



EAR,NOSE,THROAT,TREATMENT UNIT TECHNICAL/USER MANUAL

- Thank you for purchasing our product !
- Please read this users' manual carefully before use !
- Please keep this users' manual for reference !
- Please mark down the product series number here !

Product series No. : _____



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Intended use

The E.N.T treatment unit is a kind of E.N.T equipment which specially produced and provided to qualified person using in the E.N.T clinical use and related operating steps, consisting of complete sets of E.N.T. equipment and equipment components related to each other, for iatrical department to diagnose, cure and do operation.

The E.N.T treatment unit is consisted of sprayer, suction gun, blowing gun, waste drainage system, pre-heater, treatment table, writing table, film viewer, operating light, cold light source, and patient chair.

The equipment has not attachment, for the information of attachment, please check the relevant requirements and regulations or contact **Suntem**® at +49 40 2513175 in EU, or +86 757 87393723 worldwide.

Regulatory Information

The Regulatory Information and Specifications document is delivered with E.N.T Treatment Unit as mandated by agency requirements. If you need this information, please visit www.suntem.cn, or contact **Suntem**® at +49 40 2513175 in EU, or +86 757 87393728 worldwide.

Product Service


Product service is available through your local authorized dealer. For service information, or to locate an authorized dealer, contact **Suntem**® at +49 40 2513175 in EU, or +86 757 87393723 worldwide.

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I. Safety information

Please read manual carefully, in order to operate and keep E.N.T. unit well and safety . please connect with local agent or manufacturer , if you need any technology help.

- **Warning :**
- i. Please don’ t put equipment in wet place , in order to avoid accident of fire and Levin , please don't open main body cover except the technical person.please contact with professional technical person for any problem.

ii. If machine smoking or other unusual situation happen. in order to avoid the fire accident. please cut off the power first, and then contact with the professional technical person who manufacturethis product.

iii. If some water leak into the machine , it maybe cause leakage of electricity accident , please cut off the power at once. and contact with the professional technical person who manufacture this machine.

iv. If meet unknown situation. please cut off the power at once. and contact with the professional technical person who manufacture this machine.

v. Please don't disassemble or re-install the machine. otherwise it will damage the spare part inside, it will cause accident.

vi. If the power line was damage. please cut off the power immediately. don't touch the power line by hand. and contact with the professional technical person who manufacture this machine.

vii. The suitable working situation is A.C.220V/50HZ.

viii. Please cut off the power under the thunder and lightning weather.

ix. Don't touch the power plug with wet hand.
















x. Don't clean the machine with insecticide, alcohol, thinner and chemic. it will damage the surface.

xi. Don't reproduce the machine by yourself. it is our of the warranty if something damage.

II. Attentions

- This machine only suitable for E.N.T. department diagnosis. treatment and operation.
- Only use fuse protector and spare confirm by our company.
- This device contains electric mechanical moving parts, please ensure that no items are touched within the working range.
- When this device is not used, please reduce the patient chair to the lowest position and cut off the power.
- Please ensure the headrest of patient chair is locked before using it.
- Please don't use the device under high temperature, high moist, vibrate, flammable or unbalanced environment.
- Patient chair is intermittent operation device, continuous operating time not exceeding 1 minute.
- When the device needs maintenance, please contact with the professional technical. Power supply must be cut off before any repair.
- When long time not using the equipment, be sure to disconnect the power supply.
- It is prohibit that the dirty water from suction bottle leak to vacuum pump.
- No anesthesia medicine into the bottle of spray gun.
- The lifetime of this machine is eight years, over use may cause pipeline aging, functional failure, and may even cause accidents. Please contact with qualified medical device recycling agencies, timely eliminate the device or replace with new one.
- Can not be used in flammable anesthetics mixed with air or. mixed gas with oxygen or nitrous oxide flammable anesthetic gases.

III. Diagram and symbol

Symbol	Meaning	Symbol	Meaning	Symbol	Meaning	Symbol	Meaning	Symbol	Meaning
	warning		Attention		Type B device: no electric touch with patient		Film viewer		Keep dry
	Ground terminal protector		Power close		Power disconnect		Operating light		This side up
	Pre-heater		Cold light source		Type BF device, electric touch with patient		Emergency stop		Flagile

IV. Product description

- i. Use:

The E.N.T treatment unit is a kind of E.N.T equipment which specially produced and provided to qualified person using in the E.N.T clinical use and related operating steps, consisting of complete sets of E.N.T. equipment and equipment components related to each other, for iatrical department to diagnose, cure and do operation.
- ii. Security features

■ According to the anti shock type classification: I type

■ According to the avoid lightning stroke type classification: with BF type function

■ Classification according to anti liquid level: foot controller IPX4

■ Classification according to the safety degree under condition when using flammable anesthesia mixed with air or flammable anesthesia mixed with oxygen or Nitrous Oxide: Non AP/APG Type

■ According to running mode type classification : interval operation

■ Electrical type: single triple core , power supply

■ The rated voltage and frequency: a.c.220 V, 50 Hz

■ Input power: 1800 VA

■ Fuse: input of transformer S501-6.3A, output of transformer S501-10A

■ Having no effect on the defibrillator discharge protection Application Part

■ No sign input and output part

■ Impermanence machine

■ No-move normal machine

■ Life:8 years
- iii. WARRANTY:

● **Suntem**® warrants all products against defects in materials or workmanship for one year from time of delivery.

● **Suntem**® sole obligation under the warranty is to provide parts for the repair, or at its option, to provide the replacement product (excluding labor). The buyer shall have no other remedy. All special, incidental, and coincidental damages are excluded.

● The warranty does not cover damage resulting from improper installation or maintenance, accident or misuse.

● The warranty does not cover damage resulting from the use of cleaning, disinfecting or sterilization chemicals and processes.

● The warranty also does not cover light source. Failure to follow instructions provided in the **Suntem**® Instructions For Use (operation and maintenance instructions) may void the warranty.

● No other warranties as to merchantability or otherwise are made. For service information, contact your local authorized dealer. Check with local codes for installation of this product.

V. Product structure

- i. Please see the below product structure picture.
- ii. The E.N.T. treatment unit is make of treatment table and the patient chair. the treatment table include spray gun, suction gun, blowing gun and blow-off system, pre-heater, instrument tray, writing table, film viewer, LED light, cold light source etc. patient chair included head rest, back rest, cushion, foot switch and motor.



