



User Manual

Integral Dental Unit

**Model: YD-A1, YD-A2, YD-A3, YD-A4, YD-A5,
AD-S1、AD-S3、AD-S6、AD-S8、AD-S9;**

Thank you to buy our Integral Dental Unit. In order to use all functions of the comprehensive dental unit sufficiently, you are strongly recommended to read the Instruction carefully. You are advised to keep this Instruction safe and use it for reference.

Our company reserves the right to change product design without prior notice.
This Instrument responds to every function of the product as much as possible.



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I. SAFETY INFORMATION

To help you use the product correctly, you are strongly recommended to read the User Manual carefully. You can contact our distributor if you have any special issues.



1. To reduce the possibility of fire and electric shock, please do not place the device in a humid place, and do not open the package box. Any modification of the device only can be done by qualified professional maintenance personnel.
2. If the equipment emits smoke or other abnormal conditions happen, which may cause some fire situations, please immediately disconnect the power supply, and contact your local dealer or after-sales service department.
3. Don't let water enters the electronic circuit in the device, otherwise it may cause electric shock. If some water gets into the electric circuit, please immediately disconnect the power, and contact your local dealer or after-sales service department.
4. If the dental unit goes wrong due to unknown reasons, you are required to switch off the power supply immediately and contact the local distributor or manufacturer's servicing department.
5. You are not allowed to disassemble or try to modify the dental unit; otherwise, some parts or components inside may be damaged and cause electronic shock.
6. If the power supply cord is damaged, disconnect it immediately and do not touch the power supply cord directly. Contact your local dealer to replace the damaged cord.
7. The product applies to the power supply of 230Vac 50/60 Hz. Don't connect to any other power supply other than 230Vac 50/60 Hz, otherwise it may cause the dental unit damage.
8. The device shall connect to the standard power supply socket with grounding.
9. Please don't touch the power plug when your hand is wet, and it may cause electric shock.
10. Please do not use pesticides, alcohol, thinners, or chemical liquids to clean the device; it may cause the device surface material damage.
11. All relevant parameters of the dental unit have been set well; no parameters can be allowed to adjust without authorization.
12. The rated load of the equipment is 135KG; when the device overloaded, it will cause damage to dental unit.
13. The mode of operation of dental chair is Non-CONTINUOUS OPERATION. The maximum activation time is 1 min.
14. Please do not smash the machine; otherwise, it will be excluded from the manufacturer's warranty.
15. Keep the device away from high-power electromagnetic equipment to avoid electromagnetic interference.
16. Please only use the device after fixed it on the ground.
17. **Serious Incident Report: Any serious incident that has occurred in relation to the device should be reported to the manufacturer and the competent authority of the Member State in which the user and/or patient is established.**

Notice to user:






























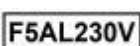






This product has been tested and conforming with MDR. This product **is not equipped with** the mercury separator, so the water-draining system in the unit cannot be used for filtering solid particles, debris, or mercury alloy. The users are kindly requested to install a mercury separator on the drainage system of the equipment to avoid pollution of drainage.






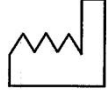





You are welcome to contact us for more information.

Please record the product's sequence number here for your future reference.

Item No.	_____
Date of manufacture	_____
Lifespan	<u>5 Years</u>

II. GRAPH AND SYMBOL

	Warning		Dental chair, Up
	Type B applied part		Dental chair, Down
	Protective earth wire		Dental chair tilt backward
	ON		Dental chair tilt forward
	OFF		Mouth cleaning
	Dental operating light		Bowl flush
	Film viewer		Cup filler
	This way up		Heating
	Film viewer on		Clean button
	Set dental chair memory positioning :Move to Presetting height (Up)		Set dental chair memory positioning :Move to Presetting height (Down)
	Set dental chair memory positioning: chair backrest moves to the presetting angle		Set dental chair memory positioning: chair backrest moves to the presetting angle
	Cart version Up		Cart version Dow
	Water source switch on		Water adjusting
	spray air		spray water
	Fragile		Rated voltage 230V, current 5A
	Keep dry		Manufacturer
	Stacking limits		Serial number
	Temperature limits		Separate collection for EEE

	Humidity limitation		Authorized Representative in European Community
	Atmospheric pressure limitation		Refer to instructions manual
	No rolling		Manufacture Date
	Setting button		CE Mark for EU market
	Electric shock hazard		Avoid sunlight radiate
	Medical Device		

III. IMPORTANT NOTICES

- ✧ Please read the Instruction carefully before using the unit; follow all warnings and descriptions specified in the Instruction or marked on the unit when operating this unit.
- ✧ The power socket line should be configured as standard, and the ground wire must be connected reliably.
- ✧ Don't switch on the water heater when there is no water.
- ✧ Do not place an overweight article on the instrument tray.
- ✧ The air pressure of the unit had been set in factory. Setting adjustment only can be allowed to execute by qualified professionals.
- ✧ The dental chair's action limit had been locked. Setting adjustment only can be allowed to execute by qualified professionals.
- ✧ Please turn off the main supply, switch off water and gas source at the end of day.
- ✧ The handpiece can be operated with water output only when you step on "W" button of the foot controller.
- ✧ Please installed with an amalgam separation device when operating the unit. (Connect with the water outlet connector of this unit.)
- ✧ Please disconnect the water, air and power source before maintenance,
- ✧ Put the handle and nozzle of the 3-way syringe into the sterilization bag before sterilizing, and then perform high-pressure steam sterilization at 134 °C (2bar), and the sterilization time shall not be shorter than 3 minutes;
- ✧ When you need to execute cleaning and disinfecting for dental handpiece (high-speed handpiece) and low-speed air motor (low-speed handpiece), please follow the instruction for use of the handpieces instruction for use provided by their supplier.
- ✧ Please clean the cover and cushion with a damp cloth and neutral detergent, to ensure that the surface is smooth and elastic and not subject to corrosion; PU parts and ABS parts are cleaned with a soft cloth dipped in soapy water; metal baking paint parts are cleaned with a soft cloth dipped in soapy water Wipe with car spray wax.
- ✧ Before using this unit, please turn on the water, gas, power supply.
- ✧ Control the dental chair back to the minimum position and switch off the water, air, and power supply if you do not use the Integral Dental Unit.
- ✧ Lock the pillow up before using dental chair.
- ✧ Do not touch beads of the lamp with hand directly; if it needs to replace, please wear your protective gloves and wait the lamp cool before repair.
- ✧ Contact the professional and qualified maintenance staff if the unit is needed to repair or maintain; before starting maintenance, please disconnect the water, air, and power source.
- ✧ The recommended service life of the dental unit is five years; the use beyond such a limit may cause pipeline aging and invalid functions, even cause an accident. The user should contact the qualified medical apparatus and instruments recycling agent and make preparations for phasing out or replacing new equipment.
- ✧ After using the equipment, please do the settlement by the relevant regulations for the waste in dirt collection cup and other residue processing, in order to avoid contamination.
- ✧ Improper operation may cause other parts of the gums and mouth injuries; the device only can be used by qualified dentist.
- ✧ When operating the dental chair, make sure that no objects are placed within the range of motion.
- ✧ At the end of the product's life, you should flush pipeline for 2-3 minutes and then shut off water and gas source, and then disposal the device according to local regulation.

IV. TRANSPORTATION AND STORAGE

1. Conditions of transportation: keep the unit upside, handle the unit with care, and keep the unit dry always.
2. Transport environment: Temperature-20 °C to 55 °C Relative humidity:≤90% ,Atmospheric pressure range: 70-106 kpa
3. Storage environment: temperature -20 °C to 55 °C;, relative humidity:≤90% , Atmospheric pressure range: 70-106 kpa, non-corrosive gas, and well-ventilated room.
4. When transporting or storing the unit in a wooden box, it can be stacked by two pieces maximally.

V. PRODUCT INTRODUCTION

1. Functions and Intended use

The Integral Dental Unit is intended to serve as a base for ancillary dental devices and accessories by providing air, water, vacuum, and low voltage electrical power to hand-held dental instruments. The dental unit is intended for use by qualified dental practitioners to provide diagnostic and therapeutic treatment to dental patients in a clinical environment.

This product is composed of a dental unit and a dental patient chair. Dental treatment machine consists of an electric dental chair, instrument tray, mouthwash water supply device, oral light, saliva suction, spittoon, three-way syringe, film viewer, foot switch, heater, armrest.

2. Safety Feature

- ✧ Type of protection against electronic shock: Class I
- ✧ Degree of protection against the electronic shock of Applied Part: Type B
- ✧ Protection against harmful ingress of water or particulate matter: IPX4 (foot switch)
- ✧ Protection against hazards of ignition of flammable anesthetic mixtures: Non-AP/APG RATINGS
- ✧ Mode of operation: Non-CONTINUOUS OPERATION
- ✧ Type of power source: single-phase 3-core, power supply from the electric grid.
- ✧ Power supply: AC 230V, 50/60Hz
- ✧ Power input: 350 VA
- ✧ Don't have the effect of discharge protection part;
- ✧ There is no signal input or output.
- ✧ This is fixed ME equipment
- ✧ The dental device is stationary equipment.

VI. OPERATING CONDITIONS

In order to guarantee the unit to work normally, the following operating conditions must be available:

1. Environmental temperature: 5°C~40°C

2. Relative humidity: 30%~80%
3. Atmospheric pressure: 86 kPa~106 kPa
4. Rated voltage: 230 Vac± 10%, 5 A
5. Rated frequency: 50/60Hz±1 Hz
6. Water source:
 - water pressure: 0.20 MPa ~0.40 MPa;
 - flow: >10 L/min;
 - hardness: <25°
7. Air source:
 - air pressure: 0.6MPa~0.80 Mpa;
 - flow: >50 L/min; Oil-free
8. The floor on which the dental unit shall be fixed must be horizontal and flat; the deflection angle of the body after the dental unit is installed and fixed can not be more than 0.5°
9. Software version 1.0



VII. BASIC PARAMETERS

◆Noise	<70 dBA
◆Base box	Power supply: 230 Vac, 60/50Hz, single-phase 3core, protective grounding. Power input: 350 VA Water filter hole diameter: <90μm Air filter hole diameter: <25μm
◆Water heater	Power supply: 24 V dc , Inside power supply Power input: 80 VA Thermostatic: 40±5℃
◆Saliva ejector	Weak saliva: <ul style="list-style-type: none"> — vacuum degree >15 kPa; — water pumping rate > 80 mL/min Strong saliva: <ul style="list-style-type: none"> — vacuum degree >25 kPa; — water pumping rate > 1000 mL/min
◆Instrument tray	Rotating angle: >270° Up-down moving range: >440mm Max. Load: <5 Kg
◆Film viewer	Power supply: 24 V ac Inside power supply Power input: 80 VA
◆Operating light	Power supply: 12 V ac Inside power supply Power input: 50 VA Illuminance: 5 000~20 000 Lx Radiant heat: <200 W/m ² @ max. illuminance Color rendering index: >85 Ra
◆Foot switch	Tripping force: >10N and <30N Degree of protection against harmful ingress of water: IPX4(foot switch) Service life: >25 000 repeats
◆Dental chair	Power supply: 24 V dc Inside power supply Loading capacity: 1323N (about 135 Kg) Loading capacity of headrest: 300N (about 30Kg) Mass of patient chair: 110 KG Moving range of headrest: 120mm Range of backrest when going backwards: 90°~170° Seat cushion's maximum height : 730mm Seat cushion's minimum height : 450mm
Attachment ----- Amalgam separation device	It has a medical device product registration card Attachment parameters are reflected in its operating instructions

◆Workspace	L: ≥3 000 mm; W: ≥2 200 mm; H: ≥2 500 mm
◆Maximum lifting capability	Chair 150 Kg; Assistant load ≤5kg

