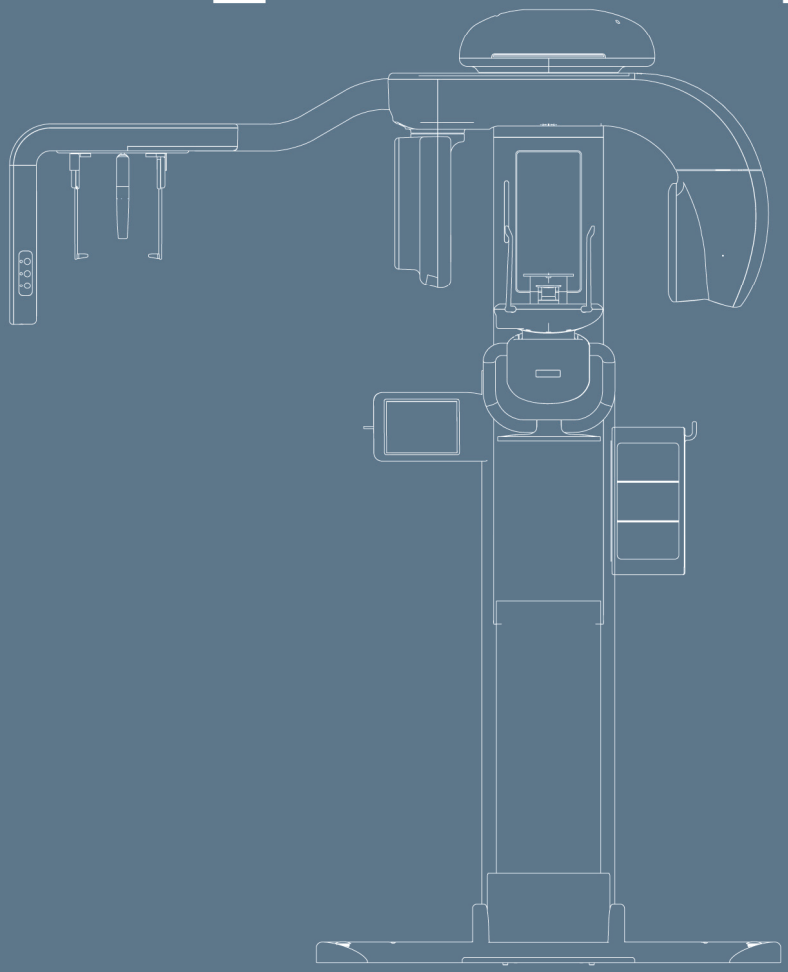
World's No.1 Dental Digital Radiography

Release Version 1.0.0
Dated 6th May 2009

PaX-Reve3D
Installation Manual

Combined Panoramic, Cephalometric
and CT imaging solution
for dental professionals



Contents

Attention

E-WOO reserves the right to change the contents of this manual if necessary for performance improvement or information complement without notification.

Regarding the contents of this manual, E-WOO cannot assume liability of safe and reliable operation caused by User's mistakes; therefore User must read this manual very carefully before using the system. The details of the system might be different from this manual according to the model.

Conventions in this manual

The following symbols will be used throughout this manual for the users to keep better comprehension of their meaning. Make sure that you fully understand them and obey the instructions they contain.

Symbol	Message	meaning
	Note	This symbol indicates a *note* to help you get the best performances from the system. Carefully read these notes to bring about the best performance possible.
	Warning	This symbol indicates a *warning* that should be obeyed with extreme cares. When missed, it may cause severe damages or physical injuries.
	X-Ray	This radiation symbol warns you about radiation dangers.
	Important	This indicates a compulsory action or instruction. Contains important instructions. If not observed, there might be malfunction of the system or damage to the system or other problems may occur.

Caution for System Installation

1. To maintain the safety, the installer must read and follow this manual carefully.
2. The installer must confirm the system is installed as described in this manual and perform the appropriate procedures therein.
3. Only a E-WOO technician or a qualified technical expert can install the system.
4. Applying pressure or spraying liquid on the system can cause fire and electrical accident.
5. Do NOT install the system in an environment exposed to volatile gas or vapor.
6. For a stable power supply avoid using the system simultaneously with other system of high electrical capacity, and make sure to ground the system.
7. If there is any doubt on operation or condition, do NOT install the system until a E-WOO customer support team confirms the reliability.

Guidelines for Protection against Radiation

The X-ray system may cause injury to the patients if used improperly. The instructions contained in this manual must be read and followed when operating PaX-Reve3D. The world standard regulations pertaining to radiation safety must be observed.

When exposing X-ray, User must be behind the protective wall, or take other protective actions. When a breakdowns or troubles appear, User keeps at least 2m (7feet) away from the X-ray system to release the exposure switch while observing patient and capture-progress.

User must provide the protective clothes to the patient. Before capturing, pregnant women must always consult with doctors.

X-ray room requirement for system installation

Recommended Minimum Space

- PaX-Reve3D 2000(W) * 2500(D) * 2500(H) mm

  - Above space is considered for the movement of both system operator and patient.
  - The system is normally installed beside a wall, and operator uses the system on left.

Width of Door

- The width of door is more than 800mm for system movement into X-ray room.

Ground

- The condition of ground should be balanced for system balance.
- Ground should support a min. 500KG of weight.

Power Supply

- For system stability please guarantee 3KW power supply.

Protection against radiation

- For protection against radiation follow the government or local standards.

Safety Zone

- Check the safety zone.

Chapter 1. Introduction

1.1. System features

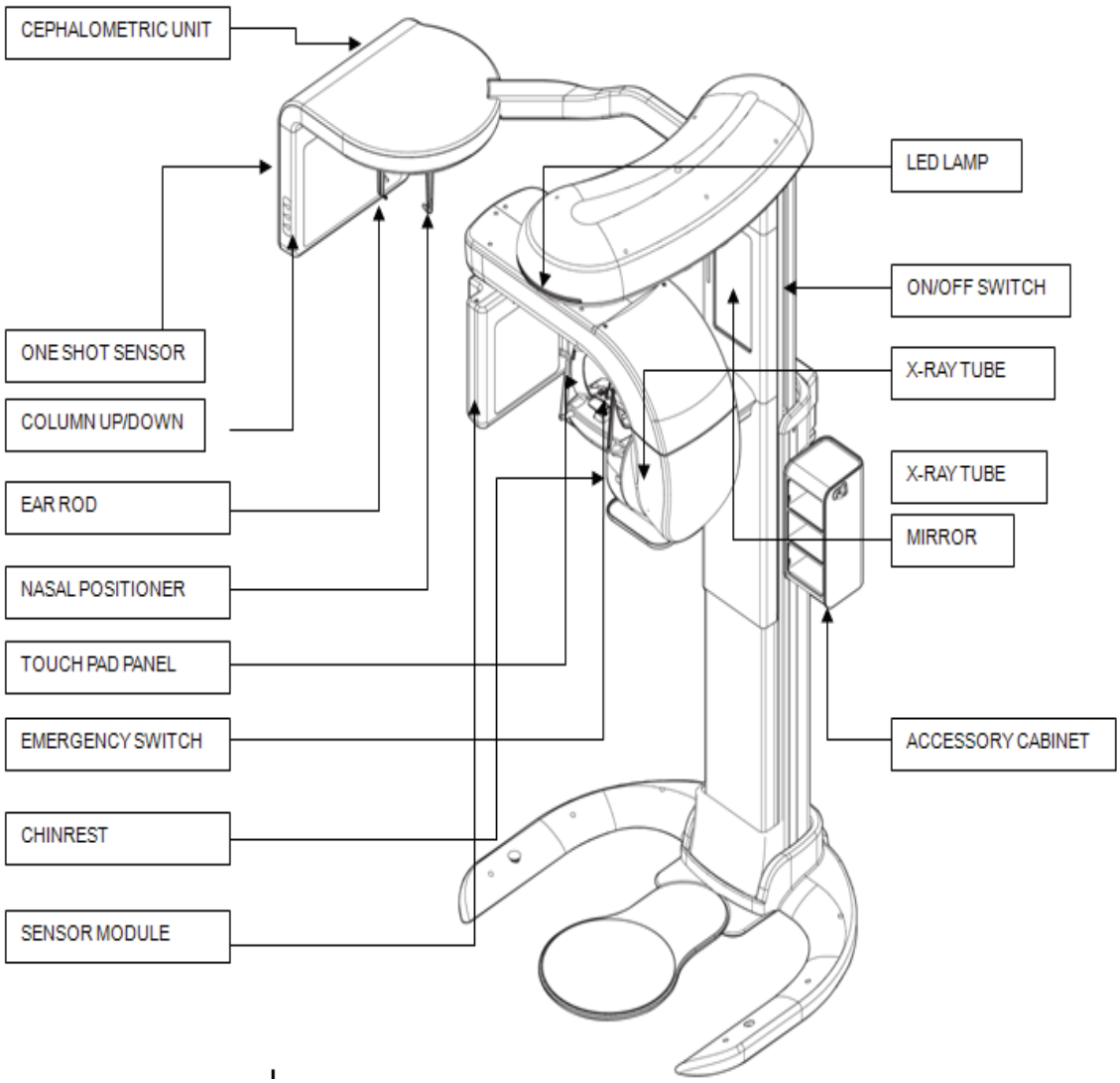
PaX-Reve3D is diagnostic equipment that incorporates Digital Dental Panoramic and Cephalometric Imaging Systems, as well as Computed Tomography System with Cone Beam Technology. This equipment is based on digital and computed tomography. Specifically, its advanced digital imaging process allows for a considerably efficient diagnosis, well-rounded management information, and a real-time sharing of image information in a network. It's equipped with the-state-of-the-art CT sensor to capture 3-D Computed Tomogram X-ray Scanned Image.

This equipment provides various features as follows.

Among them:

1. Consolidates Panoramic, One-shot Cephalometric and CT imaging mode into single system and makes it possible to acquire high quality of digital images with ease.
2. Made it easy to operate using both PC and the LCD panel.
3. Features 3 in 1 system that provides all the necessary dental images to diagnose.
4. Supports a variety of capturing modes for a dental diagnosis and treatment like Implant, let alone the basic panoramic mode.
5. Features capability of switching automatically the sensing mode, even without mounting and unmounting sensors.
6. Employs the FPXD for the one-shot capture capability, especially for the professional dentists practicing teeth correction.
7. Generates clear CT 3D-Images reconstructed from each slice so as to analyze the area invisible from the regular 2D-images and makes the practices safer than ever before.
8. Needs not to be concerned any longer about space installed, since the size of system is similar to the general panorama only system.
9. Takes into account that safety for the patients from exposure to X-Ray is primary concern. Thus a greatly reduced dose of exposure, compared with that of general purpose CT X-Ray system, is advantageous.
10. Improving reliability and dependability by adopting CAN(controlled area network) protocol that generally is used in areas like airplane, thus leading to greatly reduced problem occurrences.
11. The PaX-Reve3D has been designed to carry out the following radiological examinations.
    - Standard Panoramic mode
    - Special panoramic mode
    - Cephalometric mode
    - CT mode

1.2. General view of the PaX-Reve3D



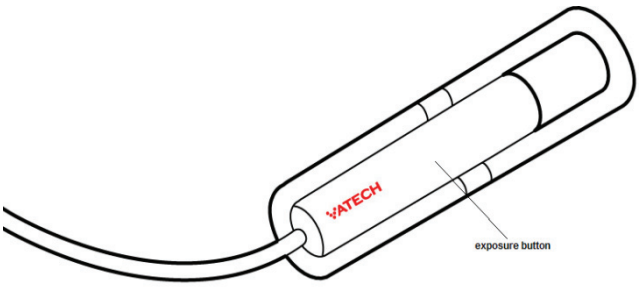
- **CEPHALOMETRIC UNIT:** an assembled unit to carry out the Cephalometric imaging.
- **ONE-SHOT SENSOR:** a sensor detecting signal in Cephalometric mode.
- **COLUMN UP/DOWN ADJUSTER:** adjust the height of equipment to the patient height.
- **TOUCH PAD SCREEN**: allows the operator to control certain unit functions by touching screen. It also displays the operating parameters and some texts messages. This panel works in a way that touching the screen activates the unit.
- **EAR ROD**: The vertical pieces holding the ear rods are usually wood or plastic. Wood is better.
- **NASAL POSITIONER:** help the patient position correctly – usually in Cephalometric mode.
- **EMERGENCY SWITCH:** for safety reasons, this is used to terminate power to equipment by pressing this button when a severe fault occurs. Its primary use is to protect humans and equipment from a severe injuries and damages.
- **CHIN REST**: help the patient rest while imaging.
- **X-RAY SENSOR Module:** used to detect a dose of X-Rays through the patient and convert it into electrical signal. This module consists of two different sensors to perform different purposes - CT sensor and panoramic sensor.
- **LED LAMP:** Indicates current X-ray exposure activity (green at idle state, but turn into orange color while x-raying).
- **ROTATING UNIT:** moves to the proper position and turns around patient's head during exposure.
- **ON/OFF SWITCH:** turns on and off the equipment.
- **X-RAY TUBE:** a source of X-Ray emission.
- **MIRROR:** let the patients correct positions by themselves through reflection in a mirror.
- **ACCESSORY CABINET**: used to keep little things relevant to the operation of this unit.
- **TELESCOPIC COLUMN:** this part of column moves up and down to be adjusted to patient height.

- **STATIONARY COLUMN:** this part of column is fixed to the base plate.

- **BASE plate:** used to balance and stabilize the whole equipment.

1.3. Exposure switch

The exposure switch enables you to launch a radiological image acquisition via exposure button from outside the X-Ray room. You press and hold the exposure switch button until the end of acquisition. Premature release of exposure switch button interrupts acquisition.



Chapter 2. Preparing installation for the unit

2.1. Responsibilities of the Manufacturer

When the situation is as below, the manufacturer has the responsibilities for the safe and proper working of the system.

- When the system is installed as per installation manual.
- When the user uses the system as per user manual and instructions on the program.
- When the user software is installed as per software installation manual.
- When repairs are made by manufacturer's engineers and/or trained engineers from the manufacturer.
- When user uses authorized components or approved components.

