

# Upgraded ADAE Portable X-ray Machine

**ONLY FROM ADAE**

**Upgraded Main Board**  
With smart cooling system



**USER MANUAL**

# PREFACE

## Manufacturer Declaration

We appreciate you kindly select our dental X-ray unit very much. Please read the operation manual carefully before using the unit so that you could learn all the details about technical specification, installation, operating methods, maintenance and the transportation.

The preparation of this manual according with GB/T14436-93 <The general industrial product guarantee files>, GB/T9969-2008 <industrial product specification conditions> and other relevant standards, our company has the instruction of non-public publishing copyright, any person or company shall not to copy or translated into another language the whole or any section of this manual without the written consent of our company.

## After-sales service responsibility

Our company only responsible for the performance and reliability of the instrument under the following circumstances:

- Assembly, debug and repair personnel authorized by our company.
- Related electrical equipments according with national standards.
- Using the device according to the operation manual.

## Product management type

According to the classification rules and catalogue of medical devices, dental X-ray machines are active diagnostic medical devices, and the management category is type II, the classification code is 6830.



**Note: This device is not treatment device.**



**Warning: This device need to be use by trained professional or medical institutions.**

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# I Safety guidelines

**1. Before working and testing, you must according with the safety instruction:**

Please make sure the machine connect with the power correct, check the equipment work carefully;  
 Please make sure equipment connect the ground correct;  
 Please make sure the power supply.

**2. In addition, you also must according with the requirements of national special provisions (for example: Occupational Safety and Accident Prevention Regulations).**



**Note: During using process, you should make the distance from the focus to skin as long as possible.**

**3. The equipment placement and storage place should be paid attention to the following:**

Please do not use and save in inflammable and explosive places;  
 Please do not use and save in pressure, temperature, humidity, over the allowed scope environment;  
 Please do not use and save in the water place;  
 Please avoid slope instability, vibration and impact (including handling);  
 Please note that the frequency of the AC power source and allow current and voltage;  
 Keep well ventilated, avoid direct sunlight.

**4. Equipment installation**

You must according with the technical data to finish all installation tasks.

**5. Equipment maintenance**

Because the equipment include the users operation and diagnosing patients, therefore must be maintained, checked, diagnosed equipment maintenance every year. And this equipment involved in high voltage electrical control components, should check the safety of its insulation.

**6. Warning:**



X-rays are harmful to patients and operators that must comply with safety exposure factors and operating instructions.

**7. The Symbol Instruction**

NO.	SYMBOL	INSTRUCTION
1		May cause an electric shock, damage of high voltage components or debugging test points
2		Turn on the switch will produce radioactive rays.
3		Caution
4		Fragile with care
5		Up
6		Stacking layer limit
7		Dryness
8		B Type
9		II types of equipment

**8.EMC PERFORMANCE**

Dental X-ray machine may cause electromagnetic interference to other devices by air or by connecting cables. EMC refers to the ability of the device to suppress the electromagnetic interference of other devices without causing similar electromagnetic interference to other devices. The product design according with YY0505-2012 class 1, type A standard.

Comply with the following EMC electromagnetic compatibility radiation and electromagnetic immunity declaration.(see table 1, table 2)

**Table 1 Electromagnetic emission**

Guide and manufacturers declaration—Electromagnetic emission		
Dental X-ray machine is expected using in the following provisions of the electromagnetic environment, buyers or users shall ensure that using it in the electromagnetic environment.		
Emission test	Conformity	Electromagnetic environment, guide
RF emission GB 4824	Class 1	Dental X-ray machine in order to finish its expected function must launch electromagnetic energy. Nearby electronic equipment may be affected.
RF emission GB 4824	Type A	Dental X-ray machine is suitable for the household or not residential low-voltage supply network of public and not all the facilities used in the direct connection.
Harmonic emission GB 17625.1	Inapplicability	
Voltage fluctuation/launch GB 17625.2	Inapplicability	

**Table 2 Electromagnetic immunity**

Guide and manufacturers declaration—Electromagnetic immunity			
Dental X-ray machine is expected using in the following provisions of the electromagnetic environment, buyers or users shall ensure that using in the electromagnetic environment.			
Immunity test	IEC 60601 Electrical level	According with level	Electromagnetic immunity—Guide
Electrostatic discharge GB/T 17626.2	±6kV Contact discharge ±8kV Air discharge	±6kV ±8kV	The ground should be wood, concrete or ceramic tile, if the ground covered with synthetic material, the relative humidity should be at least 30%.
Electrical transient bursts GB/T 17626.4	±2kV For the power cord ±1kV For the input/output line	±2kV ±1kV	Network power supply should have a typical commercial or the quality of medical environment.
Surge GB/T 17626.5	±1kV Wire to wire ±2kV Wire to ground	±1kV ±2kV	Network power supply should have a typical commercial or the quality of medical environment.
Power frequency magnetic field (50/60Hz) GB/T 17626.8	3A/m	3A/m	Power frequency magnetic field should have in a typical commercial or hospital environment level of power frequency magnetic field characteristics of the typical place.
The power input line voltage sag and short supply interruption and the voltage change GB/T 17626.11	< 5%UT for 0.5 cycles (up the UT, > 95% sag) 40% UT for 5 cycles (up UT, 60% sag) 70% UT, for 25 cycles (up the UT, 30% sag) < 5%UT for 5 seconds (up the UT, > 95% sag)	<5%UT  40%UT  70%UT  <5%UT	Network power supply should have a typical commercial or the quality of medical environment. If dental X-ray machine user needs to run continuously during power outage, then recommend the dental X-ray machine adopts uninterruptible power supply or batteries.
Note: $U_T$ Refers to the communication network voltage before applying test voltage.			