① Head rest	② Operating light	③ Rotate of lock	④ Film viewer
⑤ Foot pedal for patient chair	⑥ Spray gun, suction gun, blowing gun	⑦ Foot switch for patient chair	⑧ Control panel

VI. Technical parameters

■ Noise	< 70 dB (A)	■ LED light	The rated power: d.c.9V, internal power supply The rated voltage: 6VA Illuminating level: < 1500lx
■ Spray gun	Working pressure adjustable range: 0kPa ~ 350kPa Spray water flux adjustable range: 0mL/min ~ 20mL/min	■ Cold light source	Illuminating level: > 20000lx Surface temperature: < 55℃
■ Suction gun	Working pressure adjustable range: - 100kPa ~ 0kPa Max suction level: ≥ 1000mL/min/max	■ Patient chair	Power: a.c.24V, internal power supply Max. load: 1323N (appr. 135kg) Loading capacity of headrest: 300N (appr. 30kg) Extend range of headrest:120mm Reclining range of backrest: 90~170degree Max. height of chair seat: 600mm Min. height of chair seat: 550mm
■ Blowing gun	Working pressure adjustable range: 0kPa ~ 350kPa	■ Foot switch	Start-up force: >10N, and <30N Anti liquid level: IPX4 Serve lift: >25000times
■ Blow-off system	Glass pollution bottle, total capacity ≥ 2500ml	■ Work space	length ≥ 4000mm, width ≥ 2600mm, height ≥ 2000mm
■ Pre-heater	The rated power: a.c.220V, internal power supply The rated frequency: 450VA Surface temperature: > 50℃ , and < 180℃		
■ Instrument tray	Stainless steel instrument tray / glass medicine bottle		
■ Writing table	Marble glass material / Sheet Metal paint.		
■ Film viewer	The rated power: d.c.30V, internal power supply The rated frequency: 30VA		

VII. Working condition

Working condition requirement:







- i. Environment: temperature 5℃ ~ 40℃
- ii. Relative humidity: 30% ~ 80%
- iii. High of pressure: ≤3000m
- iv. The rated power: a.c.220V, 10A,1800VA
- v. The rate frequency: 50 Hz
- vi. Machine fixed on smooth floor. the body deflection angle < 0.5degree

VIII. Installation

i. Installation preparation

- Clear the room of all debris and thoroughly clean the floors.
- Check with local building and code authorities about installation requirements. They differ from state to state and internation.

Recommended tools

Hex key set		Phillips head screwdriver	
Nipper pliers		Standard screwdriver	
12 # monkey spanner × 4 sets		Scissors	

ii. Prepare the unit

Recommended Tools

- Drill
- Hammer
- Standard screwdriver

Task 1



E.N.T. Treatment Unit 1-1

Remove packing material from around

Task 2



Remove packing film, set aside the light post (along with film viewer holder), light arm, operating light, compressor, vacuum pump, film viewer, waste bottled and doctor stool



NOTE: When removing modules from their packaging, watch for kits and manuals included for the doctor (such as the Instructions For Use). Set these aside during installation.

iii. Installation of table

Step 1



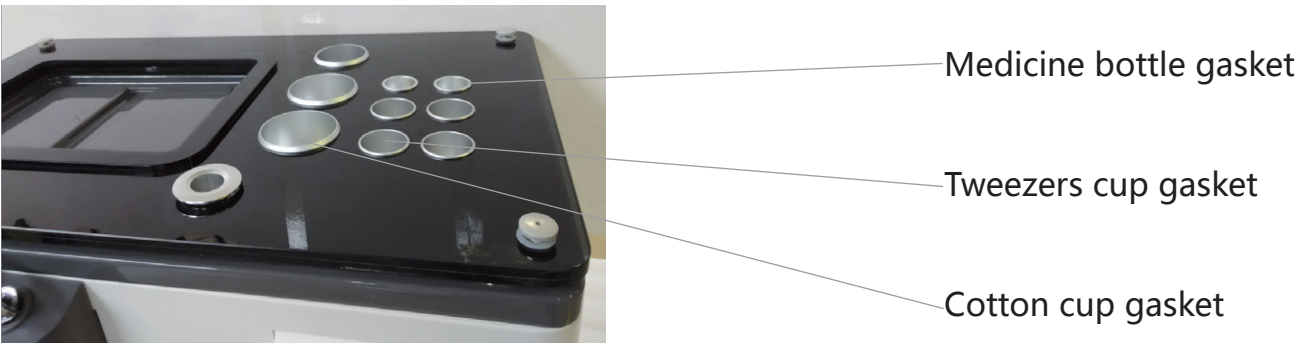
place the unscrewed table screw and seal away.

Step 2



place the table to away and then take out the pearl wool under the table.

Step 3



- ① Place the table just like the above picture and then fix the table screw and seal.
- ② Place well the medicine bottle gasket, cotton cup gasket and tweezers cup gasket like above pictures.

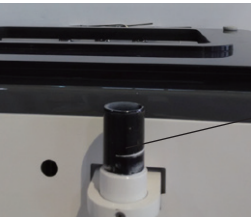
iv. Installation for film viewer bracket & lamp arm

Recommended tools

- Standard screwdriver
- M4-12conutersunk screw

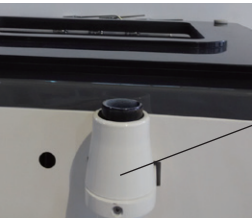


Step 1



film viewer
central
column

Step 2



column
decorating
ring

Place well the column
decorating ring like the
above pictures.

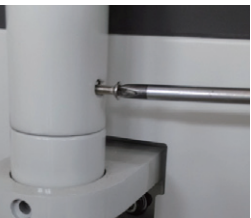
Step 3



film viewer
bracket

Put the film viewer bracket
into the column refered as
aboved pictures.

Step 4



Move up the decorating
ring , use standard
screwdriver to fix.

Step 5



lamp arm
lamp line
subflow

Let the lamp arm and
subflow be ready.

Step 6



lamp arm
lamp line
subflow
film viewer bracket

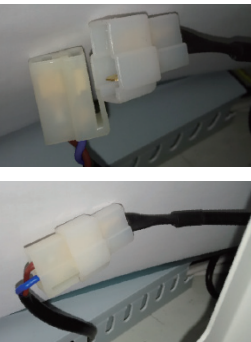
Let lamp line across the film
viewer bracket and then put the
lamp arm into film viewer bracket.