2.2. Parts list (supplied)

Part Name	Internal Box	Item	Specification	Q'TY
Base, Accessory, PC	Base	BASE	Base Cover	1
			Base Plate	1
			Footrest1	1
			Footrest2	1
			Footrest cover (Transparent)	1
	Accessory	HEADREST		1
		BAND	Headrest Band (Vatech)	1
		ACCESSORY CABINET		1
		BITE CHIN		1
		NORMAL CHIN		1
		SINUS CHIN		1
		NON CHIN		1
		TMJ CHIN		1
		CHIN SUPPORT	With Pin (1EA)	1
		EAR ROD	Ear rod L/R (With spring)	2
		CABLE TIE	70mm	10
		TOUCH PANEL ASS'Y	Touch pad LCD	1
		CABI ASS'Y		1
		SERIAL CABLE		1

		LAN CABLE	8 PIN LAN FOR PANO 10M	1
			8 PIN LAN FOR PANO 1M	1
		HUB CABLE		1
		HOLDER	X-ray Exposure Switch Holder	2
		SPEAKER BOX		1
		SWITCH	Up/Down	1
		INDICATOR BOX	X-ray exposure switch	1
			Cable for exposure switch	
		USB KEY	Image reconstruction key	1
		3D VIEWER KEY	Image viewing 3D	1
		CASE	Handle table	3
			Case Wire-1	1
		BLOCK	Column Support Block A	2
			Column Support Block B	2
			Base Support Block Rear fixing Plate	1
		CAP	Hole Cap (Silicon)	3
			Silicon Cap	30
		WRENCH BOLT	8*25	4
			8*25 (With ø8Spring&Flat Washer)	6
			8*60 (With ø8Spring&Flat Washer)	2
			8*50 (With ø8Spring&Flat Washer)	1
			3*8	2
			4*8	2
			4*25	4
			4*8	16
		PANORAMA COVER	Small Disposable Bag	1
		CARPUS PLATE	Carpus Plate (With sticker)	1
			Guide shaft	1
	Manual	USER MANUAL	EasyDent V4	
			Ez3D2009	
			3-D Dental Imaging	
			Exposure Switch Manual	1

2.3. Check Shock Watch and Tilt Watch

All kinds of goods are subject to the damage in their transit. Therefore our units are shipped with “Shock Watch” and “Tilt Watch” stickers to monitor delivery status. Please check whether the “Shock Watch” and “Tilt Watch” on each carton have been damaged before opening the cartons.

<Shock Watch>

<Tilt Watch>

Warning

Please check the color status of Shock Watch & Tilt Watch on each carton to see it has turned RED. If color of either of them did change, it represents great impacts in transit. Please contact your delivery company agent, or VATECH.

Chapter 3. Installing the unit

3.1. Assembling the base and column

Note

Please make sure that floor surface on which the PaX-Reve3D is to be installed is flat and dry.

Back

Left

Right

Front

Note

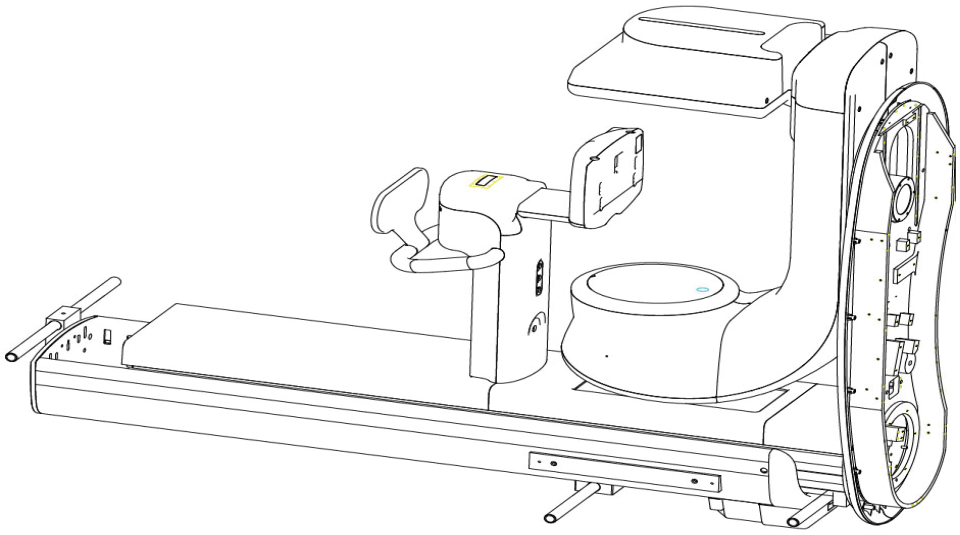
At least 3 people are needed to carry and install this unit to prevent this product from being damaged and person from being injured.

Note

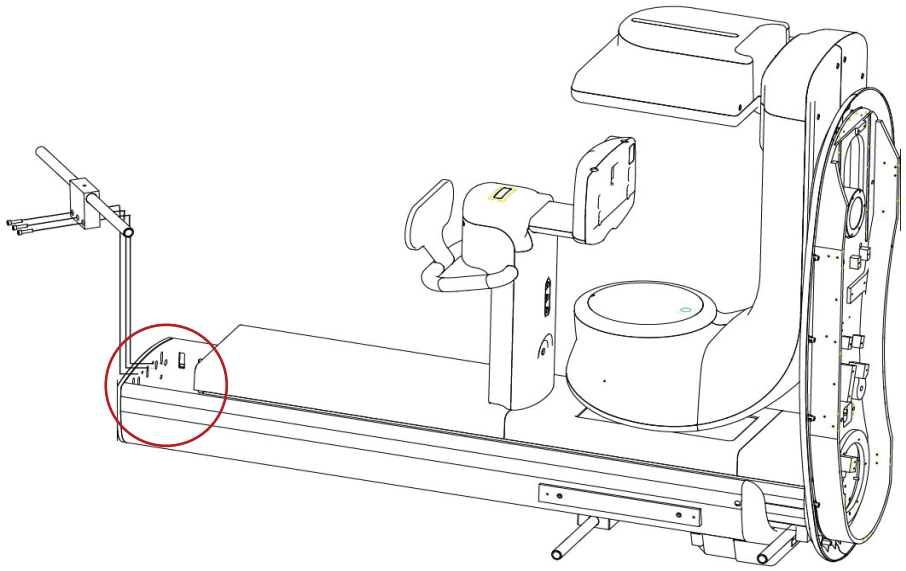
Please keep at least 300mm of distance from the wall so that you could assemble Cephalometric unit, cabling work and assembly of the covers on the backside.

Procedures:

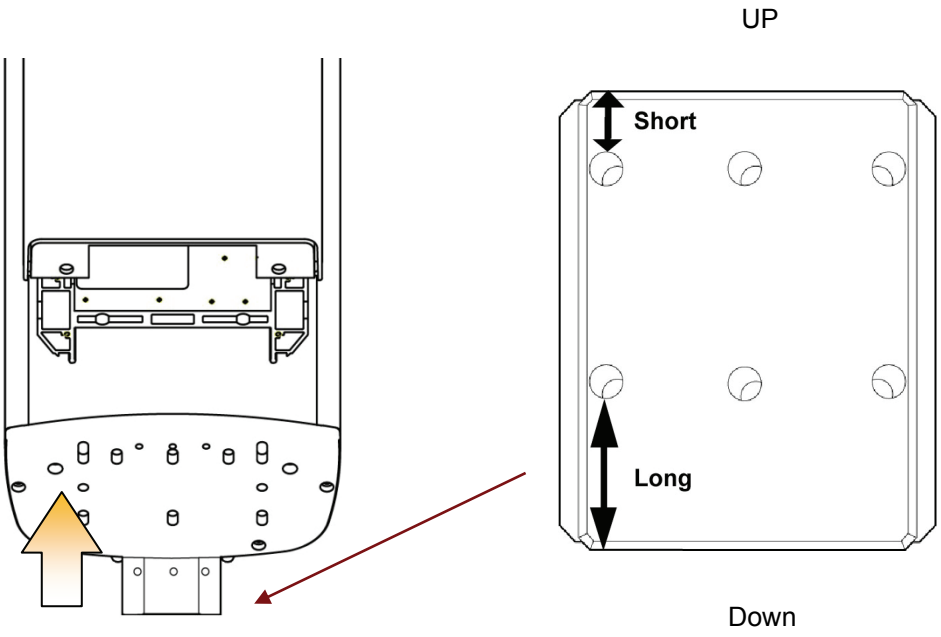
1. Carefully unpack the carton and position the unit, as follows. That is, lay the unit on the floor, with the column down, for preparing installation.



2. Please remove the moving handle using the wrench.



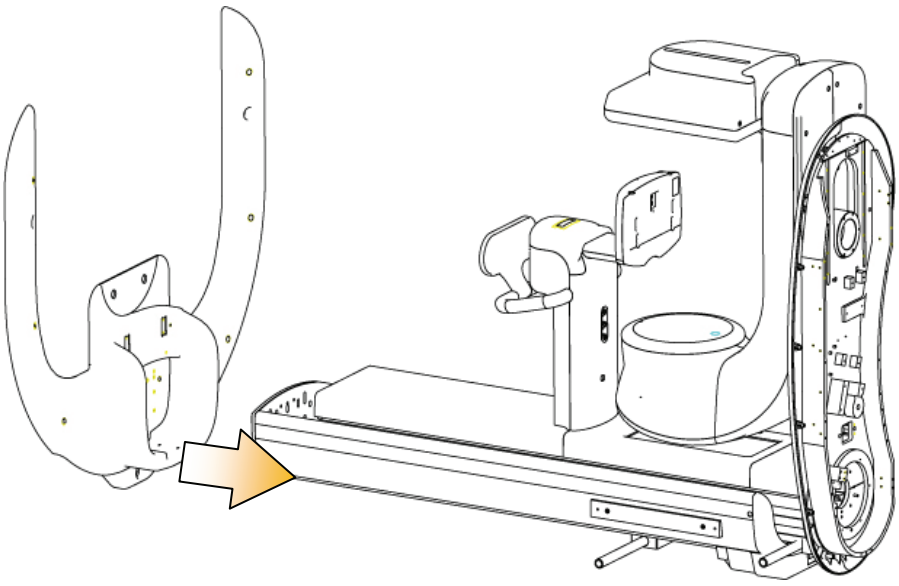
3. Please push the base's rear plate (Accessory No.10) fully inside the lower part of column, as the arrows indicated below.



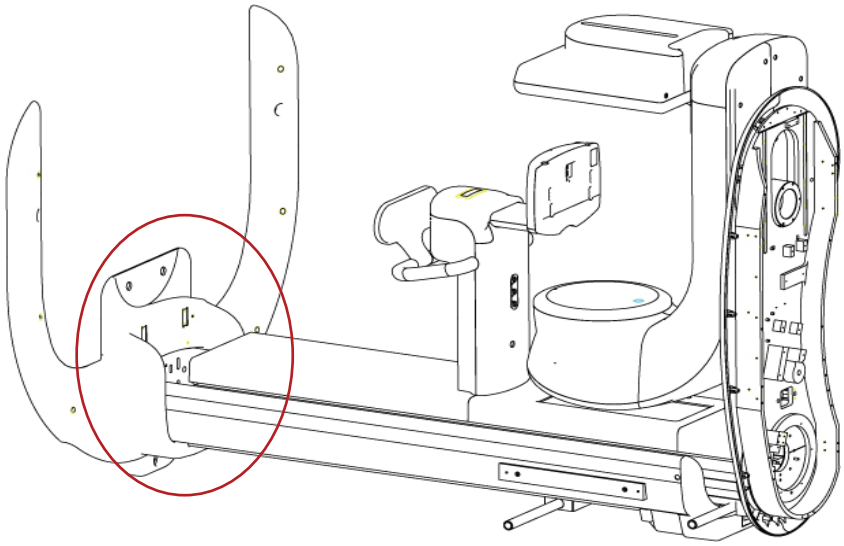
Underside of lower part of column

Rear bracing plate for the base

4. Please assemble the column and the base together. Be careful of the heavy weight of the unit while assembling.



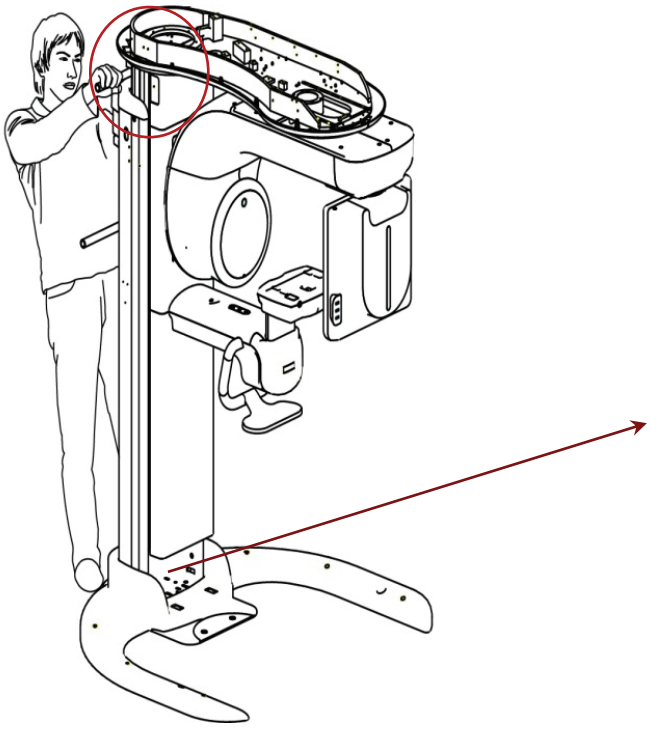
Before assembly

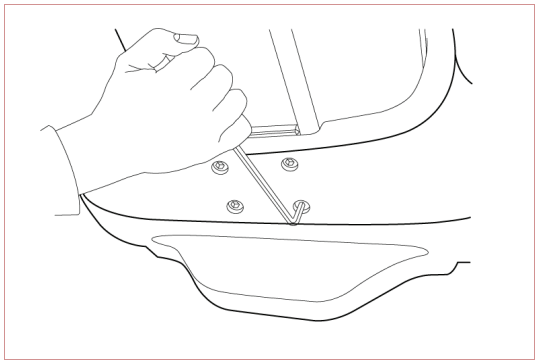


After assembly

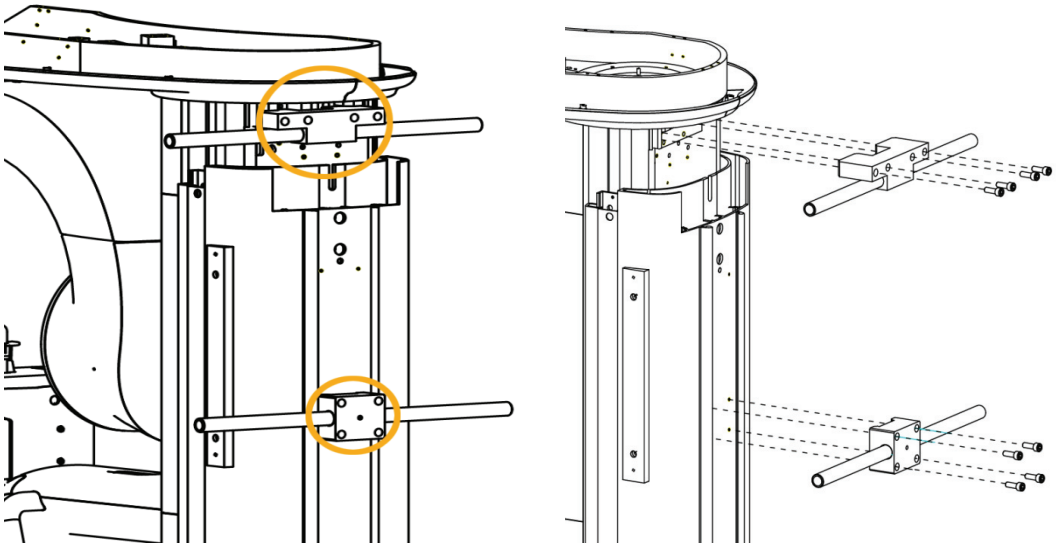
5. Please put the unit in upright position, as shown below. *At least 3 people are required to do this. Think about the unit is too heavy*. Firmly screw 4 wrench bolts (M8*25, Accessory No.11), as stated in the following figure.