Install the equipment as far away from other electrical equipment as possible.


Adjust the position between this equipment and other equipment/ installation Angle could reduce electromagnetic interference.

Changing other equipment wiring position can be reduce the electromagnetic interference.

Changing other equipment power path can be reduce the electromagnetic interference.

Specified electromagnetic compatibility environment see Table 3 and Table 4.

**Table 3 Electromagnetic immunity**

Guide and manufacturers declaration—Electromagnetic immunity			
Dental X-ray machine is expected using in the following provisions of the electromagnetic environment, buyers or users shall ensure that using in the electromagnetic environment.			
Immunity test	IEC 60601 Electrical level	According with level	Electromagnetic immunity—Guide
<p>The radio frequency transmission GB/T 17626.6</p> <p>The radio frequency radiation GB/T 17626.3</p>	<p>3V (effective value) 150 kHz ~ 80 MHz</p> <p>3V/m 80 MHz ~ 2.5 GHz</p>	<p>3V (effective value) 150 kHz ~ 80 MHz</p> <p>3V/m 80 MHz ~ 2.5 GHz</p>	<p>Using portable and mobile radio frequency communication equipment close to any part of the dental X-ray machine should not more than recommended separation distance, including the cables. The distance by the transmitter frequency and the corresponding formula</p> <p>The recommended separation distance  <math>d=1.2\sqrt{P}</math>  <math>d=1.2\sqrt{P}</math> 80MHz-800MHz  <math>d=2.3\sqrt{P}</math> 800MHz-2.5GHz</p> <p>In the formula:  <i>P</i>—According to the manufacturer provide the transmitter maximum rated power output, unit is watts(W);  <i>d</i>—The recommended separation distance, the unit is meter(M).</p> <p>Fixed type strength of the transmitter based on electromagnetic surveya to determine, each frequency rangeb should be less than the level.</p> <p>May appear interference near the following mark symbol of the equipment</p> 
<p>Note I: In the frequency of 80 MHz and 800 MHz, using the formula of high frequency.</p> <p>Note II: These guides may not be suitable for all situation, electromagnetic propagation by buildings, objects, and the effect of absorption and reflection of the body.</p>			
<p>a. Stationary transmitter, such as: wireless (cellular/cordless) phones and ground mobile radio station, amateur radio, AM and FM radio and television broadcasting, etc., the field intensity in theory can predict. For the evaluation of fixed RF transmitter electromagnetic environment, electromagnetic site survey should be taken into account. If measured dental X-ray machine field strength is higher than the place of the above applicable radio frequency (RF) in line with the level, the dental X-ray machine should be observed to verify their works. If the observed abnormal performance, the supplementary measures may be required, such as to readjust direction or location of dental X-ray machine.</p> <p>b. Through 150 KHZ ~ 80 MHz frequency range, the field strength should be lower than 3 V/m.</p>			

**Table 4 The recommended separation distance between portable and mobile radio communication equipment or system**

The recommended separation distance between portable and mobile radio communication equipment and the dental x-ray machine			
Dental X-ray machine is using expected in the radiofrequency radiation harassment controlled electromagnetic environment. Communications equipment based on maximum rated power output, the purchaser or the user can through the following recommended by maintaining a portable and mobile radio communication equipment (transmitter) and the minimum distance between dental X-ray machine to prevent electromagnetic interference.			
The maximum rated power output of the transmitter w	Corresponding to different frequency transmitter isolation distance M		
	150kHz-80MHz $d=1.2\sqrt{p}$	80MHz-800MHz $d=1.2\sqrt{p}$	800MHz-2.5GHz $d=2.3\sqrt{p}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23
To the table not listed transmitter maximum rated power output and recommended isolation distance is d, unit meters (M), determine by the available transmitter frequency corresponding column, here P is provided by the manufacturers transmitter maximum rated output power, unit watts (W).			
Note I: In the frequency of 80 MHz and 800 MHz, using the formula of high frequency.			
Note II: These guides may not be suitable for all situation, electromagnetic propagation by buildings, objects, and the effect of absorption and reflection of the body.			

**Notice:**

a. The product cables as follows

1	Cable	1.27m	Non-shielding	From AC220V to charger input		
2	Connection cable	1.02m	Non-shielding	Charger output	Dental x-ray unit	——

- b. This product shall be installed and used in such a way as to ensure that the electromagnetic compatibility environment described above is met in order to ensure the normal operation of the equipment.
- c. It is prohibited to use the equipment in the vicinity of strong radiation sources, otherwise it may interfere the normal operation.
- d. Please purchase and use the accessories of the equipment sold by the manufacturer, otherwise it may lead to increase the launch of the equipment or decrease the resistance to the disturbance.
- e. Dental X-Ray machines should not be used in proximity or overlap with other equipment, if must be, should observe and verificate under the configuration in which they used.
- f. Dental X-Ray machines shall have the ability to achieve their basic performance when subjected to electromagnetic interference, including:
  - The components work normally and the default parameters are not altered at will.
  - No arbitrary changes in the mode of operation of equipment, no false alarms, etc..



