

MXR-550 Digital Mammography System

Service Manual

Version Information

The version number of this manual may upgrade at any time because of software or the change of technical specifications, and without prior notice, the version information of this service manual is as follows:

Version NO	Date of Issue	Revise the Reason
1.0	2014.10	Initial version

Intellectual Property

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Suitable Users

This service manual is applicable to responsible for the product maintenance with service engineers, authorized maintenance personnel and after-sales service.

Service Information

Range of free services:

Every product within the range of HEDY Medical warranty service regulations all can enjoy free services.

Charge service scope:

- 1) Whichever is beyond HEDY Medical product warranty service regulations, HEDY Medical service will be charge.
- 2) Even during the warranty period, due to the following reasons products require maintenance: Artificially damaged; Incorrect use of default; Power grid voltage is beyond range of product; Irresistible natural disasters; Change accessories or consumables without permission from the HEDY Medical; Or not authorized personnel by HEDY Medical to maintenance machine.

 WARNING !	If hospitals or institutions responsible for using this instrument can't achieve a satisfactory repair/maintenance plan, it could cause abnormal device failure and endanger personal safety.
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Product Information

Product name: Digital Mammography System

Product type: MXR-550

Power supply: 220VAC 50 Hz 10kVA

Security Type: Class I Type BF

Product performance structure and composition: detector (AXS-2430 or HMD-2430), high-volt generator (Spellman VMX), X-ray tube assembly (C339+XM15 or HMT-113), collimator, gantry, console, generator cabinet, image acquisition workstation and the control box.

Manufacturer: HEDY Medical Device Co., Ltd.

Address: No.286, Science Avenue, Guangzhou High and New Tech

Development Zone, 510663, P. R. China

Tel: +86-20-8307-0896

Fax: +86-20-8307-0817

Mail: service@hedymed.com

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Chapter1 Brief introduction

1.1 Overview

Digital Mammography System (MXR-550) is a breast X-ray radiography equipment, which is development and produce by HEDY Medical Device Co., Ltd. It is mainly composed of high-volt generator, generator cabinet, X-ray tube assembly, collimator, detector, C-arm, console and breast image acquisition workstation, which can be used for the diagnosis of radiography in medical units.

The main characteristics of the system are as follows:

- Consistency and ease of use, meet different location radiography, convenient to handover the radiography mode.
- Has the function of self-protection and patient protection.
- Power on self-test, error indication.

In addition, the system supports the wheelchair model, which can normal operate to the wheelchair patients.

1.2 Brief introduction of the equipment

- Product name: Digital Mammography System.
- Product type: MXR-550.
- Power supply: 220VAC 50 Hz 10kVA
- Security Type: Class I Type BF

1.3 The Range of Application and Contraindications

The range of application: specialized in human breast tissue radiography, access to tissue imaging for clinical diagnosis.

Contraindications: /

1.4 Classification of the Safety

MXR-550 Digital Mammography System has the following safety classification:

- According to the State Food and Drug Administration medical management belongs to the class II medical devices.
- The shock proof type: class I equipment.

- Prevent electric shock: B type application part.
- Prevent harmful liquid level: IPX0.
- Protection under the use of mixed gas with flammable, air, nitrous oxide and oxygen cases: Not in a mixture of flammable gas and air or the use of anesthesia and the mixture of oxygen or Nitrous Oxide.
- Power connected form: non detachable power supply cord.
- Operation mode: intermittent loading continuous operation.
- Recommended disinfection, sterilization method: according to the requirements of the manufacturers to classify.