Important: *one person should grasp the bar, pulling the unit toward himself, to facilitate screwing bolts. After screwing 4 wrench bolts, it is no longer necessary to do this work*

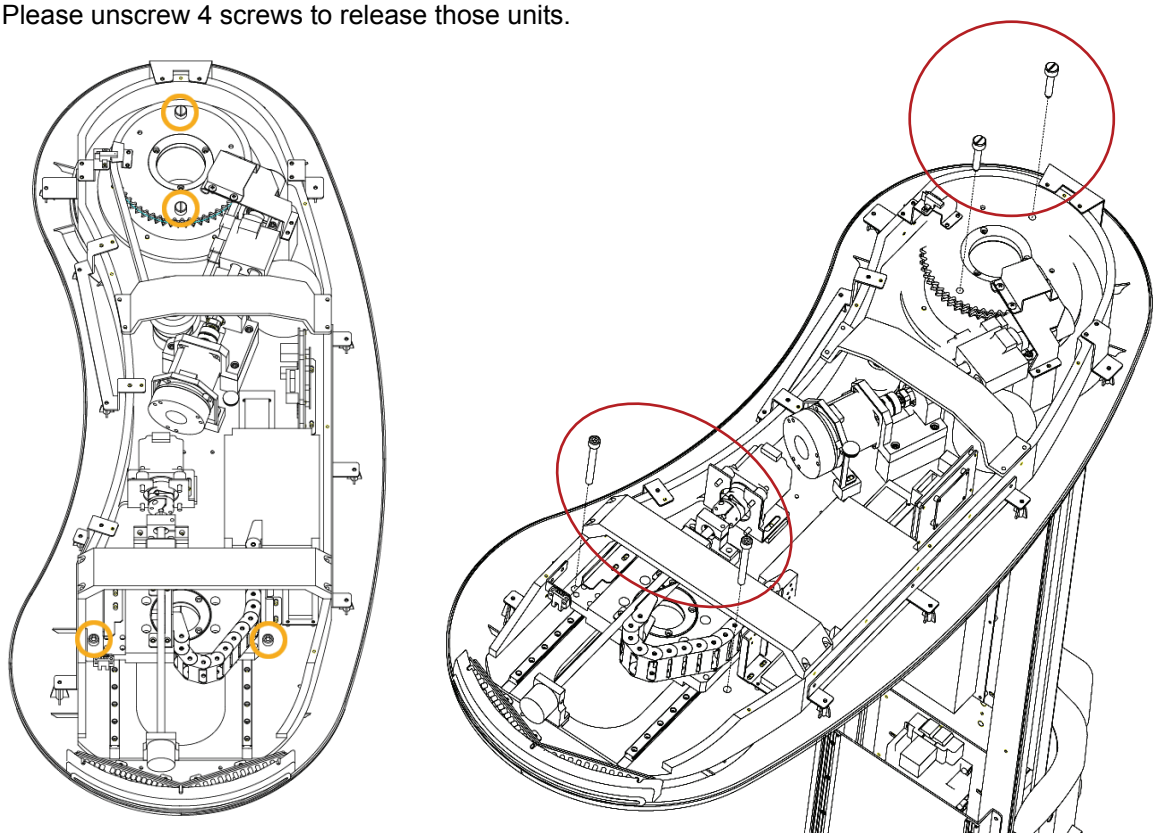




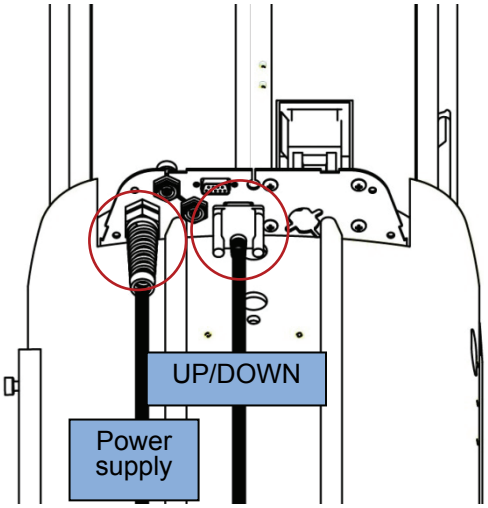
6. Now remove two handle bars from the unit.



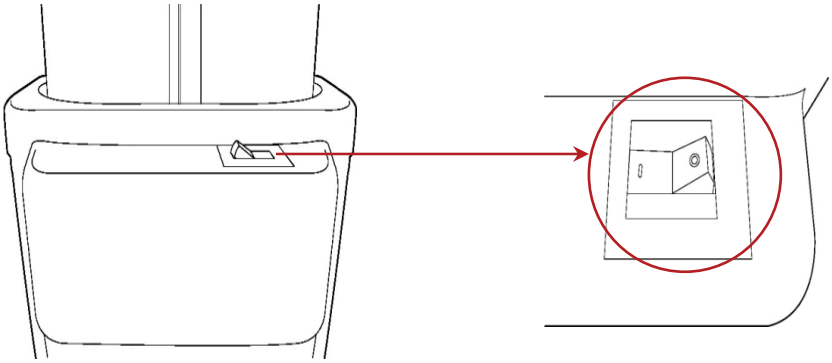
7. By factory default, to prevent the unit from being damaged while shipping and moving the unit, the rotating unit and vertical frame are firmly fixed to a particular position, using wrench bolts.
Please unscrew 4 screws to release those units.

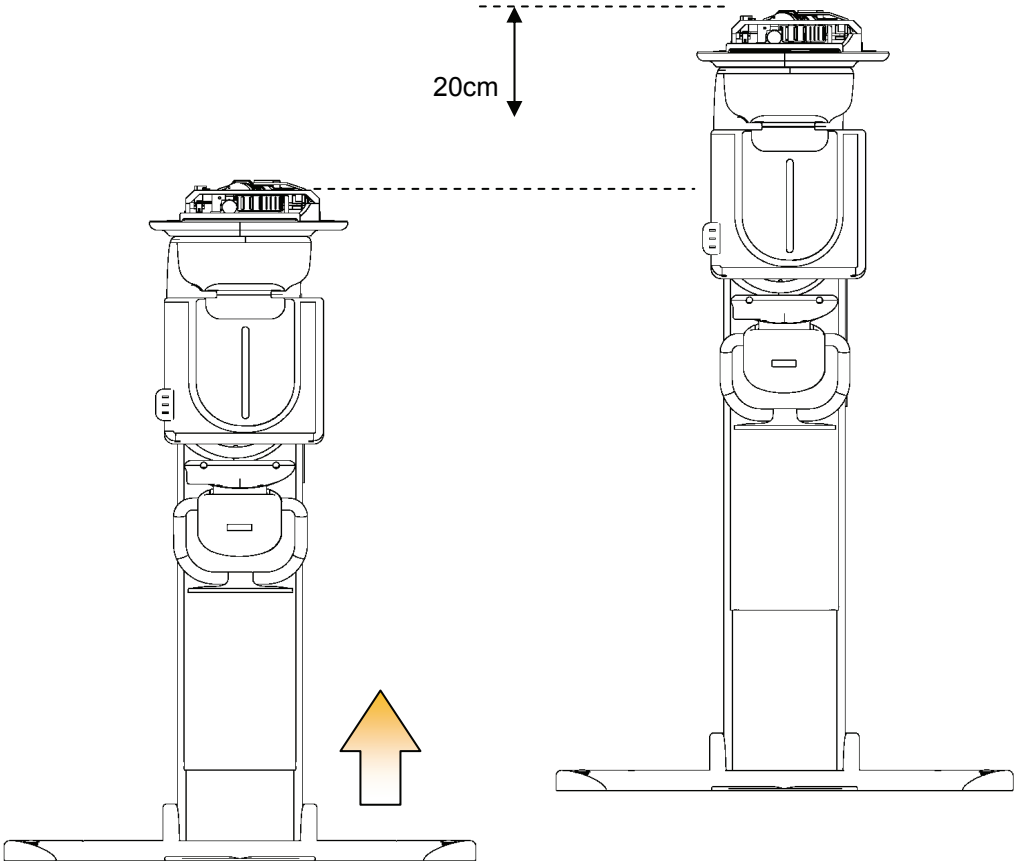


8. Please connect the power supply and Up/Down switch cables.

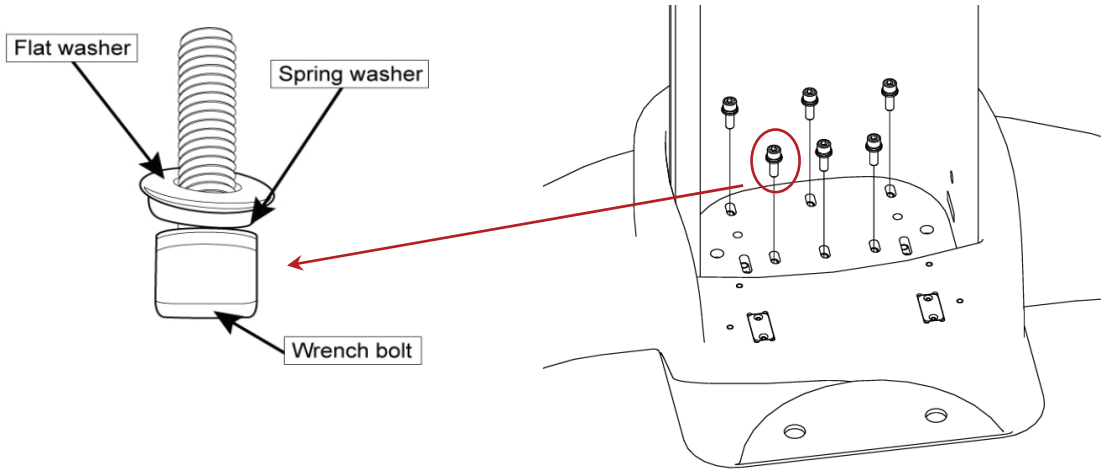


9. Turn on the unit and move up the column unit by approximately 20cm, using the Up/Down switch.

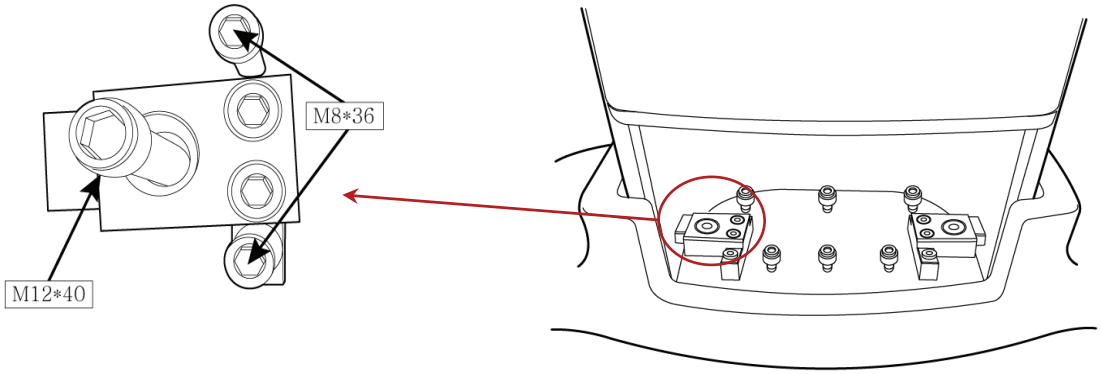




10. Now it is time to work on fastening the frontal part of assembly of column and base.
    Two procedural works are required to fix column and base together with 6 wrench bolts screws (M8*25 – Wrench bolt, 8Φ – Flat washer & spring washer] (Accessory No.14), as shown in the first figure.



Next do the same, as follows.



11. Please make sure that there is enough room to work.
    ① Insert the supplied Guide Shaft Assembly into the column and move it up fully so that one end of it falls in the hole. (*Figure 2)*
    ② Next pull it down through the hole and match the end of it onto the hole on the base. (*Figure 3*)
    ③ Do this procedure again for the other one. (*Figure 4*)
    ④ Finally turn to make them tight, using the spanner.

