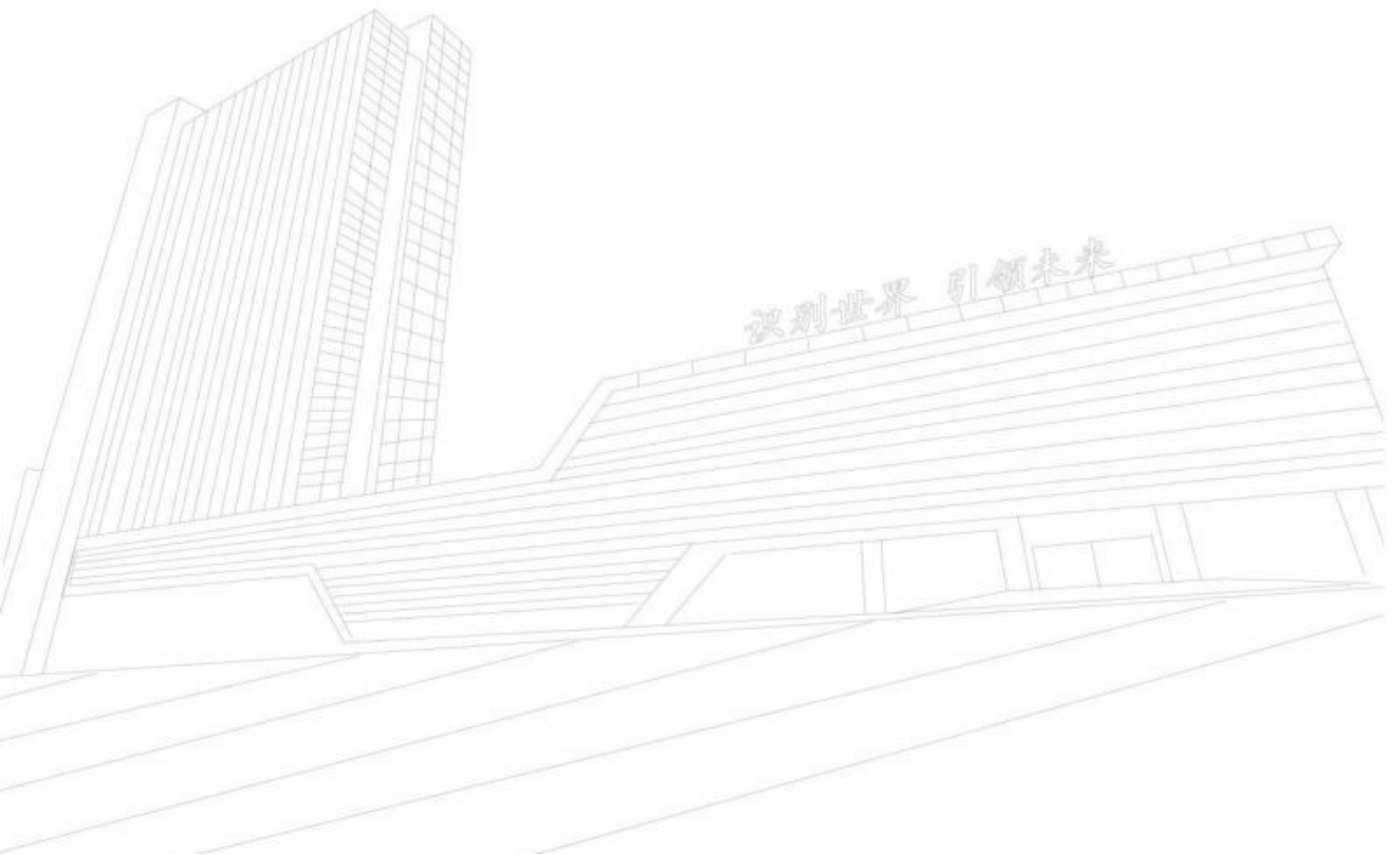


# Maintenance Manual

## CBCT SS-X9010DPro Series



Hefei Meyer Optoelectronic Technology Inc.