VIII. PRODUCT STRUCTURE

1. Overview diagram

YD-A1	YD-A2
	
YD-A3	YD-A4
	
YD-A5	AD-S1



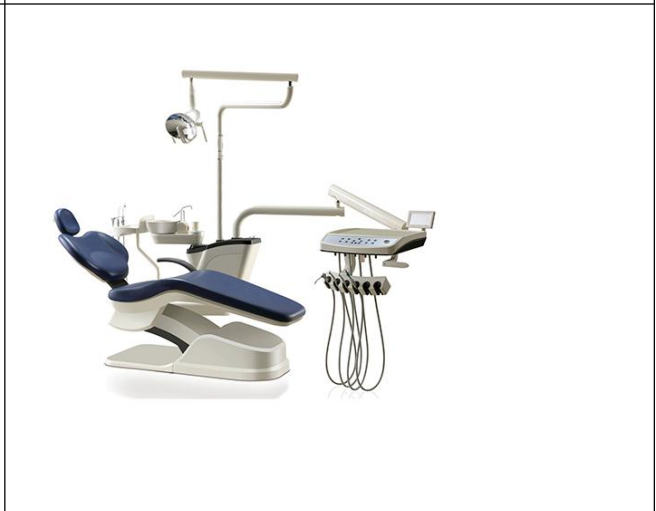
AD-S3

AD-S6

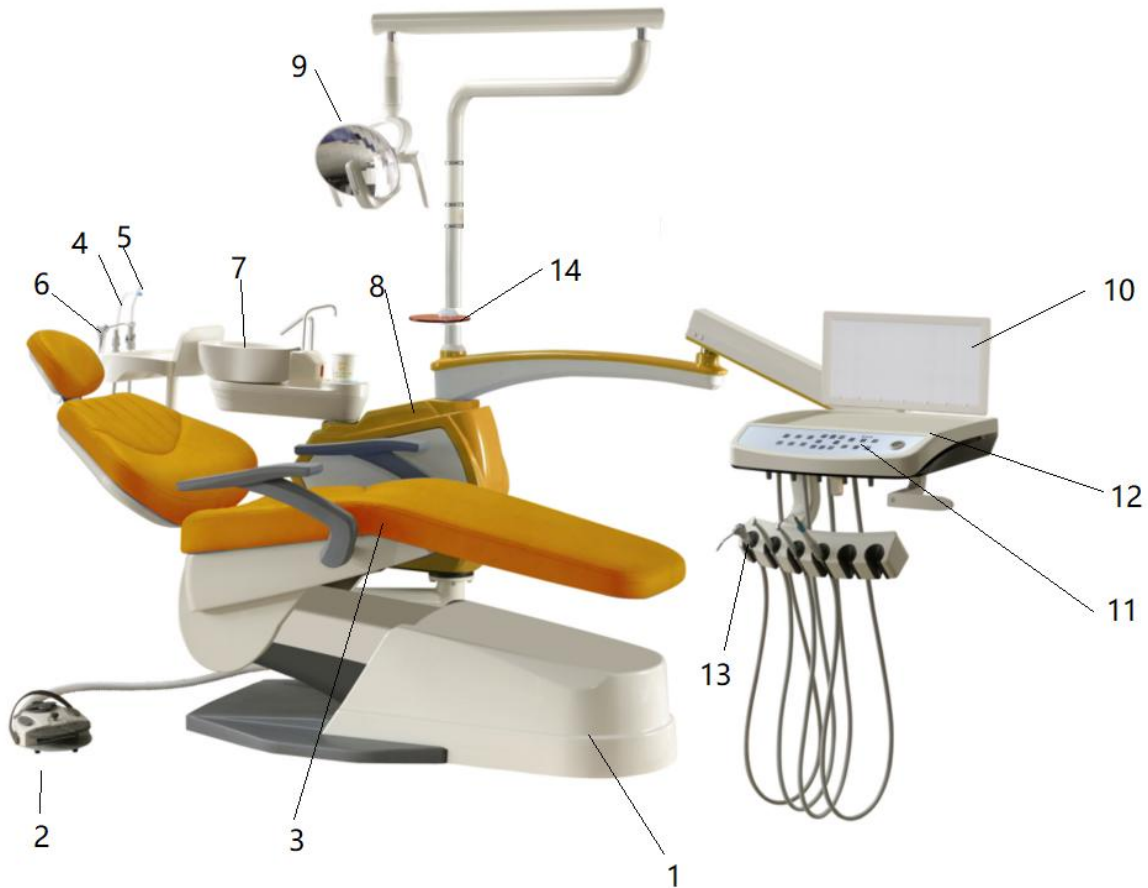


AD-S8

AD-S9

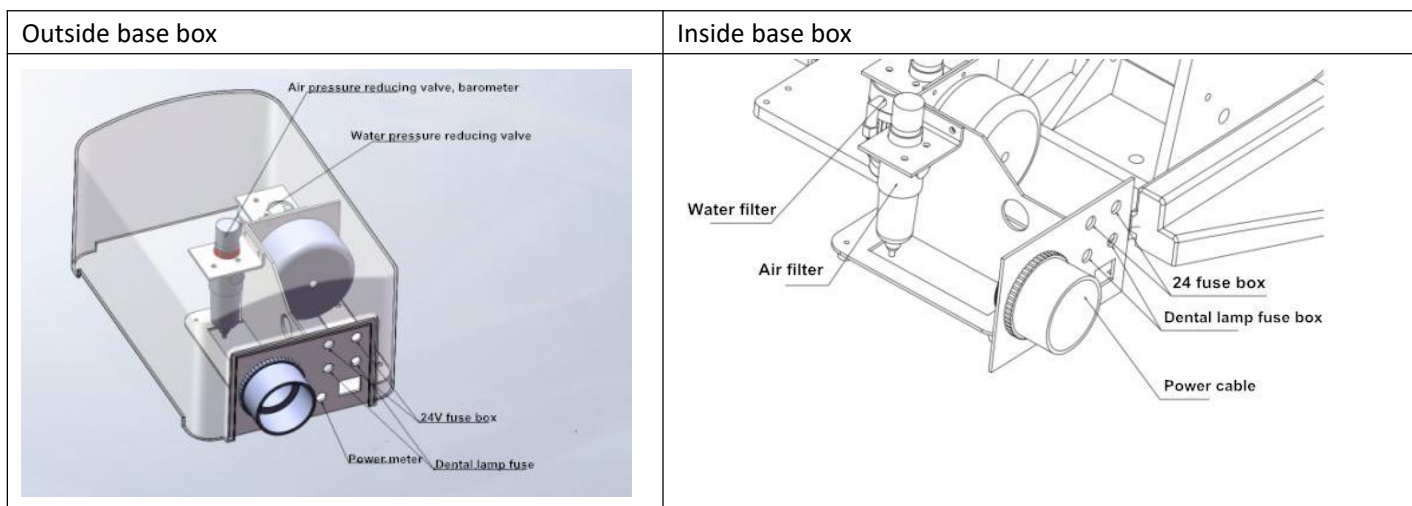


Mainly components introduction:



- | | |
|------------------------------------|--|
| 1 Base box | 8 Dental cabinet |
| 2 Foot switch | 9 Operating light |
| 3 Patient chair | 10 Film viewer |
| 4 Week saliva pump | 11 Control panel |
| 5 Strong saliva pump | 12 Instrument tray |
| 6 3-way syringe (without tip, hot) | 13 3-way spray gun (without tip, cool) |
| 7 Mouth water supply | 14 Glass Tray |

2. Outside & Inside base box



IX. INSTALLATION

1. Installation space

(1) Environment requirement

To ensure the dental unit to work typically, we recommend you install the dental unit in a clean, dry, well-ventilated area, and leave the ground where the dental unit to be flat and stable.

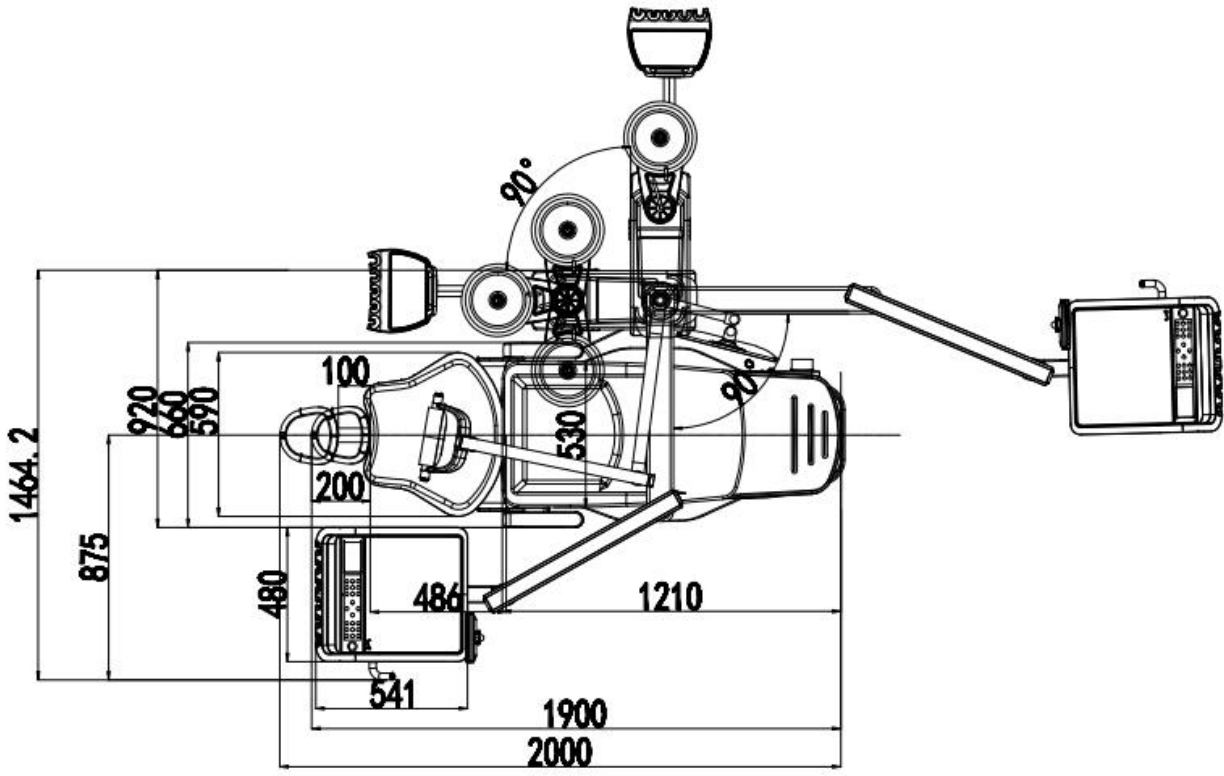
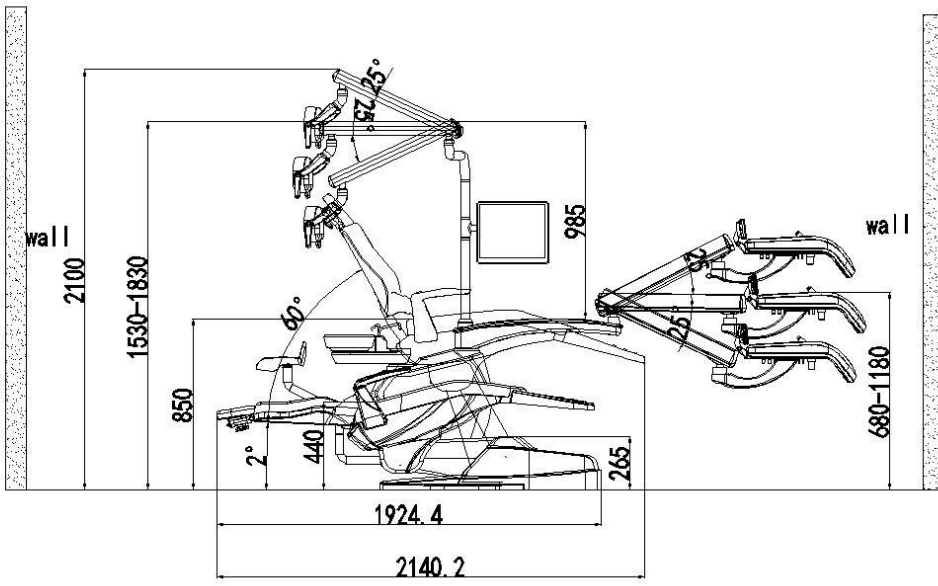
(2) Space requirement

To ensure the dental unit will not contact with any article within its moving space, please make sure sufficient space is available when install the dental unit, below configuration show the detail space requirement and information.

