



MODEL JYF-10D
DENTAL X-RAY UNIT

OPERATION MANUAL

PREFACE

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

Please contact with the dealer if you have any problem after reading the operation manual.

Thank you again.

ABOUT THE SYMBOL



Dangerous voltage.



X-ray emitting.



Caution



Protective earth.



Caution: The user should read the operation manual carefully before installation and use the unit.

Note: Content of the manual is subject to changes without prior notice.

Chapter 1 INTRODUCTION

1.1 Characteristics

JYF-10D dental x-ray unit is an essential diagnostic equipment for dentist with features as following:

- a). Simple structure: The x-ray generator, central controller and unit frame are integrated into one unit.
- b). Good protection: The radiation is much lower than national protecting standard.
- c). Digital circuit: The digital circuit makes exposure time accurately.

1.2 Main use

The unit is particularly provided for synthesis hospitals、cavity specialty hospital and dental clinic to take photo.

1.3 Environmental and working conditions

- a. Condition of transportation and store

Environmental temperature: $-20\sim 70^{\circ}\text{C}$

Relative humidity: $\leq 75\%$

Atmospheric pressure: $50\sim 106\text{Kpa}$

- b. Conditions of operation

Environmental temperature: $10\sim 40^{\circ}\text{C}$

Relative humidity: $\leq 75\%$

Atmospheric pressure: $70\sim 106\text{Kpa}$

- c. Power supply

Single phase AC $220\pm 22\text{V}$; $50\text{Hz}\pm 1\text{Hz}$

Power capacity: $> 1000\text{VA}$



Power resistance: $< 2\ \Omega$

1.4 Security and relative symbol



Warnings: Please learn relative security measures and functions given in the file or on the unit.

- Don't use or store near the place which is possible to fire.
- Don't use or store where air pressure or temperature or moisture exceeds range.

- Keep good ventilation and avoid direct sunlight, protect against the eroding of dust and corrosive air.
- Avoid slant, shaking, and shock (including transportation).
- Don't use or store near to chemicals or combustible gas.
- There is  to indicate grounding nut, please be sure of good grounding before use.
-  means output of radiation.
- The machine is with special device to control radiation for safe operation.

Chapter 2 SPECIFICATIONS

2.1 Technical specifications

tube voltage: $60KV \pm 10\%$

tube current: $8\text{ mA} \pm 20\%$

exposal time: $0.2 \sim 4.0\text{ s}$

input power: $<600\text{ VA}$

output power: $P \approx 339\text{ VA}$

irradiation diameter: 52 mm

fuse: F5AL250VAC , 250V, 5A

capacity: 60 KV , 8 mA .

the way of operation :breake load;continuous operation

the weigh of x-ray source: 7.5 Kg

the variation rate of high-voltage generator 1:226

manufactory:hangzhou wandong electrical Co.Ltd.

X-ray area: $3.14 \times 26^2(\text{mm}^2)$

The time of loading follows R'10

up-down range of X-ray head: $\geq 400\text{ mm}$

forward-back range of X-ray head: 600 mm

level turning angle of head: 360°

rounding angle of head: 270°

life: 6 years

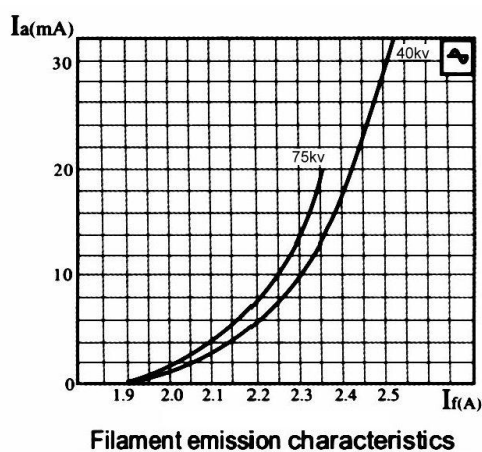
2.2 Main specifications of X-ray tube

XD2-1.4/85 fixup anode X-ray tube

Top working voltage	Focus value	Target angle	Fuse			Anode normal loading	Anode thermal capacity
			Current	Voltage	Working frequency		
85KV	1.5	23°	2.5 A	$2.8 \pm 0.7V$	50~60HZ	1.4kw	9 KJ