1.5 Properties of products

1.5.1 High-volt Generator

Parameter	Specifications
Voltage	Range: 20-40kV (step: 0.5kV) Accuracy of kV: $\leq \pm 4\%$
Current	Range: 10mA~160mA, Accuracy of exposure mA: $\leq \pm 5\%$, follow the R'20 number system, consists of the following gears: 10, 11, 12.5, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40, 45, 50, 56, 63, 71, 80, 90, 100, 110, 125, 140, 160
Maximum Output Power	5kW (40kV, 125mA)
nominal electric power	4.8kW (30kV, 160mA, 0.1s)
Nominal X-ray tube current and the corresponding largest X-ray voltage	160 mA, 30kV
Nominal X-ray tube voltage and the corresponding largest X-ray current	40 kV, 125 mA
Nominal exposure time	Range: 0.005s~10s, Accuracy of exposure ms: $\leq (10\% + 1\text{ms})$, follow the R'20 number system, consists of the following gears: 0.005, 0.0056, 0.0063, 0.0071, 0.008, 0.009, 0.01, 0.011, 0.0125, 0.014, 0.016, 0.018, 0.02, 0.022,

	0.025, 0.028, 0.032, 0.036, 0.04, 0.045, 0.05, 0.056, 0.063, 0.071, 0.08, 0.09, 0.1, 0.11, 0.125, 0.14, 0.16, 0.18, 0.2, 0.22, 0.25, 0.28, 0.32, 0.36, 0.40, 0.45, 0.5, 0.56, 0.63, 0.71, 0.8, 0.9, 1, 1.1, 1.25, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5, 5.6, 6.3, 7.1, 8, 9, 10
mAs	Range: 0.5mAs ~ 560mAs, Accuracy of exposure mAs: $\leq \pm 2\%$, follow the R'20 number system, consists of the following gears: 0.5, 0.56, 0.63, 0.71, 0.8, 0.9, 1, 1.1, 1.25, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5, 5.6, 6.3, 7.1, 8, 9, 10, 11, 12.5, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40, 45, 50, 56, 63, 71, 80, 90, 100, 110, 125, 140, 160, 180, 200, 220, 250, 280, 320, 360, 400, 450, 500, 560
Minimum mAs	0.5mAs (50ms, 10mA)
AEC Shortest Irradiation Time	6.3mAs

1.5.2 X-ray Tube Assembly

Type	XM15
Parameter	Specifications
Focal spot nominal value(s)	0.1mm/0.3mm
Max. anode heat storage capacity	225kJ (300kHU)
Max. continuous heat dissipation	500W
Nominal tube voltage	40kV
Anode material	Mo doped
Target angle	15°
Radiation field with housing tilted at 5°	18cm a 50cm
Inherent filtration	0.5 mm Be

Additional filtration	0.03 mm Mo
Anode rotation rate	Low rate: 3000r/min; High rate: 10000r/min
Nominal input power(s) of the anode	small: 1.15kW 2 kW
	large: 4.8kW 9kW

Type	HMT-113
Parameter	Specifications
Focal spot nominal value(s)	0.1mm/0.3mm
Max. continuous heat dissipation	500W
Max. anode heat storage capacity	225kJ (300kHU)
Nominal tube voltage	40kV
Anode material	Mo doped
Inherent filtration	0.5mm Be
Radiation field with housing tilted at 5°	18cm a 50cm
Anode rotation rate	Low rate:3000r/min; High rate:10000r/min
Target angle	16 ° (large focus)
	10 ° (small focus)
Nominal input power(s) of the anode	small: 0.7kW 1.35kW
	large: 2.9kW 4.9kW

Type		C339V
Parameter		Specifications
Leakage radiation load factor		49 kV, 4mA
Additional filtration		0.03mm Mo
Weight		13kg
The rotating anode motor	Voltage	Startup: 220V , operation: 40V (50Hz) ; Startup:440V, operation: 100V (170Hz)
	Current	Startup: 7.1A, operation: 1.3A (50Hz); Startup: 5.7A, operation: 0.9A (170Hz)
	Phase shift	Startup: 3.5A, operation: 0.8A (50Hz); Startup: 8.2A, operation: 1.4A (170Hz)
	General	Startup: 7.8A, operation: 1.5A (50Hz); Startup: 9.2A, operation: 2.1A (170Hz)
	Condenser capacity	25-40 μ F (50Hz); 4.5 μ F (170Hz)
	Maximum speed to start up	2/min (50Hz); 1/min (170Hz)
	Input power	Startup: 1550J, operation: 60W (50Hz) ; Startup: 3250J, operation: 210W (170Hz)