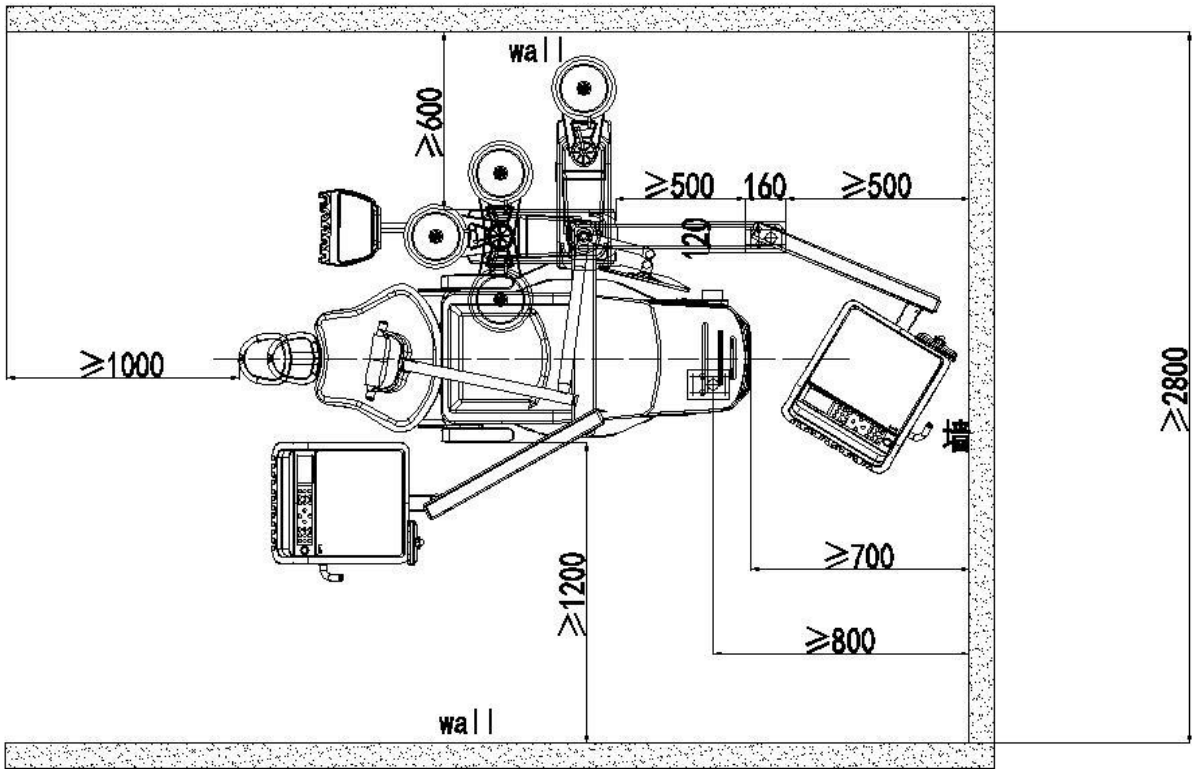
General Overall space size

- I) The length: > 3000mm;
- II) The width: > 2800mm;
- III) The height: > 2500mm.

Units: MM

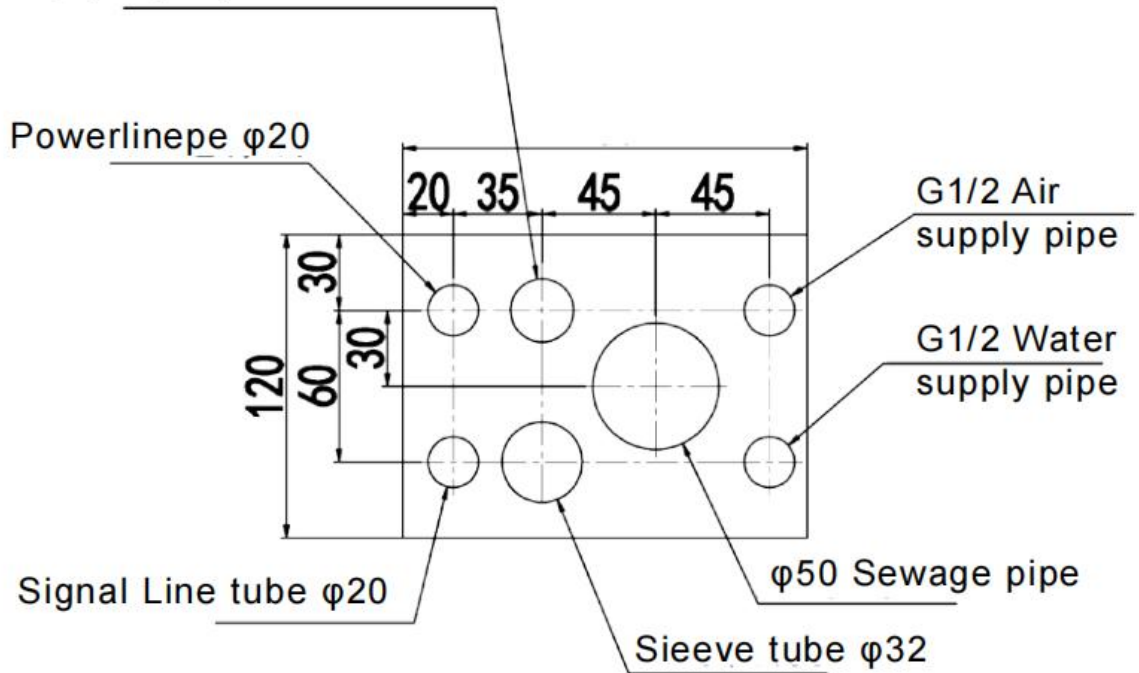


(3) Installation size of bottom plate and location diagram of reserved water outlet of ground box

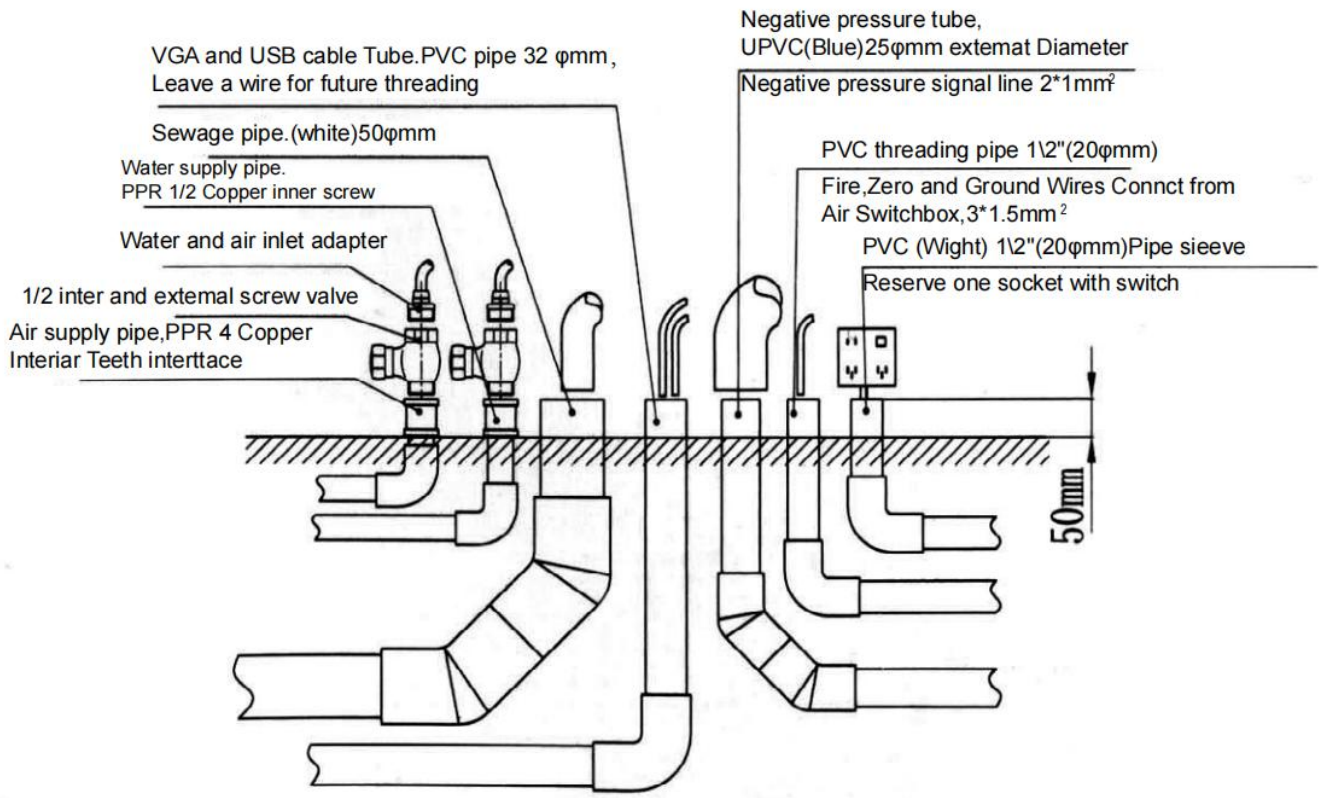


(4) Piping layout dimension drawing (1)

Vacuum pipe $\phi 25$ (Outer diameter)



(5) Piping layout dimension drawing (2)



(6) The weight of the dental chair: 195KG

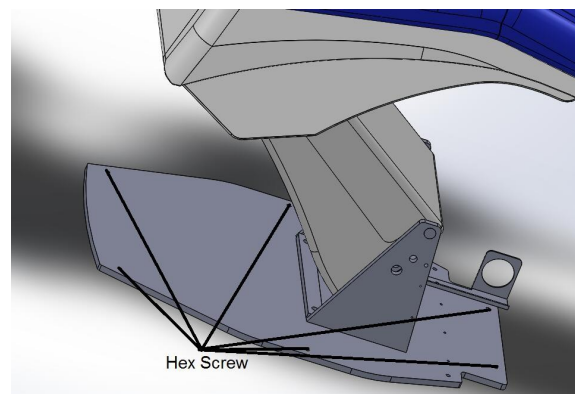
2.Product installation

(1) Handling and installation

Open the product's box and take out the power supply cord and connect it with the power supply.

Lift dental chair to maximum position; take the front and bottom housing, and then remove the power cord.

Use the **M10 Allen screw** wrench to remove the four screws that fix the patient chair on the bottom of the package, and carefully move the dental chair to the predetermined.





Do not lift or turn pivoted arm, armrest, assistant frame, dental cabinet, plastic housing, and other easy breakables in the handling process. Otherwise, they may be damaged.

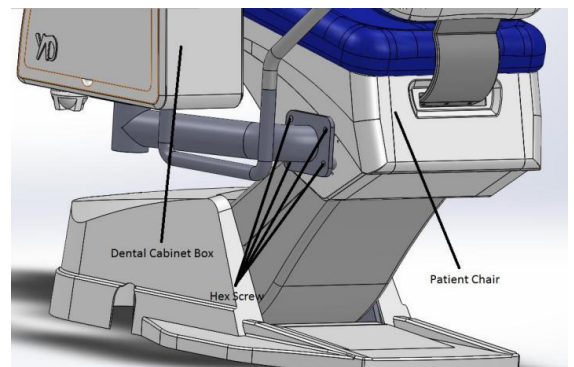
Hold the instrument tray in the handling process. Otherwise, it may be damaged.



(2) Connect the therapeutic unit with dental chair

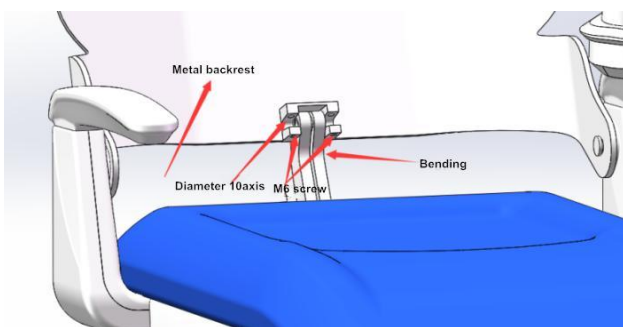
Lift the therapeutic unit and let it align with the interface on the dental chair. Secure the therapeutic unit onto the dental chair using accompanied M10 bolts.

Pls. Refer to Figure right hand.



(3) Install dental chair backrest

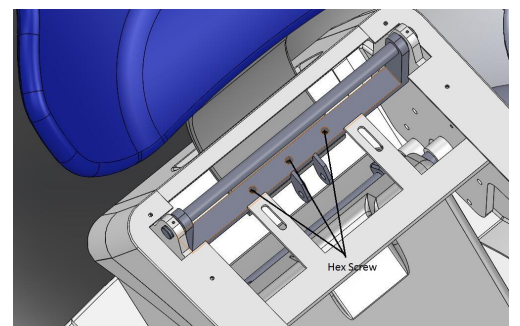
After installing the bending plate with the 10-diameter axis, snap it into the backrest groove and fix it with the equipped M6 screw. (Refer to below figure)



Use three accompanied M10 bolts to fix backrest onto the dental chair.