Step 7



lamp line

Across out the lamp line from
the hole of column , and across
into the round hole.



Connect the lamp lines
like pictures.

v. Lamp installation

Step 1



Take out the lamp from the package.



Step 2



① Connect the same chromatic connector.

② Install the lamp into lamp arm.

③ Use 5x12 inner hexagon screw to fix the lamp.



vi. Film viewer installation

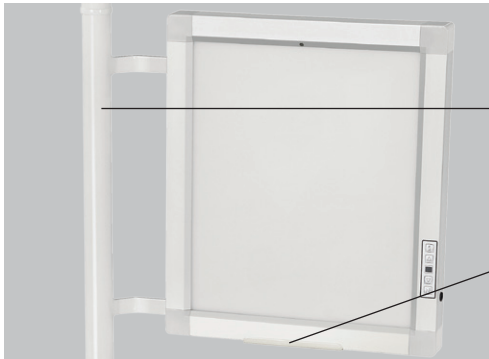
Step 1



Take out the film viewer from the package.



Step 2



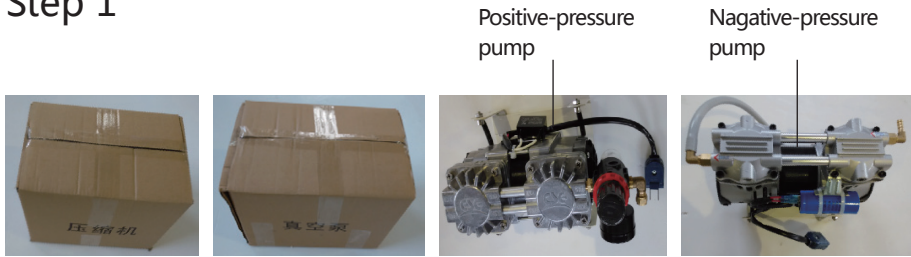
Film viewer bracket

Film viewer frame

Install the film viewer into M5 screw of the bracker and then screw them up tightly.

vii. Installation for pressure pump

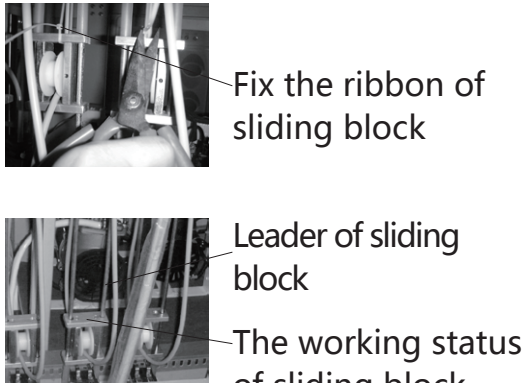
Step 1



Take out the positive pressure pump and negative pressure pump from the package.

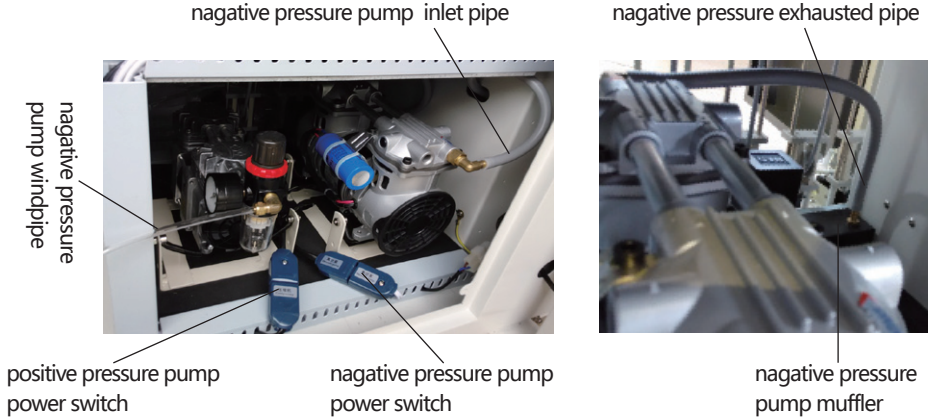
- ① Put the Positive-pressure pump and Negative-pressure pump into cabinet.
- ② Put the negative pressure pump windpipe into the connector of positive pressure pump and use the screw to fix . Put nagative pressure pump inlet pipe into the inlet connector of pressure pump . Connect nagative pressure exhausted pipe with negative pressure pump muffler.
- ③ Inset compressor switch plug pressure pump switch plug to their related stock plug.

Step 3



Let the Sliding block fixed into leader reset to the working status as per the above pictures.

Step 2



viii. Install suction bottle

Step 1



Unpick the package and take out the suction bottle.

Step 2



Install the suction bottle into the arm and then close the suction bottle to make leak-proofness between cap and bottle.

ix. Installation the patient

Preparation of installation

- Clean out sundries and clean the floor.
- Ask for the installation request from the local . government . Every countries has its own rules.

Installation steps

- ① Use the screw and monkey wrench to untwist the wooden box



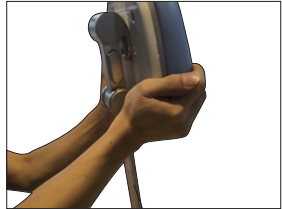
- ② Untwist the patient package used knife



- ③ Untwist the bottom plate fixed screw of the patient chair used money wrench and beak.



- ⑤ Take out the pillow from the package and install into the backrest.



Pulley must be connect with installation holes completely , insert and then finish installation.

- ④ Move the patient chair and put into the appointed place. Move the chair as per the below picture when moving.



Attention : When moving the chair , armrest and pulley can not under stress.

x. Installation Test

Test the E.N.T. chair as per below list after installation.

E.N.T. chair <ul style="list-style-type: none">▶ Spray gun ,Suction gun and Blowing gun work as usual▶ Demisters work as usual▶ Cold light work as usual	Lamp light <ul style="list-style-type: none">▶ Light work as usual▶ Adjustable the light arm tightness
Patient chair <ul style="list-style-type: none">▶ Up and down work as usual▶ Adjustable pillow	Film viewer <ul style="list-style-type: none">▶ Film viewer work as usual▶ Adjustable illumination

IX. Use Manual

Make sue turn on the switch when use.

All setting have function for automatically turn-off and save.

