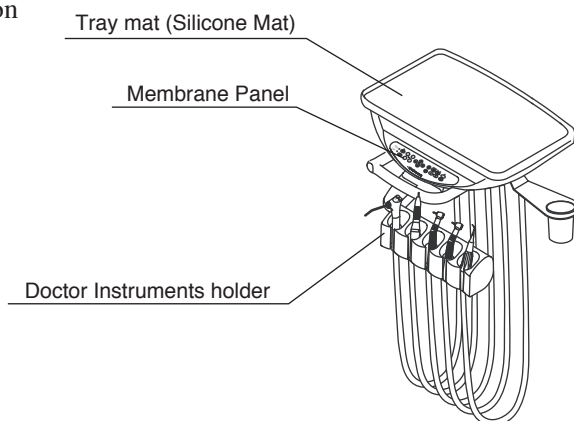
Do not place any hard and heavy article or any article having a sharp tip or edge on the chair's seating area. The synthetic leather may be damaged otherwise.

For cleaning the resin cover, do not use solvent or detergent containing abrasive agent. In addition, do not use any chemical that is other than specified for this unit. The resin cover may crack otherwise. Use a soft cloth moistened with either water or diluted neutral detergent.

Never use detergent of strong acidity or alkali pipe detergent, or materials including metal may be corroded.

## 5. CARE AND MAINTANANCE

### 2. Doctor unit section



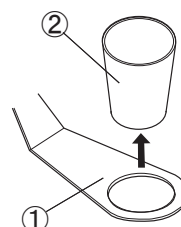
#### Waste receptacle (optional)

When waste accumulates, replace paper cup ① as required from waste receptacle holder ②.

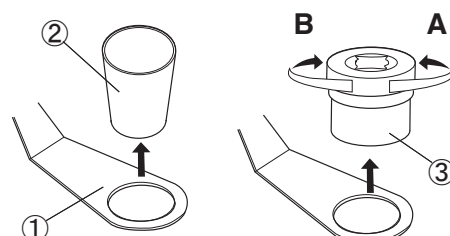
Waste receptacle (optional) ③ made of stainless steel is removed when turned in direction A, and is fastened when turned in direction B.

Since the cover is provided with sharp edges for easily catching cotton or the like. Therefore, be careful at the occasions of cleaning.

Paper cup type



Stainless cup type

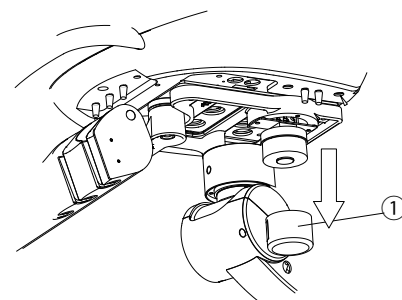


#### Oil mist separator (optional)

The oil mist separator (optional) collects the oil contained in the exhaust air from handpieces.

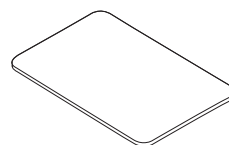
Make sure to discard the oil when the oil level rises to the red line marked on oil receiver container ①.

The oil receiver container can be removed when turned counterclockwise.



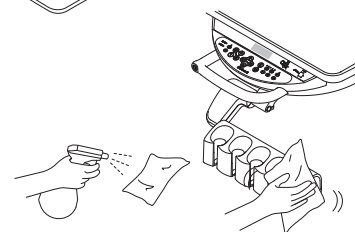
#### Tray mat (optional)

The silicone mat (optional) can be disinfected with autoclave and they also permit sterilization with alcohol.



#### Doctor Instrument holder

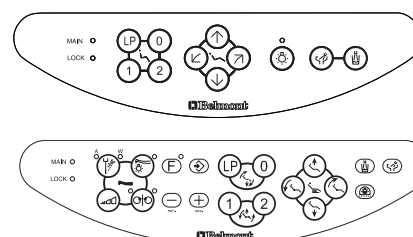
Use cleaning agent FD333 made by Durr.



#### Membrane switch panel

### ⚠ CAUTION

In case the surface of the membrane switch panel is wiped with disinfectant agent or the like, fully wipe away the chemical. Membrane switch malfunction may arise if the chemical penetrates to the back face of the membrane.

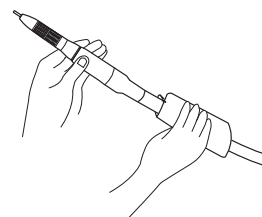


## 5. CARE AND MAINTANANCE

### Handpiece hose

Carefully wipe away the filth from the handpiece hose using soft cloth moistened with alcohol or the like.

**NOTICE:** Observe instructions given in handpiece instruction manuals for the care of handpieces.



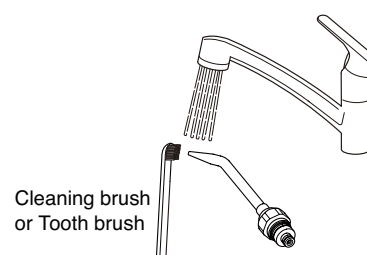
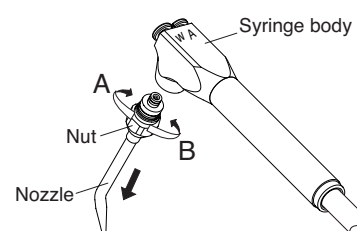
### Belmont 77 Syringe

#### Disassembly

Remove the nozzle from syringe by turning it in direction A.

#### Cleaning by hand

- A. Wipe off the surface contamination by a cloth while rinsing the surface by running clean warm water at  $40\pm 5$  degrees. Scrub the tip and joint part of nozzle by a cleaning brush or by a tooth brush with running clean warm water at  $40\pm 5$  degrees.
- B. Rinse thoroughly by distilled water at ordinary temperature or by clean water for more than 1 minute.
- C. Check whether contamination is removed or not after cleaning. Continue the cleaning if contamination is remained.
- D. Immersed with an alkaline detergent for 5 minutes.  
(We recommend to use ID212 made by Durr)
- E. Rinse thoroughly by distilled water at ordinary temperature or by clean water for more than 1 minute.