2.3 Main specifications of X-ray generator

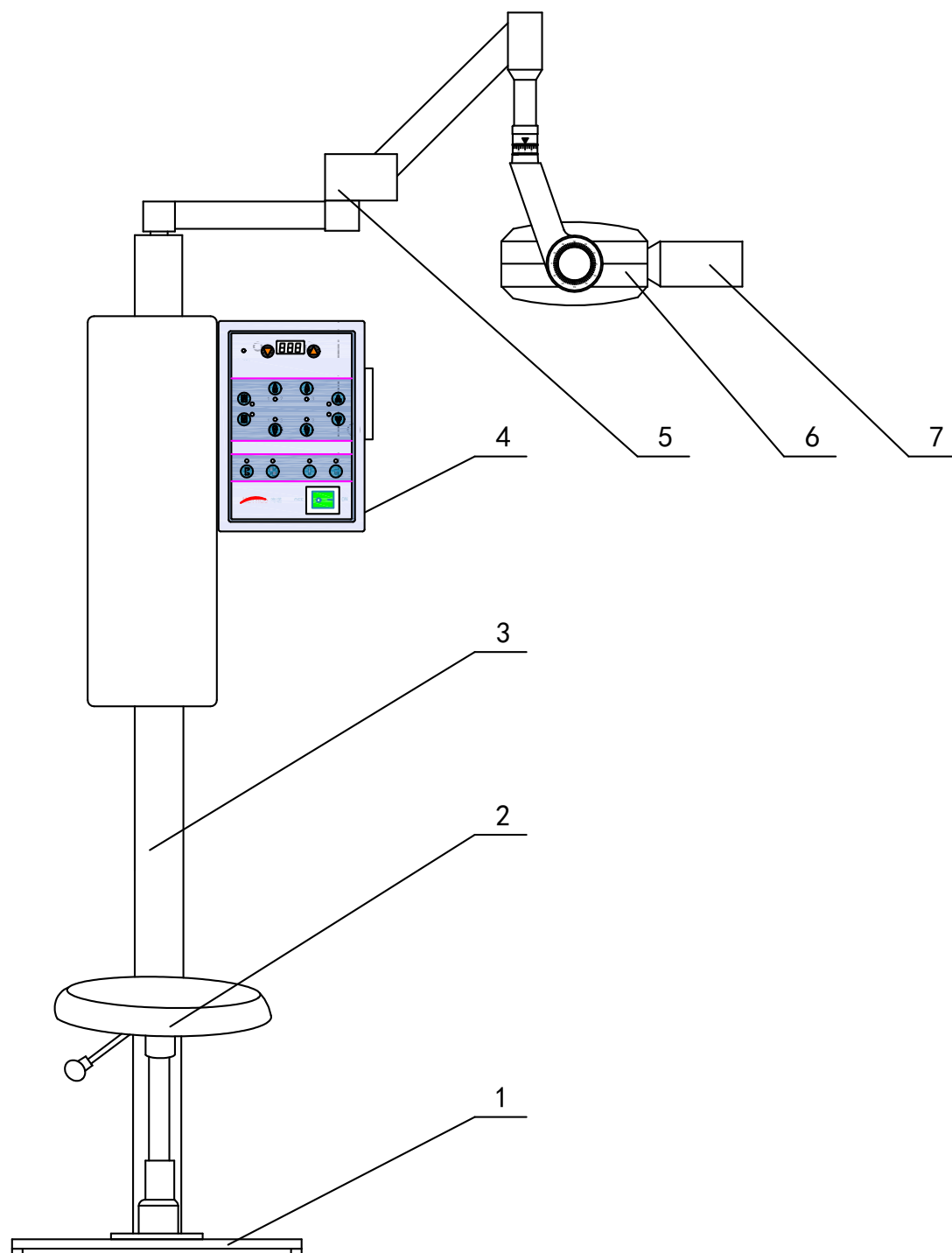
X-ray Generator	
X-ray tube	XD2-1.4/85
Focus value	1.5
Total Al equivalent	2mmAL
Tube voltage	60KV
Tube current	8mA



Chapter 3 STRUCTURE AND PRINCIPLE

3.1. Structure in general

The unit includes x-ray generator、central controller and machine frame. Figure 1 is in detail.