Pls. keep backrest away from sharp articles in handling course; otherwise, it may scratch or damage backrest.



(4) Install dental chair cushion

Align the leather pad with the T-shaped nut at the front hole of the leather pad. After the screw enters the hole, push the leather pad in the direction of the arrow in the figure below to make the T-shaped nut enter the slot at the rear end of the leather pad (Figure 4-1) Insert two M6 inner hexagon screws into the arrow position to fix.

Take out the six screws at the bottom of the cushion, pass through the corresponding four holes on the patient chair to re-screw the cushion, and tighten the hex nuts. During installation, avoid sharp objects from scratching the surface of the backrest. (Figure4-2)

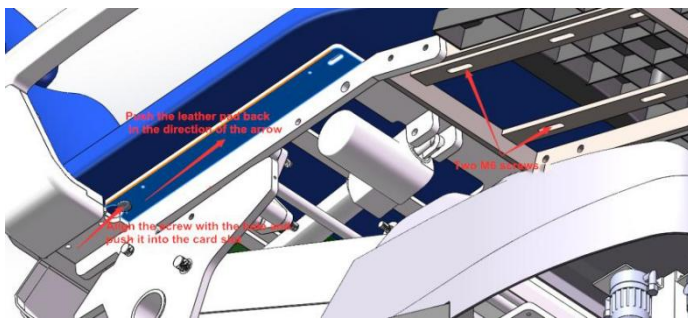


Figure 4-1

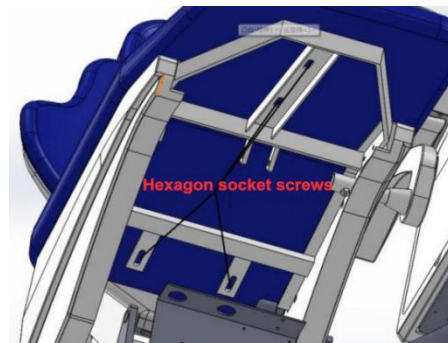
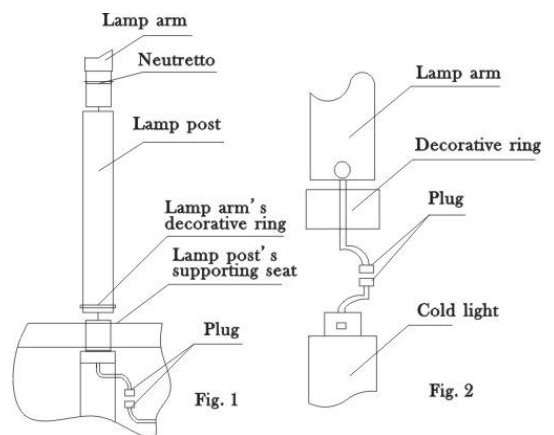


Figure 4-2

(5) Installation of operating lights

Open the lamp arm packing box; install the lamp arm in turns (see Fig.1 at the right side)

1. Take out operating light and screw off the M5 female- hex screw from the connecting shaft (see Fig. 2 at the right side),
2. Put the decorative ring into the lamp arm's connecting rod, connect the cold light lamp's connecting shaft with the power plug of the lamp arm's connecting rod,
3. Put the power cord and the power plug into the lamp arm's connecting rod, and then insert the cold light lamp's connecting rod into the lamp arm's connecting shaft hole;
4. Finally, tighten with the accompanied M5X12 bolts.



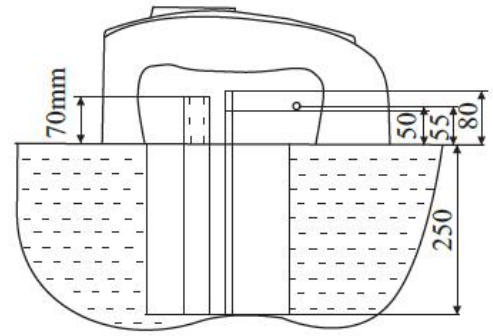
(6) Install base box's air and water pipe

As shown by the Figure at the right side: connect the water inlet pipe, air inlet pipe and water outlet pipe of the unit with the water source, air source, and water outlet;

When connecting, please make sure the air inlet pipe and the air inlet pipe is airtight; otherwise, water or air may leak from the connecting interface

Finally, connect the earth wire with the ground.

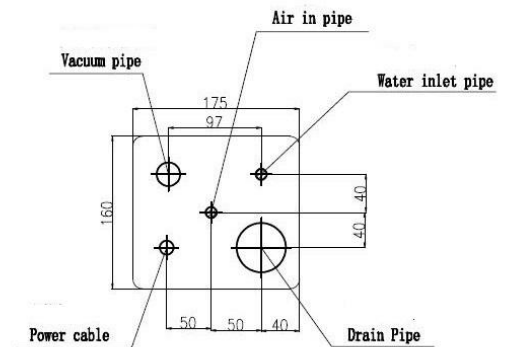
According to the installation position of the unit, lay the water inlet, air inlet, and water outlet pipe in the desirous place; the water inlet pipe and the air inlet pipe must be of PVC material with the specification of $\varnothing 8 \times \varnothing 5$ (i.e., ZG1/2"); The elbow must connect each of them. The water outlet pipe to be used must have the inner diameter more than 27.5mm; it will be enough if the water outlet is reserved.



Do not let the height between water outlets and the dental chair's installation floor be more than 100mm; otherwise, the water inside the outlet pipe may flow back.

Keep the water outlet downwards.

Do not twists, protrude or corrugate the pipe, and do not put the water outlet into water.

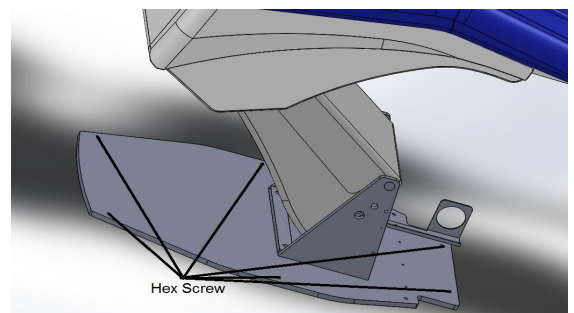


(7) Level adjustment of equipment

Put six M12 hex bots into the corresponding six M12 screw holes in the dental chair, and then adjust the screwing-in length of these screws till the desirous level of the unit is achieved.



Let the dental chair's bottom panel contact the floor as much as possible; if so, the best stability of the whole equipment shall be assured.



(8) Install the accessories of instrument tray

I) Install 3-way syringe

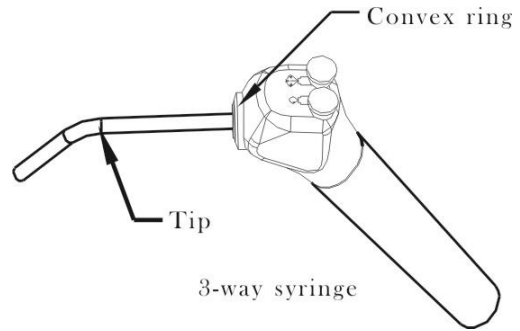
Remove the nozzle of the 3-way syringe from the accessory bag

Insert the nozzle to the convex ring on the gun, and then release the convex ring to make it reset; if the convex ring is down, it means the final installation position is not bounce; in this case, please to press the convex ring again and insert the nozzle inwards hardly till the convex ring comes out.

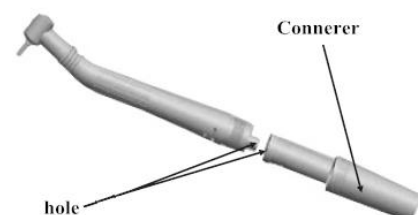
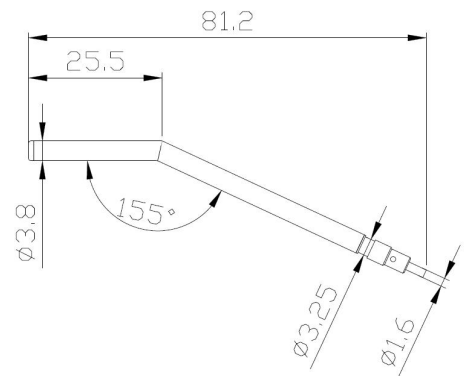
Note: We do not provide the tip with the 3-way syringe in the device. Please prepare the tip by yourself; refer to the below dimension of the tip, which can be compatible with the 3-way syringe. When you reuse the tip, please sterilize the tip according to its sterilization requirement: Most heat sterilization process 134 °C for 3 mins after cleaning with clean water.

Cleaning steps:

Use clean water to rush the 3-way syringe firstly; wipe off the soil on its surface with soft, clean cloth. And then rinse the 3-way syringe until no any soil is left by visual inspection. If any soil left on its surface, repeat the cleaning steps abovementioned.



Unit: mm



II) Install handpiece

Before installing the handpiece, please open the water and air source. Pull out all handpiece tube and step on the footswitch to drain residual water and air from the pipes. When installing, all holes must be aligned with each other to make a connection.



Use of handpieces, disinfection, and maintenance, please refer to their manuals!

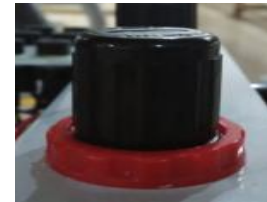
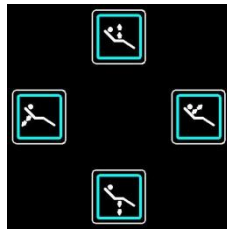
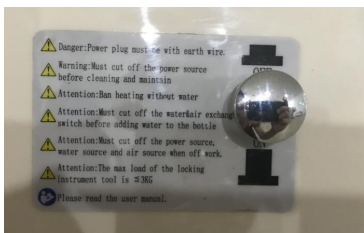
X. COMMISSIONING

Close the main switch of water, air, and electric power (see Figure below).

Note: After finishing work, please disconnect the water, air, and electric power supply; if so, the parts and components inside the unit can be well protected, and the service life of the whole unit can be extended; meanwhile, the accident probability can be lower.

1. After the buzzer toots, the indicator lamp on the instrument tray and assistant frame shall be “on”; since then, the equipment shall make self-inspection.
2. Inspect the water source connection joint and ensure there is no water leakage.
3. Inspect the air source connection joint and ensure there is no air leakage.
4. Check the barometer pressure indication value on the air pressure reducing valve. The standard working pressure is 0.55MPa. If it is wrong, please adjust the adjustment knob of the air filter pressure reducing valve to the above value.

The adjustment method is: turn up the knob on the top of the air filter pressure reducing valve. Turn the knob clockwise to increase the pressure value and vice versa to decrease the pressure value.



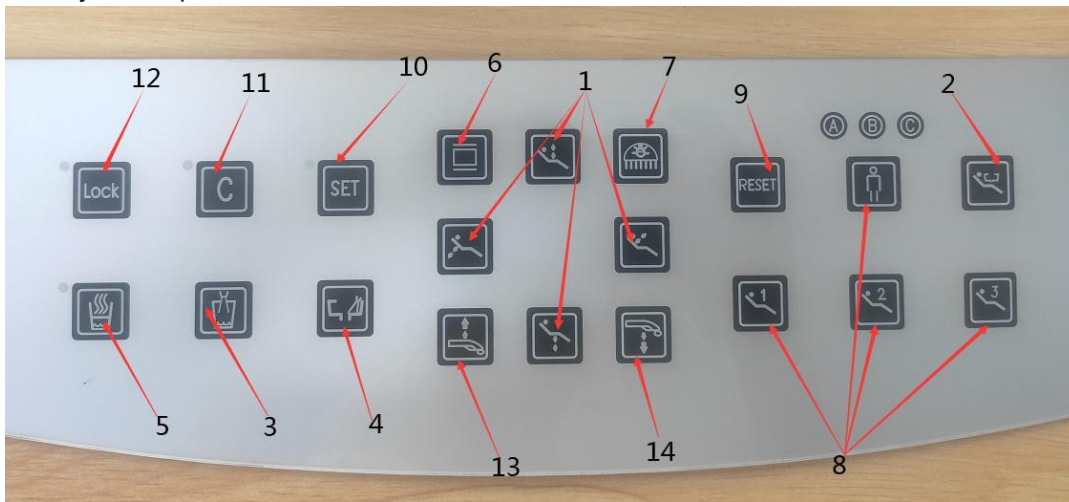
Note: The machine needs to be connected to the air before the device can open the water channel.