When power reset after power interrupt, except operation interrupt, there will be no security problems if need it continue to work, pls restart it.

i. Suction gun

Suction gun is with 5pcs nozzles : 2pcs ϕ 2.5 mm and 3pcs ϕ 3 mm.



Out hanging device, it can work automatic when you pickup the gun.

And it will stop working automatic when you put the gun back to the holder.

⚠ Attention: Should check the sewage bottle whether beyond the specified value when use the suction gun , to prevent sewage into the suction pump.

⚠ Attention: suction gun maintenance: use water to clean the pipe above 1-2 times every day to prevent blockage.

ii. Spray gun



① Put down as per the arrows , the spearhead will pull out



② Followed as arrows , turn left can unpick the rotary medicine bottle



③ Turn right can tightening the medicine bottle
(attention : over-tightening will lead to spearhead breakage)

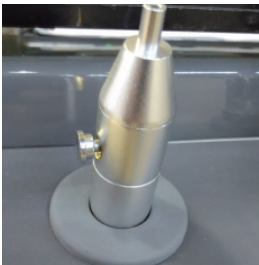
Detachabl Medicine bottle of spray gun can be match with different medical Liquid. When put the liquid, should follow up the left pictures and its instruction manual. Carry up the spray gun, suction pump will start to work, press the button of spray gun can spray soporific liquid. regulating valve on the right side of spray gun can adjust pressure of spray gun.

⚠ Attention: Spray gun as the exactitude instruments should be clean it after use to prevent blocking.

⚠ Attention: Spray gun should be sterilization after use . Recommend to disinfected with over 75% alcohol.

⚠ Warning: Liquid device can not with anesthesia.

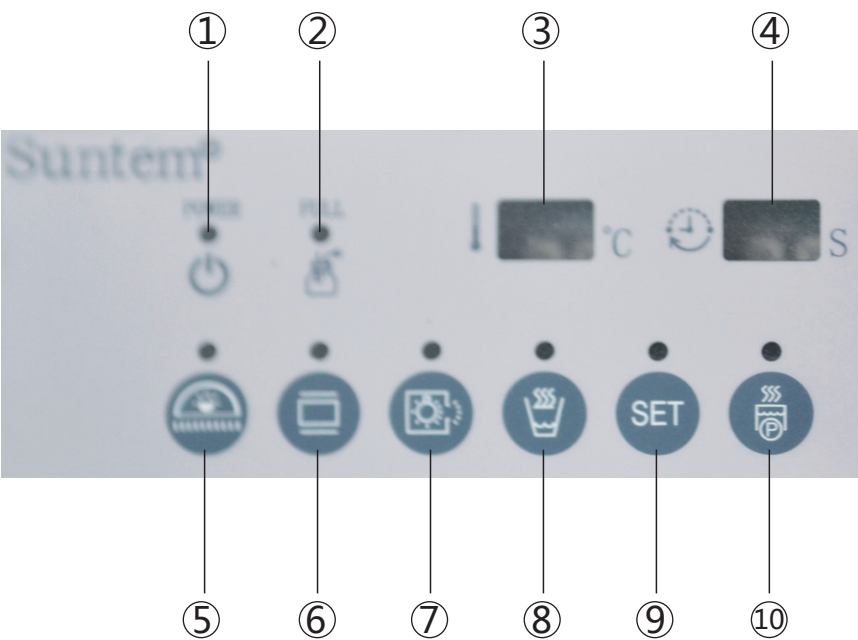
iii. Blowing Gun



When pick up the blow gun, the compressor immediately works, press blowing gun button, gas ejects out. Through the control valve which on the right side of the blowing gun, you can adjust the working pressure of the blow gun.

⚠ Blowing gun can be used for blowing E.N.T. throat and drying the injury body.

iv. Control Panel

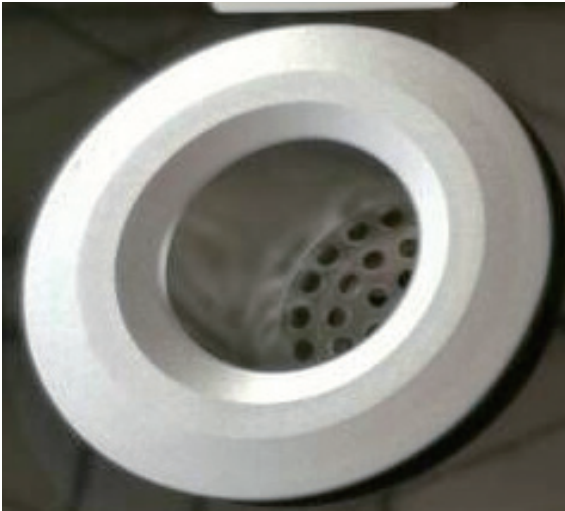


- ① Power supply indicator light
- ② Blow –off system (warning system)
- ③ Water temperature display of Constant temperature system
- ④ Pre-heater time screen
- ⑤ Operating light button

- ⑥ Film viewer button
- ⑦ Cold light source button
- ⑧ Constant temperature system's power button
- ⑨ Pre-heater time setting button
- ⑩ Pre-heater button

- ① This indicator is indicating that the device is in working condition. After connect the power and turn on the machine power switch, the system automatically working, the power supply indicator light will be “on” ; the machine can be normally operation.
- ② This indicator is the warning lamp for waste water of the blow-off system. When the waste water in the suction bottle reach the warning line, the indicator light will be on, at the same time, and the system will issue a "beep, beep, beep" continuity buzzer alarm. When the water is reach the warning line, please blow off the waste water to avoid the suction gun is can not working properly.
- ③ This screen can show the water temperature of the output terminal.
- ④ Pre-heater time screen can display heating time of the pre-heater device. When the pre-heater time is set, the set time will be displayed directly on the screen.
- ⑤ Press the operating light button, the operating light will be power on. When the operating light is power on, the corresponding indicator on the control panel will be lighting, when power off, the indicator will be shut off.
- ⑥ Press the film viewer button, the film viewer will be power on. When the film view is power on, the corresponding indicator on the control panel will be lighting, when power off, the indicator will be shut off.
- ⑦ Press the cold light source button, the cold light source will be power on. When the cold light source is power on, the corresponding indicator on the control panel will be lighting, when power off, the indicator will be shut off.
- ⑧ The constant temperature heating system is optional accessory; for using instruction please refer to the instruction manual.
- ⑨ Press the pre-heater time setting button to start the power switch of setting button, the corresponding indicator on the control panel will be lighting. Press the pre-heater button again to turn it power on, the pre-heater time setting has 3 time stage (9S、15S、20S) , every time when press the pre-heater button, time will change randomly. After confirm the pre-heater time, please press the pre-heater setting button again.
- ⑩ Press the pre-heater button, the pre-heater system will be power on. When the Pre-heater system is power on, the corresponding indicator on the control panel will be lighting, the time figure on the pre-heater time screen will be change at the same time. When power off, the indicator will be shut off, and the time figure on the pre-heater time screen will recover to the original setting time.

v. Pre-heater



Pre-heater Settings Button



Pre-heater Button

Pre-heater Time Setting

To set the preheat time of the pre-heater: Press the SET button, the buzzer will “beep” , and then press the pre-heater control button to adjust the working time (time setting is 9 seconds, 15 seconds, 20 seconds) to be suitable, then press the SET key again, the buzzer “beep” again as finished. Then the pre-heater control key will be switched between ON and OFF.