## II Product basic performance

### 1. Product working principle

High voltage generator provide high voltage on both ends of the X-ray tube filament and a metal target, X ray tube cathode filament produced a large number of electrons in a vacuum tube high-speed movement, hit the metal target, to produce x-rays.

In hospital when using dental X-ray take image, X-ray generator emit x-rays through the body teeth, muscle groups such as density, will be through the body's tissues with image information of X rays by dental medical film image receiver, show the density of different tooth tissue images, used for clinical diagnosis.

### 2. Product main structure

Dental X-ray machine consist by x ray main body, charger, holder. Main body consist by screen board, control board, remote control board, x-ray tube component, battery. X-ray tube component consist by x-ray glass, high voltage generator and cone.

### 3. Main performance

Tube voltage: 60 KV

Tube current: 1.5 mA

Exposure time: 0.2 s ~ 3.2 S, 0.02 S per file.

### 4. Device Type

According to the protection of the risk of electric shock, this equipment belong to class II type B applied part.

## III Application

### 1. The scope of application:

dental X-ray machine get the human oral cavity image by x ray photography used for medical imaging diagnosis.

### 2. The scope of using:

Need trained oral dentists or technician to use. For adults and children's Diagnosis.

## IV Product performance

### 1. Conditions of operation:

- Atmospheric pressure: 70Kpa~106Kpa
- Environmental temperature: +10°C ~ +40°C
- Relative humidity: 30% ~ 75%

### 2. Condition of transportation and store:

- Environmental temperature: -20°C ~ +50°C
- Relative humidity: 10% ~ 90%
- Atmospheric pressure: 50KPa ~ 106KPa

### 3. Battery conditions:

- Battery: 6600mAh/14.8V
- Charger input voltage: single AC220V, 50HZ
- Charger output voltage: DC16.8V
- Charging current: 2.5A

#### 4. Specifications:

- 4.1 Tube voltage: 60kVp (stable)
- 4.2 Tube current: 1.5mA (stable)
- 4.3 Nominal electric power: 90W(60kv 1.5mA 0.2S)  
Max output electric power: 90W (60kv 1.5mA)
- 4.4 The way of running: Break load; continuous operation
- 4.5 Loading time: 0.2~3.2s
- 4.6 working frequency: 30kHz
- 4.7 main body fuse type: F20AL250V  
Charger fuse type: SMT T3. 15AL, 250Vac

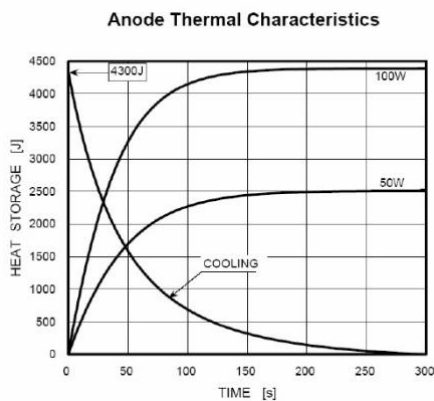
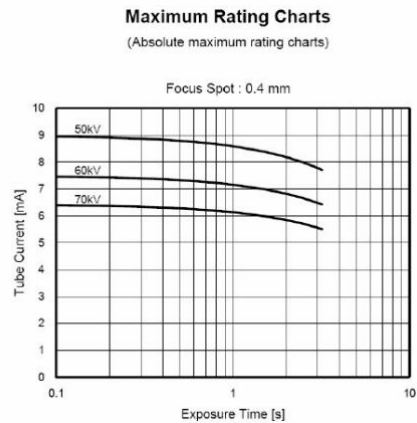
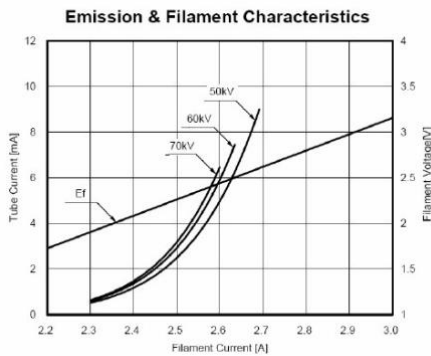
#### 5. X-ray glass and its performance

##### 5.1 X-ray glass:

- Modle: KL27-0.8-70
- Manufacturer: Hangzhou Yilong Electrical Co., Ltd.
- Target material:Ttungsten

Nominal X-ray tube voltage (KV)	Focus nominal value	Target angle	Lining properties	Weight (g)
70	0.8	19°	.Ifmax=2.1A,Uf=2.0±0.5V	90
Anode nominal input power (kw)	Maximum continuous thermal dissipation (W)	Inherent filtration (mmAl)	Anode thermal capacity (KJ)	
0.84	140	0.5	7	