1.5.3 Collimator (HMC-915)

Parameter	Specifications
Power	24V DC, 2A
Radiation field (SID=65cm ($\pm 1\%$ SID), EN 60601-2-54)	Min.: 5cm $\times$ 5cm max.: 24cm $\times$ 30cm
Inherent filtration (x-ray beam=75kV,	The min. is 0.02mmAl (the requirement is 1mm)

EN 60601-1-3 par.7.3;7.4)	
Additional filtration (x-ray beam =75kV, EN 60601-1-3 par.7.5)	0.03mmMo/0.025mmRh
The illuminance in the max. SID (SID=1m, Light Field 35×35cm; EN 60601-2-54)	>160Lux
Timer	Button/automate, 30s timer
Light field indicator	LED
The biggest radiation leakage (70kV,4mA,SID=100cm, EN 60601-1-3)	<40mRh
Light Field switch	Automate
Weight	3.6kg

1.5.4 Detector

Parameter	Configuration 1: AXS-2430	Configuration 2: HMD-2430
Pixel unit	85μm	85μm
Effective imaging range	239.36*304.64mm	239.36*304.64mm
Pixel matrix	2816*3584pixels	2816*3584pixels
Spatial resolution	≥7.0lp/mm	≥7.0lp/mm

1.5.5 Gantry

Parameter	Specifications
Motion range of the C-arm	630mm~1440mm, offset: ±5%
Rotation range of the C-arm	+195 ~-155 °, the division value is 1 °, offset: ±2 °
FID	660mm, offset: ±5%

Motion range of the Compression plate	245mm, offset: $\pm 10\%$
Pressure range	0~300N (manual); 150~200N (automatic)

1.5.6 Image Acquisition Workstation

Parameter	Specifications
Monitor	19inch, resolution 1280×1024, contrast 1000:1
Memory	$\geq 8\text{G}$
Storage	$\geq 320\text{G}$
Operation system	Windows 7

1.5.7 Grid

Parameter	Specifications
grid ratio	5:1
Size	338*264mm
Line Pairs	36L/cm
focal distance	66CM

1.5.8 Environmental requirement

Parameter	Working conditions	Transportation and storage conditions
Relative humidity	30%~75%	20%~85%
Atmospheric pressure	700hPa~1060hPa	700hPa~1060hPa
Temperature	10℃~40℃	5℃~40℃

Chapter2 Installation and Testing

2.1 Room Requirements

2.1.1 Room Space Requirements

- Installation area: $2.6\text{m} \times 2.5\text{m}$.
- Operation room area: $1.5\text{ m} \times 2.5\text{m}$.
- Room height: $\geq 2.5\text{m}$.
- The door height: $\geq 2.0\text{m}$.
- The door width: $\geq 1.0\text{m}$.

2.1.2 Room Floor Requirements

- 1) The floor should be smooth cement floor or tile floor, must be stable and flat, and concrete thickness 150 mm or more.
- 2) The room should install air conditioners and dehumidification equipment in advance, completes the moisture-proof, waterproof, rat-proof measure and equipped with appropriate lighting and power socket.

2.1.3 Room Environmental Requirements

- 1) Environment temperature: $10^{\circ}\text{C} \sim 40^{\circ}\text{C}$;
- 2) Relative humidity: $30\% \sim 75\%$;
- 3) Barometric pressure: $700 \sim 1060\text{hPa}$.

2.1.4 Power Condition

Hospital network power supply needs to meet the conditions:

- 1) Voltage: Single phase AC220V;
- 2) Mains frequency: 50 Hz;
- 3) Source resistance: $\leq 0.5\ \Omega$;
- 4) The instantaneous power input: $\geq 10\text{kVA}$;

- 5) Current release characteristic: 220VAC, 50A.