Lightly press the pre-heater button to start pre-heater device; the device can work, you can bake indirect laryngoscope and nasopharyngoscope etc. (Press this key, after working for 9 seconds, 15 seconds or 20 seconds the equipment will the stop working automatic; For pre-heater time setting please refer to No. 9 “Pre-heater time setting button”). When you need to use it again, just press the button.

- Attention:** The Pre-heater and surface of button can not have water or liquid drops, to prevent damage to its internal circuit.
- WARNING:** High temperature on the surface, don’ t touch by hand.

vi. Cold Light Source

Press the cold light source button to open the cold light source, it can connect the fiber cable to endoscope to check ear, nose and throat, press the button again to shut off the cold light source when the checking finished. When the cold light source is working, the corresponding indicator light on the control panel will be lighting, when turn off, the indicator light will be shut off.



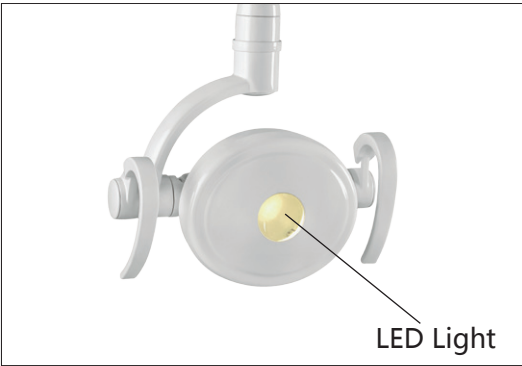
Cold light source button

- Attention:** replace the bulb:
The cold light source use the LED light source, if need to replace the bulb, please contact the local authorized distributor to get maintenance service, or call global hotline +86 757 87393723 contact **Suntem®**.
- CAUTION:** Always turn off the cold light source and let it to be cool completely before doing maintenance or repairing.

Attention:

This cold light source is not intended for use in the operating room.
To prevent the cold light source lighting failure during using, please prepare another cold light source for back up. When the cold light source is not in function, can replace the back up cold light source for temporarily use. At the same time, please contact our company to repair as soon as possible.
Before performing the endoscopic examination, it is necessary to check whether the portion of the endoscope and the endoscopic accessory which inserts into the human body has rough surface, sharp edge or protrusion can causes safety hazard.
The cold light source outputs high power light, it is possible to cause the surface temperature of fiber cable, endoscope or accessories reach over than 41 degrees, and it will possibly cause permanent tissue injury or burns. The user can avoid over-temperature by selecting the endoscope and its accessories.
When the cold light source is used with the endoscope, the light output window of endoscope will output higher light intensity, and cause high temperature damage possibly, please use as little light intensity as possible to obtain the best light view light effect. Do not place the fiber cable or endoscope on the endothermic or flammable material.
When you pull out the cold light source after finish using the fiber cable, please avoid touching the connector of the fiber cable which will burn your skin.
To avoid interference from high-frequency surgical equipment, do not connect high-frequency surgical equipment and cold light sources to the same electrical outlet, and place the cold light source far away from high-frequency surgical equipment.
The starting voltage of the laser device is very high. To prevent the laser device from affecting the cold light source, please put the cold light source far away from the laser device.
The cold light source will output high intensity light, which will cause eye discomfort, please avoid direct lighting to the eyes. If the eyes need to be exposed to strong light for a long time when doing debugging or maintenance, the operator should wear protective glasses.
All medical electrical equipment used in connection with this equipment must conform to GB9706.1-2007, and the medical equipment to be used with it shall obtain the formal product registration or record.
Spraying gas pressure should be moderate; it should be controlled at 0 ~ 0.28Mpa, gas pressure too high will cause people uncomfortable.

vii. Operating Light



Operating light button

Press the operating light button, the operating light will be power on and it can be use for examination. Press the button again, it will be off. When the operating light is power on, the corresponding indicator on the control panel will be lighting, when power off, the indicator will be shut off.

Maintenance of the Operating Light

- In order to get the best performance and longest life of your lights, please use only soapy water and water to wipe the lamp shell. Do not use solvents containing alcohol. Please follow these steps to wipe the lamp shell:
- i. Shut off the operating light and make it cool down completely;
 Warning: In order to get the best performance and longest life of your lights, please cool down the operating light before wipe the lamp shell. Do not do any operation on the operating light when wiping the lamp shell.
 - ii. Pick up one piece of non-abrasive cotton flannel, put into small amount of mild and non-corrosive soap solution, take it out, wring the water and then wipe the lamp shell.
 - iii. Use warm water to wash clean the cotton flannel, and then wipe the lamp shell again.
 - iv. Wipe the lamp shell with a dry cotton flannel cloth to ensure that the lamp shell is dry completely before opening the lamp.
 Attention: If the lamp cover is scratched or damaged, please contact the local authorized distributor to request replacement, or call global hotline +86 757 87393723 contact **Suntem®**.
 - Warning:** The operating light must not shoot directly to the eyes!

Replace the bulb:

The operating light use the LED, if need to replace the bulb, please contact the local authorized distributor to get maintenance service, or call global hotline +86 757 87393723 contact **Suntem®**.

viii. Film Viewer

Sensor Switch, when the film viewer in power station, plug in the X-ray film directly, you can start viewing the film.



Film Viewer Button



- ① When the film viewer is in power station, press this shift button lightly can start the film viewer and keep lighting.
- ② This button is for adjust the luminance of the film viewer.
- ③ Power indicator light
- ④ This button is for adjust the luminance of the film viewer.
- ⑤ Power button, press this button, switch the film viewer between power on and off station; when the indicator is keep energized, you can start the film viewer; when the power indicator flashing, the film viewer does not work.