XI. INSTRUCTIONS FOR USE

- ✧ When using the unit, please make sure you have already switched on the water, air and electric power supply;
- ✧ All parameters can be stored automatically if the power supply shuts down;
- ✧ After the power supply shuts down and recovers, except that the on-going operation suspends, no safety problems shall occur. If it is needed to work continuously, please re-start the unit.

1. How to use Keyboard Plate of Instrument Tray


The keyboard plate is shown as follows:





(1) Position of dental chair

Every long press on the button shall trigger the patient chair to move according to every respective arrow indication; the patient chair shall stop moving if the button is released:


——“” : Dental chair, upwards;

——“” : Dental chair, downwards;

——“” : Dental chair, tilt backwards;

——“” : Dental chair, tilt forwards;

(2) Mouth cleaning(Only with memory system)


Press the “” key one time, the dental chair backrest shall move to the most front position so as to facilitate the patient to spit and clean mouth; press the button again, the dental chair backrest shall move back to its previous position.

Notes:



In the running course of the dental chair backrest, if other function keys are pressed, the functions

triggered by such key shall stop automatically.


(3) Mouth water supply

Press the “” key one time, the mouth wash supply shall stop after the setting time is up; during the mouth wash supply period, every press on this key shall stop water supply. For the time setting, please refer to “**Instruction for Setting Key**”.

(4) The spittoon flush

Press the “SET” button, pilot lamp is shining, press the “” key fourth times the spittoon flush, press the key “SET” again, the pilot lamp is extinguish, then finishing setting, the whole flowing process is set about 15 seconds. Repeat the process, press one time  to set 30 minutes for whole flowing process, twice for 60 minutes, three times for all times, fifth times is cycling as the first time.


(5) Heating

Press the “” key one time, the constant-temperature water heater shall be started to heat water to a temperature of $40^{\circ}\text{C} \pm 5^{\circ}\text{C}$; if the water temperature reduces, the water heater shall start automatically (the indicator lamp shall flash in the heating process; the indicator lamp shall be always on after the setting value is reached); every press on the key again shall stop the water heater (the indicator lamp shall be off).

Notes:

The hot water shall only be supplied for mouth cleaning and 3-way syringe (connect the open the water supply before using the water heater so as to prevent it from burning without water and causing short circuit).


(6) Film viewer

Press the “” key one time, the power supply of the film viewer shall be connected; press the key again, the power supply of the film viewer shall be disconnected. (Model dependent)

Notes:

There is a power switch on the film viewer.

(7) Operating light

Press the “” key one time, the power supply of the operating light shall be connected; press the key again, the power supply of the operating light shall be disconnected. (Model dependent)

Touch the “K” key to adjust the chromatic aberration. The first time is yellow light, the second time is white light, and the third time is yellow and white light. Adjust the brightness. It is adjusted by swiping the illuminance adjustment bar, and the next time it is turned on, it will automatically remember the last used illuminance. (Depending on the model)

Notes:

There is a power switch on operating light.

(8) Memory positioning of dental chair (Model dependent)

User can customize 0-9 memory positions for the dental chair. (Depending on function of the device.)

Every press on the memory key shall trigger the corresponding indicator light and the corresponding memory procedure; in such case the dental chair shall move to the corresponding memory position.

As for the customized setting, please refer to “(10) Setting Key”.

Notes:

In the running course of the dental chair, if other function keys are pressed, the functions triggered by such key shall stop automatically.

(9) Reset dental chair

Press the “RESET” key one time, the dental chair shall lower minimally and leans forward.


Notes:

In running dental chair, if other function keys are pressed, the functions triggered by such key shall stop automatically.

(10) Setting key

I) Set mouth water supply time

Step 1: Press the “SET” key one time, the indicator shall be on;

Step 2: Keep on pressing the “” key till the desired water volume is reached;



Step 3: Press the “SET” key one time, the indicator shall be off. Finish setting.



Notes:

The setting procedure limits only the water supply time; however the huge change in water pressure may cause change in water supply volume; in this case please re-set accordingly.

II) Set dental chair memory positioning (Model dependent)

Step 1: Press the “SET” key one time, the indicator shall be on;

Step 2: Keep on pressing the “” or the “” key (press one of them only, or both are not pressed) till the dental chair moves to the presetting height;

Step 3: Keep on pressing the “” or the “” key (press one of them only, or both are not pressed) till the dental chair backrest moves to the presetting angle;

Step 4: Press Key A, B or C, and then press any key of the 3 memory positions;

Step 5: Press the “SET” key, the indicator shall be off and the setting is thence finished; till now the presetting seat position has been stored in the corresponding memory key.

(11) “”: key for Cleaning and reset

When the doctor finishes his work, press the “C” button, the chair will start the automatic cleaning and reset function.

To press “C” button , the chair frame rises to the highest position, the backrest is highest and the front, and then the spittoon starts to flush automatically for 5 minutes, after that, the seat drops to the lowest.

note: When the patient chair is running with the “C” key, if you click another function key, the function key will

automatically stop! (Except for the key “ SET” “LOCK” and the cart version





(12) “Lock” key

Press the “Lock “ key for 2-3 seconds, the indicator next to the key will be on, and the function keys of the entire main control panel cannot be used

When you long press the Lock key again, the indicator light is off, and the function keys can be used.

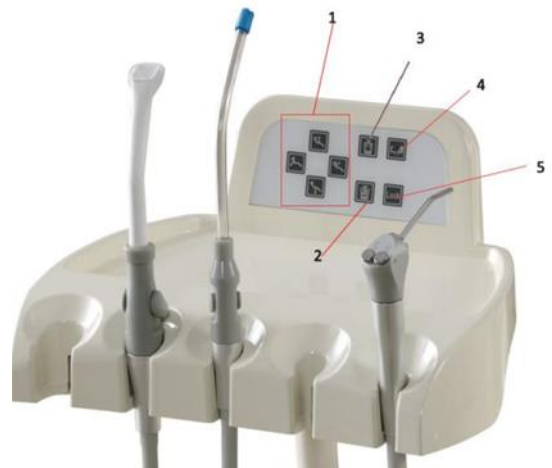
(13) “” “” : **Cart version Up and Down**

A: “” The trolley rises and stops when it reaches the maximum stroke of the motor. When it is rising, press this key or other keys again to stop the function.

B: “” The trolley descends and stops when it reaches the minimum stroke of the motor. When it is ascending, press this key or other keys again to stop the function.

2. How to use Keyboard Plate of Assistant tray


- 1: Patient chair position;
- 2: Water boiled;
- 3: Water supply;
- 4: Water flues;
- 5: Lock the control panel



As for the functions of every key, please refer to Chapter XI, Section 1 “How to use the Keyboard plate of the instrument tray”

3. How to use water tank

The water stored in the water tank is only used for the instruments on the instrument tray; when selecting and using the water tank to supply water, the following procedures must be followed:

Step 1: Press the “” “AIR OFF” switch to disconnect the water supply;


Step 2 : Flip the switch “” “AIR ON”, the water source for the instruments on the instrument tray shall be switched to water tank.



Figure 1

Notes:

If the tap water is used for the instruments on the instrument tray, please make sure the switch is

flipped to  position.

When switch “” from “open” to “close”, there might be exhaust air, it is normal phenomenon.

4. How to use foot control

(1) Position of dental chair

Pull the ball arm to the four directions, dental chair shall move according to the indication; after releasing the ball arm, the dental chair shall stop moving.

- “UP” : Dental chair, upwards;
- “DO” : Dental chair, downwards;
- “BO” : Dental chair, tilt backward;
- “BU” : Dental chair, tilt forward;



(2) Mouth water supply (SUPPLY)(Model dependent)

Step on this key one time, the mouth wash supply shall stop after the setting time is up; during this period, the step on this key again shall stop water supply.

(3) Bowl flush (RUSH)(Model dependent)

Press this key one time, the spittoon shall be rinsed for three minutes; during this period, every press on this key again shall stop water rinsing.(Depending on the setting of the flush)

(4) Blow Key (BLOW)

After the work with the handpiece is done, please step on this key to dry the pipe of the handpiece.

Notes:

The required air flow can be adjusted according to the needs [see Page20 chapter]

(5) Operating pedal of handpiece

The left pedal (W) means the operating water supply control switch; the right pedal (A) means the operating air source control switch. Instructions for use:

- Step on the left pedal: the water source of the handpiece works only;
- Step on the right pedal: the air source of the handpiece works only;
- Step on the left and right pedal: the water and air source of the handpiece work simultaneously

Note: When stepping on the right pedal, the chair frame enters the interlock mode. Pressing any lift button will not move the chair frame. After releasing the pedal, the lift buttons can works.

5. How to adjust water and air flow for handpiece

See Fig.1 for handpiece’s adjustment



In Fig.1 ①, ② and ③ show the flows of water and air in operation of hand-pieces , ④ Show the flow of fog. The adjustment method is: connect three handpieces, pull out one handpiece randomly and step on two pedals of the foot controller simultaneously, and then turn the corresponding knob shown by Fig.1 to adjust the water and air volume. The air volume can be viewed through the handpieces pressure gauge installed on the instrument tray. The volume of water can be viewed visually.

Note:

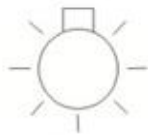
Please do not pull two or three handpieces for use simultaneously!

6. How to use operating light

The operating light is respectively marked as follows:



Operating light



Lighting,illumination



illumination, Closed



illumination, weak

Notes:

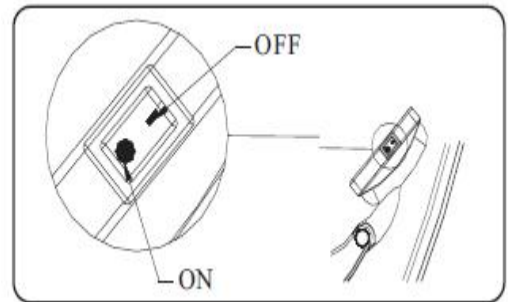
The cold light lamp's power supply is controlled through the keys on the instrument tray.

7. How to use film viewer

As shown by the Figure, if switch on film viewer is flipped to "ON", the operating light shall be on, and be off when flipped to "OFF".



The power for film viewer is controlled by keys on the instrument tray.



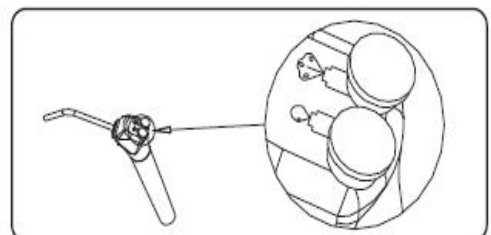
8. How to use 3-way syringe and saliva ejector

(1) 3-way syringe

Press the " " key to trigger spray gun to spray air independently;

Press the " "key to trigger spray gun to spray water independently;

Press the " "and " "to trigger spray gun to spray mist.



(2) Saliva ejector

Take the strong and weak suction off the assistant tray to make them work automatically.

Note: The saliva suction device needs to be equipped with a disposable suction tube in use, and the 3- way syringe needs to be equipped with a disposable 3- way syringe head in use.

9. Water quality management and related bacterial contamination risk

There is bacterial contamination risk if the procedural water quality is not good which might cause by follow conditions:

1 Waterline process was not implemented according to the procedure for water quality management recommended in the instruction for use.

2 Water filter damage or blocked

The potential exposure of dental personnel and patients to high concentrations of multiple microbial forms may represent a risk of infection.

Recommend procedure for water quality management

1 Replace the filter if it is clogged or discolored

2 Replace the water in water tank in the morning

3 Flush waterline 3 minutes before first patient

4 Flush waterline for 20 to 30 seconds between patients

5 Empty the water tank at the end of day

6 Clean the waterline with a hydrogen peroxide–based disinfectant weekly, and then flush it with water

Note:

The user shall frequently monitor the procedural water quality. Sample the water and store in sterile water bottle. And the water shall be analysis within 24 hours.

The water quality shall comply with sanitary requirement for medical water in local medical institutions.

XII. MAINTENANCE AND REPAIR

12.1 Strong and weak suction cleaning

1. In the process of work, every two hours, with strong and weak suction water to clean;

During the treatment, please clean the strong and weak suction by suction water every two hours .

2. After work every day, suck a liter of water and rinse.

When complete a-day working, please suck in 1L water to clean the suction.

12.2 Clean the collecting cup

Normal use into weekly maintenance once, frequent use when increasing the number of maintenance, to repair;

Please maintenance once a week. If it's used frequently, please increase the number of cleanings.

- A. Put the pollution collecting cup down counterclockwise and unscrew it, then remove it;

Unscrew the dirt collection cup counterclockwise, put it down.