# **CBCT SS-X9010DPro Series Maintenance Manual**


Date: June 25, 2024


---


**Contents**

1. CBCT Overall Structure Diagram .....	4
2. Service Preparations .....	5
2.1. Installation Tools.....	5
2.2. Calibration Tools .....	6
2.3. Calibration Software.....	7
2.4. Preparation of Spare Parts .....	8
3. On-site Inspection .....	9
3.1. Inspection of Working Conditions .....	9
3.1.1. Lead Room .....	9
3.1.2. CBCT Status .....	9
3.1.3. IPC Status .....	10
3.2. Inspection of Image Qualities.....	11
3.2.1. Inspection of CT and Part CT Mode Imaging.....	11
3.2.2. Inspection of Pano Mode Imaging.....	12
3.2.3. Inspection of Ceph Mode Imaging .....	12

The following signal words are used in this manual:

 **Warning!** Failure to strictly observe this warning may result in serious injuries.

 **Notice!** Failure to strictly observe this caution may result in slight injuries.

 **Prompt!** Failure to strictly observe this reminder may adversely affect the performance or use of the equipment, but will not result in any personal damage.

## 1. CBCT Overall Structure Diagram









Description:

Label	Name
1	Cantilever
2	Ceph arm
3	Rotary arm
4	X-ray tube assembly
5	Main sensor
6	Ceph sensor
7	Test bench
8	Column
9	Workstation

## 2. Service Preparations

### 2.1. Installation Tools

Service engineers should be advised to prepack the following installation tools when conducting CBCT services according to our guidelines.

Line No.	Name	Sample Image	Use
1.1	Multimeter		To measure power supply or circuit stability
1.2	Diagonal cutting plier		To cut cable ties
1.3	Allen keys		To remove or install various sizes of Allen head screws.
1.4	Phillips screwdrivers, a small one + a big one		To remove or install Phillips head screws
1.5	6" monkey wrench		To remove fixing nuts of the packing box
1.6	Cable ties		To organize and secure cables


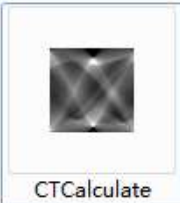




## 2.2. Calibration Tools

Service engineers should be advised to prepack the following calibration tools when conducting CBCT services according to our guidelines.

Line No.	Name	Actual Image	Use
2.1	Roundness calibration phantom		To calibrate the U value of CT mode
2.2	Panoramic calibration phantom		To calibrate panoramic entry angle and position
2.3	Dental arch phantom		To calibrate the panoramic track
2.4	Holder plate		To hold a calibration phantom

### 2.3. Calibration Software

The calibration software and files are listed in the following table:

Line No.	Name	Software Picture	Use
3.1	CopTools		To calibrate the motor parameters, defective pixel correction, bright level correction, loading of raw data
3.2	CTCalculate		CT roundness calibration
3.3	SendOrbit		To send panoramic track files
3.4	MyViewer		To connect to the touch screen of the unit
3.5	Orbit files	 15x9 full orbit  15x9 half orbit	Files for panoramic track calibration

## 2.4. Preparation of Spare Parts

We recommend some common spare parts to be prepacked by the service engineer, as summarized in the table below.