Maintenance of the Film Viewer

In order to get the best performance and longest life of your lights, please use only soapy water and water to wipe the lamp shell. Do not use solvents containing alcohol. Please follow these steps to wipe the lamp shell:

- ① Shut off the operating light and make it cool down completely;
- ⚠ Warning: In order to get the best performance and longest life of your lights, please cool down the film viewer before wipe the lamp shell. Do not do any operation on the film viewer when wiping the lamp shell.
- ② Pick up one piece of non-abrasive cotton flannel, put into small amount of mild and non-corrosive soap solution, take it out, wring the water and then wipe the lamp shell.
- ③ Use warm water to wash clean the cotton flannel, and then wipe the lamp shell again.
- ④ Wipe the lamp shell with a dry cotton flannel cloth to ensure that the lamp shell is dry completely before opening the lamp.
- ⚠ Attention: If the lamp cover is scratched or damaged, please contact the local authorized distributor to request replacement, or call global hotline +86 757 87393723 contact **Suntem®**.

ix. Patient Chair

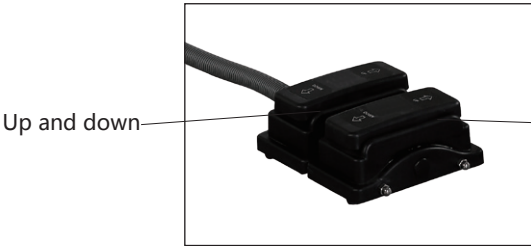
Turn on the power switch which behind the patient's chair near the ground.



Press the power button, start the patient chair.

⚠ **Attention:** Under emergent situation, press the red Emergency Button can cut off the power.

The foot switch can control the patient to go up and down, afterward and backward.



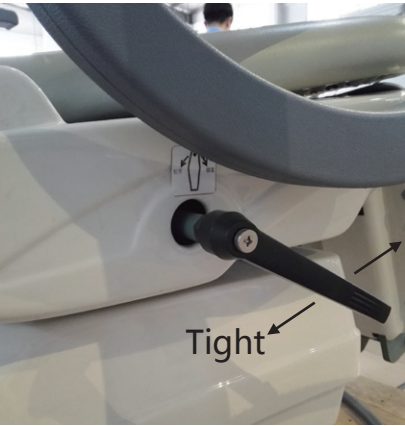
Pedal

The patient chair can provide the pedal (see below). Maximum load ≤ 100Kg.



Chair's Orientation & Angle Adjustment

Release the switch on the right armrest to adjust the left and right direction of the chair (maximum ± 90 °), when finish adjusting, must lock the screw handle.



Drag the pillow up and down to adjust the position of the pillow (see the following figure 1 on the left). Press the switch on the back of the pillow to adjust the angle of the pillow (see the following figure 2 and 3 on the right).



Figure 1

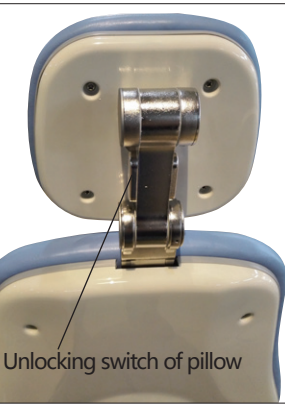


Figure 2



Figure 3

X. Maintenance

- i. In the daily maintenance, the unit should keep clean, the pipeline should keep smooth and the leaking should be banned, the rotation should add the lube in time to make the equipment work in the normal condition, suggest at least one time for a year.
- ii. In order to keep the product clean, suggest use medicinal alcohol clean the surface of the product in the daily life.
- iii. Clean the spray gun in time, in case the mouth built up.
- iv. Check the waste water in sucking bottle if extend the imitation or not, don’ t make the waste water into the vacuum pump.
- v. The operating light piece should keep in the normal temperature and clean with the cloths.

XI、Transportation and Storage

- i. Transportation conditions : upward ,handle with care ,moisture proof.
- ii. Transportation environment: temperature :5℃ – 40 ℃ Relative humidity : ≤ 85%.
- iii. Storage environment : temperature 5℃ ~ 40℃ , relative humidity ≤ 80%、 no corrosively air and keep with fresh air.
- iv. The wooden box can’ t bear over double floor during transportation and storage.

XII. Usual malfunction and Solutions

Phenomena	Possible causes	Solutions	Remark
Equipment out of work	1. The power supply can not connect	Connect the power supply switch	——
	2. The power supply switch fuse destroyed	Replace the fuse of the same model	——
	3. Equipment fuse destroyed	Replace the fuse of the same model	——
	4. Equipment main switch not to/be open	Open the main switch	——
Operating light off	1. Bulbs are burned out	Replace the bulbs in the same models	——
	2.Lamp Is loose connect	Revise and then insert	——
	3. Cold light source transformer is burned out	Replace the fuse in the same	——
	4.The inner wire in the movable joints are twist off	Change the inner wire	——
Cold light off	1. Bulbs are burned out	Replace the bulbs in the same models	——
	2.Lamp Is loose connect	Revise and then insert	——
	3. Cold light source transformer is burned out	Replace the fuse in the same	——
	4. Control panel broken	Replace the control panel	——
Pre-heater (electric fan) off	1. The electric fan’ s switch no be open	Open the switch	——
	2. The fan’ spower supply plug loose or not to be inserted well	Insert the plug well again	——
	3. The electric fan broken	Replace the fan	——
	4. Control panel broken	Replace the control panel	——
The sucking gun out of work or no suction	1. The power pin of vacuum pump not to be inserted well	Insert the vacuum pump pin again	——
	2. The sucking bottle not to be covered well	Cover the sucking bottle well	——
	3. Windpipe tie-in not to be inserted well and destroyed	Lock the windpipe tie-in tighten or change the windpipe	——
	4. The journey switch of sucking is not to be inserted well and destroyed	Check the wire and change the journey switch	——
	5. The vacuum pump broken	Change the same model vacuum pump	——
Spray gun is out of work or the pressure meter no pressure	1. The power supply pin of the air compressor is not to be inserted well	Insert the compressor vacuum well again	——
	2. The switch of air compressor is close	Open the air compressor switch	——
	3. The regulation valve of spray gun is turned to the lowest	Turn the regulation valve to the pressure you need	——
	4. The journey switch of spray gun not to be inserted well and destroyed	Check the wire or change the journey switch	——
	5. Windpipe tie-in not to be inserted well and destroyed	Lock the wire tie-in tighten or change the windpipe	——
	6. Air compressor is broken	Change the same model air compressor	——
Air compressor out of work	1. The block on the pole is locked that can’ t control the switch	Look for the reason why the block is locked and find out the solution	——
	2. The journey wire of the compressor is loose or the switch is broken	Inspect the wire and find out the destroy journey and change a new one	——