NOTE !	If the network power supply of the room is not stability enough, higher than the rated voltage or low voltage condition need to configure the regulated power supply. If often blackout, need to configure the UPS power supply. The output of UPS power supply need to meet with the power requirements of machine, the rated power output suggest 30% larger than the machine rated power input.
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2.1.5 Protection Requirements

The protection requirements of the room need to meet the national radiological protection standards, recommended the following protective measures:

- 1) Examination room brick wall is 370 mm thick (equal to 2 mm lead equivalent), concrete wall thickness should be in above of 200 mm.
- 2) The lead glass between exam room and operator room thickness > 1.5 mm lead equivalent, vision acuity 0.25 m^2 , the height glass center distance: 1200 mm.
- 3) Ceiling of 1.0 mm lead equivalent.
- 4) Exam room of ground floor, for protective treatment of the ceiling of the examination room with 2 mm lead equivalent protection. To the second floor above, just for ground protection processing, with 2 mm lead equivalent protection.
- 5) When the exam room is on the first floor (regardless of bungalow or buildings), the external windows should be adopted 1.0 mm lead equivalent of lead glass or covered by 240mm brick wall.

2.1.6 Wiring

There have line hole between exam room and operator room. If it is the ground hole, the wall of exam room must have 500 mm long, 100 mm wide, 50 mm high board holes, with 2 mm lead leather cover surface.

2.1.7 Radiation Hazard Warning Sign

Outside the exam room must have marked the radiation hazard warning signs and lights. When the indicator lights up, close the room door, and others without permission shall not enter.

2.2 Installation Preparation

2.2.1 Unpacking and Unloading

1. Notes
 - 1) Ensure the transit of packing-case from the car to install room, have not steps and large slope.
 - 2) Due to the equipment frame, need to trailer handling.
 - 3) Be careful and steadily to transfer the detector, avoid damage to the detector by jounce.
 - 4) Please according to the installation's order transfer the packing-case, if the space of installation room is small.
 - 5) There needs at least two skilled workers in the whole process of transport.
2. Before spilt open a case, make sure the total number of cases and check the boxes for damage phenomenon, if found to have damaged phenomenon, immediately notify the carrier or agent.

2.2.2 Installation Tools

No.	Name	No.	Name
1	socket wrench(21 sets)	9	monkey wrench
2	Allen wrench(9 sets)	10	flathead screwdriver
3	Phillips screwdriver	11	multimeter
4	diagonal cutting pliers	12	nipper pliers
5	percussion drilling	13	gradienter
6	oil pen	14	plumb bob
7	flexible rule	15	cable ties
8	gerny	16	cutter knife

2.3 Installation Instructions

2.3.1 Installation Process

Install the gantry→ install the platform of radiography→ install the X-ray source component→ install the generator cabinet →install image acquisition workstation.

2.3.2 Installation Steps

1. Install the gantry

Install the gantry to the specified location, aim at the playing mounting hole in advance, fixed the gantry on the ground with supplied screw.

 WARNING!	The installation staff must be careful when transfer the equipment, avoid injuring or crushed or cause equipment damage.
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2. Install the platform of radiography (detector and grid)

- 1) Adjust the C-arm to proper position for ease of detector installation.
- 2) Install the cooling fan in the detector support platform, pay attention to the direction of the installation of the cooling fan.
- 3) Place the detector on the supporting platform, adjust to the proper location, fixed the detector on the platform with supplied screw.
- 4) Install detector protection on both sides of supporting platform to prevent the friction between the detector and grid.
- 5) Connect the power cord, signal lines, cable to the detector and settle the circuit. Install grid in the grid bracket, check the movement of grid after connected to power supply.
- 6) After the installation, put the shell outside-in into the radiography platform, buckle with the shell of C-arm.

3. Install the X-ray source component

- 1) Connect the power cord between the generator cabinet and the gantry. Press the height adjustment knob to make the C-arm has a proper location for ease of the X-ray source component installation.
- 2) Take out the tube and collimator from the packing-case; Then remove the flange on the collimator and install it on the outlet window of tube, fixed it with supplied screw.
- 3) Place the tube on the tube mounting plate, make the outlet window of tube straight down, pay attention to the corresponding mounting holes and fixed the tube with supplied screw.