### CAUTION

Cleaning must be done within 1 hour after use.

Throw out and do not take autoclave handpiece for following cases.

- Contamination and solid material attached to handpiece can not be removed.

### Sterilization

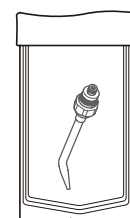
The nozzle can be sterilized with autoclave. Sterilization with autoclave is permitted up to 250 times.

- A. Insert the handpiece in a sterilization pouch and seal it.
- B. Autoclave for 20 min. at  $121^{\circ}\text{C}$  or 4 min. at  $135^{\circ}\text{C}$ .

Apply Vaseline thinly and evenly to the two O-rings after sterilization. Tighten the nut firmly in direction B to undo the nozzle.

### CAUTION

- Sterilization by class B cycles.
- Sterilization temperature is  $135$  degrees or less.
- Skip the drying process if the temperature is to exceed  $135^{\circ}\text{C}$ .
- If damage occurs to the sterilization pouch, discard and sterilize again using a new pouch.
- Before use, make sure that the nut is firmly tightened.



Sterilization pouch

### Storage

After cleaning the nozzle, keep it in the clean place.



## 5. CARE AND MAINTANANCE

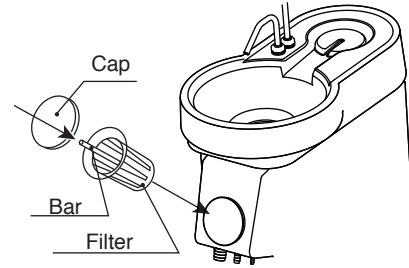
### 3. Cuspidor unit section

#### Cleaning of solid collector

Remove the filter in the solid collector located in the cuspidor unit section on termination of medical treatment, and wash the filter.

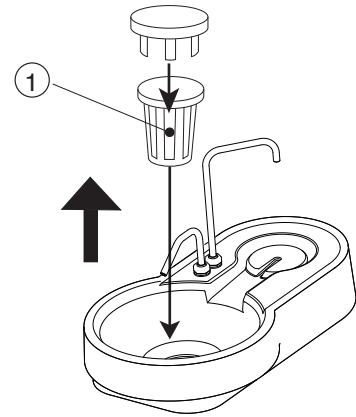
The vacuum suction force will drop if excessive solids are contained in the solid collector filter.

For removing the filter, remove the cover and pull the bar. The filter comes out together with the bar. The filter can be removed from the bar when the filter is twisted.



#### Cleaning of cuspidor section

Waste filter ① in the cuspidor bowl is easily clogged. Therefore, clean it daily on termination of medical treatment.



### ⚠CAUTION

Never use emery paper, metallic brush or detergent containing grinding agent for cleaning. Use of strong acid detergent or alkali pipe detergent may corrode metals. Never use detergent of such a nature.

### ⚠CAUTION

Make sure to turn off the main switch before dismounting or mounting of the cuspidor bowl or cupfiller tray. If the main switch is not turned off at such an occasion, the cupfiller sensor may be activated by hand or any other article during mounting/dismounting work, water for bowl flush may jet out, and corrosion to metallic components may arise.

The cuspidor bowl is made of porcelain, and it may be cracked if impact is applied to it. Furthermore, cleaning of the cuspidor bowl with hot water should be avoided because cracking may result.

The cuspidor bowl can be easily removed. Be careful not to apply excessive force at occasions other than cleaning. (Be careful not to apply impact to it, not to drive it and not to allow it to fall.)

## 5. CARE AND MAINTANANCE

### Cleaning of Vacuum Handpiece and Saliva Ejector Handpiece

For effective sterilization, washing for removing contamination and immersion by a cleaning agent are required. Then, rinse by water in order to remove residual cleaning agent on medical device.

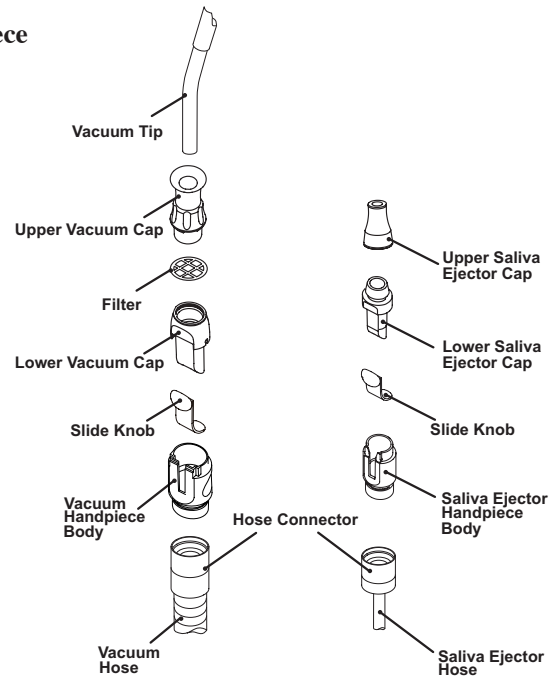
Take following procedures from cleaning to sterilization.

\* Use the disposable saliva ejector tip.

### Disassembly

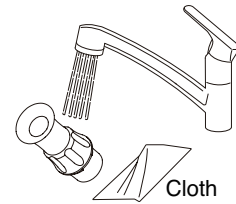
Disassemble the handpiece for the preparation of cleaning as the following figures show.

Pull the hose connector to disconnect the vacuum hose.