#### 5.2 X-ray tube characteristic curve



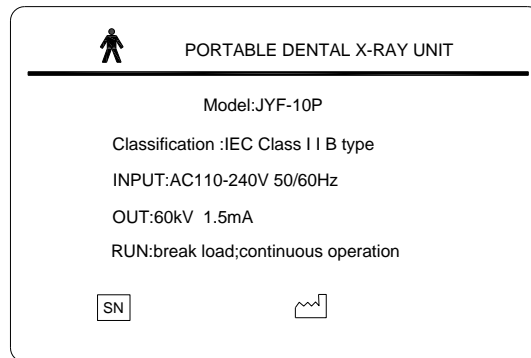
### 5.3 X-ray tube component

- Classification of X-ray tube components: Class I, Type B
- Maximum continuous thermal dissipation: 140W
- X-ray tube anode target angle to base axis: 19°
- Total X-ray source component filtered: 2.0mmAl
- Using cone limit x-ray beam, maximum radiation field: 3.14×262(mm<sup>2</sup>)
- Leak radiation loading conditions: 60kV, 1.5mA, < 0.25 mGy/h
- Tolerance of focal position and base axis: ≤ 1 mm
- X-ray source assembly weight: 1.1 kg

6. Device using life: 6 years

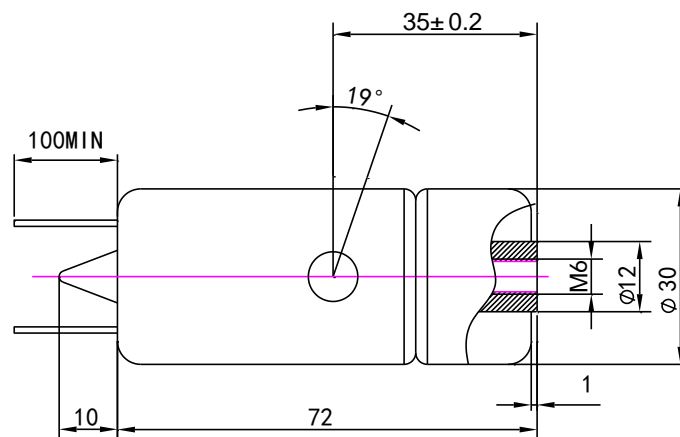
## V Device identification

### 1.Product identification



## VI The main structure

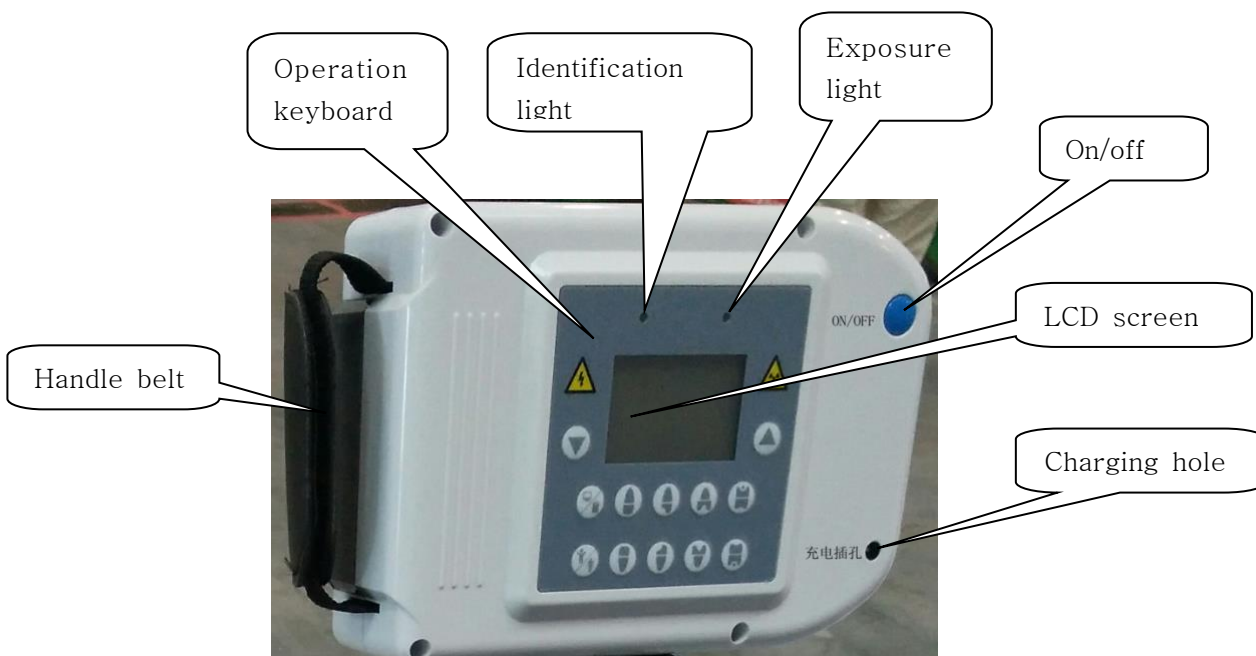
### 1. X-ray tube glass shape picture



## 2. Machine shape picture



## 3. Main machine



#### 4.control panel



- 1. exposure time decrease
- 2. film/sensor shift
- 3. adult/kids shift
- 4. teeth positions choose
- 5. exposure time increase

### VII. Installation And Debugging

1. Open the package, take off the machine, read the user manual carefully, turn on it and operate.





- 1.charger 2.main machine 3.Aluminum Box

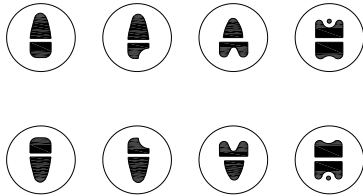
## VIII Method of using

### 1. Turn on the machine



- Press the power switch till buzzer, all the interface will be displayed on the LCD screen, loosen your finger and the device will be ready for 5 seconds.
- Display the initial conditions on the screen.
- The device will shut down automatically if there is no operation for more than 5 minutes

### 2. Setting exposure time

- According to the patient's characteristics, choose adult/kid. 
- According to the image receiving device, choose 
- According to the patient's tooth position, choose the tooth position.