1.base 2.chair 3. stake 4. central controller 5.arm component
6.x-ray generator 7.x-ray controller

3.2. Principle

As soon as the primary coil of high voltage transformer is given to 220V, the second coil gets high voltage for x-ray generator to produce x-ray.

KV and mA are fixed in this machine. mAs is adjusted by change exposure time.

Chapter 4. INSTALLATION

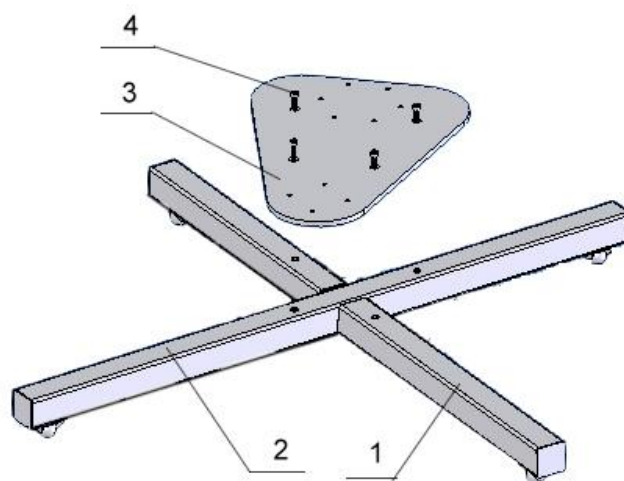
4.1 Inspection after unwrapping pack

In order to transport conveniently, the unit is disassembled and packed in parts. Please check the parts according packing list to make sure all the parts are in good condition. And then clean the antiseptic oil and dust to prepare installation.



Caution: In order to get good x-ray photo, the unit must use the specific power cable. The cable must be copper material with section of copper no less than 1.5mm². If the cable is longer than 5 meters, the section must be relatively added.

4.2.1 Installation of base



1. Base A 2. Base B 3. Baseplate 4. Bolts

(1) Put base A on the ground with the gap upward, placed about 45°, put the side with gap far from forward.

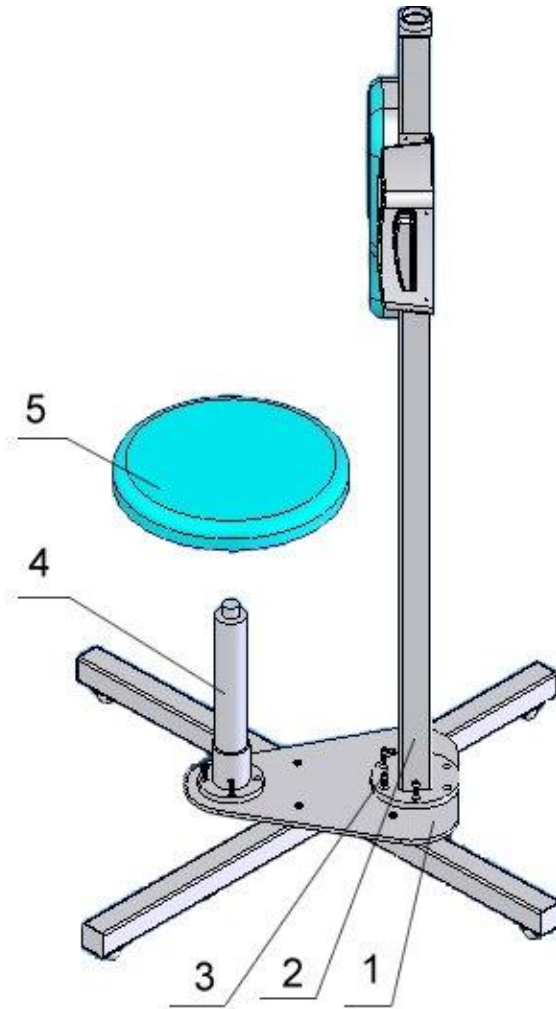
from forward.

