

Digital Dental X-ray Machine Model



OPERATION MANUAL



ISO9001:2000

Description of Machine

TR-PHX02 portable high-frequency X-ray machine is the sixth generation of high-frequency oral X-ray machine. Our company has been cooperating with the Chinese Academy of Sciences Institute of Physics, Xi'an Jiaotong University School of Electronics, 618 military and other scientific research units for studying, developing and upgrading to publish TR-PHX02 type. The machine combines the advantages of similar products at home and abroad with shortcomings of the frequency X-ray machine product such as current, garbage and more problems. After comprehensive change, the tube voltage frequency is

30KHz, tube current is 0.1MA. Radiation range is only the front angle of 55.2 degrees, less than 1.2 meters away. This is the first in the country, in the world is also out of the leading position, known as the "green X-ray machine." All components of the product are imported components and to achieve the whole digital control. Performance is more stable and reliable.

The type of small, spiritual is the leading in domestic, the ball part is only 2.2 kg, it is convenient to visit and clinics daily use, storage does not take up extra space.

This product has an emergency stop function in shooting.

Using Toshiba 0.3 micro-focus tube, the image can be more clear and delicate and Accessories are imported components. Due to excellent product quality, devaluation ball tube warranty 5 years commitment.

The machine is randomly equipped with test x-ray film and liquid.

There are vacuum components and high-pressure parts inside the machine, non-professionals prohibit opening so as not to damage the machine and cause personal injury.

In addition to the radiation outside except exposure tube part, the rest of the surrounding parts have been done to protect the shield. Ray detection is 0 and safe to use.

The machine can match the sensor to achieve non-film inspection, storage instead of x-ray film.

Equipment Composition and Main Application

TR-PHX02 high-frequency X-ray machine consists power supply, data center processor and oscillation, amplification and feedback part of the ball has a boost, times the pressure, frequency, tube, vacuum insulation seal, and other components. The shell part is injection molding and seal protection

TR-PHX02 high-frequency X-ray machine is mainly used for dental clinics, check before treatment, in the treatment process, and after treatment to confirm the situation. For the extraction of teeth, would like to know the internal structure of the gums, the depth of the root, the degree of inflammation of the pulp, and even the internal situation of the teeth etc. It is indispensable equipment for the clinic daily work. Due to the small dose and no need lead apron protection, some hospitals buy for shooting of the fingers and feet.

Technical Data

- 1) Power supply: 24V8000MA Charger 2201 / 110V 50Hz
- 2) Tube current: 1MA
- 3) Frequency: 30Hz
- 4) Exposure time: 1-9 seconds continuously adjustable
- 5) Radiation leakage :< 20ugy / h
- 6) Rated power: 60W
- 7) Focal length: > 20cm
- 8) Tube voltage: 60KV
- 9) Relative humidity: <80%
- 10) Ambient temperature: 5-40
- 11) Gross weight: 1.9Kg

Instructions



- 1) Check the appearance of machine after opening carton whether is wresting, planning or traces or not.
- 2) In accordance with the box packing list, check the accessories and complete accessories.
- 3) Turn on the power switch (POWER). At this time the power switch indicator light is on, while the host displays digital preset exposure time. At this point the machine is in standby mode.
- 4) You can reset the desired time by setting the SET, "+" and "-" keys. (If you do not need to re-set, you can directly to the next step) operation is as follows:
 - Press the SET button (SET), the upper indicator light is on, then the machine to set the time state.
- 5) The x-ray film placed to be perpendicular to the teeth to be shot, as close as possible to the teeth (the smooth side of x-ray film connect to teeth)
- 6) The ball head placed towards to the teeth, requiring the ball head, teeth, x-ray film are perpendicular to each other.
- 7) After adjusting the position, press the exposure key (ON / OFF), (Note: press it for 0.5 seconds to release it).
- 8) From the start to before tube exposure, press the start button again to emergency stop shooting work and return to standby. (At this time there is no ray output. x-ray film also can be used as usual).
- 9) If you reset the exposure time, please repeat the sixth step, such as repeat the film, please repeat the seventh step to the ninth step.