- B. Remove the used cotton;

- C. Put appropriate amount of new cotton into the collecting cup;

- D. Tighten the collecting cup clockwise

12.3 Clearing Filters

Strong and weak suction filters help prevent solids from entering the suction system.

Strong and weak suction filters are used to prevent solid matter from entering the suction system.

To ensure that the suction system works properly, please clean the filter net at least twice a week.

Clean the two-in-one filter net:

1. Turn off the suction system.
2. Pull out the two-in-one filter, remove the filter mesh, and clean up the solids.
3. Reinstall it.

12.4 Self-flowing Drainage Cleaning

At the end of each day's work, the drain pipe should be flushed to remove the residue in the drain hose. If the drain pipe is not washed regularly, residue may accumulate and damage the drainage function of the spittoon. Flush the drain and run the Clean key to complete the cleaning process.

When complete a-day working, the drain hose should be flushed to remove debris in the drain hose. Otherwise, Debris can then build up and damage the spittoon's drainage.

Please press the key "Clean" on the instrument control, Then it will enter auto-clean process.

12.5 Clean spittoons

Curved nozzles and smooth spittoons facilitate quick cleaning operations, please empty and clean the filter before clean the spittoon every times.

Warning:

Do not clog the spittoon drain by dumping filter residue into the spittoon. After each rinse, please install the rinse filter on the spittoon drain to prevent the residue from blocking the pipe.

Do not pour filter residue into the spittoon as it can block the drain of the spittoon. Then Install the rinse filter on the spittoon drain to prevent debris from clogging the pipes.

12.6 Clean the mouth lamp

1. Clean LED oral lamp: After use for a period of time, the shell and lamp panel will collect dust, blood, body fluids, etc., so the product must be cleaned. It can be wiped with liquid wax and a soft cloth that not only clean the shell but also protect the paint layer. If the dirt is serious, it can be repeatedly scrubbed with alcohol.

Note: Not allow to scrub with acid, alkaline solution or abrasive.

2. It is important to turn off the LED oral lamp during routine examination because of its safety. It is necessary to check the state of the connecting screw and other connecting screws regularly, and tighten them immediately if they are loose. Check the connection of the power cable. Check whether there is loosening or oxidation. If there is, insert it tightly or replace it immediately. Use a measuring resistance meter to check the performance of the grounding cable.

Note: The above examinations must be performed at least once a year.

Warning: Electrical inspection must cut off the grid power.

12.7 Clean the surface of the dental chair

Touch and transfer surfaces

Touch surfaces are areas that need to be touched during dental treatment and are potentially subject to cross contamination.

Transfer surfaces are those surfaces contaminated by contact with instruments and other non-moving objects.

We recommend that all applicable touch surfaces and transfer surfaces be isolated and protected. The quarantine used must be FDA-certified plastic quarantine film. After treating each patient, the insulating plastic film should be removed and disposed of.

1. Do not use organic solvents or acid substances (such as gasoline, alcohol, etc., otherwise the leather will crack, smell or fade).

2. Metal parts and plastic parts should be cleaned with a soft cloth dipped in soapy water or with a neutral cleaner.

Guidelines for disinfection of dental chair leather

It is suggested that leather should be disinfected once a day by using 3% hydrogen peroxide disinfectant, dermal moisturizing cream and 3% multi-enzyme disinfectant. The leather should be disinfected and cleaned according to the instructions of the disinfectant, and then cleaned with water.

Precautions for disinfection

It is strictly prohibited to use alcohol, enhanced glutaraldehyde disinfectant, 84 disinfectant, benzalpium bromide disinfectant, benzalpium chloride propanol disinfectant and all kinds of acid and alkaline disinfectant for disinfection. If the leather is caused by color difference, chapping and aging, it does not belong to the normal scope of leather warranty.

12.8 Clean water tank

In order to maintain and keep tap water clean, water filter element inside the water tank must be cleaned

with neutral detergent (hole size of filter is less than 90um); it is recommended to clean the water filter every 6 months. If housing or filter of water is broken or damaged, pls. replace accordingly.

In order to maintain the quality of water in water tank, neutral detergent should be used for tank cleaning on a regular basis and it's recommended to do this job weekly. Before disassembling water tank, air source of water tank should be disconnected.

Note:

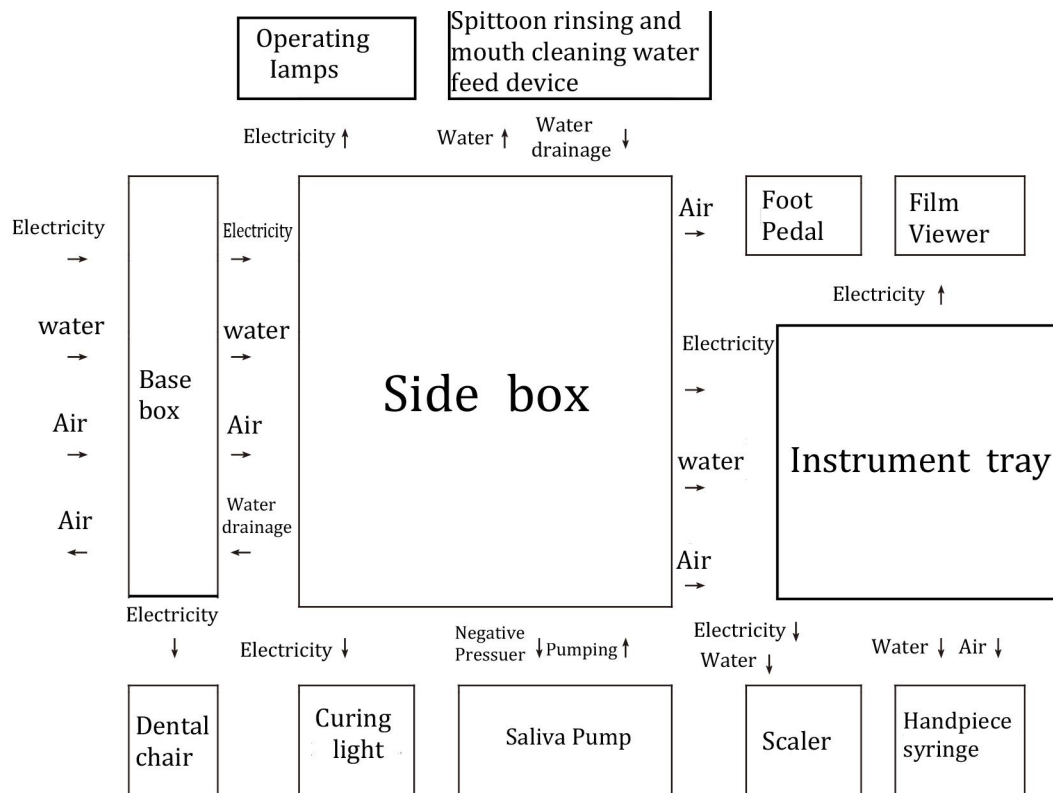
1. In order to **keep the air dry, the water in the air pressure reducing valve (filter element size less than 25um) in the water tank should be drained regularly** and it's recommended to do this job weekly. If air relief valve leaks, pls. replace accordingly.
2. The operating light can only be maintained in normal temperature; the wet cloth can be used for cleaning; the reflective panel can only be cleaned by using compressed air;
3. Solid pollutant, after the filter of **saliva ejector** is used, may possibly go into and accumulate, therefore the filter should be cleaned by clean water on a regular basis; it's recommended to clean before getting off every day.
4. **For the maintenance and repair of film viewers, in order to keep the product clean, you can use medical alcohol to wipe and clean the surface of the product. If the light is not bright or the light source is uneven, please replace it continuously.**
5. **Daily maintenance instructions to maintain the hygiene of the product. The leather pads and armrests can be cleaned with alcohol. The strong and weak suction filters should be cleaned every day to prevent clogging of the pipeline. After the work is completed, the water, gas and power switches must be turned off.**

XIII. COMMON TROUBLES

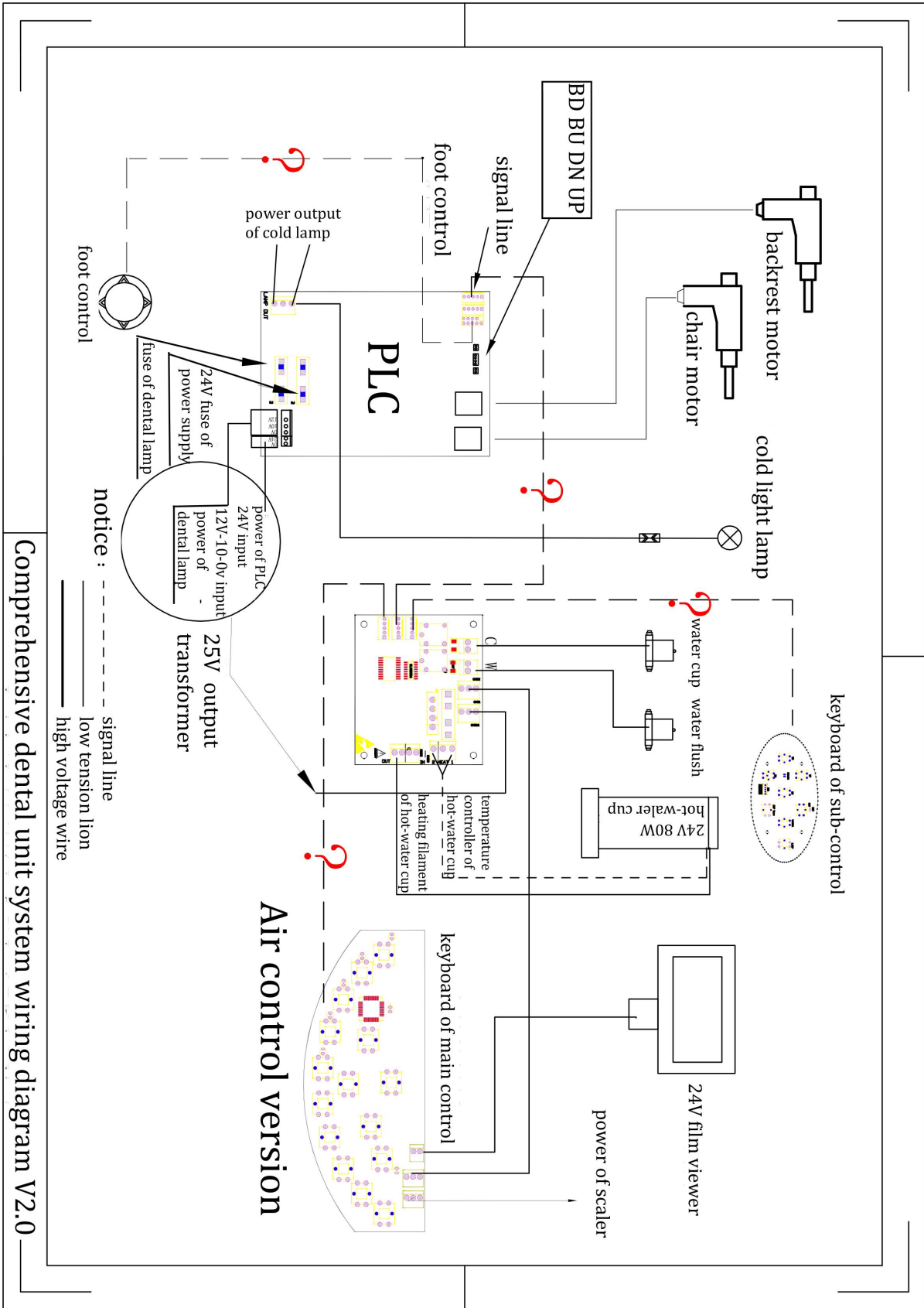
Trouble description	Reason analysis	Trouble solution
The operating light is not lit	<ul style="list-style-type: none"> - The bulb burns out; - The lamp is not connected properly; - The connecting piece is not connected properly; - The fuse on the secondary end of the power transformer burned out; - The electric wire inside the moving joint is broken; - Dental lamp fuse blowout. 	<ul style="list-style-type: none"> - Replace the bulb of the same type; - Correct with the instruments; - Correct with the instruments, and then insert again; - Replace the fuse of the same type; - Replace the new wire; - Exchange the same type fuse.
The mouth wash supply cannot be switched off	<ul style="list-style-type: none"> - The solenoid valve is blocked by foreign matters inside; - Line gets through by itself. 	<ul style="list-style-type: none"> - Remove the solenoid valve and clean; - The position of the two solenoid valve plugs can be changed, and the accessories can be replaced by the elimination method.
The mouth wash supply fails to work.	<ul style="list-style-type: none"> - The water pipe is twisted and damaged; - The solenoid valve coil burns out; - Loose plug; - solenoid valve inside wire loose. 	<ul style="list-style-type: none"> - Replace new pipe; - Replace new solenoid valve; - Check the plug of solenoid valve; - Remove the solenoid valve and reconnect it.