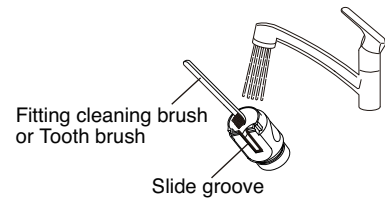


### Cleaning by hand

- A. Wipe off the surface contamination by a cloth while rinsing the surface by running clean warm water at  $40 \pm 5$  degrees. Scrub the intubation or hole, slide groove and filter by a cleaning brush or by a tooth brush with running clean warm water at  $40 \pm 5$  degrees. Wipe off by a cloth for the area which brush is unable to reach.

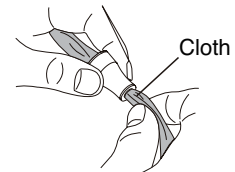


- B. Rinse thoroughly by distilled water at ordinary temperature or by clean water for more than 1 minute.
- C. Check whether contamination is removed or not after cleaning. Continue the cleaning if contamination is remained.



- D. Immersed with an alkaline detergent for 5 minutes.  
(We recommend to use ID212 made by DURR)

- E. Rinse thoroughly by distilled water at ordinary temperature or by clean water for more than 1 minute.



### CAUTION

**Cleaning must be done within 1 hour after use.**

**Throw out and do not take autoclave handpiece for following cases.**

- Any waste material can not be removed by clogged hole.
- Contamination and solid material attached to handpiece can not be removed.

## 5. CARE AND MAINTANANCE

### Sterilization

Vacuum Tip/Vacuum Cap/ Vacuum Handpiece Body/Saliva Ejector Handpiece Body can be autoclave. Vacuum handpiece body and saliva ejector body have to assemble before autoclave.

Sterilization with autoclave is permitted up to 250 times.

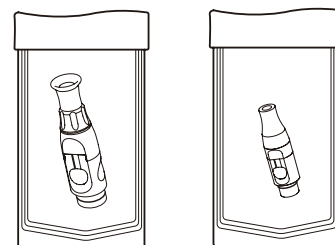
However, sterilization of the slide knob with autoclave is permitted up to 100 times (because of application of load at the time of sliding).

A. Insert the handpiece in a sterilization pouch and seal it.

B. Autoclave for 20 min. at 121°C or 4 min. at 135°C.

### ⚠ CAUTION

- Sterilization by class B cycles.
- Sterilization temperature is 135 degrees or less.
- The cap, filter and body are made of resin. They may become deteriorated if they are sterilized in an autoclave many times.
- After autoclave sterilization, the cap, filter, body and valve are subject to discoloration, which does not have a negative effect on performance.
- The slide knob can be autoclave 100 times and is expendable supplies.
- Skip the drying process if the temperature is to exceed 135°C.
- If damage occurs to the sterilization pouch, discard and sterilize again using a new pouch.



Sterilization pouch

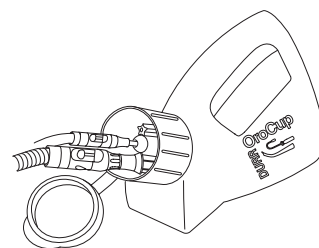
### Storage

After cleaning the vacuum tip, keep it in the clean place.

### Cleaning vacuum and saliva ejector lines

The sucking unit comes into contact with secretions, spit and blood that contain bacteria every day. Be sure to clean and sterilize it at the end of each work day.

Recommended cleaner : Orotol Plus made by DURRE.

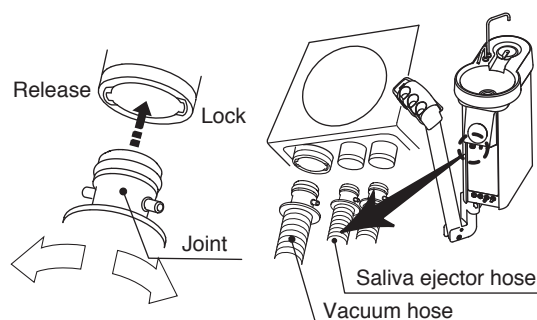


### Cleaning of vacuum hose and saliva ejector hose

The vacuum hose and saliva ejector hose can be removed when the joint is unlocked by turning it counterclockwise. Therefore, they can be cleaned with running water.

For cleaning the vacuum hose and saliva ejector hose, turn off the main switch for the unit. For fitting the hose, insert the joint section and then twist it clockwise for locking it.

If the hose can be hardly removed or hardly locked, turn the hose while forcing it.



## 5. CARE AND MAINTANANCE

### 4. Junction box section

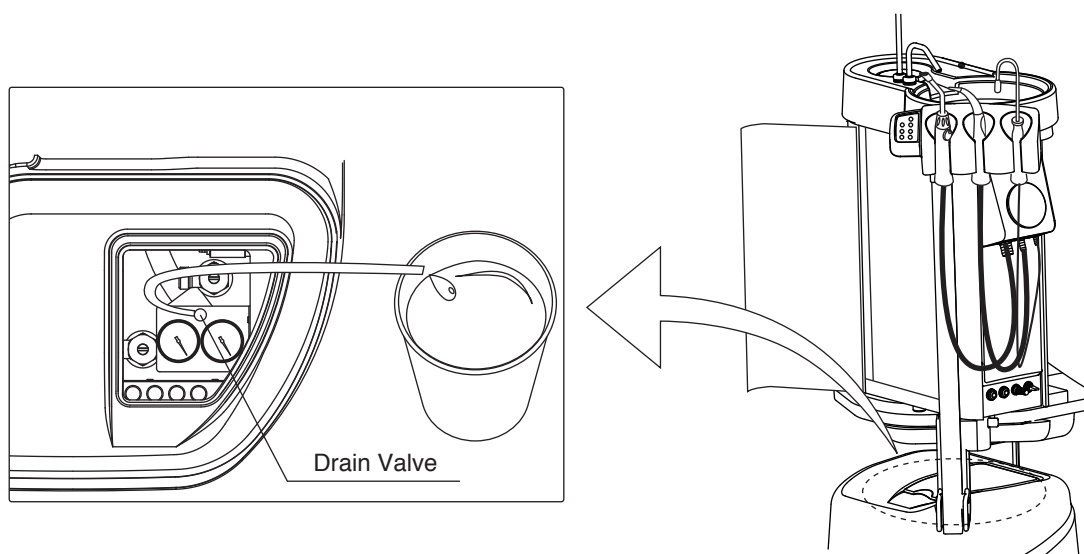
#### **Cleaning of air filter drain valve and water drainage from air compressor**

The drain valve is provided for drainage of water from the air filter.