- The patient's tooth position has been selected and the exposure time has been adjusted according to the patient's signs(fat or thin).

 (increase 0.02s for each press) or  (reduce 0.02s for each press)

- Exposure time reference

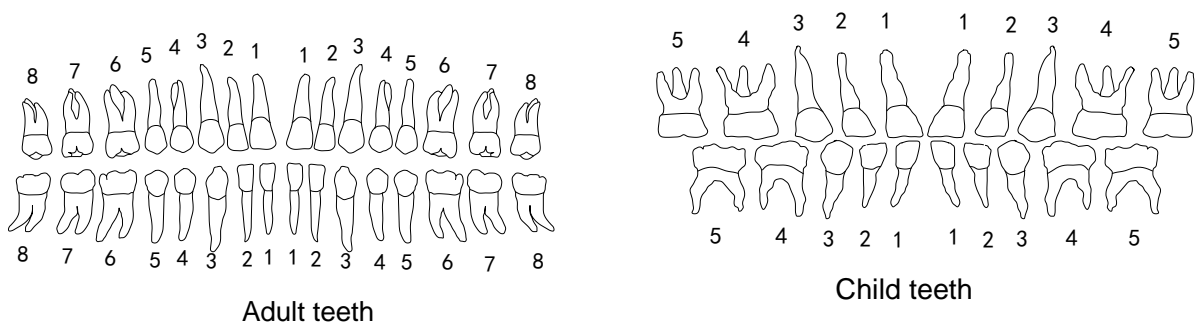
								
Adults	0.4	0.6	0.8	1.2	0.3	0.5	0.7	1.0
Children	0.3	0.5	0.7	0.9	0.2	0.4	0.6	0.8

### 3.Place the internal oral receiver

Put the internal oral receiver into mouth,make it close to the tooth.

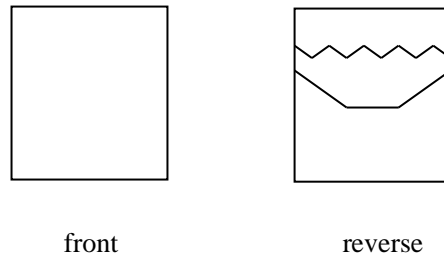
### 4. Image receiver placement and shooting position of internal oral

#### 4.1 Teeth diagram



## 4.2 Image receiver placement of internal oral

### a. Film placement



Put the film into mouth, film front close to the inside of teeth which want to image, use the thumb hold the film reverse, to make sure closely.

### b. Sensor placement



Put the sensor into mouth, film front close to the inside of teeth which want to image, use the thumb hold the film reverse, to make sure closely.

## 4.3 Shooting position

### 4.3.1 Patients posture: patient sit on the chair

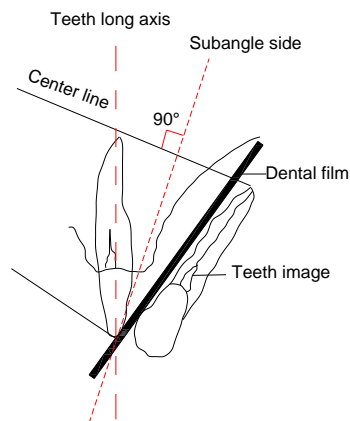
maxillary and mandible incisor: lip is parallel to the ground.

maxillary molar: ear- nose line (the line between upper external auditory canal and the nose) parallel to the ground.

mandible molar: ear- mouth line (the line between upper external auditory canal and the mouth) parallel to the ground.

### 4.3.2 Film and X-ray direction relation

- a. Film and x ray direction position as the figure below, X-ray along the center line by teeth point to the film. Note horn line and the center line position, if the centerline position deviation from the correct position (center line and Angle is less than or greater than  $90^\circ$ ), then take a fake image, may shorter or longer than the actual teeth.



- b. When shooting, the suggestion of the patients and the cone position ( for adults example)
- Mandible shooting: the cone aimed at the parts of shooting.
- Maxillary shooting:
- (6-7-6-7)teeth position, cone aimed at the edge of zygomatic;
  - (4-5-4-5) teeth position, cone aimed at the front of the zygomatic;
  - (3-3) teeth position, cone aimed at the side of the nose;
  - (2-2) teeth position, cone aimed at the tip and the midpoint of the side of the nose;
  - (1-1) teeth position, Cone aimed at the nasal tip.



**Notice: when exposure, the patient should always be monitored outside the room to ensure the patient's safety.**

### 5. shooting position adjustment

Adjusting the holder to adjust the machine angle, make the cone aligned with the photographed tooth.