Figure 1 Guide Shaft Assembly

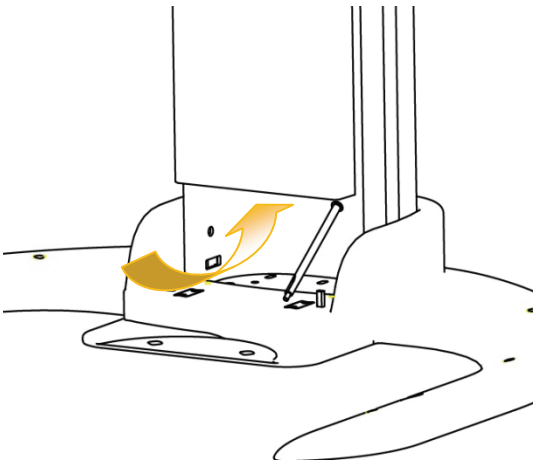


Figure 2 Base

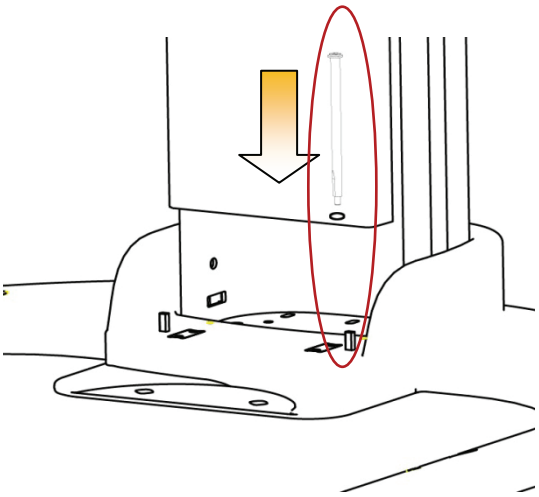


Figure 3

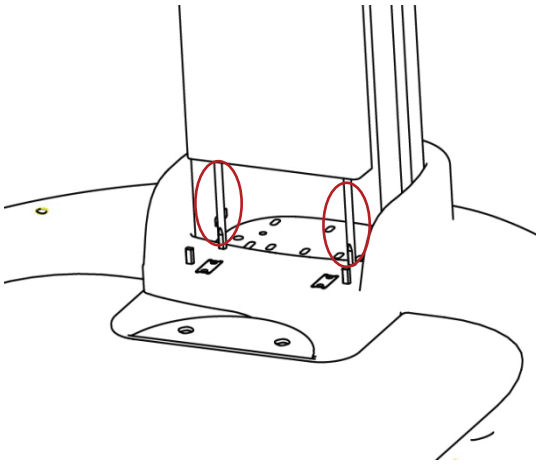
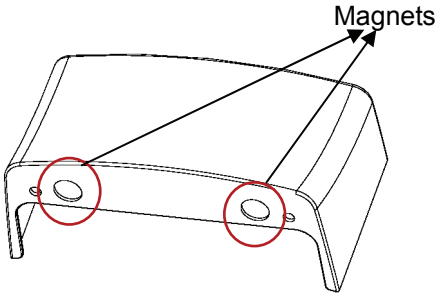
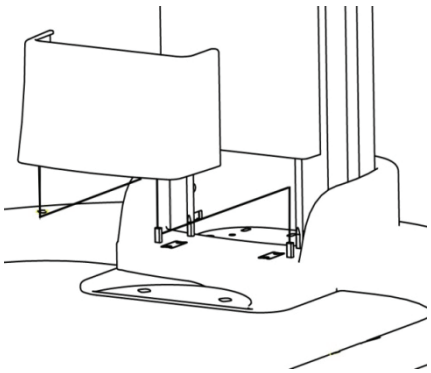


Figure 4

12. Please cover the open area - where work has just been done, with the base cover in a way that two magnets face down on the base.

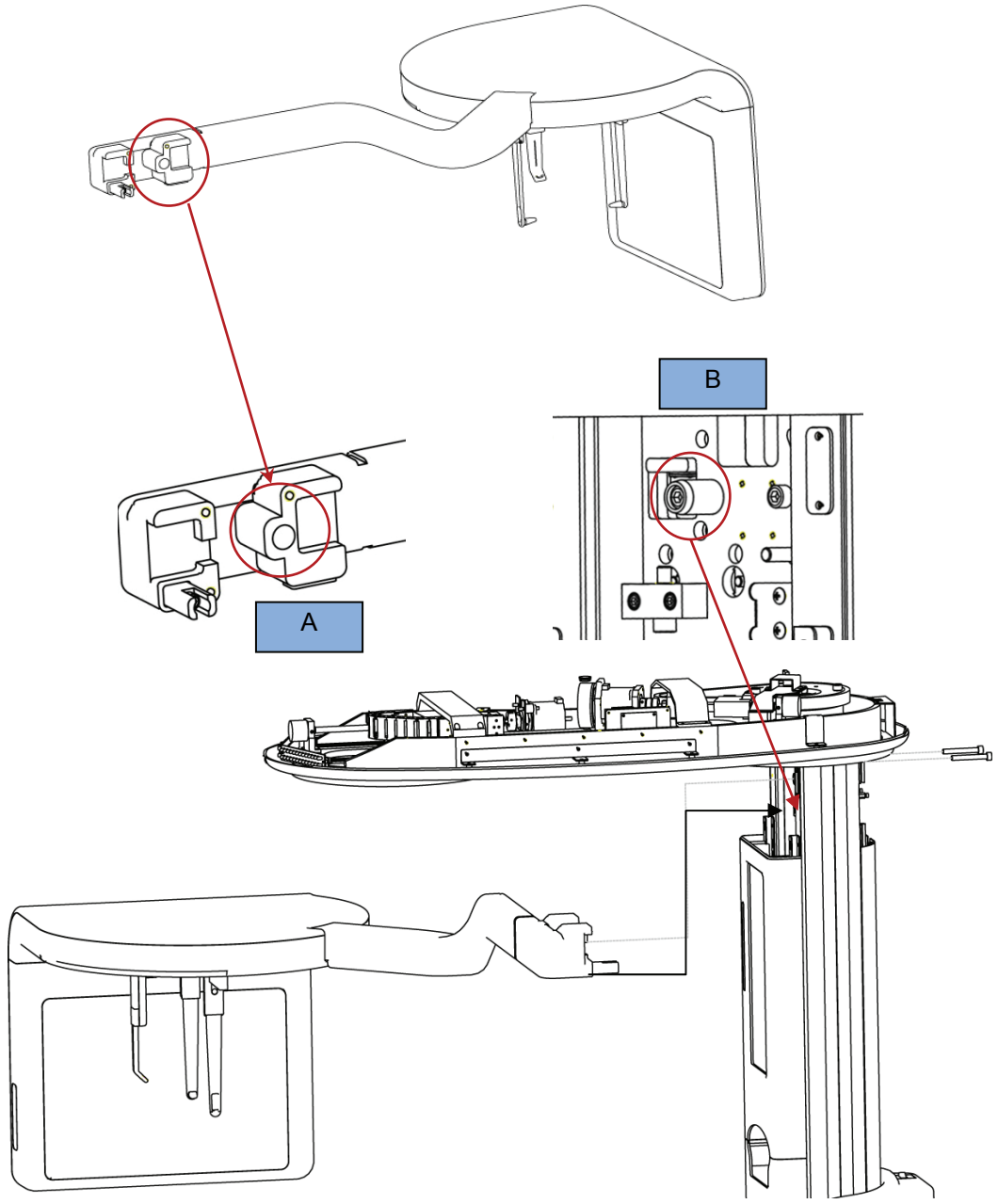




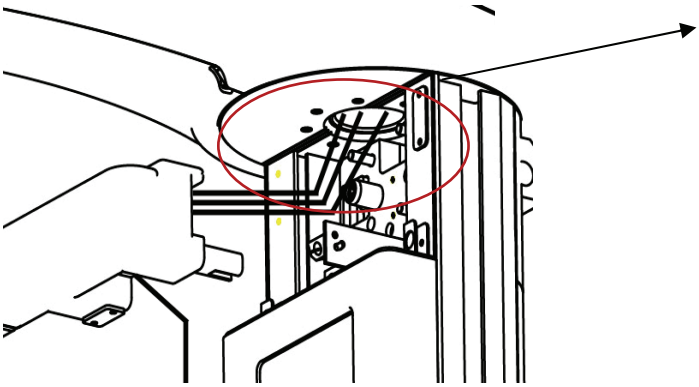
3.2. Installing the Cephalometric unit

This explains how to install the Cephalometric unit to the column unit, as described in the following figures. Be careful to handle this unit, because sensor is so susceptible to the physical impacts.

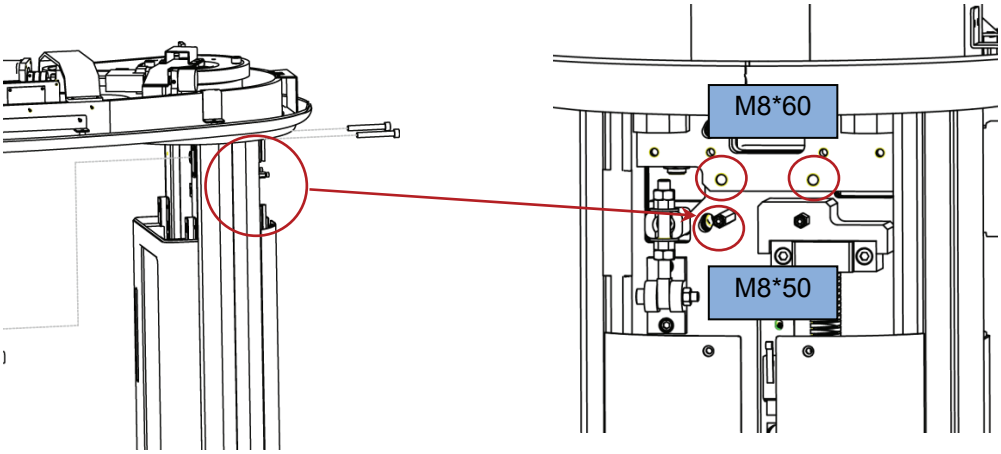
1. Do follow these procedures to mount the Cephalometric unit on the column unit.
   ① Insert the supplied Guide Shaft Assembly into the column and move it up fully so that one end of it falls in the hole. (*Figure 2)*
   ② Locate the Cephalometric unit.
   ③ Move it to the column unit as close as possible.
   ④ Locate A, B on each part, respectively and try to match them together.



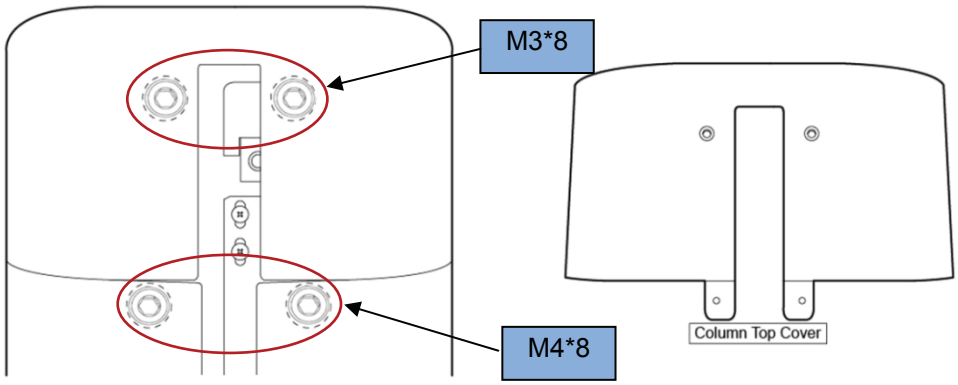
2. Please take out the wires, ONE72A, ONE74A and ONE75A, from the Cephalometric unit through the guide hole on the vertical frame unit when **A** and **B** are close enough each other.
   But leave wire ONE73A out from this work, which will be connected to the LAN Hub later.



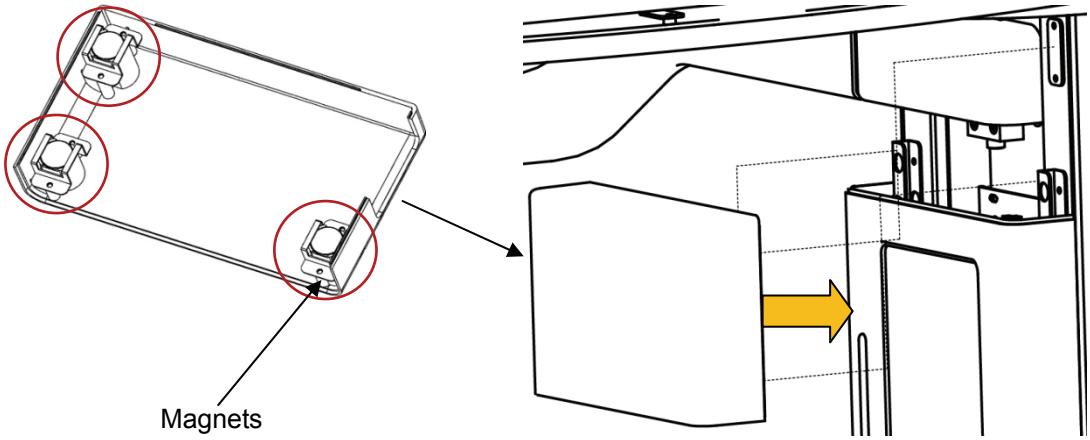
3. Upon combining **A** part with **B,** fasten these two units using 2 wrench bolts (M8*60+8Φ flat washer/spring]: Accessory No.15) and 1 wrench bolt(M8*50+8Φ flat washer/spring]:Accessory No.16) at rear column.



4. Please fix the Column top cover (Accessory No.02) onto the back side of column, using wrench bolts (M3*8 and M4*8)(Accessory No. 17 and 18)

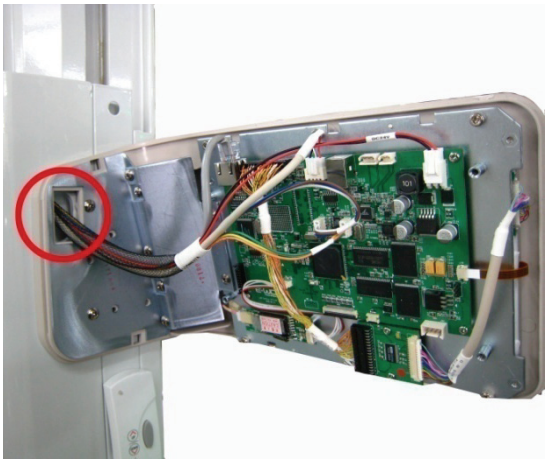


5. Please install the Case Column Top Assembly (Accessory No.05) onto the front side of column.

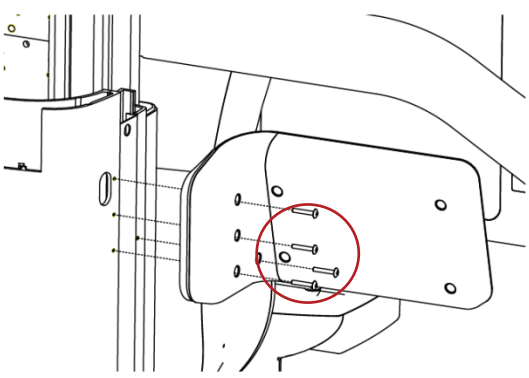


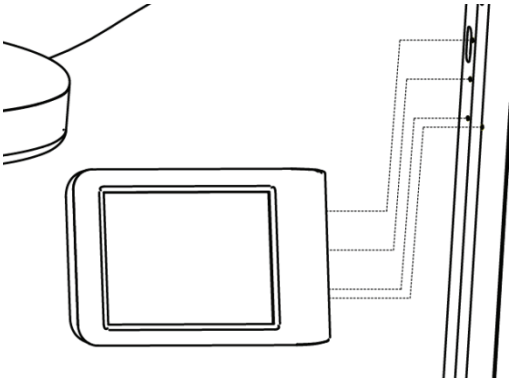
3.3. Installing the touch pad screen

1. First push and full cables from the Touch panel screen through the wire guide hole, as indicated in red circle. The touch pad screen is supplied with Accessory No. 09.