Drain the water accumulated in the air filter by turning the drain valve counterclockwise, at least once a week.

If water enters the unit interior, failure of air turbine, air motor, syringe and so forth may arise. After water drainage from the air filter, make sure to close the drain valve by turning it clockwise.

Drain the water accumulated in the air compressor, with the drain valve opened, once a week.



### 5. Product exterior section

#### **Cleaning of product exterior**

Apply dry wiping to metallic components with soft cloth.

If water was spilled to any component, wipe off the moisture immediately. Corrosion and rusting may arise otherwise.

Wipe the plastic cover with wet and soft cloth.

#### **Sterilization of product exterior**

Use FD333 made by Durr for cleaning and bacteria elimination from the product exterior.

**NOTICE:** Wipe off water and residual disinfectant immediately. Corrosion and rusting may arise otherwise.

## 6. COMPATIBILITY OF HANDPIECES

|            | DESCRIPTION                                      |
|------------|--|
| Syringe    | FARO(3-way) SYRINGE                              |
|            | LUZZANI(3-way ) Minilight w/Light                |
|            | DCI(3-way ) SYRINGE                              |
| Turbine    | BIEN AIR BORA S36L / UNIFIX with LIGHT           |
|            | NSK Ti-Max X                                     |
|            | NSK MACH-LITE XT                                 |
|            | NSK PANA-MAX                                     |
| Air motor  | BIEN AIR Aquilon 830 / UNIFIX with LIGHT /PM1132 |
|            | NSK EX-203 / EX-6                                |
| Micromotor | BIEN AIR MC3LK / PLMP021PCB. / PM1132            |
|            | BIEN AIR MX / DMX PCB. / PM1132                  |
|            | BIEN AIR MX2 / DMX2 PRO PCB. / PM1132            |
|            | NSK NL-400 / NL-400SB.PCB / EX-6                 |
|            | NSK TIM-40J / DA-290N PCB. / EX-6                |
|            | NSK NLX PLUS                                     |
| Scaler     | SATELEC SP4055 w/Light                           |
|            | SATELEC SP4055 NEWTRON w/Light                   |
|            | NSK VARIOS 150 LUX(w/light)                      |
|            | NSK VARIOS 170 w/light                           |
|            | EMS SCALER                                       |
|            | CAVITRON   |

## 7. STORAGE, LIFETIME, DISPOSAL AND RESTRICTIONS OF USE

### Procedure for storage of the unit

Make sure to carry out works of items described below on termination of medical treatment for the day, or when it is anticipated that the unit will not be used for a long period of time for recess or the like.

#### 1. Main switch

Make sure to turn off the main switch on termination of medical treatment. (It is for stopping supply of compressed air, water, electricity and so forth.)

This action is essential for preventing water leakage and electric troubles.

#### 2. Water main valve

Make sure to turn the water main valve to the closed position by turning it counterclockwise, on termination of medical treatment.

This action is essential for preventing water leakage.

#### 3. Water main valve

Turn the water main valve to the closed position by turning it clockwise if it is anticipated that the unit will not be used for a long period of time for recess or the like.

#### 4. Air main valve

Turn the air main valve to the closed position by turning it clockwise if it is anticipated that the unit will not be used for a long period of time for recess or the like.

#### 5. Discharge air from the air compressor after turning off the air compressor circuit breaker. (Make sure to turn off the power.)

#### 6. Make sure to turn off the vacuum pump circuit breaker. (Make sure to turn off the power.)

#### 7. Make sure to turn off the equipment circuit breaker in the clinic cabinet panel. (Make sure to turn off the power.)

### Lifetime

The lifetime of this product is ten years after production and shipping.

## 8. BEFORE ASKING FOR REPAIRS

If any of phenomena described below has occurred, make the following checks before asking for repairs.

| Phenomenon                        | Check point and result   | Action to be taken   |
|-----------------------------------|--|--|
| The product does not work at all. | Main switch is not on.   | Turn on the main switch.   |
|                                   | Air compressor power is not on.  | Turn on the power.   |
|                                   | Equipment circuit breaker in the clinic cabinet panel is not on.           | Turn on the equipment circuit breaker.                                       |
| The chair does not work.          | Locking device for motion stop is activated.                               | Unlock the device. See page 20, Chair motion stop function (safety function) |
| Water is not supplied.            | Water main valve is closed.  | Open the water main valve.   |
|                                   | Water flow rate control valve or knob for handpiece or the like is closed. | Open the valve or knob.  |
| Vacuum suction does not work.     | Vacuum pump power is not on.   | Turn on the power.   |
|                                   | Filter of solid collector is filthy.                                       | Clean the filter.  |
|                                   | Filter of vacuum handpiece is filthy.                                      | Clean the filter.  |

If the unit does not normally work even if actions were taken upon checkup stated above, then stop using the unit, turn off the main switch and contact your dealer or our office.