XIII. Electromagnetic Compatibility



Attentions :

- ▶ ST-E300、ST-E500、ST-E600、ST-E800、ST-E900、ST-E1000 E.N.T. Treatment unit meets YY 0505 standard Electromagnetic Compatibility Requirements.
- ▶ The user should install and use according to the EMC information provided in the documentation.
- ▶ Portable and mobile radiofrequency communications equipment may affect the performance of ST-E300, ST-E500, ST-E600, ST-E800, ST-E900, ST-E1000 E.N.T. treatment unit and chair, please avoid strong. electromagnetic interference when use, Such as near mobile phones, microwave ovens and so on.
- ▶ Guidance and manufacturer's declaration are provided in the attachment.



Warning :


- ▶ ST-E300, ST-E600, ST-E800, ST-E900, ST-E1000 E.N.T. treatment unit should not be approach or stacked with other equipment, if must be approach or stacked, You should observe that the validation works properly in the configuration in which it is used.
- ▶ Except the manufacturer of E.N.T. treatment unit model ST-E300、ST-E500、ST-E600、ST-E800、ST-E900、ST-E1000 can sold spare parts for internal components, use other Accessories and cables may result in an increase in the emission of an E.N.T. treatment unit or a reduction in immunity.

Attachments:

Guidance and manufacturer's declaration–Electromagnetic emission		
E.N.T. treatment unit model ST-E300、ST-E500、ST-E600、ST-E800、ST-E900、ST-E1000are expected to be used in belowelectromagnetic environment , the purchaser or user should ensure that it is used in this electromagnetic environment :		
Emission test	Conformity	Electromagnetic environment–Guidance
Radio frequency emission GB 4824	Group 1	The E.N.T. Treatment unit onlyuses radio frequency energy for its internal functions. Therefore, its radio frequency emission is very low, and the possibility of interference withnearby electronic equipment is very small E.N.T. treatment unit is suitable for all facilities in non-domestic and not directly connected to the residential public low-voltage power supply network
Radio frequency emission GB 4824	Type A	
Harmonic emission GB 17625.1	Not applicable	
Voltage fluctuation/Flicker emission GB 17625.2	Not applicable	

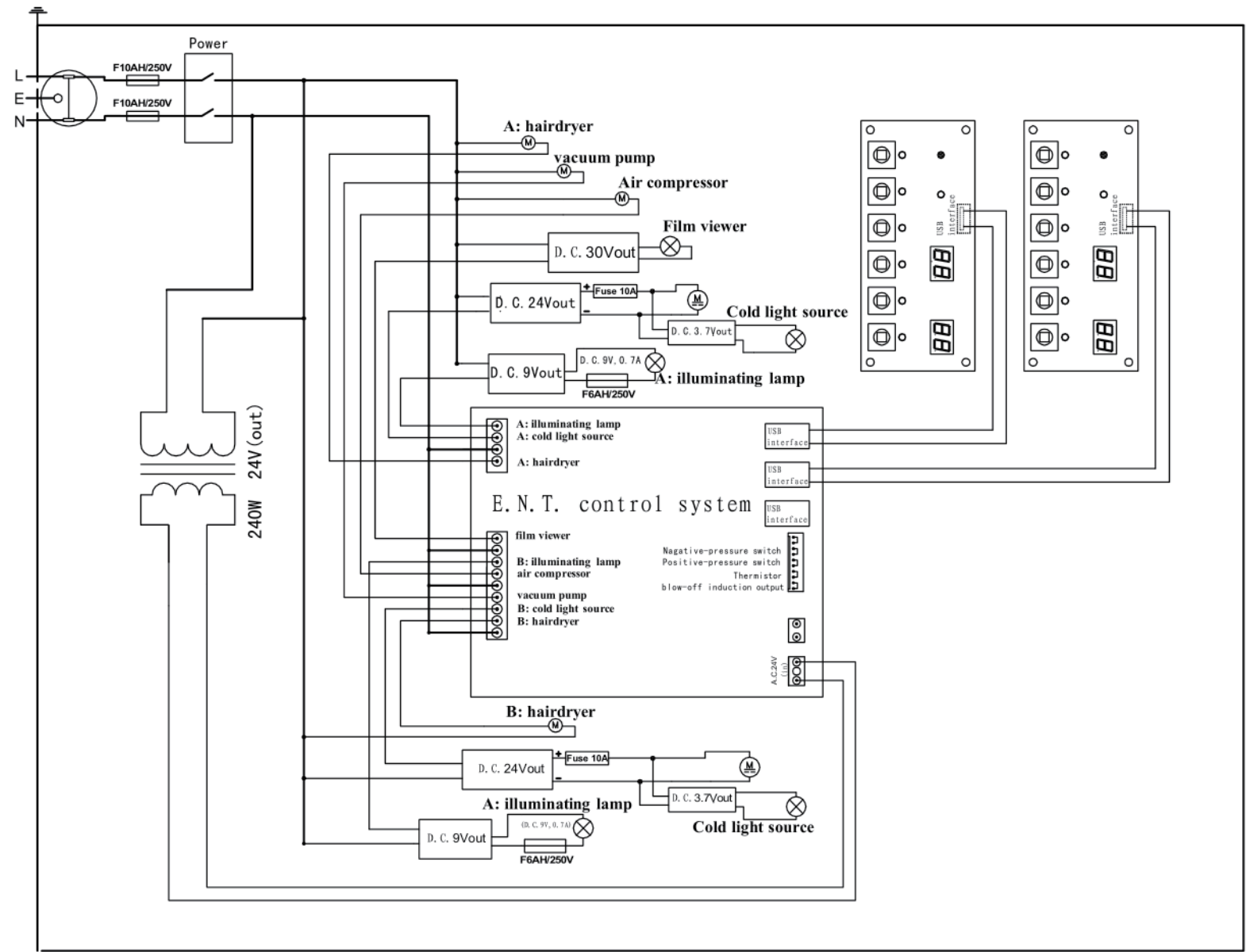
The recommendation distance for Portable and mobile radio frequency communications equipment and E.N.T. treatment unit			
E.N.T. treatment unit model ST-E300、ST-E500、ST-E600、ST-E800、ST-E900、ST-E1000are expected to be used in belowelectromagnetic environment。 Depending on the maximum rated output power of the communication device, the purchaser or user may prevent electromagnetic interference by maintaining the minimum distance between the portable and mobile radio frequencycommunications equipment (transmitter) and the E.N.T. treatment unit as belowrecommendation.			
The maximum output power rate of the transmitter W	Corresponding to the different frequencies of the transmitter isolation distance/m		
	150 kHz ~ 80 MHz $d = 1.2\sqrt{P}$	80 kHz ~ 800 MHz $d = 1.2\sqrt{P}$	800 kHz ~ 2.5 MHz $d = 1.2\sqrt{P}$
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
Above the not listedmaximum output power rate of the transmitter , Recommended isolation distance d , the unit is meter (m) , this can be calculated by formula in the corresponding transmitter frequency column , P is the maximum output power rate of the transmitter provided by the transmitter manufacturer , the unit is watt(W). Note1 : the frequency between ,adopt the formula for higher frequency bands. Note2 : These guidelines may not be appropriate for all situations。 Electromagnetic transmission is influence by the buildings, objects , body's absorption and reflection.			