<p>The water temperature of the mouth wash supply is too high</p>	<ul style="list-style-type: none"> - A temperature relay inside the top cover fails to work; 	<ul style="list-style-type: none"> - Replace new water heater;
<p>The spittoon is not drained smoothly</p>	<ul style="list-style-type: none"> - The pipe is blocked; - The plastic pipe is twisted and damaged. 	<ul style="list-style-type: none"> - Remove and clean the pollutant; - Remove it and dip it into the hot water; alternatively replace new pipe.
<p>No water is supplied to the spittoon</p>	<ul style="list-style-type: none"> - The water pipe is twisted and damaged; - The solenoid valve burns out; - Loose plug; - solenoid valve inside wire loose. 	<ul style="list-style-type: none"> - Replace new pipe; - Replace new solenoid valve; - Check the plug of solenoid valve; - Remove the solenoid valve and reconnect it.
<p>The saliva ejector does not work well</p>	<ul style="list-style-type: none"> - The pipe is blocked; - The filter is blocked; - Damaged seal; - Water pressure or air pressure is not enough. 	<ul style="list-style-type: none"> - Use clear water to clean or remove to clean with clear water; - Remove and clean the filter, and then install it again; - Change the seal; - Adjusted to normal pressure.

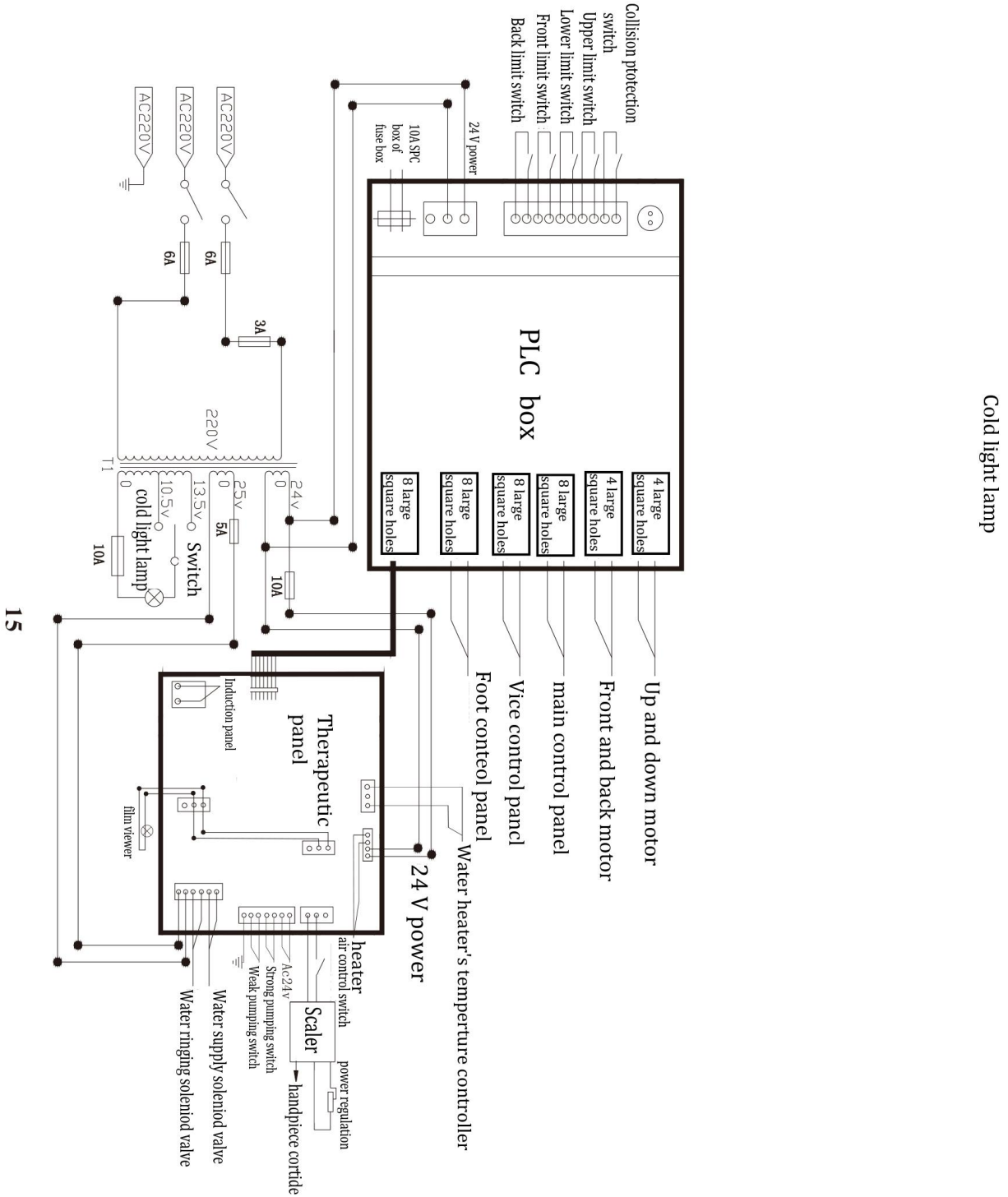
XIV. SCHEMATIC DIAGRAM FOR WORKING PRINCIPLE