2. Then attach the touch pad screen onto the column and fix it, using 4 screws (M4*25 truss: Accessory No.19).

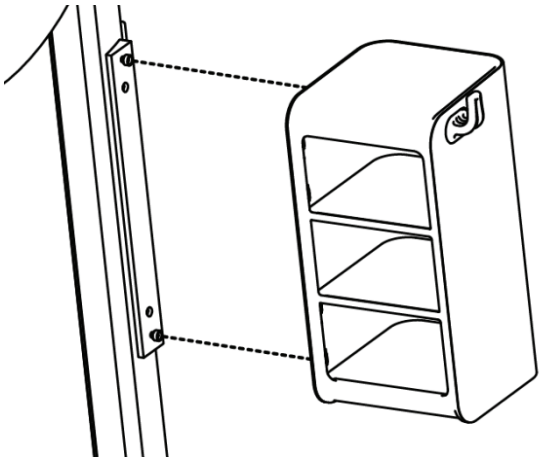




3. This job has just been done.

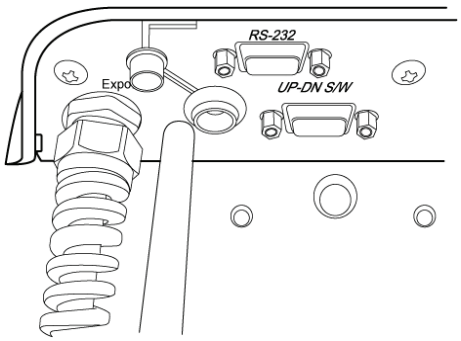
3.4. Installing the accessory cabinet

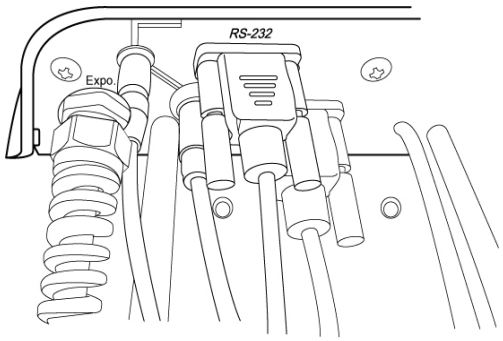
1. This is to mount the accessory cabinet on the column.
   Just attach the cabinet after adjusting two bolts on the side of the column



3.5. Wiring each devise and finishing installation

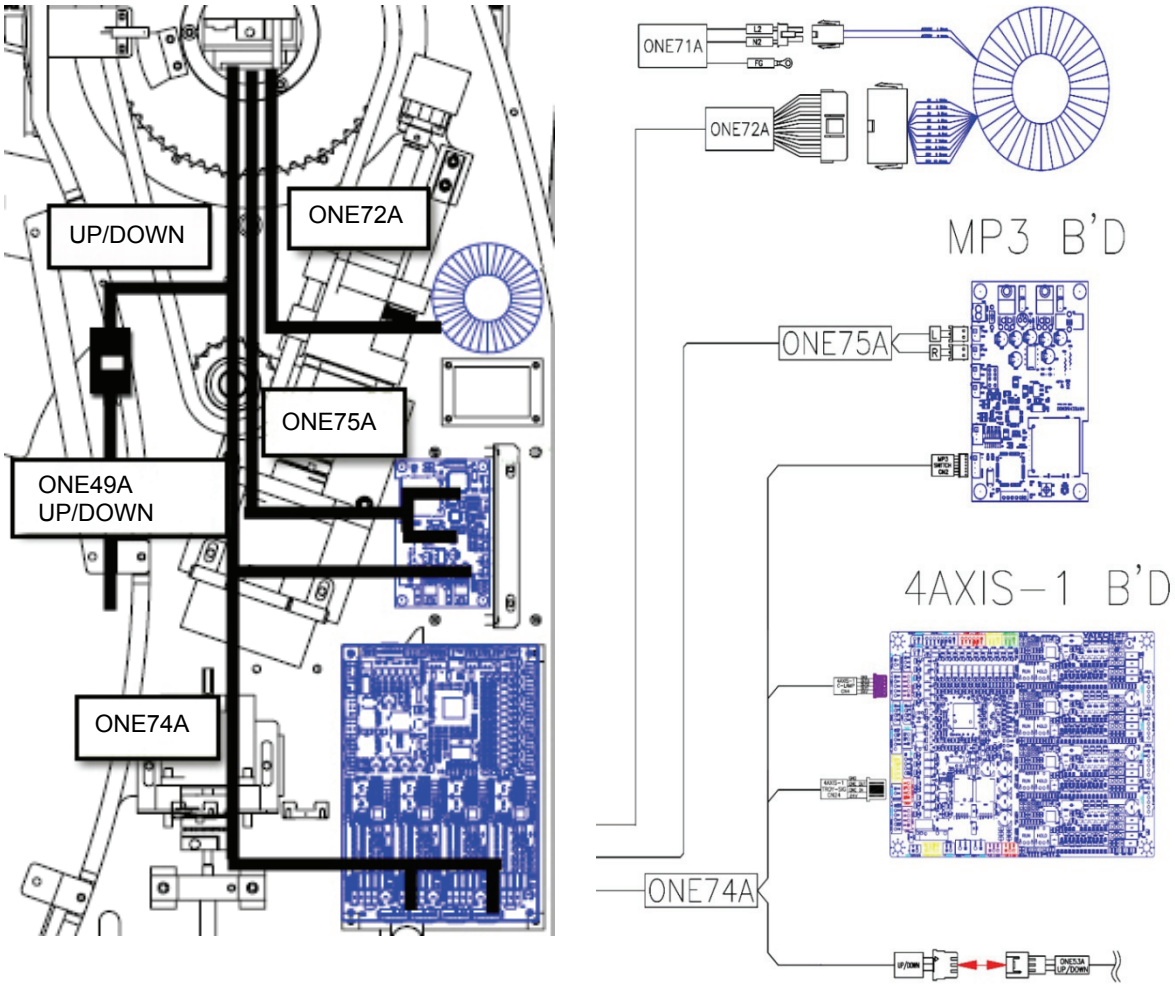
1. Connecting wires to the connector panel on the back of column.
   Please connect the RS-232, X-Ray exposure switch cable, Up/Down switch and LAN cables to the connector panel on the back of column.



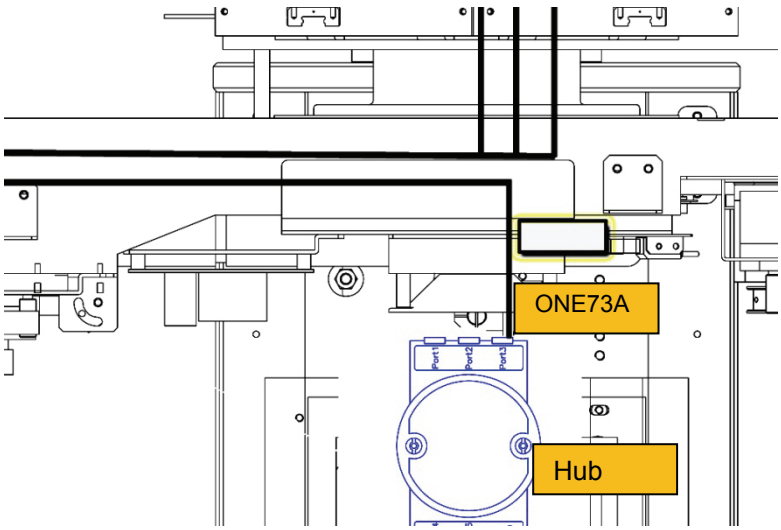


2. Connecting the wires from the Cephalometric unit to various components.

   Connect these various cables–**ONE72A, ONE75A, ONE74A** and **ONE54A** to each corresponding component, according to the following diagram. Always be careful not to plug forcefully.



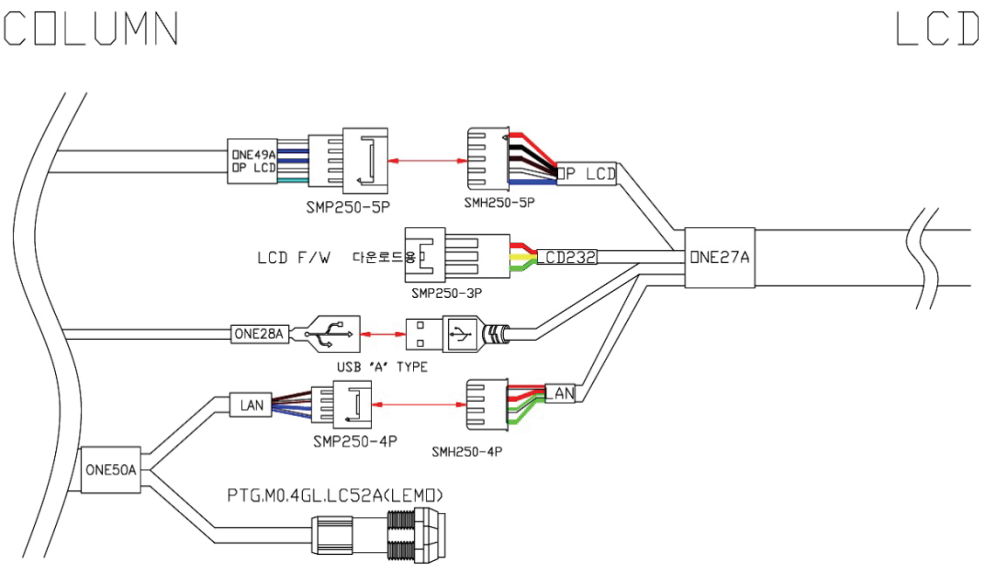
3. The **ONE73A** cable is connected to the LAN Hub.



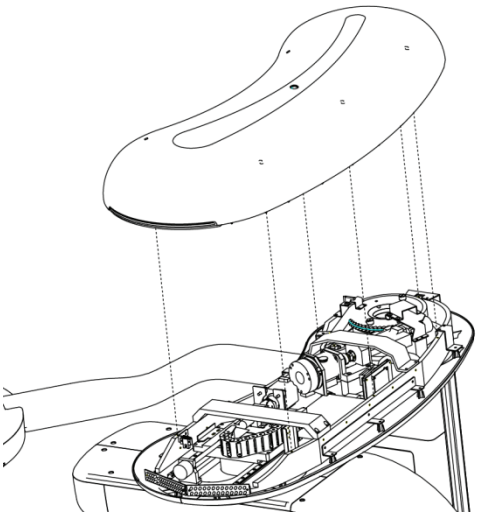
The following table summarizes the connection information by cable number, name, and connection location

Cable number	Cabling name	Connection location
ONE74A	MAP SWITCH	CN2
	C-LAMP	CN4
	TROY-SIG	CN24
	UP / DOWN	ONE53A UP / DOWN
ONE75A	LT / RT	CN7 / CN6
ONE72A		TRANS NC
ONE73A	ETHERNET CABLE	LAN HUB

4. Connecting the touch pad screen wires to those from the column.
   For these works always be careful to not force too much when plugging each other.
   Double check before wiring together and follow the schematic diagram.



5. Please cover the vertical frame with the Case Vertical Top, using 6 truss bolts. (M4*8: Accessory No. 20)



6. Next fasten the Case column power (Accessory No. 06) using 4 truss bolts (M4*8: Accessory No.20). (*Figure 1)*

   And fix the Column Back Case cover (Accessory No. 02) to column. (*Figure 2*)

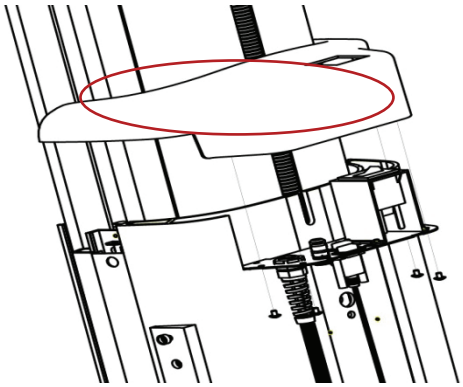


Figure 1

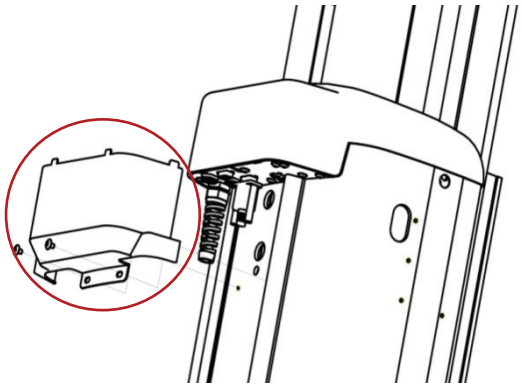
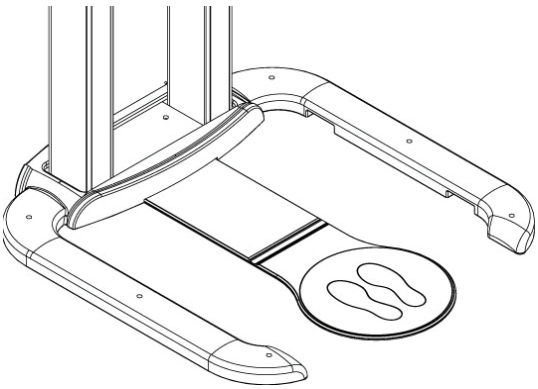
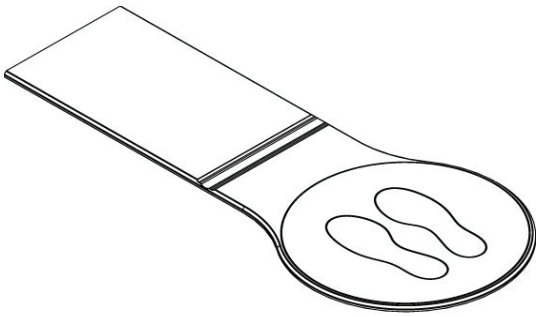


Figure 2

7. Please lay the footrest in a proper place.





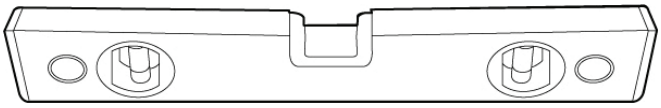
Base Foot Board

3.6. Balancing the equipment

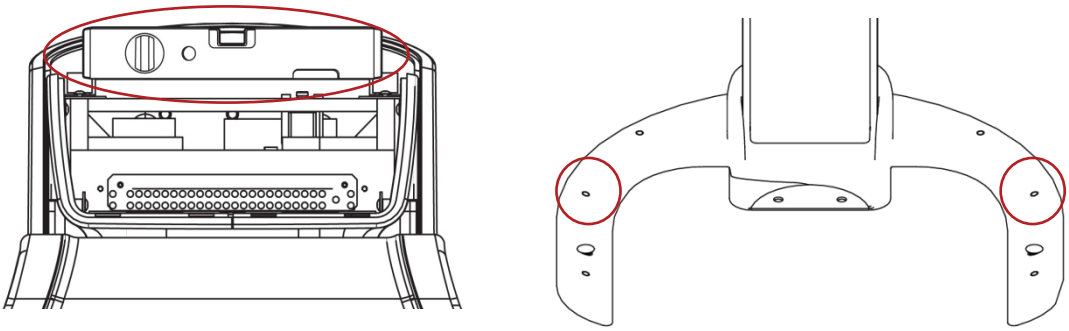
Because this system deals with operation of a moving parts, this step to balance the unit before putting into operation is mandatory to enable the system operate in a stable , smoother way leading, eventually, to an acquisition of better quality of image.