### 6. Exposure shooting

Press the exposure button and hold it, you can expose the pre-set parameters, and the exposure indicator is bright, the buzzer rings, release the button, stop exposure.

### 7. turn off the device

Press the on/off button for two seconds, and then release it, device will automatically turn off.



**Caution: 1. Please keep pressing the button of exposure switch during the exposure, or the exposure will stop.  
2. The unit will stop working at once while releasing the button of exposure switch if there is any trouble during the exposure.**

## 8. Image Developing

### 8.1 film

#### a. light room film

Put 3 or 4ml solution by the injector to the tooth-bag, take out the film to wash with clear water after pressing about 2 - 5min with hand.

#### b. dark -room film

Tear the tooth-bag in dark room, take out the film by clam, put it into the developing solution, take out the film after 3 or 5min to wash it with clear water. then put the film into the fixer solution about 3 or 5min, wash it with clear water again.



## 8.2 sensor

The image will appear in the image system.

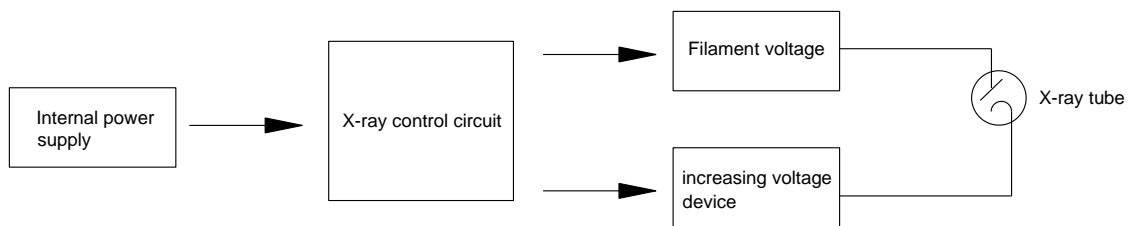
## 9. charging

- If the battery is low voltage and it can not work properly, please charge it in time.
- If the machine is not used for a long time, please charge the equipment once a month to ensure that the battery is used properly.
- When charging, please use the native charger or use the same specification charger that meets the requirements of the national standard GB9706.1-2007.
- when finish the charging, (the charger LED indicator is changed from orange to green), the DC output of the charger is removed from the charging hole.
- Battery is consumable, each equipment only equipped with one original battery, if you want to buy, please contact the manufacturer.

# IX Principle introduction

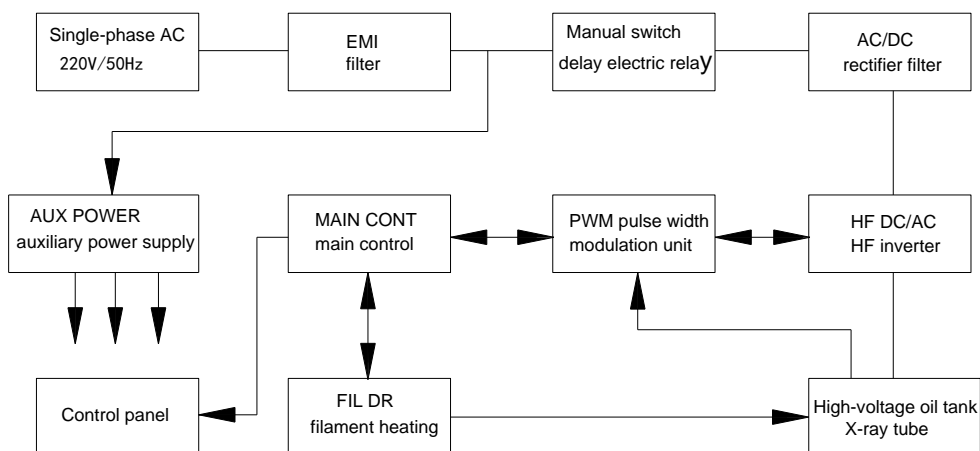
## 1. product principle diagram

Turning on the power supply, path after transformation, the circuit makes the high voltage generator get electric, the high voltage supply X-ray tube, produce x-rays.



## 2. System circuit diagram

The diagram of the system between each units is shown below:



## X Failure and maintenance

1. The power indicator light is not bright-- make sure the power switch turned on, check whether the power plug into the socket completely(Contacts are in good condition), and then check the loop or fuse whether cutout.
2. When press the exposure switch (or remote control), the indicator is not bright, no Buzzer sound - check whether the power light is bright (if not, see tip 1)
3. The film is too light or too dark or uneven density – make sure power indicator is not bright, the exposure indicator and buzzer sound normal (if not, see tips 1, 2), when exposing, make sure press the switch all the time, until finish exposure and it may stop automatically.
4. Exposure time more than setting time- console exposure indicator or buzzer sound doesn't stop automatically, loosen the switch, turn off the power, check the failure.
5. Console exposure indicator or buzzer sound at any time without press the switch-- turn off the power, check the failure.
6. If there is noise or heat from the tube without exposure, turn off the console and cut down all the power. Check the failure.
7. If the fuse is blown, use a screwdriver to turn the fuse counterclockwise to replace the fuse.
8. When there is a failure, please do not disassemble, should write "have fault!" The note is attached to the device and contact with the company local maintenance department or the company.