(2) Put base B on base A, please note that the side with gap far from forward

(3) Put the baseplate on base A and B with the smaller side forward, align the four screw

holes and fixed with screws.

4.2.2 Installation of column and chair



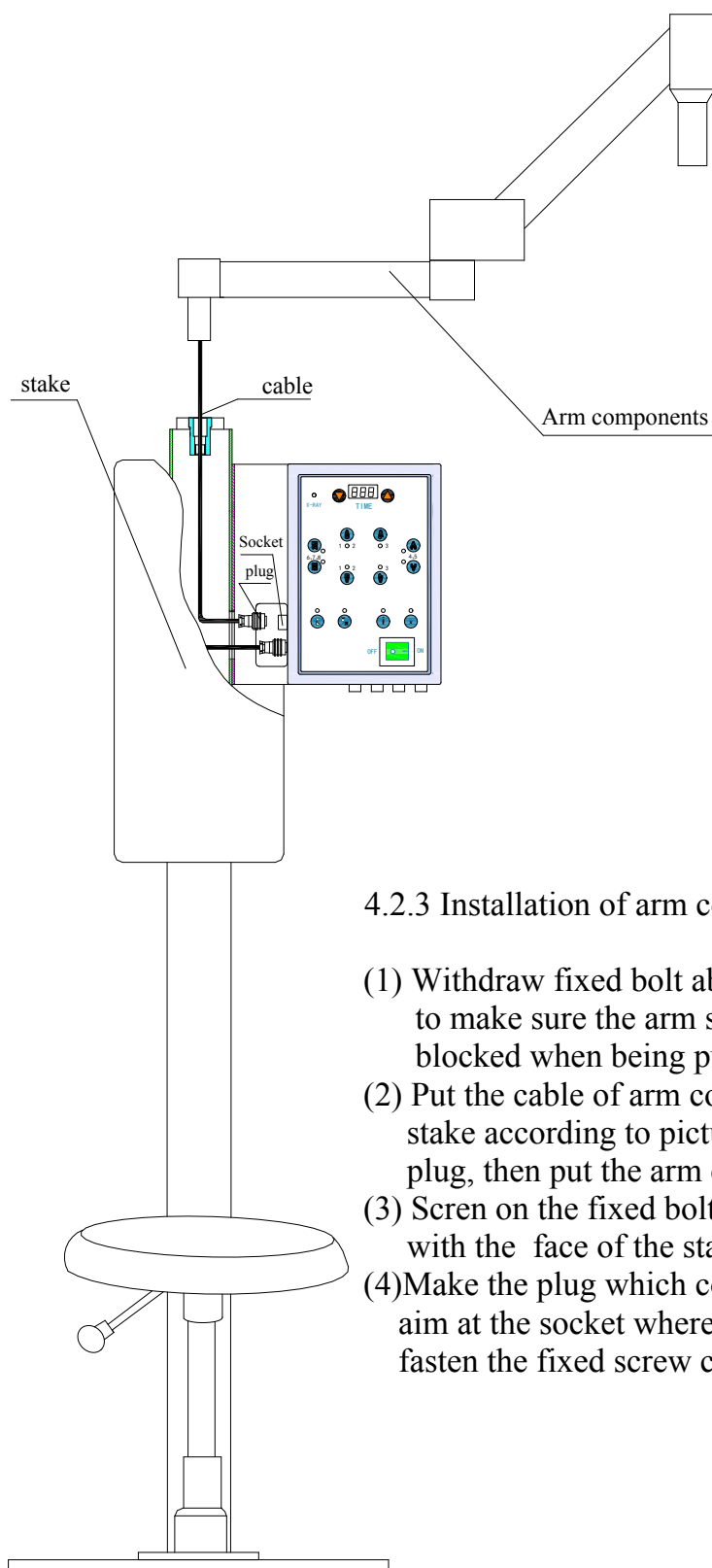
1. Baseplate 2. Column 3. Bolts M6 4. Pneumatic lifter 5. Seat

(1) Put the column on the baseplate with the backrest towards the smaller side of the

baseplate, then fasten the M6 bolts.