Note

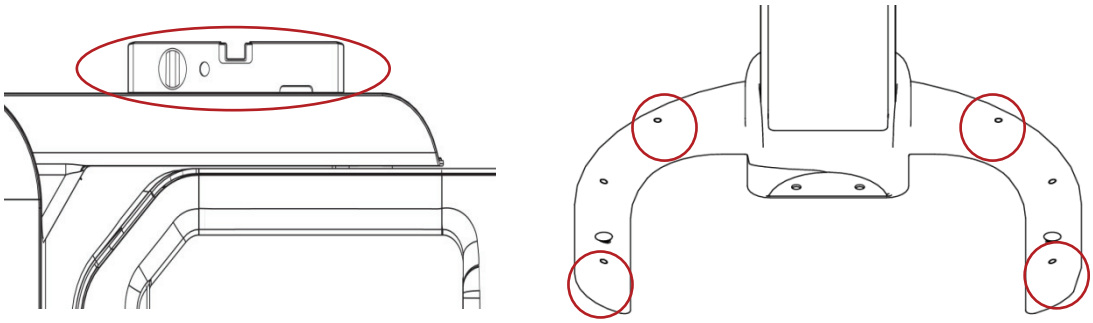
*The **level** is required to do this job.*



1. First place the level on the front top edge of the vertical frame, as shown in the figure.
   While observing the level, adjust the bolts on both right and left sides of base until it is balanced.



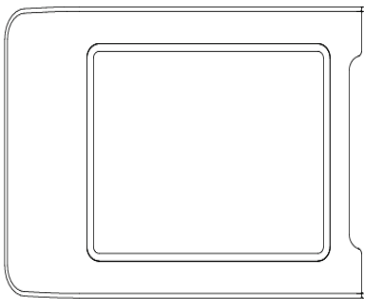
2. Place the level on the side top edge of the vertical frame.
   While observing the level, adjust 4 bolts shown in the circles until balancing is obtained.



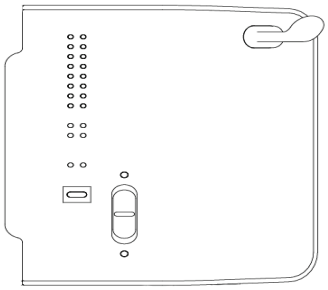
3. Cover those 6 holes with the supplied rubber hole caps (Accessory No.21).

Chapter 4. Installing the control box

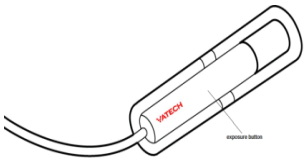
1. 3 components for the LCD panel and its control box assembly.



LCD panel (optional)



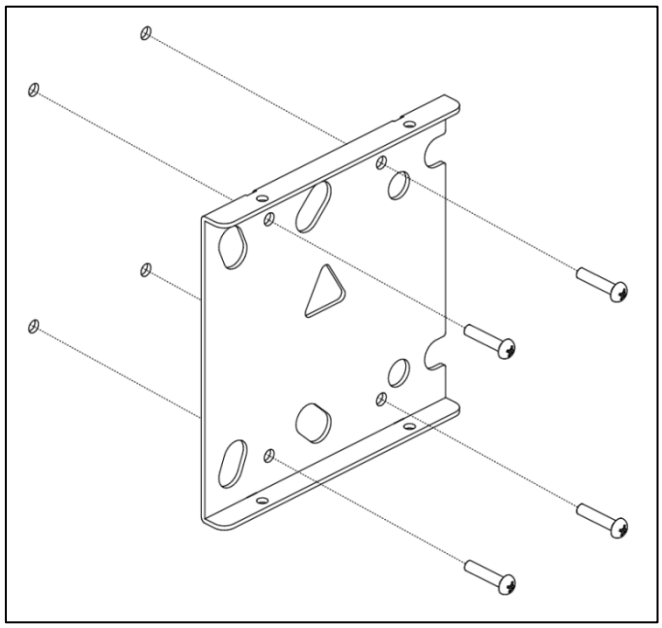
control box



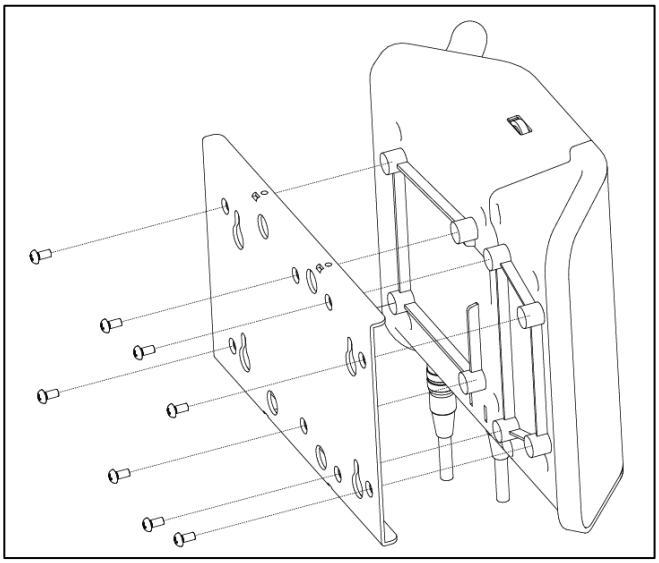
exposure switch

2. Installing control box with the basic configuration.

① Locate the place where control box is to be mounted and fix the wall-mounted type bracket using kal block and tapping crews. (M4*10)



② Match the corresponding holes of the control box and the rear bracket and assemble them, using truss bolts. (M4*10)



③ Each connector description.

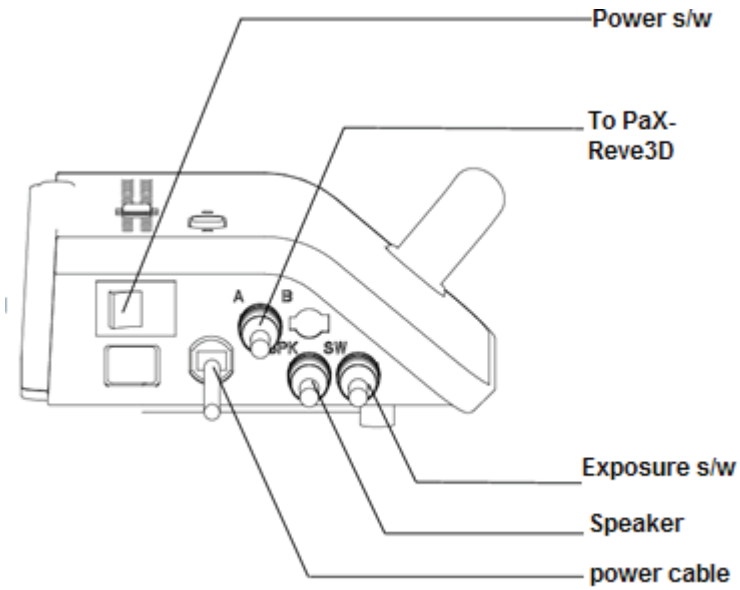
Power s/w: turns on/off power to control box

A: is a 6-pin connector used to connect control box to the PaX-Reve3D

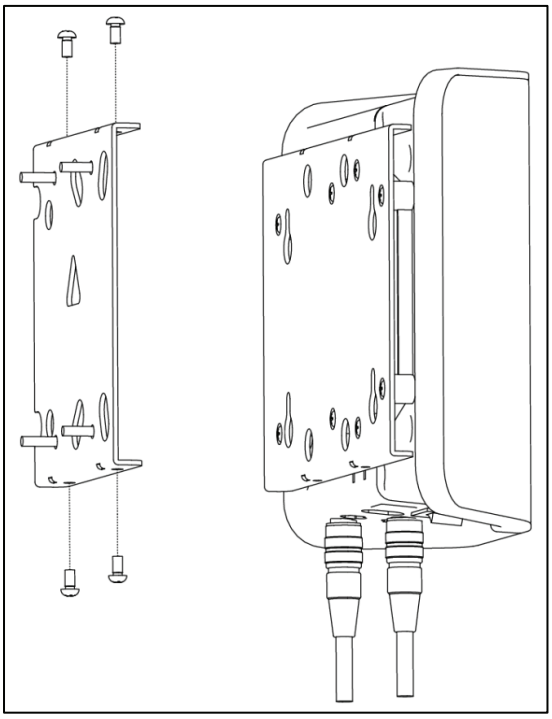
B: is a 6-pin connector to provide the interoperability of this unit and other equipments, making X-ray exposure possible with single control box.

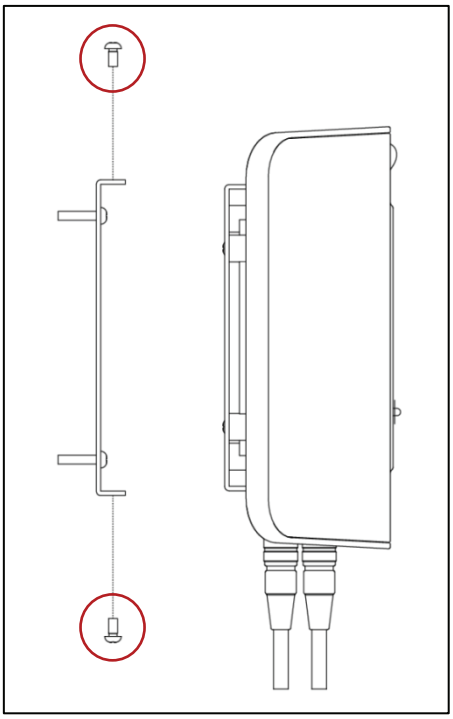
SPK: provides communications between the patient and operator through speaker.
They are physically separated, one in operating room while the other in exposure room.

SW: is a connector to connect the exposure switch.

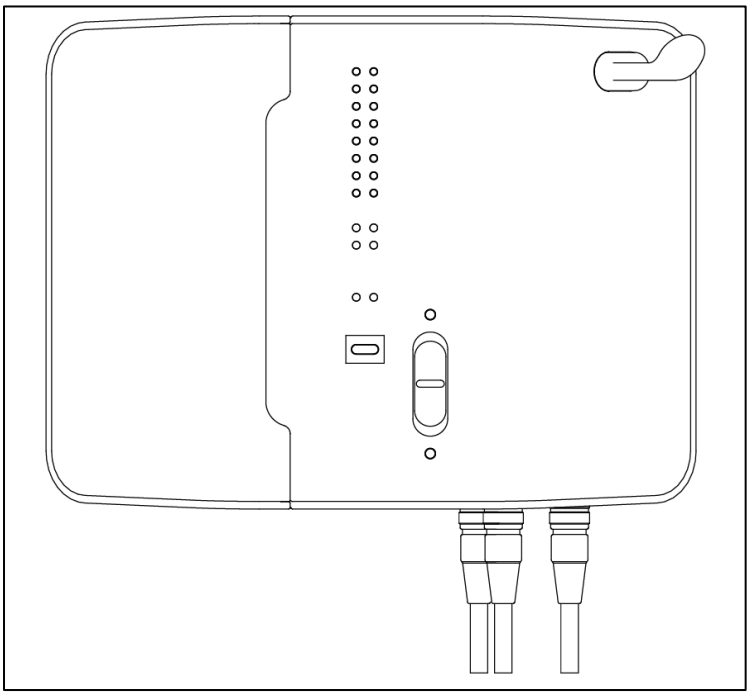


④ Combine the control box with bracket that has already been installed on the wall.
And screw them with 4 truss bolts. (M4*10)



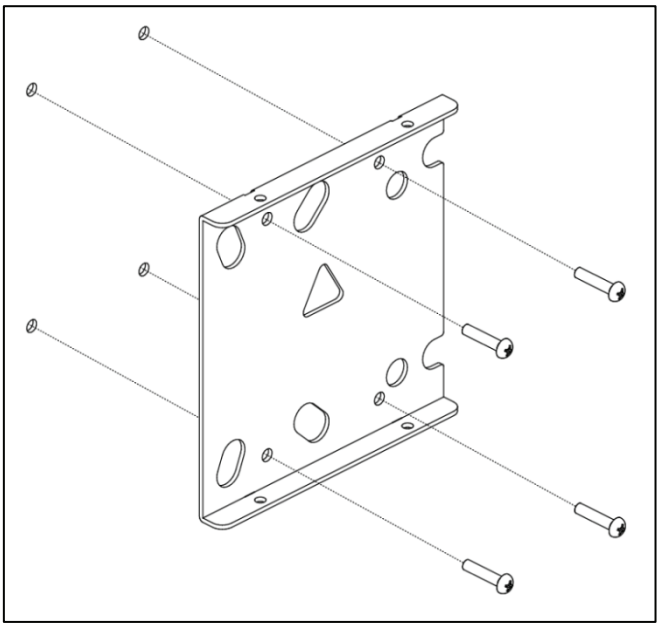


⑤ Works have just finished.