- 10) After work Please turn off the power of the main unit and press the POWER button to turn off the power and indicator light closes. Do not leave the machine in standby mode for a long time.
- 11) Usage: Insert the charger into the host charging seat the charger is on. When the indication light is green and the charge is over.
- 12) The power indicator is below 14.8V, it is recommended to charge to ensure the quality of the images.
- ## Film Flushing Method
- 1). After taking the photo of teeth according to the normal operation of the X-ray machine, taking out the film from the mouth.
 - 2). Take 3-5ML from the bottle of film liquid with a syringe.
 - 3). Put film liquid into the film bag, with the thumb and index finger pinch the bag at both ends and both sides repeatedly pinch bending.
 - 4). Rinse the bag into the bag for four minutes, tear the film pocket.
 - 5). Remove the photo into the water rinse (do not use your fingers to wipe the film plane to avoid image loss).
 - 6). Dry photos to observe the diagnosis.

Reference Data of Shooting Angle

Shooting angle control should be appropriate, shooting the front teeth when the film vertical while taking molar teeth, film is placed horizontally. Take the teeth when the nose should be parallel with the ground, photographed teeth should be parallel with the ground. Remind the patient to gently press the tooth to the root of the tooth.

Item	Upper Teeth	Lower Teeth
1-2	42 degree	-15 degree
3	45 degree	-18 degree
4-5	30 degree	-10 degree
6-8	28 degree	-5 degree

Reference Data of Teeth Shooting Time

Item	Adult	Child
Front Teeth	0.8-1.2S	0.8-1.0 S
Canine Teeth	1.2-1.4 S	1.0-1.2 S

Upper Molar Teeth 5. 6	1.6-1.8 S	1.4-1.6 S
Upper Molar Teeth 7. 8	3.0-3.5 S	2.8-3.3 S
Lower molar teeth 5. 6	1.8-2.0 S	1.6-1.8 S
Lower Molar teeth 7. 8	2.0-2.5 S	1.8-2.3 S

Precautions

- 1). The time of shooting the teeth should be correct, the last stage of time to stabilize the time, do not make the three of the mutual position changes.

- 2). Turn off the power after use.
- 3). Turn on for a minute before starting shooting to keep the radiation output stable.
- 4). When the battery power is low, the machine will enter the automatic protection state, this time cannot work normally.
- 5). During the shooting process, press the exposure key, then the machine stops working and returns to the ready state.
- 6). Use randomized film and liquid. Or buy genuine one from manufacturers and regular channels, otherwise it will affect the shooting results.
- 7). Please use it in carefulness to avoid damage the expensive tube.
- 8). If you find the machine cannot work normally and cannot solve the problem, contact the manufacturers or distributors in a timely manner. Do not open the machine by yourself.
- 9). Film and liquid should be kept properly and used in the warranty period.
- 10). The temperature of printing out film should be maintained between 23-25 degrees to ensure the film effect.
- 11). Please use according to the technical parameters.
- 12). Please read the instructions carefully before use.

The exposure setting time is generally between 0.8 and 2.5 seconds, but the real ray output is between 0.2 and 0.5 seconds. The principle of ray output is adopting filament and high-frequency high-pressure at the same time to produce radiation. We design (filament warm-up time is long) is because we have to achieve effect of the small current and less radiation. This time is mainly filament Warm up time.

So what are shortcomings for the short preheating time of filament? Because the filament supplies power in a very short time, and in order to achieve the amount of radiation, it must have high current to shock. It is difficult to stabilize the output when in high current shock, which is negative for the usage life for tube and produce a lot of garbage rays.

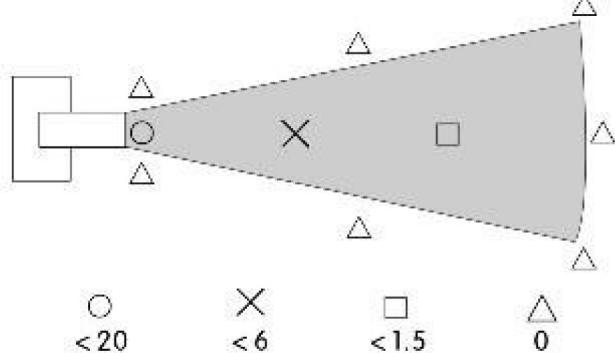
Our high-frequency high-pressure equipment is controlled by the program, The output comes in the final time of filament's preheating in order to achieve a stable amount of radiation, so that reduce the minimum amount of garbage radiation, but also to protect the usage life of the tube.