Guidance and manufacturer's declaration–Electromagnetic immunity			
E.N.T. treatment unit model ST-E300、ST-E500、ST-E600、ST-E800、ST-E900、ST-E1000are expected to be used in belowelectromagnetic environment, the purchaser or user should ensure that it is used in this electromagnetic environment:			
Immunity test	IEC 60601Test level	Coincidence level	Electromagnetic environment–Guidance
Static electricitydischarge GB/T 17626.2	±6 kV Contact discharge ±8 kV Air discharge	±6 kV Contact discharge ±8 kV Air discharge	The floor should be wood, concrete or tile, if the ground covered with syntheticmaterials,the relative humidity should be at least 30%
Electrical Fast Transient Burst GB/T 17626.4	±2kV to power cable ±1kV to input/output line	±2kV to power cable ±1kV to input/output line	The network power supply should have a quality that is typically used in a commercial or hospital environment
surge GB/T 17626.5	±1 kV line to line ±2 kV line to ground	±1 kV line to line ±2 kV line to ground	The network power supply should have a quality that is typically used in a commercialor hospital environment
Power input line Voltage sag, short time Interrupt and voltage changes GB/T 17626.11	<5 % U_{Tr} ,continued0.5cycle (sag on U_{Tr} ,>95%) 40 % U_{Tr} ,continued5 cycle (sag on U_{Tr} ,60%) 70 % U_T , continued25 cycle (sag on U_{Tr} ,30%) <5 % U_{Tr} ,continued5s (sag on U_{Tr} ,>95%)	<5 % U_{Tr} ,continued0.5 cycle (sag on U_{Tr} ,>95%) 40 % U_{Tr} ,continued5cycle (sag on U_{Tr} ,60%) 70 % U_T , continued25 cycle (sag on U_{Tr} ,30%) <5 % U_{Tr} ,continued5s (sag on U_{Tr} ,>95%)	The network power supply should have a quality that is typically used in a commercialor hospital environment.If the E.N.T. treatment unit user needs continuous operation during a power outage, the E.N.T. Treatment Unit need powered by an uninterruptible power supply or battery
Power frequency magnetic field (50/60Hz) GB/T 17626.8	3A/m	3A/m,50/60Hz	The power frequency magnetic field shall have the characteristics of the power frequency magnetic field level same in a typical commercial or hospital environment
Note: UT refers to the AC voltage before applying the test voltage.			

Guidance and manufacturer's declaration–Electromagnetic immunity			
E.N.T. treatment unit model ST-E300、ST-E500、ST-E600、ST-E800、ST-E900、ST-E1000are expected to be used in belowelectromagnetic environment, the purchaser or user should ensure that it is used in this electromagnetic environment:			
Immunity test	IEC 60601 Test level	Coincidence level	Electromagnetic environment–Guidance
Radio frequency transmit GB/T 17626.6	3 V (Valid values) 150 kHz ~ 80 MHz	3V (Valid values)	Portable and mobileradio frequency communication equipment should not be used with any part of the E.N.T. Treatment unit which closer to the recommended separationdistance, including cables . This distance is calculated from the formula corresponding to the transmitter frequency. RecommendedIsolation distance $d = 1.2\sqrt{P}$
Radio frequency radiation GB/T 17626.3	3V/m 80 MHz ~ 2.5 GHz	3V/m	$d = 1.2\sqrt{P}$ 80 MHz ~ 800 MHz $d = 1.2\sqrt{P}$ 800 MHz ~ 2.5 GHz 式中： P is the maximum output power rate of the transmitter provided by the transmitter manufacturer , the unit is watt(W) ; P is the recommended isolation distance d , the unit is meter (m) 。 The field strength of a fixed radio frequency transmitter is determined by survey of the electromagnetic fielda, which should be lower than the coincidence level in each frequency range ^b . Interference may occur near the device marked with the following symbols. 
Note1: the frequency between ,adopt the formula for higher frequency bands. Note2: These guidelines may not be appropriate for all situations。 Electromagnetic transmission is influence by the buildings, objects , body's absorption and reflection			
Note aFixed transmitter , such as : Wireless (cellular / cordless) phones and terrestrial mobile radio base stations, amateur radio, amplitude modulation and frequency modulation radio broadcasting and television broadcasting, the field strength in theory can not be accurately predicted. In order to assess the electromagnetic environment of fixed radio frequency transmitters, consideration should be given to the investigation of electromagnetic fields. If E.N.T. treatment unit is measured at a site above the applicable radio frequency compliance level, the E.N.T. should be observed to verify that it is functioning properly. If abnormal performance is observed, supplemental measures may be necessary, such as reorienting the orientation or location of the E.N.T. treatment unit. Note b: frequency range of 150 kHz ~ 80 MHz,The field strength should be less than 3V/m.			

XIV. Control board diagram

E.N.T. treatment unit control board diagram



E.N.T. patient chair control board diagram