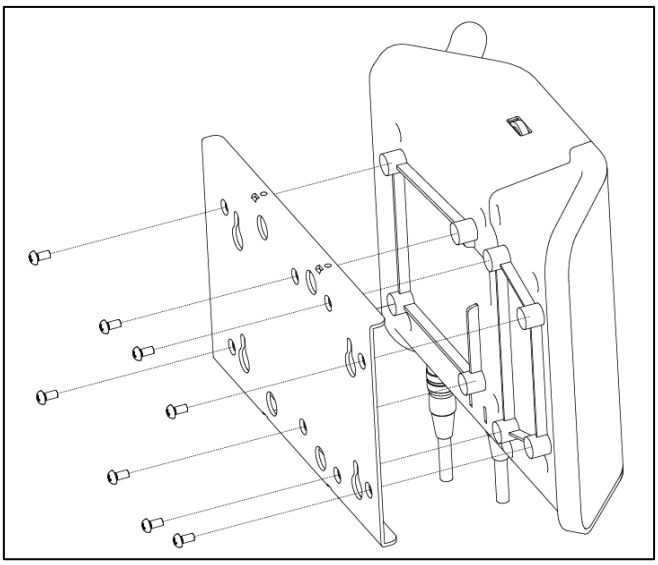


3. Installing with the LCD panel(optional)

① Locate the place where control box is to be mounted and screw wall-mounted type bracket, using kal block and tapping crews. (M4*10)



② Match the corresponding holes of the control box and the rear bracket and assemble them, using truss bolts. (M4*10)



③ Each connector description

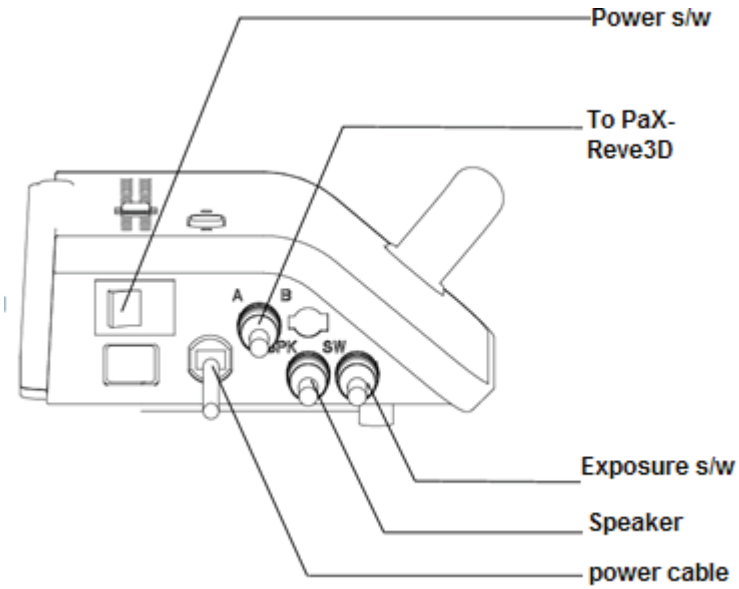
Power s/w: turns on/off power to control box.

A: is a 6-pin connector used to connect control box to the PaX-Reve3D.

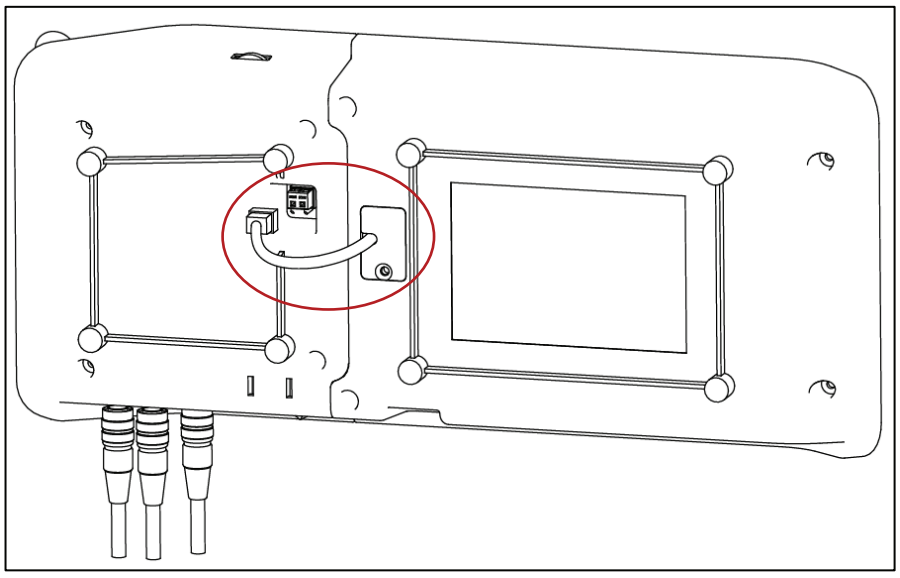
B: is a 6-pin connector to provide the interoperability of this unit and other equipments, making X-ray exposure possible with single control box.

SPK: provides communications between the patient and operator through speaker.
They are physically separated, one in operating room while the other in exposure room.

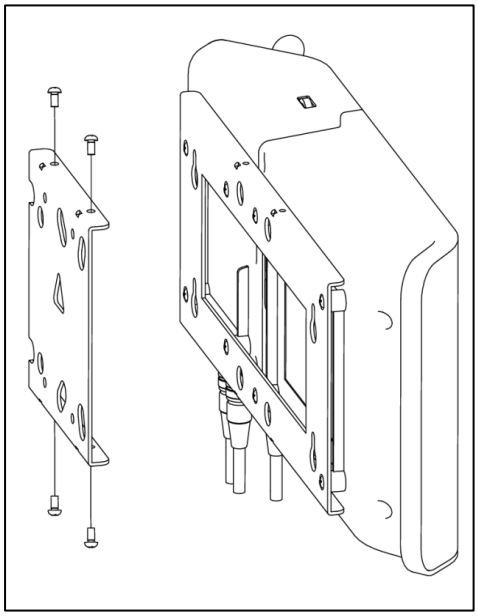
SW: is a connector to connect the exposure switch.

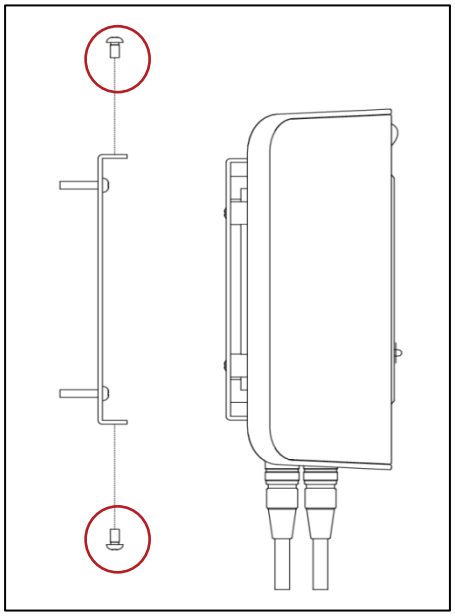


④ Connect the power cable from the LCD panel to connector on the control box

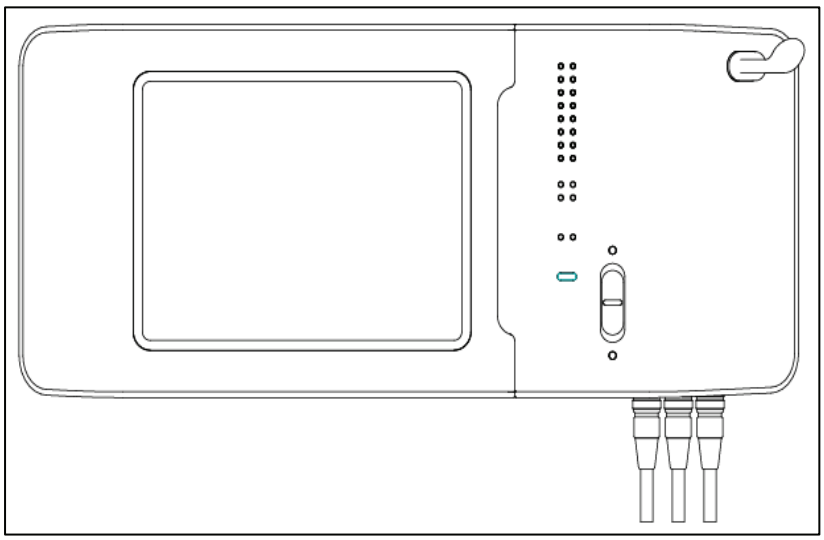


⑤ Combine the control box with bracket that has already been installed on the wall.
And screw them with 4 truss bolts. (M4*10)





⑥ Works have just finished.



Chapter 5. Technical specifications

5.1. Unit technical specifications

5.1.1. General information

1. General

- X-ray beam: Cone Beam
- Reconstruction Algorithm: A real time reconstructing algorithm
- CT reconstruction algorithm: Fast reconstruction algorithm GPU based type new MAR algorithm
- Dynamic Range: 14 bit
- Multi-FOV: (cm)

Special Mode	15X15
Standard Mode	12X8
Dental Mode	8X6
Implant Mode	5X5

- Slice Thickness (mm): Min 0.1/ Max 0.4
- Exposure Time:

<Panoramic Examination Programs>

Standard Panoramic Adult/Child	13.5 sec / 12.0 sec
Hemi-Panoramic (Left and Right)	6.8 sec
Frontal Dentition	10.6 sec
TMJ Open/Close mouth	11.2 sec (4 * 2.8 sec)
Maxillary Sinus	11.0 sec

<Cephalometric Examination Programs (One Shot Type)> 0.4 sec ~ 1.0 sec

- Number of Views: 450 ~ 720
- Number of Sliced Images: Min 160/ Max 608
- Voxel Size: Default 0.2X0.2X0.3 mm (160X160X160 pixel)
- X-ray type: Pulsed X-ray exposure system
- Scan Time (sec) at normal: 15-24 sec
- Rotating Unit Scan Angle (degree): 360 or 185
- X-ray Exposure Angle (degree): 140
- Collimator

Primary collimator	Changeable by FOV Size
	Motorized positioning for PANO& CEPH configuration

- Patient Position: Standing
- Patient Alignment: 3 guiding light beams

- Reconstruction Time: depends on FOV size (40 sec ~120sec)
- Image Magnification
  - CT Examination Programs 1.60:1
  - Panoramic Examination Programs 1.30:1
  - Cephalometric Examination Programs 1.13:1
- Focal spot size: 0.5 X0.5 mm
- Data acquisition speed: 1 Giga bit
- Weight: 270 kg

2. Panoramic imaging detector

- Technology: CMOS sensor with direct deposition (CsI)
  High sensitivity, high speed frame rate, high resolution flat panel sensor
- Active Area
  - Panoramic Mode 6 x 148 mm
- Image Acquisition Area
  - Panoramic Mode 300 x 148 mm
- Pixel Resolution 10.00 lp/mm
- Gray Level 14 bits

3. Cephalometric imaging detector

- Technology: Flat panel detector
- Active Area: 264x 325mm
- Pixel Resolution: 3.93 lp/mm
- Gray Level: 14 bits
- One-Shot Type Sensor): a-Si TFT 10”X12” sensor

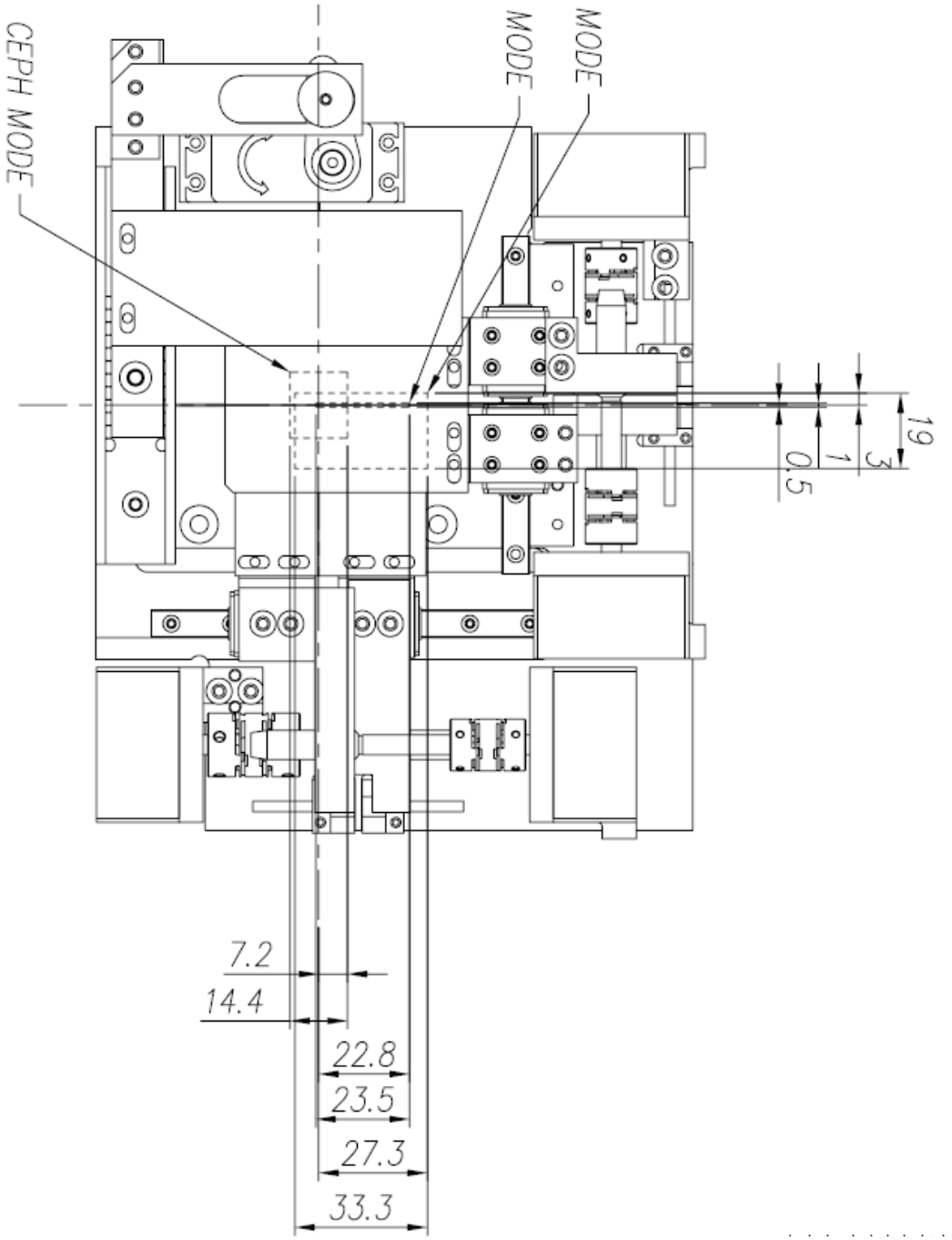
5.1.2. Electrical Characteristics

- Power supply voltage: AC 110/230V ± 10%
- Frequency: 50/60 Hz
- Power rating: 2.0KVA