- 4) The connection between collimator and tube can refer to below:

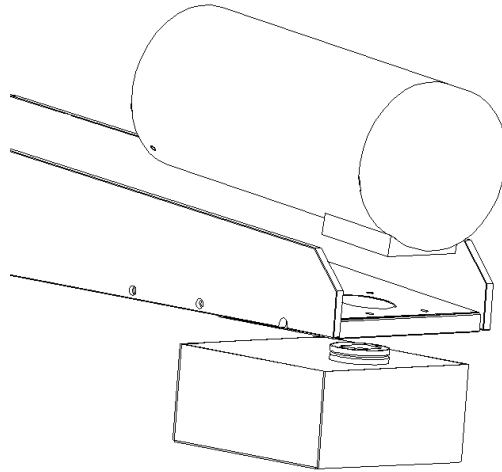


Figure 2-1

- 5) Connect the tube high voltage cables and the stator filament connector.
- 6) Cover the X-ray tube assembly with the outer cover.
4. Install the generator cabinet (contain high-volt generator)
 - 1) Transport the generator cabinet and high-volt generator to the designated location, tear down the packing cases.
 - 2) Rotating anode connection: the tube rotating anode connected to the TB2 terminal of high-volt generator.
 - 3) High voltage cable connection: clean up the high-voltage pothead with absolute alcohol or 95% alcohol, coated with high voltage silicon grease. Then inserted one end of high-voltage cable into the high pressure slot of high-volt generator and lock, and the other end insert high pressure slot of tube and lock.
 - 4) High-volt generator network power supply connection:
 - Net power input interface: TB1-1 (This system uses single-phase 220 v ac power supply as the main power supply).
 - Ground wires: TB1-1.
 - Single-phase ac wire: TB1-2, TB1-3.
- 5) Connect the power supply cord and signal line between the generator cabinet and the equipment, finally connect the room power supply.

NOTE!	The high-volt generator box should not tilt more than 20 ° above in the process of transport.
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WARNING!

The generator can provide enough power even to destroy the tube, so the users should limit the maximum exposure to X-ray tube within the range of rating. Manufacturer does not assume any due to incorrect use of the generator of the responsibility for the damage to the X-ray tube.

NOTE!

Before connection, be sure that the switch of Network power supply is broken.

5. Install image acquisition workstation
- 1) Take the computer host, display screen, mouse, keyboard out of the packing;
- 2) Connect the mouse and keyboard to the corresponding interface on the host back;
- 3) Connect the host to the network interface of hospital with cable;
- 4) Connect the video display wires to the back of the host;
- 5) Connect the monitor power cord to the power supply.

2.4 Testing Instructions

2.4.1 Machine Testing

In the machine testing process, must strictly carry out the following requirements:

1. It's not allowed to put sundries in any part of the equipment. If you need to set test instrument, you should put protective film on the parts and the detector is not allowed to set test instrument directly.
2. Before starting, first to verify the correctness of the connection position throughout; when the equipment running, ensure the movement within the scope of barrier-free.\
3. During the exposure, irrelevant person shall not stay in the exam room, and the door of it must be closed.
4. Open the detector power supply before ten minutes of the test; the system will cut off the power supply during disassembly.
5. Don't allow install other software on the host workstation, does not allow for has nothing to do with the production of other actions.

NOTE!

1. Before leaving the factory, the equipment has made the machine testing by the professional person (including mechanical movement and imaging chain characteristics of testing), the user need not again for

	equipment testing. 2. The installation and testing of the equipment must be handled by the authorized professionals.
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2.4.2 Trial Operation

End of testing, exposure by using test card or body model as test objects, to judge whether the machine is normal.

Chapter3 Planned Maintenance

This chapter describes planned maintenance procedures which must be performed regularly to maintain safe and effective operation of the equipment.

Maintenance has two aspects, one is routine maintenance by the user or operator, and the other is professional maintenance by an authorized service personnel.