There is no ray output before 90% time of shooting for our machine, and jitter will not affect the film's quality. During this 90% period, you can also press the exposure start button to achieve the purpose of emergency stop. Emergency stop no radiation output, film can also be used as usual.

Protection of X-ray Machine

X-ray is only a higher frequency of electromagnetic waves, and there is not so terrible in legend. The phones we call today also have radiation. X-ray machine also has radiation. But small high-frequency X-ray machine exposure time is only 0.2-0.5 seconds in dental field. In the following technical parameters we can clearly see my company's product X-ray attenuation range.

The radiation measurement of TR-PHX02 type (ugy / h), cannot be detected out of the range from distance of 1.2 meters and the angle of 22.5 degrees. The rays are also decreasing within the range of radiation. Figure:



The above data uses the state-owned two plants FJ-347A XY meter test "medical X-ray diagnostic health protection standard GBZ-130-2002" and safety dose is 20ugy / h.

It is no need protection for radiation leakage dose of TR-PHX02 high-frequency X-ray machine according to national regulations. And the radiation impact on the human body is only equivalent to 15 minutes of mobile phone call (distance from the ball 60 cm distance).

The amount of radiation can be easily demonstrated by the dental test. It can be put the film and placed dental experiments in accordance with the figure. If the film shows black film, it proves a larger amount of radiation. If it is white transparencies on film, it means no expose to X-rays.

The radiation distance and dose of the frequency machine is far exceeding this range.

So choose a small dose of high-frequency X-ray machine, the doctor and the patient is the best choice.

Fault Handling

Fault Condition	Reasons	Solutions
There is nothing shown on film	circuit failure	Contact with factory or distributors
	Incompatible internal circuit connector	Access to normal voltage supply Sent to sellers or manufacturers to repair
Countdown shows normal but come white film		Sent to sellers or manufacturers to repair
The shooting time cannot be set normally	Control program error	restart
	Set key (SET) fault	Repair
Press the start key does not count down	Indicator light of setting key is on	Turn off device status
The film are blurred	When shooting the position of ball head, the patient, the position is shaking	Correct operation
	The film is too far from the teeth	
	The shooting angle is not correct	

	Exposure time is too short	Reset the exposure time
Film is over white	Film is distance far from teeth. The time of printing film is too short	Increase the washing film time
Film is too dark	Exposure time is too long	Reset the exposure time
	Washing film time is too long	Shorten the washing film time
The machine is normal, the film is blur or	Film quality problems	Replace qualified products
	Quality of washing film liquid	Replace qualified products
	The temperature of the washing liquid is too low	Increase the washing film temperature
Show Normal, Exposure Off		1. Charge up 2. Repair
The boot number shows normal, press the exposure key then no	1. The battery is too low 2. Internal component short circuit	
Usage times cut after charging	1. Not fully charged 2. Charger	

Warranty Terms

We offer 1 year warranty for the machine TR-PHX02 in accordance with the national electronic product warranty. We will repair if normal use failure in the warranty period, our company is responsible for maintenance; charge a certain amount of maintenance and accessories if out of warranty period. Please send the warranty card back to our company or agent for our company record. We offer warranty in accordance with the warranty card, please fill in warranty card of company and send it back.

The following conditions are not covered by the warranty:

- 1) Artificially destroyed, resulting in irreparable.
- 2) Open the machine, study imitation.
- 3) Access to abnormal power supply caused by burning.
- 4) The addition of other functions on the machine lead to the machine cannot be used normally.
- 5) The warranty card is not mailed to the company that caused the company no have warranty file for the machine.

Packing List

- 1) Host: 1 unit
- 2) Charger: 1 pcs
- 3) Washing film liquid: 100 ML
- 4) Film: 5 pcs
- 5) X-ray sensor (optional): 1 set
- 6) 1 copy of the manual
- 7) One warranty card
- 8) 1 certificate

Note: 3), 4) import of Italian film with washing film liquid