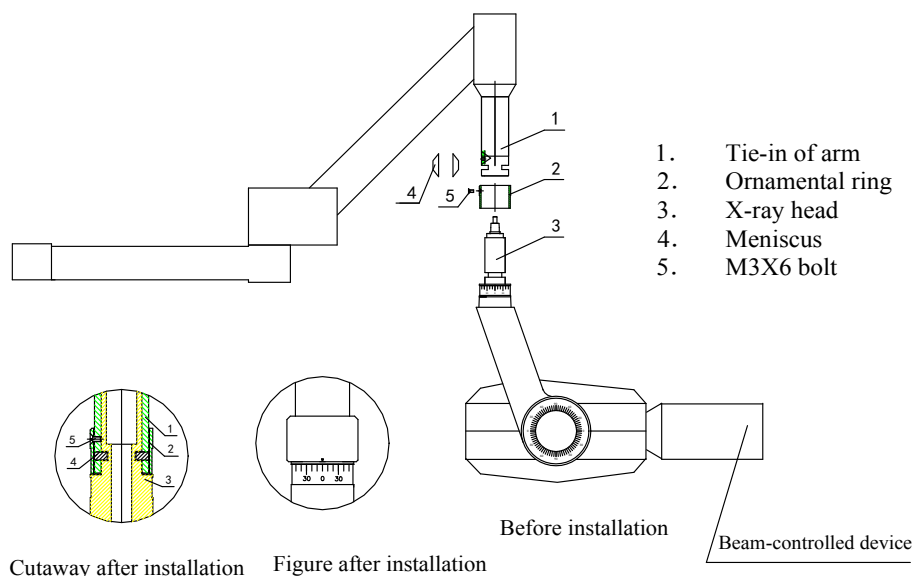
(2) Put the pneumatic lifter on the smaller side of baseplate, fasten the M6 bolts.

(3) Aim the hole of the seat at the pneumatic lifter, then press the seat.



4.2.3 Installation of arm components

- (1) Withdraw fixed bolt about 8mm to make sure the arm shall not be blocked when being putted into stake.
- (2) Put the cable of arm components into the stake according to picture and pull out the plug, then put the arm component into stake.
- (3) Screen on the fixed bolt until it is balance with the face of the stake.
- (4) Make the plug which come out from the stake aim at the socket where is controller and then fasten the fixed screw cap.



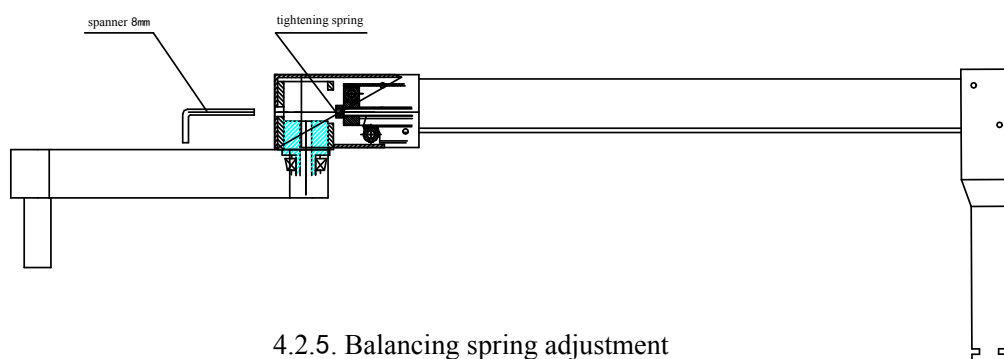
4.2.4

Installation of X-ray head (must be done by two person)