**Notice: The fault X-ray tube head shall be returned to the company and the user do not disassemble it.**

9. Product warranty
  - 1) The company ensure according with the qualified raw materials and process to produce the equipment, if provide the problem belong to the manufacturing process and materials fault report in normal using or maintains, will repair or replace the hardware.
  - 2) The company will irresponsible to the following situation and directly, indirectly or eventually damage or delay:
    - component is tear, stretching, debugging;
    - not by company authorized personnel repair or change the device;
    - damage caused by abnormal use;
    - replaced or be removed the product labels or marks;
    - users improper operation
  - 3) product warranty 1 year from the date of sold;

## XI Attention matters



**Please read the following related safety measures and methods carefully**

1. Do not turn on the machine when charging.
2. Pregnant women must according with the doctor.
3. Patients and accompanying person should be well protected when shooting X-rays, such as wearing lead clothing, lead gloves, and lead caps. When using the sensor, please note the function need shift to the sensor mode.
4. Exposing rays can cause slight damage to the human body. The farther distance from the focus, the greater radiation range, should keep the greater distance from the focus to skin.
5. During the exposure process, will produce X-rays. It may cause certain harm to the human body for a long period of using. Therefore, the operator should operate in the effective occupation area and must be equipped with lead room, protective lead screen and other protective devices.
6. All personnel should stay as far away from X-ray sources as possible.
7. In order to make the patient's absorption dose as low and reasonable as possible, the camera head must be installed with a random attached cone and operated away from the head.
8. Since there are X-ray tubes and transformer oil inside, non-professional people are not allowed to use or repair it. Please do not open or modify the equipment. All parts replacement of this machine must be operated by professional personnel.
9. Please use the original equipment with a regular charger, otherwise it will cause damage to the battery. When the equipment is out of service for more than two weeks, the battery is recharged and maintained every month to extend the battery life.
10. During the X-ray shooting process, please note that patients are required to take off their glasses, movable dentures, hairpins, and other metal parts that may enter the shooting area to avoid false images.
11. Due to the limited thermal capacity of small X-ray machines, it is recommended to pay attention to intermittent work during operation.
12. After each use of the machine, please use 75 % medical disinfection alcohol to partially sterilize the cone.
13. Clean the surface of the machine with dry cloth every week and check that the connections are in good contact.
14. Pay attention to the maintenance of the machine and check whether the indicator lights and key switches are working normally; Whether the X-ray tube assembly is likely to leak oil; X-ray tube component exposure, there is no abnormal sound.
15. Install the equipment as far away from other electrical equipment as possible, and adjust the relative position/installation angle between the equipment and other equipment to reduce electromagnetic interference.
16. Electromagnetic interference can be reduced by changing the wiring of power supplies for other equipment
17. This device meets IEC 60601-1-2 standards for electromagnetic compatibility of medical electronic devices and/or systems. However, the electromagnetic environment that exceeds the IEC 60601-1-2 standard limit or level will cause harmful interference to the instrument or reduce its performance. Therefore, in the event that the instrument does not match the required function during use, please confirm and eliminate any unsolvable problems and

errors in the adverse electromagnetic interference effects before continuing to use the instrument. Please stop immediately and contact the designated manufacturer

#### 18. Environmental protection

In order to protect the environment, film packaging bags and lotion residues generated during the use of products should not be discarded at will. Attention should be paid to collection and unified treatment. The useful resources of iron, copper, lead, glass and plastics in the end of product use have a high reuse value. They can be recycled and processed through recycling channels, which is conducive to preventing and reducing environmental pollution. Lithium batteries and other electronic components, when scrapped, should be recycled to a national designated agency.

## XII Maintenance

The equipment should be inspected and tested by professional technical personnel on a regular basis in terms of performance index, grounding, dose and safety protection.

1. The equipment shall be installed in clean and non-corrosive gas room. When working, the environment of the room shall be satisfied:
  - Atmospheric pressure: 70Kpa~106Kpa
  - Environmental temperature: +10°C~+40°C
  - Relative humidity: 30%~75%
2. When after using, turn off the switch, use 75% medical rubbing alcohol to disinfect the cone part.



**Note: when disinfecting, the cleaning cloth should be fully wrung out; After the sterilization, the machine room should be fully ventilated before starting the equipment again.**

3. Daily maintenance.

After work, should keep the equipment clean, pay attention to the equipment without anomalies, Charging normally, light display accurate, photographic effect, if there are any problems timely repair in case of serious problem of development.
4. The equipment maintained regularly.

Maintenance cycle: quarterly.  
Maintenance content:

  - Use soft, non-woven fabric to clean the surface of the equipment.
  - Check all connectors for good contact.
  - Check whether the indicator light and switch work is normal.
  - X ray tube components whether leak oil.
  - When X-ray tube components exposed, there is no abnormal sound.
5. Long-term maintenance.