XV. CIRCUIT DIAGRAM FOR DENTAL UNIT

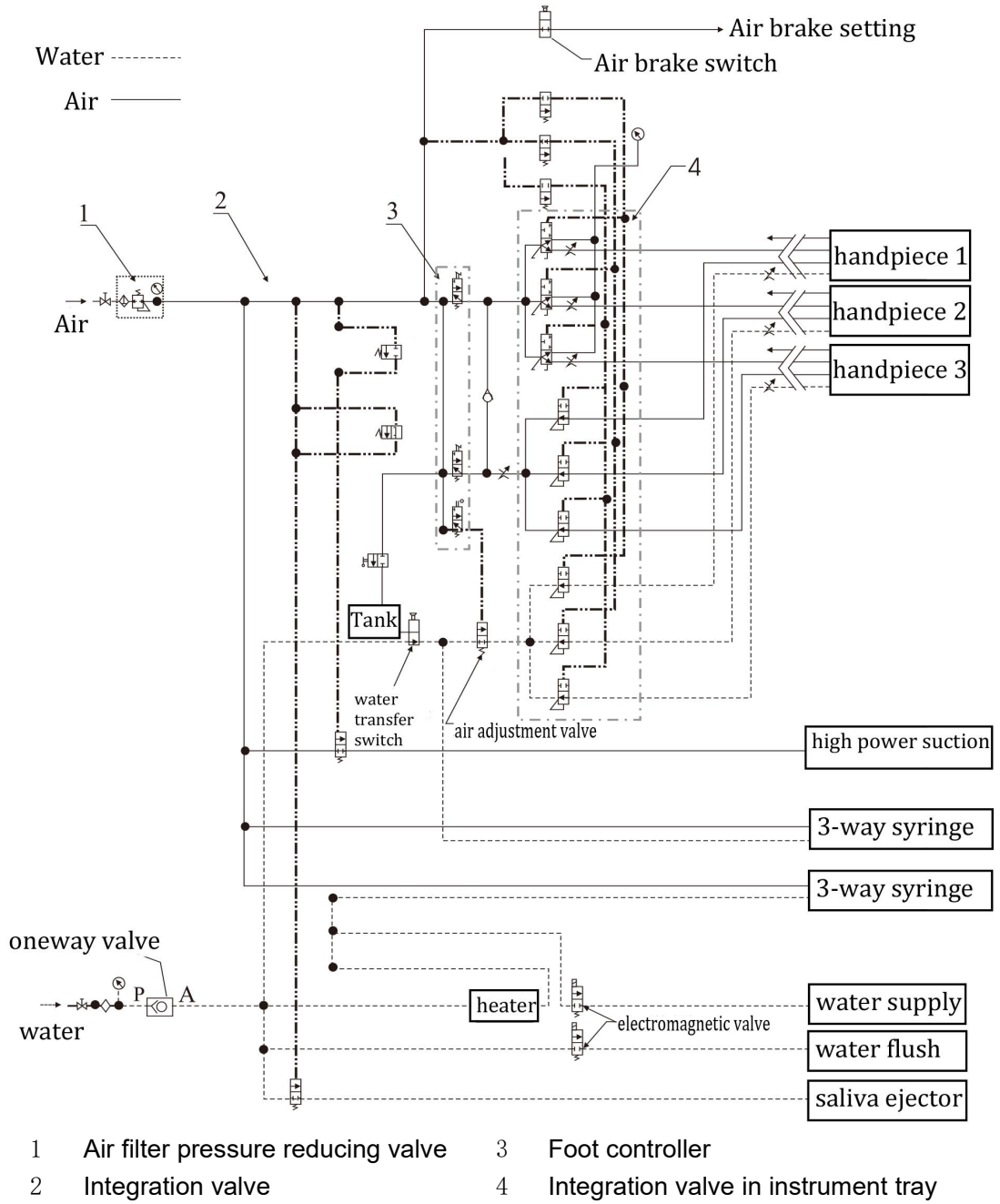


XVI. SCHEMATIC DIAGRAM FOR ELECTRIC CIRCUIT

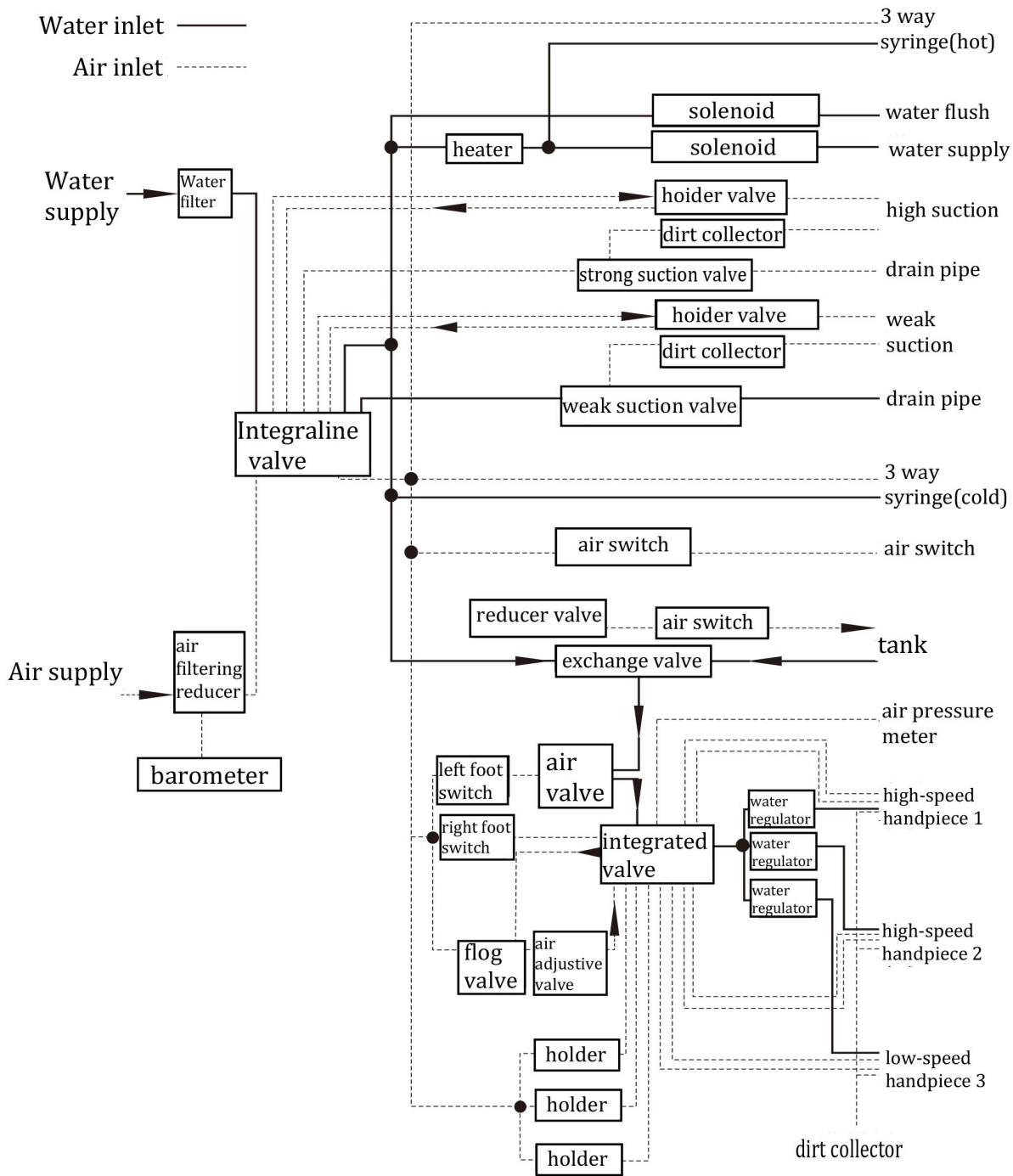


Cold light lamp

XVII. SCHEMATIC DIAGRAM FOR AIR AND WATER OPERATING PRINCIPLE



XVIII. SCHEMATIC DIAGRAM FOR WATER AND AIR PIPE



XIX. INSTRUCTIONS FOR INSTALLATION

1. Installation preparation

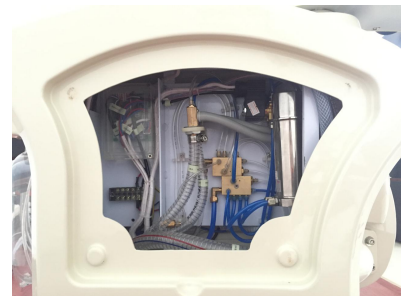
According to the overall layout, lighting, easy to use and other specific condition of the consulting room, determining position where installing the dental chair. The machine should be placed in a clean, dry, well-ventilated condition to keep in good working environment. And it must make sure that the dental chair is placed in flat and sturdy ground. Under the ground floor where placing the ground box, there must be input or output interfaces of water, gas, electricity provided with this unit, distributed in the range of 140 × 120mm. Inlet water & air pipes is a 8x5.5 PU tube. Insert three water pipes into ϕ 50mm PVC drain-pipe. (Figure I)The size of each tube interfaces to the ground is about 40mm. Input wire is 1mm three core sheathed cord, the length should be off the ground about 400mm, and protective ground wire connected.



(Figure I)

2. Check the dental chairs when open the package:

Opening the package box to see if the machine intact. Comparing with the package list, check the annex, spare parts if are complete and intact. If in doubt proposed, please check immediately to the distribution or our company. (Figure II)

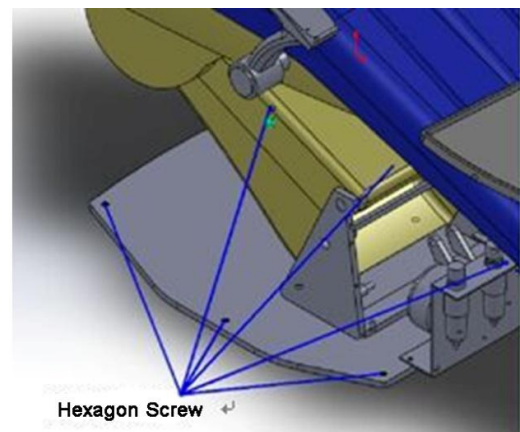


(Figure II)

3, the dental chair installation(Depending on model):

Firstly, place the dental chair in the flat ground. The machine has been designed to be stability, so it is not necessary to install anchor screws, but the dental chair must be placed on level and solid ground, to prevent accidents due to the uneven ground.

If the machine is whirling or oblique caused by the uneven ground, you could insert six M10 hexagon screws into six M10 threaded holes on the base of the dental chair, and make full surfaces contact with the ground. When adjustment, we should keep the machine level in order to ensure stability of the machine (Figure III)



(Figure III)

4.Oral light installation

Route the wires on the lamp arm into the lamp post, and then connect the two connectors. (Note: put the decorative ring) Then connect the wire connector on the lamp arm with the connector located in the column at the treatment cabinet, put it into the column, and then insert the lamp column on the column to install the lamp arm . (Caution: Do not damage the wires)

Connect the head of lamp wire plug through the decorative jacket and the lamp arm wire plug (note: the voltage of the wire color code shown is strictly not allowed to be connected). Insert the lamp holder into the hole of the lamp arm, and fix it with the screws in the attachment (Figure 6). After finishing, cover the screws and seams with a decorative jacket.

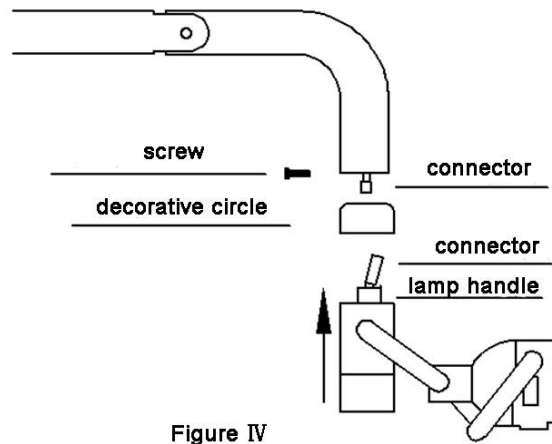


Figure IV

5.Ground box installation

Two G1 / 2 "× ϕ 8 fittings are screwed into the inlet pipe and intake pipe for standby, (Note: white pipe is gas, blue is water pipe) Please sealed connection to ensure that no leak. Open the ground box cover ,installing the appropriate predetermined position ,where it's ensured that it won't bend between the motor box and the ground box when the dental chair working up and down movement.(Figure V)



(Figure V)

6. Pipe connection

Before the tubing is connected to the treatment machine, you must first remove dirt impurities in the pipeline to extend the life of the machine. Connect the ϕ : 8 × 5.5PU tube whit water and gas supply, pay attention to sealing. In addition, the plastic drain fitting into the drain port, connect the drain, and pay attention to firmness it and sealed. (Figure V)

7.Power plugs connection

The machine has been equipped with plug before the factory.Normally there are 4 plugs as the picture.if the user are not prepared with a grounding device, the power outlet can be grounded before the power supply.



US Plug



British Plug



Europe Plug



China Plug

XX. PACKAGE LIST

Item No.	Accessories	Specification	Unit	Quantity	Confirms	Remarkable
1	Dental chair	Built in/Built out(floor box)	set	1		Fixed Package
2	headrest		piece	1		Film package
3	Lamp arm/post		set	1		carton
4	Operation lamp		set	1		carton
5	Doctor stool		piece	1		carton
6	High speed connector	1/4 diameter 8	piece	2		File package
7	inner hex screws	M12X20	piece	4		File package
8	Hex screws wrench		piece	1		File package
9	User Manuel		book	1		File package
10	Warranty card / certificate		book	1		File package
11	Strong suction		piece	1		File package
12	Weak suction		piece	1		File package
13	Fuse	T5AL250V Φ5X20	piece	2		File package
14	Instrument silicon pad					
15	Foot pad					
16	Product Disclaimer					
17	Tissue Box					
18	Production license / business license / registration card		piece	1		File package
19	High speed handpiece		piece	2		optional
20	Low speed handpiece		piece	1		optional
21	Ultrasonic scaler		set	1		optional
22	Cure light		set	1		optional
23	Camera system		set	1		optional
24	Suction system		set	1		optional

Note: When you confirm that it has the dental accessories, please mark “√” on the columns; Mark “/” for lost accessories or surplus.

Inspectors: _____

Date(Y/M/D): _____

XXI. EMC statement

The device meets the electromagnetic compatibility requirements of IEC60601-1-2.

Users should install and use them according to the EMC information provided with the attached files.



Warning:

1. The device is suitable for healthcare facility or hospital environments.
2. Portable and mobile RF communication equipment may affect the performance of device, avoid strong electromagnetic interference when using, such as close to microwave ovens, etc.
3. The device should not be used close to or stacked with other equipment.
4. If it must be used close to or stacked with other equipment, it should be observed to verify that it can work properly in the configuration used.
5. Don't use the device near active HF surgical equipment and in the RF shielded room of an ME system for magnetic resonance imaging, where the intensity of EM disturbances is high.
6. Use of accessories, transducers, and cables other than those specified or provided by the manufacturer of this equipment could result in increased electromagnetic emissions or decreased electromagnetic immunity of this equipment and result in improper operation."
7. Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of the equipment, including cable specified by the manufacturer. Otherwise, degradation of the performance of this equipment could result.

Guidance and manufacturer's declaration -electromagnetic emissions and Immunity

Table 1

Guidance and manufacturer's declaration - electromagnetic emissions	
Emissions test	Compliance
RF emissions CISPR 11	Group 1
RF emissions CISPR 11	Class B
Harmonic emissions IEC 61000-3-2	Class A
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Standard test

Table 2

Guidance and manufacturer's declaration - electromagnetic Immunity		
Immunity Test	IEC 60601-1-2 Test level	Compliance level
Electrostatic discharge (ESD) IEC 61000-4-2	±8 kV contact ±2 kV, ±4 kV, ±8 kV, ±15 kV air	±8 kV contact ±2 kV, ±4 kV, ±8 kV, ±15 kV air
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV signal input/output 100 kHz repetition frequency	±2 kV for power supply lines Not applicable 100 kHz repetition frequency

Surge IEC 61000-4-5	± 0.5 kV, ± 1 kV differential mode ± 0.5 kV, ± 1 kV, ± 2 kV common mode	± 0.5 kV, ± 1 kV differential mode Not applicable
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	0 % UT; 0,5 cycle. At 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315°. 0 % UT; 1 cycle and 70 % UT; 25/30 cycles; Single phase: at 0°. 0 % UT; 250/300 cycle	0 % UT; 0,5 cycle. At 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315°. 0 % UT; 1 cycle and 70 % UT; 25/30 cycles; Single phase: at 0°. 0 % UT; 250/300 cycle
Power frequency magnetic field IEC 61000-4-8	30 A/m 50Hz/60Hz	30 A/m 50Hz/60Hz
Conducted RF IEC61000-4-6	3 V 0,15 MHz – 80 MHz 6 V in ISM and amateur radio bands between 0,15 MHz and 80 MHz 80 % AM at 1 kHz	3 V 0,15 MHz – 80 MHz 6 V in ISM and amateur radio bands between 0,15 MHz and 80 MHz 80 % AM at 1 kHz
Radiated RF IEC61000-4-3	10 V/m 80 MHz – 2,7 GHz 80 % AM at 1 kHz	10 V/m 80 MHz – 2,7 GHz 80 % AM at 1 kHz
NOTE U_T is the a.c. mains voltage prior to application of the test level.		

Table 3

Guidance and manufacturer's declaration - electromagnetic Immunity						
Radiated RF IEC61000-4-3 (Test specifications for ENCLOSURE PORT IMMUNITY to RF wireless communications equipment)	Test Frequency (MHz)	Band (MHz)	Service	Modulation	IEC 60601-1-2 Test Level (V/m)	Compliance level (V/m)
	385	380 –390	TETRA 400	Pulse modulation 18 Hz	27	27
	450	430 –470	GMRS 460, FRS 460	FM ± 5 kHz deviation 1 kHz sine	28	28
	710	704 – 787	LTE Band 13, 17	Pulse modulation 217 Hz	9	9
	745					
	780					
	810	800 – 960	GSM 800/900, TETRA 800, iDEN 820, CDMA 850, LTE Band 5	Pulse modulation 18 Hz	28	28
	870					
	930					
	1720	1 700 – 1 990	GSM 1800; CDMA 1900; GSM 1900; DECT; LTE Band 1, 3, 4, 25; UMTS	Pulse modulation 217 Hz	28	28
	1845					
	1970					

	2450	2 400 – 2 570	Bluetooth, WLAN, 802.11 b/g/n, RFID 2450, LTE Band 7	Pulse modulation 217 Hz	28	28
	5240	5 100 – 5 800	WLAN 802.11 a/n	Pulse modulation 217 Hz	9	9
	5500					
	5785					

Table 4

Guidance and manufacturer's declaration - electromagnetic Immunity				
Radiated RF IEC61000-4-39 (Test specifications for ENCLOSURE PORT IMMUNITY to proximity magnetic fields)	Test Frequency	Modulation	IEC 60601-1-2 Test Level (A/m)	Compliance level (A/m)
	30 kHz	CW	8	8
	134,2 kHz	Pulse modulation 2.1 kHz	65	65
	13,56 kHz	Pulse modulation 50 kHz	7,5	7,5