- (1) The one person put ornamental ring (No.2) on the Tie-in of arm (No.1), hold to avoid dropping
- (2) The other one put axis of the X-Ray generator(No.3) into arm component (No.1), make tie-in and tie-tank in order
- (3) The first one put two parts of meniscus(No.4) separately into arm component (No.1) and then put down the ornamental ring(No.2) and make sure the hole of the No.2 aim at the hole of the arm component
- (4) Make connection order and fasten bolt(No.5)
- (5) Screw beam-controlled device
- (6) Connect power cable and timer
- (7) Connect grounding cable, connect green-yellow part of cable to grounding nut of controller; the other end connecting ground. (if there is accident caused by bad grounding, our company shall not be responsible for that)

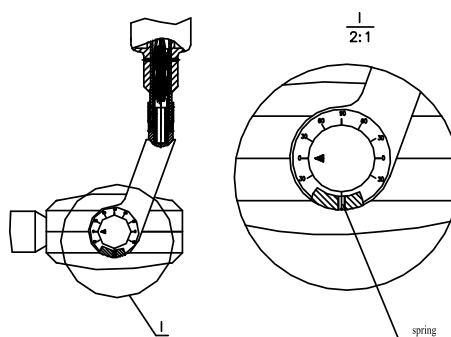


WARNING: 1. DON'T WITHDRAW HAND FROM X-RAY HEAD BEFORE FINISHMENT OF INSTALLATION.
2. GOOD GROUNDING MUST BE ENSURED.



4.2.5. Balancing spring adjustment

When using, if the head can't keep balance, user must adjust balancing spring. When adjusting, keep arm on horizontal level and then use spanner to adjust, the tighter, the more powerful.



4.2.6. Adjustment of X-ray head

The head can turn 270 ° in vertical and self-fixed at any position. If the self-fixed is not good (stopping at one position, but if you undo, it will drop down), please adjust bolts on the two sides. The more tighten, the more friction

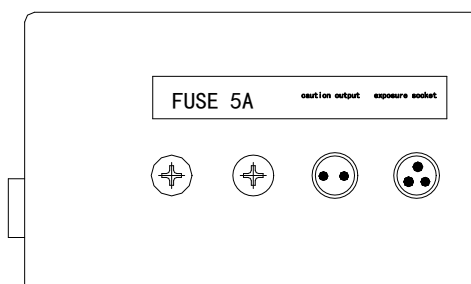
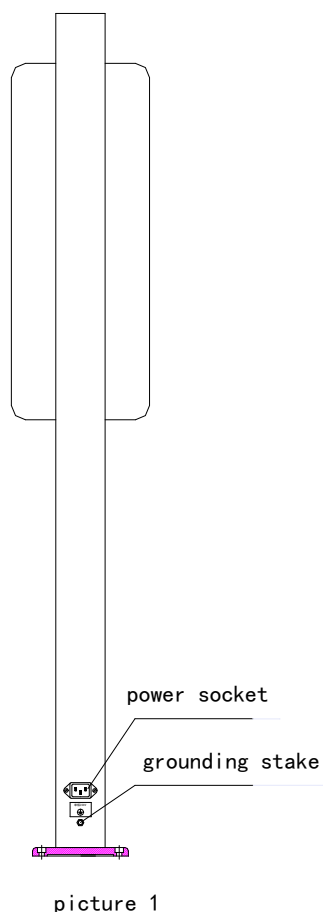


Note: 1. Keep holding the x-ray generator during the installation.

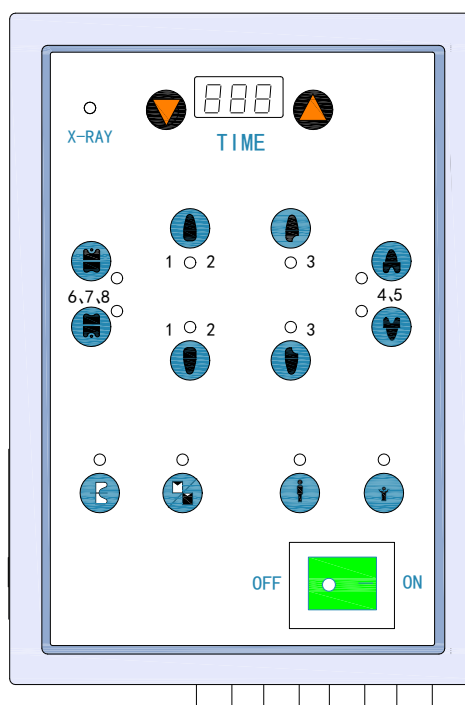
2. The unit must be connected with ground.