## 9. DIMENSION AND SPECIFICATION

### Specification

|  |   |
|--|---|
| Rated power supply -----   | AC230V/50Hz 3.4A  |
| Fuse-----  | 5A/250V(Current Rating:50A at 250VAC) Fast blow   |
| Air main pressure -----  | 0.45 to 0.5MPa  |
| Water main pressure -----  | 0.1 to 0.2MPa   |
| Mass -----   | Cuspidor unit section : 74kg<br>Doctor unit section : 40kg<br>Chair section : 150kg             |
| Dental light -----   | AL-720S / AL-520<br>AL-820S / 900 Dental Light (Type 920)                                       |
| Working environment -----  | Temperature : 10 to 40 °C<br>Humidity : 30 to 75%<br>Atmospheric pressure : 700 to 1060hPa      |
| Maximum Load -----   | 135kg   |
| Mode of operation -----  | Non-Continuous Operation<br>ON time : 3 min, OFF time : 15 min                                  |
| Classification of foot controller -----  | IPX1(applicable standard IEC60529)  |
| Protection class against electric shock -----  | Class I equipment   |
| Applied parts -----  | Type B applied parts : Seat for chair,<br>Handpiece for unit<br>(List of compatible handpieces) |
| Equipment that is not suitable for use in air, flammable anesthetic gas, oxygen or nitrous oxide |   |