3.1 Routine Maintenance

3.1.1 The Whole Machine Maintenance

Be sure to do the following user's routine maintenance:

- 1) Ensure the room is clean, dry and ventilation, avoid high temperature and direct sunlight.
- 2) Wipe all the moving parts of slide surface frequently to avoid dust and inclusions.
- 3) Check the risk warnings and labels are all in good condition.
- 4) Check whether the shell, buttons and handle can be operated normally, whether there are any damages, and any missing parts.
- 5) Check whether there is abnormal sound when the X-ray generator components exposure.
- 6) Check whether there is any wear, corrosion or oil shortage on the bearing, the user can coated with new lubricating oil when necessary.
- 7) Check to make sure all wires are fixed, there is no loss or damage.
- 8) Check to ensure that the system can run smoothly when all the moving parts are within the scope of moderate exercise.
- 9) Ensure the equipment's power supply, pay attention to understand power supply situation, measure and adjust the power supply.
- 10) Check whether the whole machine and each section's grounding protection is good.
- 11) Check for error logs in the Window, remove the log files after the analysis is completed.
- 12) Run the Windows defragmenter when pieces of authentication system are more than 5%.
- 13) Check the old image's storage directory (make a list and before removal the list, confirm whether the user still need to use and whether it has been filed).
- 14) Make the system setting's archive file on a floppy disk.
- 15) Cleaning/Disinfection

 CAUTION!	Except cleaning some patients commonly used components in checking process, power off and unplug the system before cleaning/disinfection the equipment.
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The commonly used components are as follows: Compression plate, breast radiography platform or Magnification table, patients handle and mask type shield.

● Cleaning

Before each inspection, clean and sterilize the components those are applicable and close to the patient. Such as clean the compression plate, the steps are as follows:

1. Shift out the three-dimensional compression plate.
2. Use a damp cloth or pads to clean parts, wet gauze with water or lukewarm household detergent solution.
3. After cleaning, install the three-dimensional compression plate.

NOTE !	Don't clean the system with abrasive, organic solvent cleaner (probably the cleaner has chemical reaction on the metal) and the solubility of the detergent cleaner (e.g., gasoline and stain remover, etc.).
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 CAUTION !	Don't splash equipment! Don't let cleaner into the equipment.
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● Disinfection

We recommend that the surface disinfection using isopropyl alcohol, due to phenol and its composites disinfectant can decompose chlorine, and has certain corrosion effect, therefore is generally not recommended.

Disinfection spray is not recommended according to general principle, because spray mist may seep into the system, this means that the system security can no longer guarantee (break circuit, and formation of combustible air water vapor mixture).

 WARNING !	As is known to all, some components of disinfectant are harmful to health, the disinfectant concentration in air shall not exceed the legal value, and we recommend using a strict control of manufacturer's products.
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3.1.2 Tube Maintenance

Periodical inspection:

- Whether the insulating oil of the tube components leakage or not.
- Whether the function of the temperature control switch is normal or not.
- High voltage line connection parts: line plug clamps are loose or not; the condition of the insulation silicon grease leakage and the coating.
- Whether there is abnormal noise or vibration when the X ray tube anode turns.

3.1.3 Professional Maintenance

The mechanical structure and electrical components inside the equipment need to be maintained by our authorized medical professionals.

We suggest that the system maintained after install and operate over a period of time (1 month to three months). After that, according to the system's running state, maintain every 12 months.

If the patients is up to 50 everyday, shorten the maintain time to every 6 months.

3.2 Common Problems and Solutions

We provide common problems and solutions in the table below. The user can refer to the table to troubleshoot problems, or contact our medical professionals when you cannot identify the cause or unable to solve the failure.

Don't disassemble the equipment, in order to avoid wrong operation and cause damage.