<b>Line No.</b>	<b>Name</b>	<b>Part No.</b>
1	Communication cable	5500372202
2	X-ray generator flat cable	5550005800
3	CT sensor power board	5502382901
4	Remote control board	5502363202
5	Network cable 2	3500325301
6	Optoelectronic switch – sita (672)	3401002901
7	Optoelectronic switch – other (674)	3401003001
8	Network cable 1	3500326800
9	CT power converter board	5502382801
10	Switch power supply (cus200M-24)	3405311400

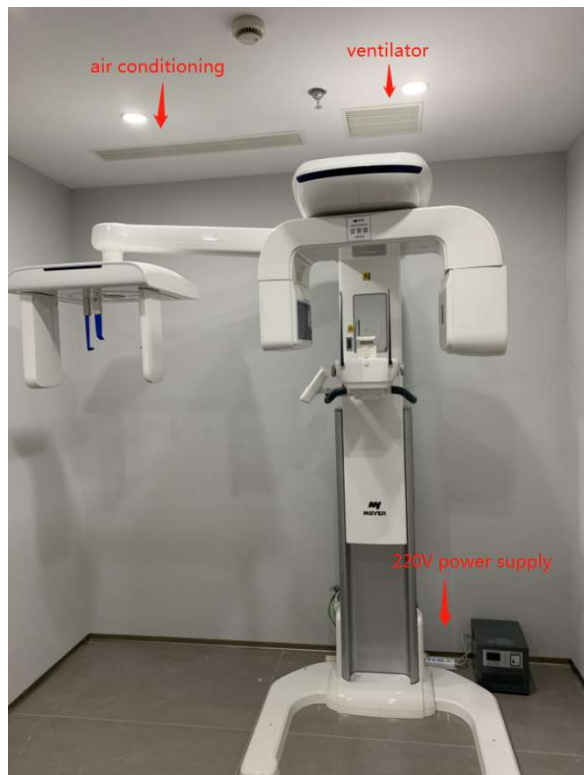
### 3. On-site Inspection

#### 3.1. Inspection of Working Conditions

##### 3.1.1. Lead Room

Inspect the following conditions of the lead room where the equipment is installed:

- a. Power supply – Confirm the supply voltage or the voltage regulator output is  $220\text{V}\pm 10\%$ ;
- b. Temperature – Confirm there is an independent air conditioning unit;
- c. Humidity – Confirm there is a dehumidifier in humid areas;
- d. Dust – Confirm there is no flying dust on site;
- e. In addition, confirm that the cables of the CBCT and IPC are neatly arranged and all IPC connectors are secure.



##### 3.1.2. CBCT Status

Inspect the following conditions of the equipment.

- a. Column lifting – Check for proper column lifting in both up and down directions despite the lifting speed. Enter the engineer mode from the upper left corner of the screen with access code my2012, and confirm that both upper and lower optoelectronic sensor switches are active.
- b. Touch control panel – Confirm touch sensitivity, proper function and display; verify the dose settings of each capture mode according to the table below.

Current and Voltage Settings			
Capture Mode	Type of Patient	DPro/P3/P4/P5/P6	
		Recommended Dose	
CT/Partial CT	Child: male/female	85 kV	7 mA
	Adult: male/female	90 kV	8 mA
	Elderly: male/female	90 kV	8 mA
Pano/TMJ	Child: male/female	75 kV	8 mA
	Adult: male/female	90 kV	10 mA
	Elderly: male/female	90 kV	10 mA
Ceph	Child: male/female	85 kV	10 mA
	Adult: male/female	90 kV	10 mA
	Elderly: male/female	90 kV	10 mA

c. Testing of each capture mode – Make one scan with the minimum tube voltage and current under each mode, and confirm all images are normal.

**△ Prompt!** Remember to adjust settings back to standard after the test.

### 3.1.3. IPC Status

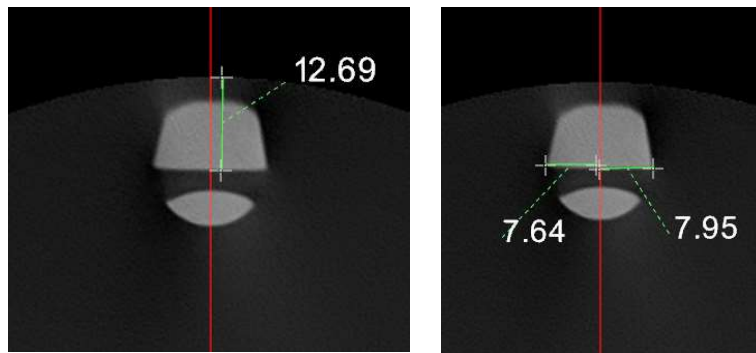
Inspect the following conditions of IPC.