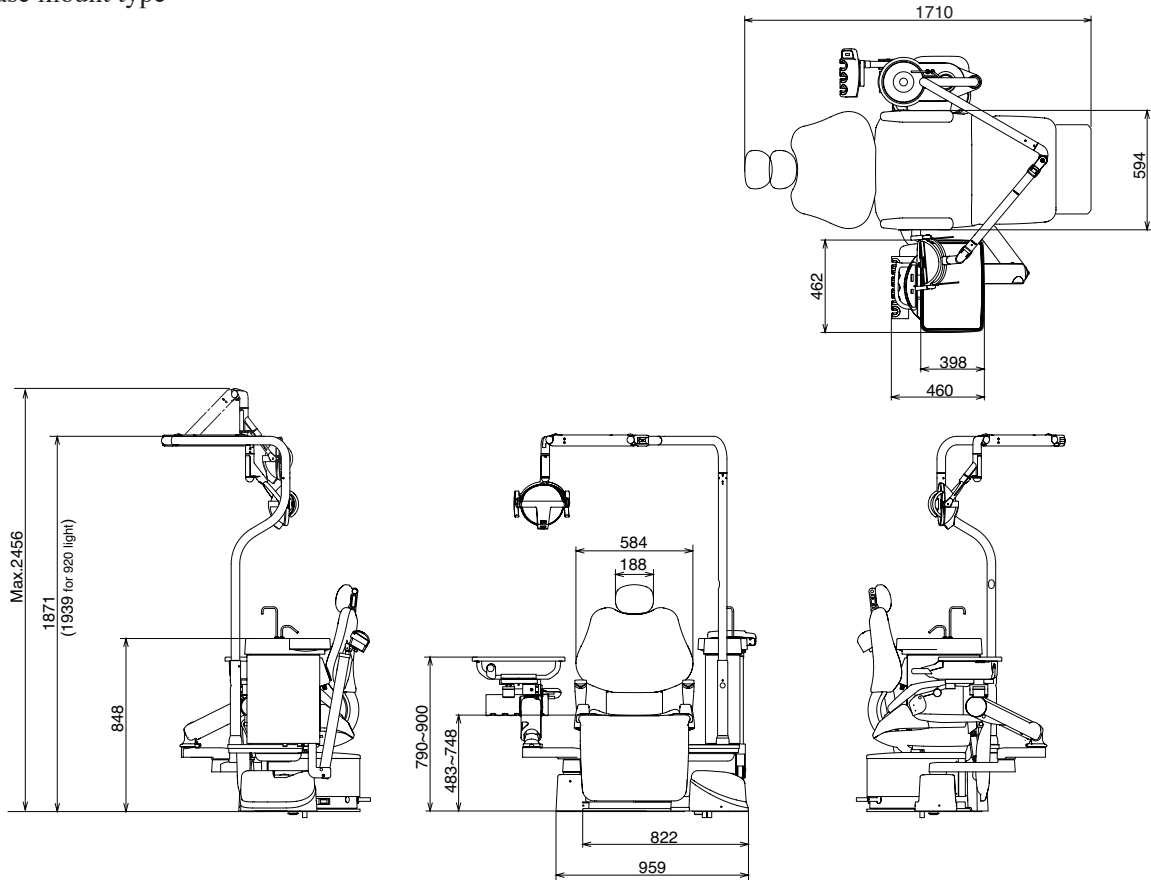
## 9. DIMENSION AND SPECIFICATION

**Dimension** (Numerical values shown here represent standard values.)

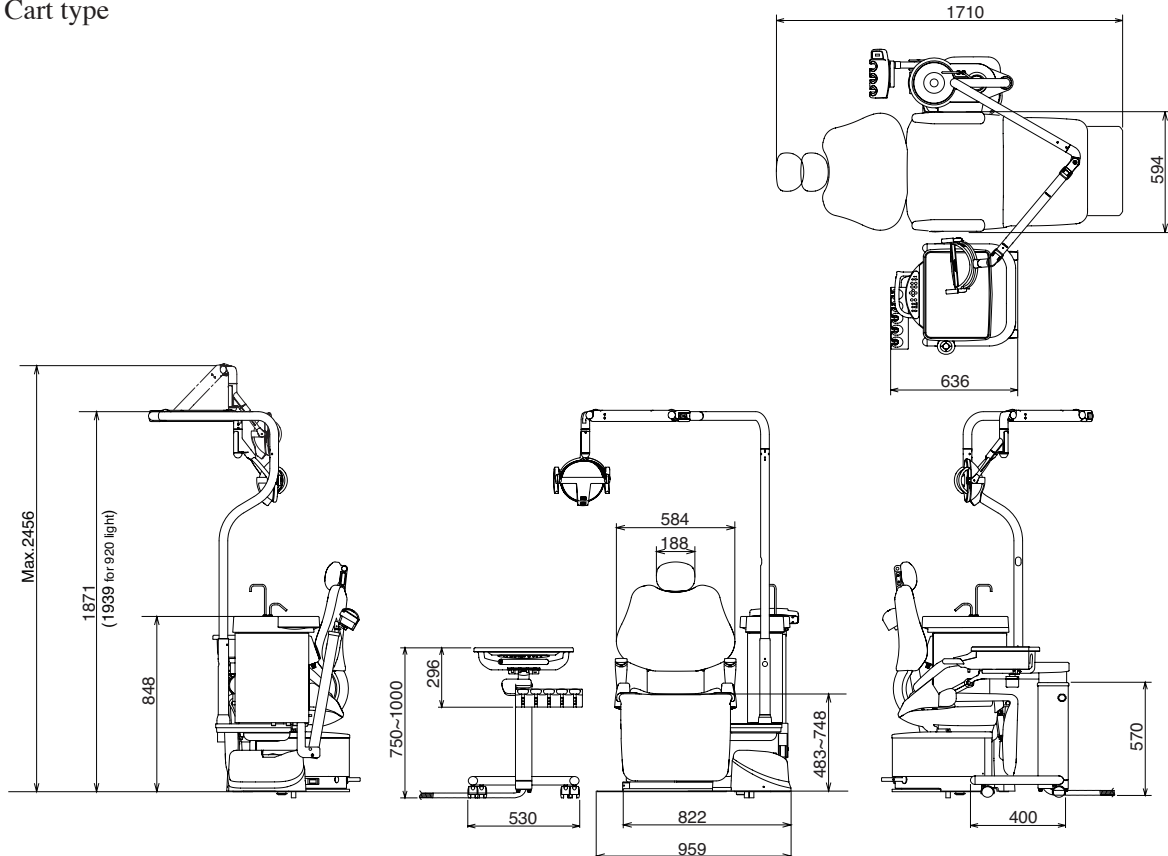
Unit: mm

Dimensional tolerance:  $\pm 10\%$

Base mount type



Cart type



## 10. MAINTANANCE AND INSPECTION

### 10-1. Guide for daily maintenance and inspection (Maintenance and inspection by user)

Management of maintenance and inspection of medical equipment should be implemented by the user (medical institution). In case the user does not implement such management, it is permitted that such management is outsourced to a qualified entity such as a medical equipment repair company.

For safe use of this product, it is necessary that inspection should be conducted in the specified frequency on the items described below.

| No. | Item                               | Frequency        | Inspection method and diagnosis   | Influence if inspection not conducted   | Maintenance required in case of nonconformity   |
|-----|------------------------------------|------------------|---|---|---|
| 1   | Check of safety functions          | Before start     | ①Chair operation switches shall not work when foot controller pedal is depressed.<br>②When cuspidor section is turned to the patient side, cuspidor indicator shall light up in pink, and chair operation switches shall not work.                                  | Unexpected personal injury and troubles may arise due to motion of the chair during medical treatment and due to pinching between doctor section and chair. | Contact your dealer or our office if any abnormality arises.  |
| 2   | Check for leakage of water and air | Before start     | Leakage of water and air shall not be observed around the product.  | The product will not normally work, and troubles may arise.   | Contact your dealer or our office if any abnormality arises.  |
| 3   | Cupfiller                          | Before start     | When a paper cup is placed on the cupfiller, the cup shall be detected and cupfilling shall be executed.<br>* Malfunction may arise if the cup is of another material grade (such as stainless steel and plastics) or if the paper cup is of dark color or pattern. | Cupfilling may not be executed.   | Execute re-inspection in accordance with "Method for operation" described in the instruction manual.<br>Contact your dealer or our office if recovery is not achieved as a result of re-inspection.   |
| 4   | Check of motions of equipment      | Before start     | ①Air turbine revolution, water flow, air flow and so forth shall be free of abnormality.<br>②Micromotor revolution, water flow and so forth shall be free of abnormality.<br>③Scaler vibration, water flow and so forth shall be free of abnormality.               | Troubles such as injury in patient's oral cavity and equipment failure may arise.   | Control the water flow in accordance with "Control of components" described in the instruction manual. If any other abnormality arises, refer to the instruction manual attached to individual equipment.<br>Contact your dealer or our office if recovery is not achieved. |
| 5   | Check of air turbine bar           | For each patient | Appropriate bar shall be positively mounted.<br>Make sure to refer to the instruction manual attached to individual equipment.  | The bar will not normally work and troubles may arise.  | If abnormality such as flaw and deformation is found on the bar, replace the bar in accordance with the instruction manual attached to individual equipment.  |
| 6   | Check of scaler tip                | For each patient | Appropriate tip shall be positively mounted and be correctly used.<br>Make sure to refer to the instruction manual attached to the scaler.  | The tip will not normally work and troubles may arise.  | If the tip was worn or deformed, replace the tip in accordance with the instruction manual attached to the scaler.<br>Contact your dealer or our office if any other trouble arises.  |
| 7   | Check of tightness of syringe nut  | For each patient | The nut for fixing the nut of Type 77, 3-way syringe shall be positively tightened.   | Troubles may arise if the nut comes off.  | Turn and positively retighten the nut that fixes the nozzle.  |
| 8   | Matters attached to micromotor     | After closing    | Excessive handpiece oil or the like shall not be attached to the motor section.   | The motor section will not work normally and troubles may arise.  | Execute care in accordance with the instruction manual attached to individual micromotor.   |