No.	Problems	Solutions
1	Cannot check into the inspection interface when start DR console.	Check that the detector and the high-volt generator's power supply is on.
2	Image processing software shut down automatically after start for a while.	Ensure the dongle plugged correctly.
3	Image cannot be saved.	Check whether the storage path is changed or the hard disk space is full.
4	Image center blurring.	Ensure the warmed up time is 10 minutes enough.
5	Image noise.	Ensure the detector's cooling fan is normal.
6	Images appear more horizontal lines.	Ensure the detector's temperature is up to the temperature set.

If the device needs to be repaired or calibrated again, or it appears any other abnormal conditions during use, please cut off the power supply and contact our service personnel, describe the problem or failure in detail, the service personnel will provide door-to-door service in time.

Chapter4 Replacement of spare parts

4.1 Replace the collimator's light

The steps are as follows:

- 1) Power off and remove the shell of the collimator.
- 2) Move away the protect radiator of the light field indicator.
- 3) Disconnect the two power cords of the indicator.
- 4) Unscrew two fixed screws, remove the damaged indicator.
- 5) Replaced with the indicator of the same specifications, ensure the surface is clean.
- 6) Tighten the two retaining screws, connect the two power cord.
- 7) Check whether the indicate region and X-ray region is corresponding.

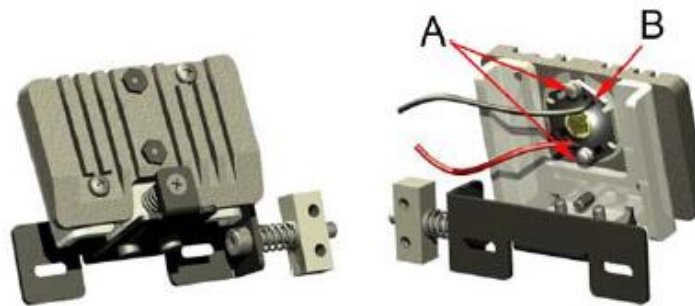


Figure 4-1



WARNING !

Make sure the power switch is turned off, and the external power supply cord is pulled out when maintain and replace the spare parts.



WARNING !

Before open the shell to repair and replacement the spare parts, wait for a few minutes until the high-volt generator's capacitor complete discharged, to avoid shock hazard caused by the capacitance of the residual voltage.

NOTE !	In order to ensure the system's performance and the safety of operation, the replace parts must be of the same specifications as the original.
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4.2 Maintenance Spare Parts List

No.	Material name	Specification and type
1	High voltage cable	M1, CA3, CA3, 10M
2	Power switch	400V/32A
3	Transformer	AC220 1200VA
4	Fuse	250V/30A、250V/10A
5	Fuse base	600VAC/DC,30A
6	Switching power supply (a)	INPUT:100-240VAC, 1.3A OUTPUT: V1 +5V, 6.0A; V2 +12V, 2.0A
7	Switching power supply (b)	INPUT:88-264VAC, 1.8A OUTPUT: V1 +24V, 10.0A
8	AC motor	0.37kW
9	Servo motor (a)	Rated power: 0.4kW Rated torque: 1.27N-m Rated speed: 3000 Rated current: 2.6A
10	Servo motor (b)	Rated power: 0.5kW Rated torque: 2.39N-m Rated speed: 2000 Rated current: 2.9A
11	Stepper motor(a)	Phase number: 2 Step angle: 1.8 °

		Holding torque: 0.14NM Rated phase current : 0.95A
12	Stepper motor(b)	Phase number: 2 Step angle: 1.8 ° Rated voltage: 2.7V Rated phase current: 1.5A
13	Stepper motor(c)	57 planetary reduction stepper motor Reduction ratio: I=25 Efficiency: 90 Rated load: 25NM
14	Solid-state relay(a)	LOAD:24~220VAC 40A INPUT:5-24VDC
15	Solid-state relay(b)	LOAD:5-200VDC, 10A INPUT:5-24VDC
16	Wiring row	600V/30A
17	High-voltage generator	5KW
18	X-ray tube components(a)	300KHU
19	X-ray tube components(b)	300KHU
20	Detector(a)	24*30CM
21	Detector(b)	24*30CM
23	AC contactor	12V/32A