Storage environment:

  - Environmental temperature: +10°C~+40°C
  - Relative humidity: 30%~75%
  - Atmospheric pressure: 700hpa~1060hpa

Battery maintains:

If the machine is not in use for a long time, please charge it once a month to ensure that the battery is working properly

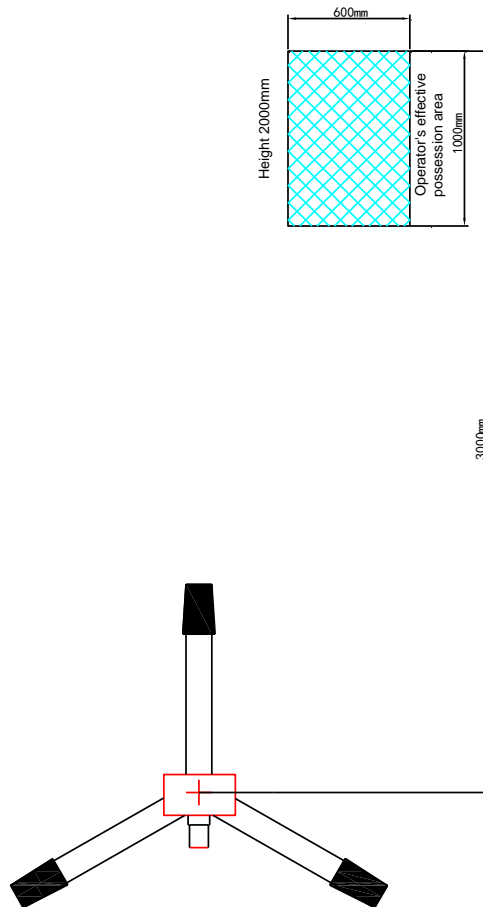
Electrical maintenance:

Turn on the machine for one hour on a regular basis.

After turn on the machine,take exposure to keep the equipment working normally.

6. If the device is not used for more than 2 weeks, it must be preheated for 5 minutes and then operate according to the operating instructions.

### XIII Operator's effective possession area



### XIV PACKING LIST

NO.	NAME	QTY	NOTE
1	Main machine	1	
2	User manual	1	
3	charger	1	

## XV Electrical schematic diagram

Diagram 1

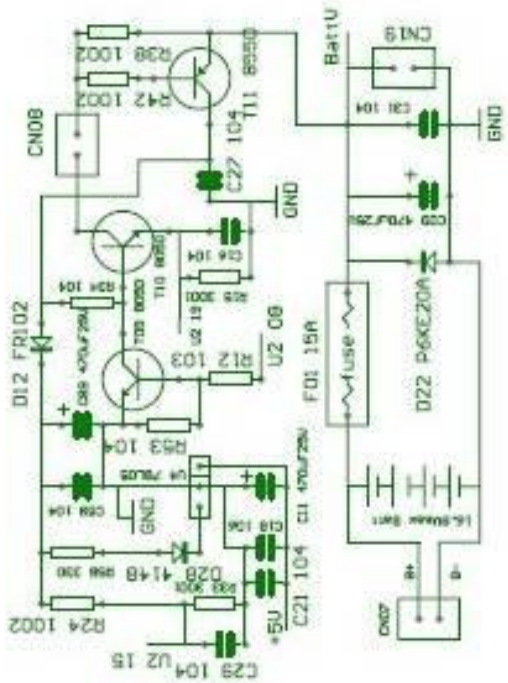
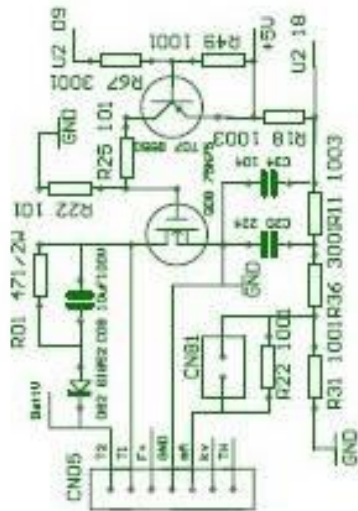
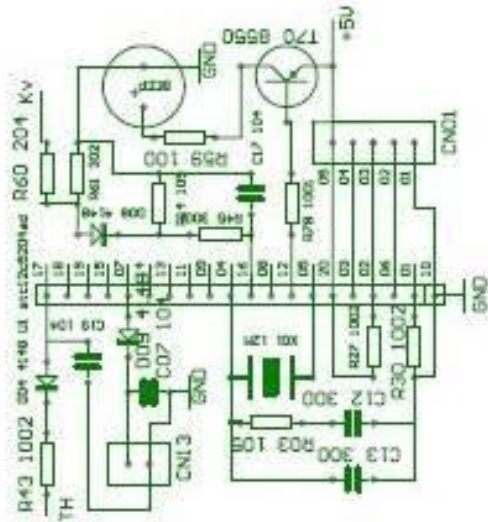
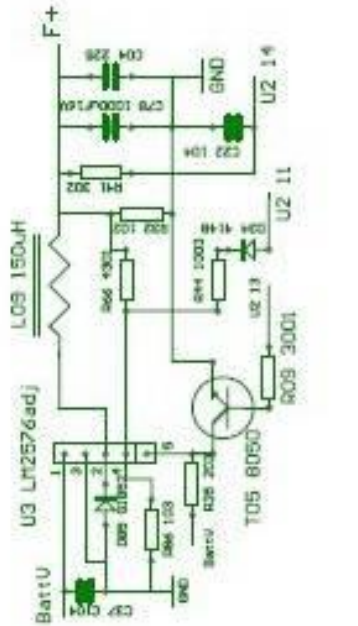


Diagram2