Chapter 5. OPERATION METHOD

- 1、 Insert the one end of the powerline into the power socket which lie in the soffit of the stake(as picture 1).
- 2、 insert the one end of the ground wire(with fork)into the grounding stake which lie in the soffit of the stake,then tighten the nut(as picture 1),the other end connect with the connection pole
- 3、 insert the plug of exposure switch into the exposure socket of controller
- 4、 the output is 24V,come to caution light of 24V



picture 2



- 5、 Make sure that voltage is normal and all the plugs and sockets are connected firmly.
- 6、 Turn on the power and the power lamp & LED light.
- 7 、 Press the  button the LED light it means the imaging of the sensor,press it again,to the imaging of the dental.
- 8、 The  button is for an adult and the  button is for a child

9、 Select the number 1-8 for teeth and lighting lamp means selected tooth.



Press the button of exposure switch to expose until the timing is ending. The yellow lamp lights and the buzzer sounds.

NOTE: Please keep pressing the button of exposure switch during the exposure, or the exposure will stop.



Caution: The unit will stop working at once while releasing the button of exposure switch if there is any trouble during the exposure ..

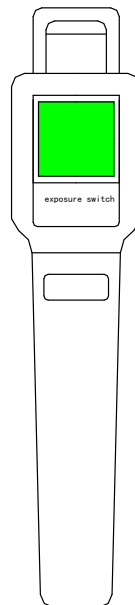
10、  button is for clench.

11、   is for increasing or decreasing time of exposure so as to get a clear photograph.

12、 Please turn off the power if the exposure stops.

13、 Turn off the power

14、 Clean the x-ray controller



Chapter 6 ATTENTIONS

- 6.1. Good grounding before operation.
- 6.2. Check the tripod power plug and the ground wire keeping the good connection with machine body.
- 6.3. Before change fuse you must turn the power off.
- 6.4. The operator must stand by at least two meters behind x-ray tube head when exposing.
- 6.5. Because the heat capacity of small x-ray unit is somewhat limited, it is suggested that operate it with intervals.
- 6.6 As operation accessory to the patient, set protective screen, wear protective uniform.

Chapter 7 MAINTENANCE

- 7.1 The newly-stalled and long-resting machine should warm up before use.
- 7.2 The x-ray generator is easy to drop down after long time use, adjust the balancing spring in the arm component by means of spanner till the generator can stop at any position.
- 7.3 As the unit stops using, push the horizontal arm to the highest position so as to loose the balancing spring in order to prolong the use life of the spring.
- 7.4 The installation and maintenance of the machine should be operated by trained person.
- 7.5 During disassembling the machine every time, first disassemble the unit head, then the other parts.

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Chapter 8 TROUBLE SHOOTING

PROBLEM	JUDGEMENT	SOLUTION
Indicator doesn't light when power on	Check the power supply Check power cable If the core broken Check power switch cable Check if switch broken	Be sure of power supply Change cable Change core Change switch cable Change switch
When press exposure button, it doesn't work	Check diode, buzzer and relay	Change them if broken
Controller and timer work but no X-ray output	Check cable Test tube head	Change when broken
Machine can work but getting bad quality photo	Check the film Wrong exposure time Wrong developing method Low voltage	Make sure the quality of film Take correct exposure time and developing time Use UPS to make sure the voltage 220V

Chapter 9 PACKING LIST

No.	Name	Piece
1	arm component	1
2	stake	1
3	chair	1
4.1	x-ray generator	1
4.2	ornamental ring	1
4.3	meniscus	2
4.4	screw M3 × 6	1
5	central controller	1
6.1	spanner 5mm/8mm	1
6.2	screwdriver	1
6.3	x-ray controller	1
6.4	Al piece 0.5/1.0	1
6.5	fuse 5A	4
7.1	power wire	1
7.2	ground wire	1
7.3	exposure switch	1
8	operation manual and certification	1
9	base	1