## 10. MAINTANANCE AND INSPECTION

| No. | Item                                     | Frequency        | Inspection method and diagnosis  | Influence if inspection not conducted  | Maintenance required in case of nonconformity  |
|-----|--|------------------|--|--|--|
| 9   | Care Vacuum and saliva ejector handpiece | After closing    | Flush the suction line, and then clean the filter of the vacuum or saliva ejector handpiece.   | Faulty suction may arise.  | Clean the suction line and filter in accordance with "Method for care" described in the instruction manual.      |
| 10  | Care Cuspidor section                    | After closing    | Clean the cuspidor and dust filter.  | Faulty water drainage may arise.   | Execute dust removal and cleaning in accordance with "Method for care" described in the instruction manual.      |
| 11  | Care Solid collector                     | After closing    | Clean the filter of the solid collector.   | Vacuum suction will become weak.   | Clean the filter in accordance with "Method for care" described in the instruction manual.                       |
| 12  | Care Exterior                            | After closing    | Chemical, filthy water and so forth shall not be found (attached or remaining) on the product exterior.  | Discoloration and deterioration to the exterior, and corrosion and rusting to metallic components may arise. | Execute wiping in accordance with "Method for care" described in the instruction manual.                         |
| 13  | Check of main switch and main valves     | After closing    | The product main switch shall be off, and water/air main valves shall be closed.   | Product failure and troubles may arise.  | Contact your dealer or our office if the main switch cannot be turned off or if the main valve cannot be closed. |
| 14  | Product's moving parts                   | Once every week  | No abnormal noise or the like shall be produced from product's moving parts when the product is operated.  | The product will not normally work and troubles may arise.   | Contact your dealer or our office if any abnormality arises.   |
| 15  | Care Drain valve                         | Once every week  | Water may enter the air line, and equipment failure may arise.   | Drain the water from the air filter drain valve.   | Drain the water from the air filter in accordance with "Method for care" described in the instruction manual.    |
| 16  | Check of water pressure and air pressure | Once every month | Check the water pressure and air pressure by reading pressure gauges in the cuspidor section.<br>Basic set pressure :<br>Water: 0.1 to 0.2 MPa<br>Air: 0.45 to 0.5 MPa | The product will not normally work, and troubles may arise.  | Contact your dealer or our office if the set pressure is abnormally high or low.                                 |
| 17  | Check of conditions of table section     | Once every month | The table shall be free of inclination, and water shall not flow on the table.   | Injury caused by falling of goods located on the table and other troubles may arise.                         | Contact your dealer or our office if any abnormality arises.   |
| 18  | Care Oil mist separator                  | Once every month | The oil level in the oil mist separator shall be lower than the red line.  | Normal output will not be produced due to inferior handpiece exhaust.  | Discharge the oil in accordance with "Method for care" described in the instruction manual.                      |

## 10. MAINTANANCE AND INSPECTION

### 10-2. Guide for Periodical Check-up

- Some parts and components of the products are degraded or deteriorated depending on the frequency of use. Annual check-up and maintenance, as well as replacement of consumable parts, are required.
- The required parts (including consumable parts) are listed below. It may be different from the following list depending on the option of the unit.
- For check-up and repair, call a technician of our authorized dealer.

#### Parts and components that require periodical check-up

| No. | Parts Description              | Standard Lifetime | No. | Parts Description          | Standard Lifetime |
|-----|--------------------------------|-------------------|-----|----------------------------|-------------------|
| 1   | Vacuum handpiece body          | 3 years           | 8   | Regulator                  | 3 years           |
| 2   | Saliva ejector handpiece body  | 3 years           | 9   | Valves                     | 3 years           |
| 3   | Foot controller                | 5 years           | 10  | Switches                   | 5 years           |
| 4   | Water supply hose              | 3 years           | 11  | Film viewer body part      | 5 years           |
| 5   | Drain hose                     | 3 years           | 12  | Pressure gauge             | 3 years           |
| 6   | Air supply hose                | 3 years           | 13  | Arm section of moving part | 7 years           |
| 7   | Electric wiring of moving part | 5 years           | 14  | Control PCBs.              | 5 years           |

#### Consumable parts

| No. | Parts Description               | No. | Parts Description             |
|-----|---------------------------------|-----|-------------------------------|
| 1   | Valve for vacuum handpiece body | 6   | Filter for oil mist separator |
| 2   | Vacuum tip                      | 7   | Filter (Air & Water)          |
| 3   | Handpiece tubings               | 8   | Bulb for dental light         |
| 4   | Vacuum hose                     | 9   | O-ring, Packing, Diaphragm    |
| 5   | Saliva ejector hose             |     |                               |

### WARNING

Execute the maintenance in accordance with this instruction manual and operating manual attached to each individual equipment ( Dental light, Handpiece, etc..) .

Failure to maintain this product may lead to physical injury or property damage.

## 11. ELECTROMAGNETIC COMPATIBILITY (EMC)

\* Applicable standard : IEC60601-1-2:2007


Medical electrical equipment needs special precautions regarding EMC and needs to be installed and put into service according to the EMC information provided in this manual.

Portable and mobile RF communications equipment can affect medical electrical equipment.

The equipment or system should not be used adjacent to or stacked with other equipment. If adjacent or stacked use is necessary, the equipment or system should be observed to verify normal operation in the configuration in which it will be used.