- a. Confirm the IPC runs smoothly.
- b. The software works properly.
- c. The system settings are correct.
- d. Check the IPC for non-authorized third-party software, etc.

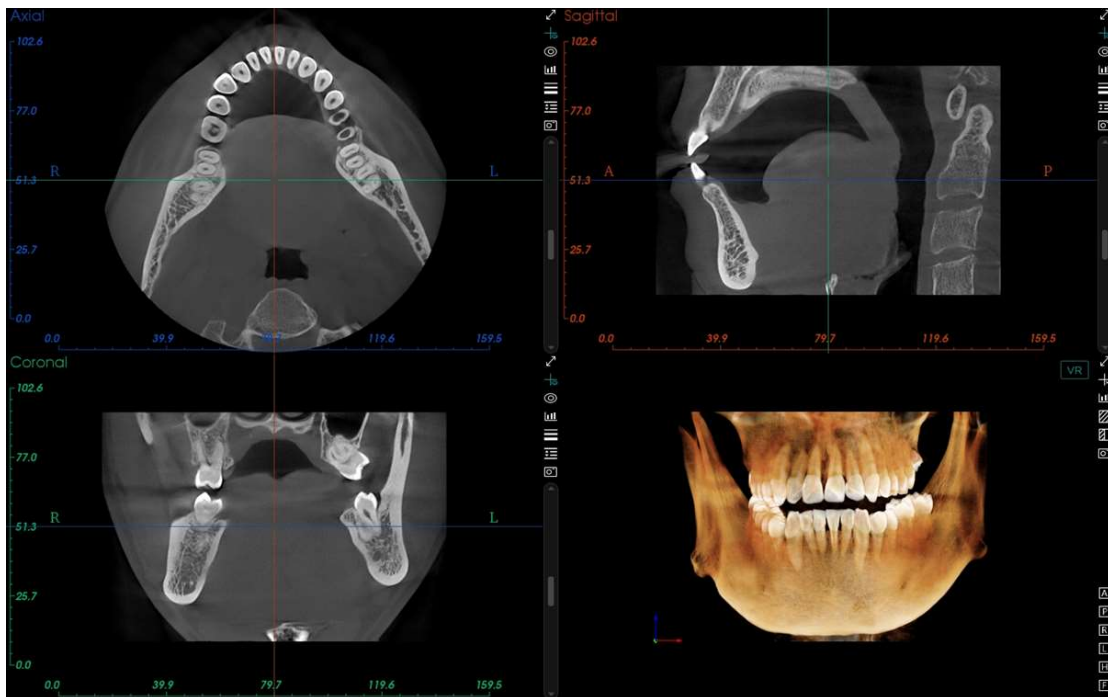
## 3.2. Inspection of Image Qualities

### 3.2.1. Inspection of CT and Part CT Mode Imaging

a. Capture a blank CT image at 60 kV/2 mA dose. Measure the occlusal distance as shown in the left picture below to be  $12.5 \text{ mm} \pm 1 \text{ mm}$ . Measure the occlusal lengths on both sides of the red line as shown in the right picture below and the values should be equal.