| <b>Guidance and manufacture's declaration – electromagnetic emissions</b>   |                   |   |
|---|-------------------|---|
| The SP-CLEO II is intended for use in the electromagnetic environment specified below. The customer or the user of the SP-CLEO II should assure that it is used in such an environment. |                   |   |
| <b>Emissions test</b>   | <b>Compliance</b> | <b>Electromagnetic environment – guidance</b>   |
| RF emissions<br>CISPR 11  | Group 1           | The SP-CLEO II uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.   |
| RF emissions<br>CISPR 11  | Class B           | The SP-CLEO II is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes. |
| Harmonic emissions<br>IEC 61000-3-2   | Class A           |   |
| Voltage fluctuations/<br>Flicker emissions<br>IEC 61000-3-3   | Complies          |   |

| <b>Guidance and manufacture's declaration – electromagnetic immunity</b>  |  |  |   |
|---|--|--|---|
| The SP-CLEO II is intended for use in the electromagnetic environment specified below. The customer or the user of the SP-CLEO II should assure that it is used in such an environment. |  |  |   |
| <b>Immunity test</b>  | <b>IEC 60601 test level</b>  | <b>Compliance level</b>  | <b>Electromagnetic environment – guidance</b>   |
| Electrostatic discharge (ESD)<br>IEC 61000-4-2  | ± 6 kV contact<br>± 8 kV air   | ± 6 kV contact<br>± 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%.   |
| Electrical fast transient/burst<br>IEC 61000-4-4  | ± 2 kV for power supply lines<br>± 1 kV for input/output lines   | ± 2 kV for power supply lines<br>± 1 kV for input/output lines   | Mains power quality should be that of a typical commercial or hospital environment.   |
| Surge<br>IEC 61000-4-5  | ± 1 kV differential mode<br>± 2 kV common mode   | ± 1 kV differential mode<br>± 2 kV common mode   | Mains power quality should be that of a typical commercial or hospital environment.   |
| Voltage dips, short interruptions and voltage variations on power supply input lines<br>IEC 61000-4-11  | <5% $U_T$<br>(>95% dip in $U_T$ )<br>for 0.5 cycle<br>40% $U_T$<br>(60% dip in $U_T$ )<br>for 5 cycle<br>70% $U_T$<br>(30% dip in $U_T$ )<br>for 25cycle<br><5% $U_T$<br>(>95% dip in $U_T$ )<br>for 5 s | <5% $U_T$<br>(>95% dip in $U_T$ )<br>for 0.5 cycle<br>40% $U_T$<br>(60% dip in $U_T$ )<br>for 5 cycle<br>70% $U_T$<br>(30% dip in $U_T$ )<br>for 25cycle<br><5% $U_T$<br>(>95% dip in $U_T$ )<br>for 5 s | Mains power quality should be that of a typical commercial or hospital environment. If the user of the SP-CLEO II requires continued operation during power mains interruptions, it is recommended that the SP-CLEO II should be powered from an uninterruptible power supply or a battery. |
| Power frequency (50/60 Hz) magnetic field<br>IEC 61000-4-8  | 3 A/m  | 3 A/m  | Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.   |
| NOTE $U_T$ is the a.c. mains voltage prior to applications of the test level.   |  |  |   |

| <b>Guidance and manufacture's declaration – electromagnetic immunity</b>   |   |                         |   |
|--|---|-------------------------|---|
| The SP-CLEO II is intended for use in the electromagnetic environment specified below. The customer or the user of the SP-CLEO II should assure that it is used in such an environment.  |   |                         |   |
| <b>Immunity test</b>   | <b>IEC 60601 test level</b>                                   | <b>Compliance level</b> | <b>Electromagnetic environment – guidance</b>   |
| Conducted RF<br>IEC 61000-4-6  | 3 Vrms<br>150 kHz to 80 MHz<br>outside ISM bands <sup>a</sup> | 3 Vrms                  | Portable and mobile RF communications equipment should be used no closer to any part of the SP-CLEO II, including cables, than the recommended separation distance calculated from the equation applications to the Frequency of the transmitter.<br><br><b>Recommended separation distance</b><br>$d = 1.2 \sqrt{P}$   |
| Radiated RF<br>IEC 61000-4-3   | 3V/m<br>80 MHz to 2.5 GHz                                     | 3 V/m                   | $d = 1.2 \sqrt{P}$ 80 MHz to 800 MHz<br>$d = 2.3 \sqrt{P}$ 800 MHz to 2.5 GHz<br><br>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 metres (m).<br><br>Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, <sup>a</sup> should be less than the compliance level in each frequency range. <sup>b</sup><br><br>Interference may occur in the vicinity of equipment marked with the following symbol:<br> |
| NOTE 1 At 80 MHz and 800MHz, the higher frequency range applies.   |   |                         |   |
| NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by adsorption and reflection from structures, objects and people.   |   |                         |   |
| <sup>a</sup> 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 SP-CLEO II is used exceeds the applicable RF compliance level above, the SP-CLEO II should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the SP-CLEO II. |   |                         |   |
| <sup>b</sup> Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3V/m.   |   |                         |   |

#### **Essential performance (purpose of IMMUNITY testing)**

Unless operated by the switches for chair control, the chair section of the SP-CLEO II does not make any movements, except for sounding a buzzer and switching on/off the indicator.

| <b>Recommended separation distances between<br/>Portable and mobile RF communications equipment and the SP-CLEO II</b>   |   |  |   |
|--|---|--|---|
| The SP-CLEO II is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the SP-CLEO II can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the SP-CLEO II as recommended below, according to the maximum output power of the communications equipment.   |   |  |   |
| <b>Rated maximum output power<br/>of transmitter<br/>W</b>   | <b>Separation distance according to frequency of transmitter</b><br>m |  |   |
|  | <b>150 kHz to 80 MHz</b><br>$d = 1.2 \sqrt{P}$                        | <b>80 MHz to 800 MHz</b><br>$d = 1.2 \sqrt{P}$ | <b>800 MHz to 2.5 GHz</b><br>$d = 2.3 \sqrt{P}$ |
| 0.01   | 0.12  | 0.12   | 0.23  |
| 0.1  | 0.38  | 0.38   | 0.73  |
| 1  | 1.2   | 1.2  | 2.3   |
| 10   | 3.8   | 3.8  | 7.3   |
| 100  | 12  | 12   | 23  |
| For transmitters rated at a maximum output power not listed above, the recommended separation distance $d$ in metres (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) according to the transmitter manufacturer.<br>NOTE 1 At 80 MHz and 800MHz, the separation distance for the higher frequency range applies.<br>NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by adsorption and reflection from structures, objects and people. |   |  |   |

## NOTE



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