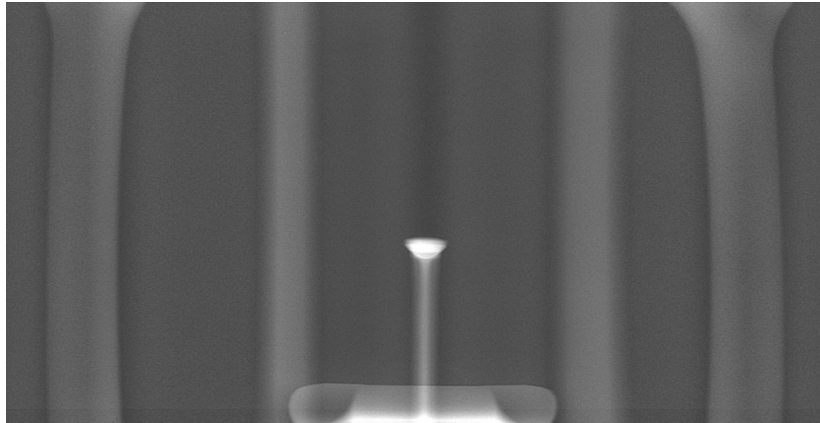
- b. Check the image for dead pixels or defective lines.
- c. Check the roundness according to the requirements outlined in the installation manual.
- d. Open any patient image which should demonstrate a centered axial plane without obvious artifacts, appropriate height of chin rest and no movement of the patient.



e. For part CT patient image, it is required that the axial plane shows no obvious artifacts and the field of view (FOV) is properly positioned.

### 3.2.2. Inspection of Pano Mode Imaging

a. Capture a blank panoramic image at 60 kV/2 mA dose. Confirm that the image has no dead pixels or defective lines, the occlusal plane is centered and horizontal, and that the temple supports are basically equal in distance from the corresponding edge.

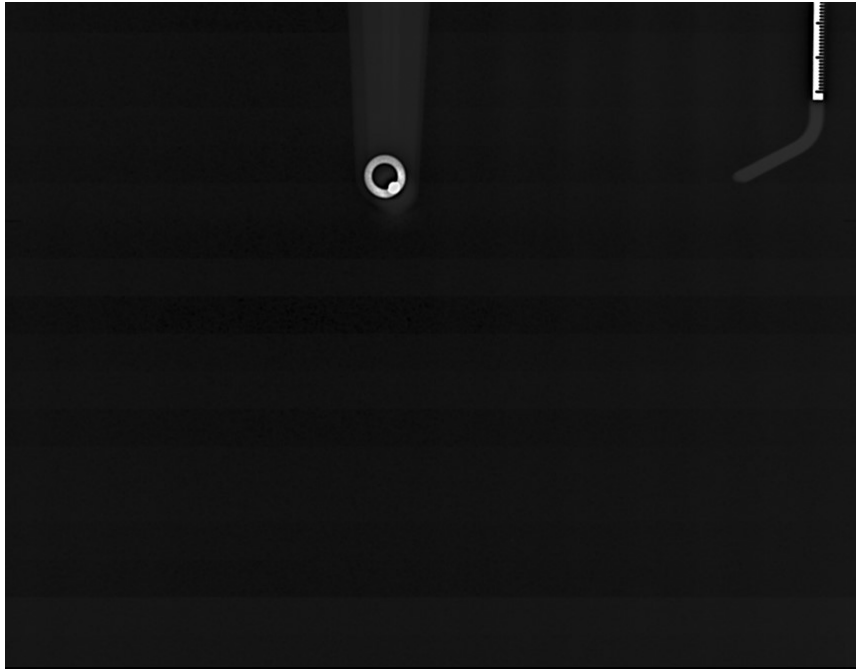


b. Check patient image to confirm there is no patient positioning errors such as incorrect height of chin rest, turning of head, tilted head, inappropriate occlusion, etc. Inform the customer of such errors, if any.



### 3.2.3. Inspection of Ceph Mode Imaging

a. Capture a blank image at 60 kV/2 mA dose. The image should be free of obstructions with no dead pixels or defective lines.



b. Check patient images to meet the following qualifications:

- i. No obstructions of the FOV;
- ii. The steel ball sits inside the steel ring;
- iii. Overall clear image without obvious defects;
- iv. The nasal support scale is visible and requires no vertical adjustment;