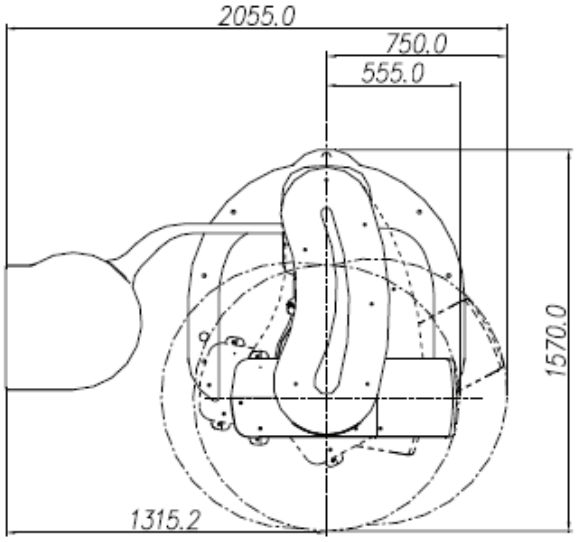
5.1.3. Environmental Characteristics

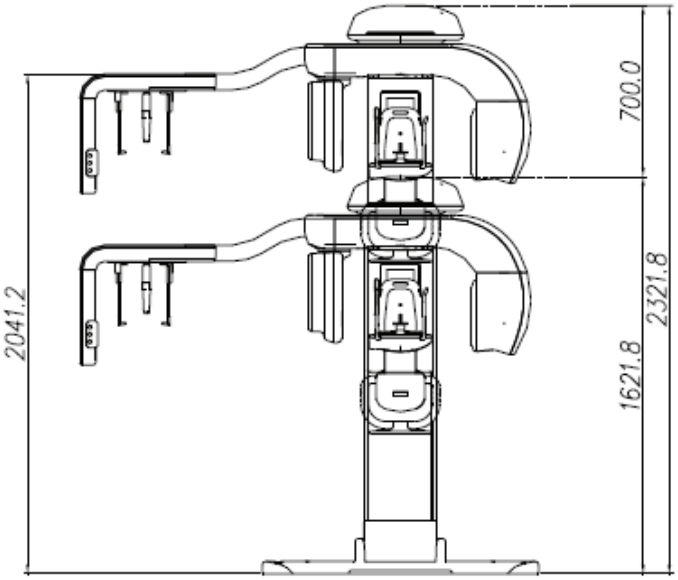
- Operating temperature: 10 ~ 30℃
- Operating relative humidity: 30 ~ 75%
- Operating atmospheric pressure: 700 ~ 1060 hPa
- Transport and storage temperature: 20 ~ 70℃
- Transport and storage relative humidity: < 90% non-condensing
- Transport and storage atmospheric pressure: 500 ~ 1060 hPa

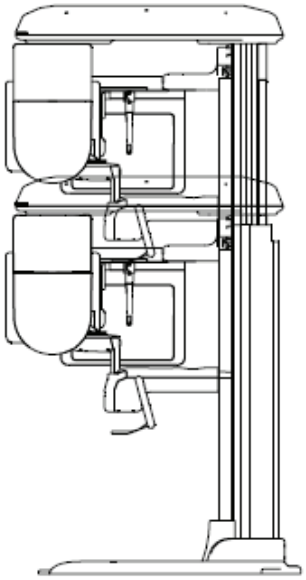
5.1.4. Dimension of beam limiting device



5.1.5. Dimension of the Unit

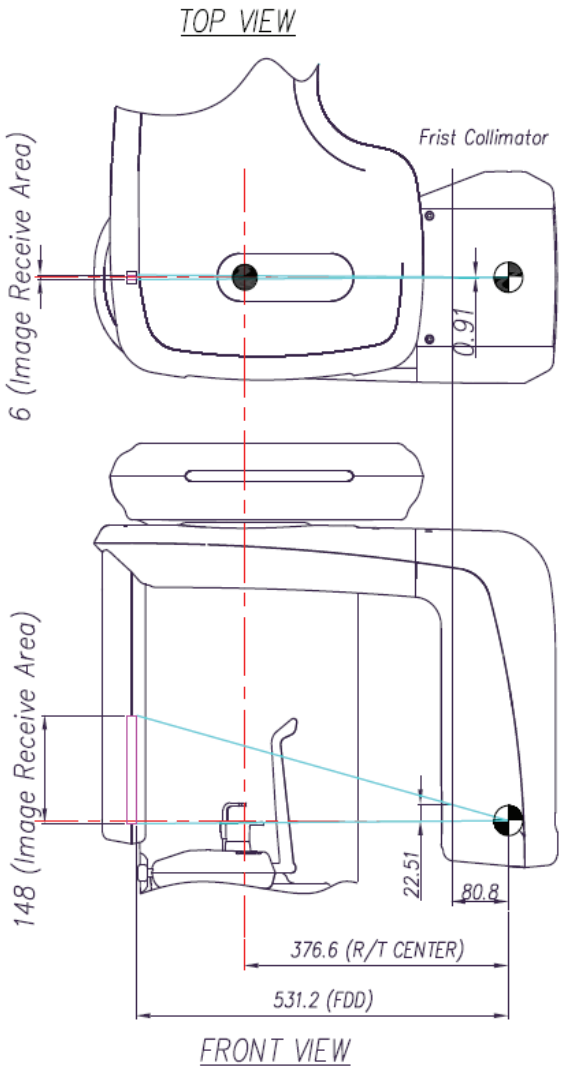






(Unit: mm)

5.1.6. Focal spot distance



FOD, ODD, FDD (mm)

Mode	FOD (Focal Spot to Object Distance)	ODD (Object to Detector Distance)	FDD (Focal Spot to Detector Distance)
CT	424.3	254.5	678.8
PANO	456.6	149.2	605.8
CEPH	1539.4	204.5	1743.9

5.1.7. Standards

This product is designed and produced to meet the following standards:

EN 60601-1, EN 60601-1-3, EN 60601-2-7, EN 60601-2-28, EN 60601-2-32,

EN 60601-1-2, EN 61000-3-2, EN 61000-3-3

EN ISO 9001, EN ISO 13485

5.1.8. Marks & Graphic symbols

TYPE B Equipment

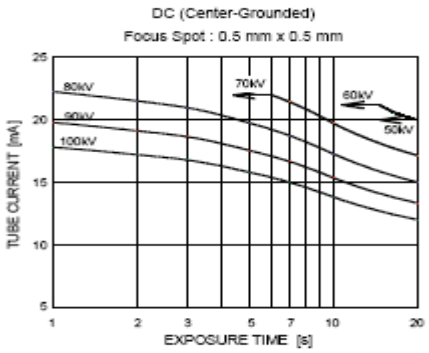
Radiation hazard

5.2. X-Ray generator specifications

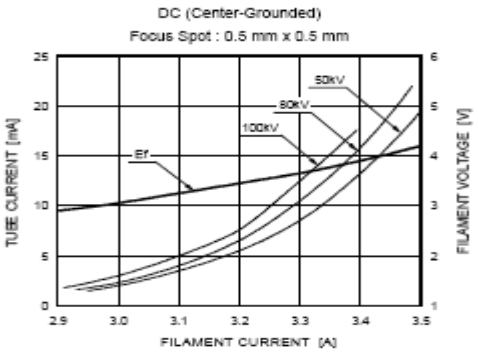
5.2.1. X-Ray Tube Specification (D-051)

- Tube voltage: 50 ~ 100 kV
- Tube current: 1 ~ 22 mA
- Focal spot: 0.5 mm
- Inherent filtration: 0.8 mm Al
- Added filtration: 2.0 mm Al
- Total filtration: 2.8 mm Al
- Filament characteristics: 3.5~4.9V 3.5A(max. filament current)
- Anode angle: 5°
- Anode Hu: 28000J
- Anode cooling rate: 265W
- Input energy at 1 sec: 1750W
- Tube target material: Tungsten

Maximum Rating Charts
(Absolute maximum rating charts)

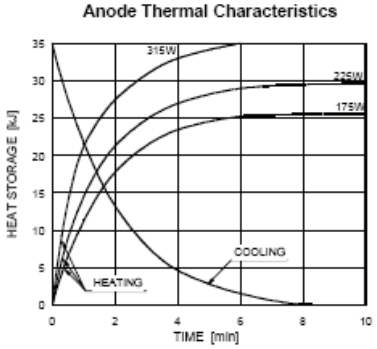


Emission & Filament Characteristics



Note: This graph indicates typical characteristics.

Anode Thermal Characteristics



- 5 -

5.2.2. High voltage generator

- Tube voltage: 50 to 80kV constant potential
- Tube current: 2 to 10mA direct current

5.2.3. X-Ray generation controller

- Focal spot length to Sensor: 678 mm
- Cooling: 1 min. cooling time
- X-Ray generation limit: 50 to 90kV and 2 to 10mA
- High frequency generator, constant potential, micro processor controlled
- Ripple < 5.5%
- Inverter frequency 36 kHz push-pull
- Nominal power less than 1.3 KW
- High voltage DC
- Exposure time

  <Panoramic Examination Programs>

  Standard Panoramic Adult/Child 13.5 sec / 12.0 sec

  Hemi-Panoramic (Left and Right) 6.8 sec

  Frontal Dentition 10.6 sec

  TMJ Open/Close mouth 11.2 sec (4 * 2.8 sec)

  Maxillary Sinus 11.0 sec

  <Cephalometric Examination Programs (One Shot Type)> 0.4 sec ~ 1.0 sec

5.3. Image Acquisition system

5.3.1. Image Reconstruction time

FOV Mode	Voxel Size	Scan time	Recon time (sec)	Reconstruction time (Metal function)
S (150X150)	0.25*0.25*0.25	High (24 sec)	54	It takes twice the time compared to reconstruction without metal function.
		Normal (15sec)	47	
	0.3*0.3*0.3	High (24 sec)	39	
		Normal (15sec)	34	
S (120X80)	0.2*0.2*0.2	High (24 sec)	38	
		Normal (15sec)	31	
	0.3*0.3*0.3	High (24 sec)	22	
		Normal (15sec)	16	
D (80X60)	0.2*0.2*0.2	High (24 sec)	30	
		Normal (15sec)	17	
	0.3*0.3*0.3	High (24 sec)	18	
		Normal (15sec)	12	
I (50X50)	0.2*0.2*0.2	High (24 sec)	18	
		Normal (15sec)	13	
	0.3*0.3*0.3	High (24 sec)	16	
		Normal (15sec)	11	

*Image reconstruction time can be varied, depending on the computer specification and/or its working condition.

*The above data is obtained from the computer system based on the HP Workstation XW 8600, Vista ENG, 4GB RAM, GTX 260 (1G) RAM

5.3.2. Computed Tomography Detector

- Technology — High resolution flat panel detector
- Pixel size — 200 ㎛
- Voxel size

FOV Mode (mm)	Voxel Size (mm)	Scan time (sec)	Data Size (MB)	Voxel Number
S (150X150)	0.25*0.25*0.25	High (24 sec)	412	600*600*600
		Normal (15 sec)		
	0.3*0.3*0.3	High (24 sec)	240	500*500*500
		Normal (15 sec)		
S (120X80)	0.2*0.2*0.2	High (24 sec)	274	600*600*400
		Normal (15 sec)		
	0.3*0.3*0.3	High (24 sec)	81.7	400*400*268
		Normal (15 sec)		
D (80X60)	0.2*0.2*0.2	High (24 sec)	91.5	400*400*300
		Normal (15 sec)		
	0.3*0.3*0.3	High (24 sec)	27.3	268*268*200
		Normal (15 sec)		
I (50X50)	0.2*0.2*0.2	High (24 sec)	30.5	252*252*252
		Normal (15 sec)		
	0.3*0.3*0.3	High (24 sec)	9.04	168*168*168
		Normal (15 sec)		

- Frame rate 30 fps
- Gray scale 14 bit
- Active area 144 mm * 241.6 mm
- Limiting Resolution 2.5 lp/mm in detector space

5.3.3. Panoramic Image Detector

- Technology CMOS sensor with Cesium Iodie (CsI) scintillator screen.
- Pixel size 100 ㎛
- Active area 6 mm * 148 mm
- Limiting Resolution 5 lp/mm
- Gray scale 14 bit

5.3.4. Cephalometric Image Detector

- Technology FPD based on a-Si TFT
- Pixel size 127㎛
- Active area 325.1 mm * 264.2 mm
- Pixel resolution 3.94 lp/mm
- Gray scale 14 bit

5.4. Standard Accessories

- Chin support
- Temple clamps
- X-ray exposure switch with extensible cable
- Hand grips
- Disposable bag
- Bite blocks with supporters
- Accessory trays

5.5. Image Viewer programs

5.5.1. 3D Image Viewer (Ez3D2009 Standard)

EZ3D2009 Standard is three-dimensional dental image viewer for prompt and accurate diagnosis with many useful functions as “various MPR function”, “two-dimensional analysis” and “three-dimensional animating work” by loading DICOM format CT image, and more.

- Easy conversions through various rendering method as VR (Volume Rendering)/MIP/minIP/X-ray.
- More accurate 3-D image by MPR rotating, curve, 3-D zoom rendering mode.
- Cross-sectional view function for fast analysis
- Convenient color management system of objects, color-map, opacity graph, preset files and more.
- Main Tool

  <View>

  Pan: Move image in the pane

  Rotate: 3D/2D rotation

  Zoom: Zoom in/out the image

  Windowing: Adjust image brightness and coloring

  Invert: Invert image brightness and coloring

  Text overlay: Show image information

  VOI (View of Interest) overlay

<Measure>

Distance: Ruler for 2 point, and Tapeline for various points

Angle

Profile: HU (Hounsfield Unit) = CT Number

Area: Measure the area by drawing ROI (Region of Interest)

ROI (Region of Interest)

<Segmentation>

Draw Mask

3D Picker

Mask Overlay

<Output>

Capture: Pane, Region, Full screen

Print

CINE player

- Task

  <MPR>

  Rotating axis: Move, rotate, adjust thickness

  Oblique slice

  <Curve>

  Cross-sectional

- Fine tuning

  Opacity adjusting function

- 3D Zoom
- **Implant Simulation**
- **Canal Drawing**
- **EzReport**
- **DICOM Print**
- **STL Export**
- **Memory Export (3D Basic)**

5.5.2. 3D Image Viewer (Ez3D2009 Professional)

EZ3D2009 Professional supports following value-added functionality with all functionality at EZ3D2009 Standard.

- Dynamic Detail View
- CD Export-2D, 3D(Pro)
- Volume Measure

5.5.3. 3D Image Viewer (Ez3D2009 Premium)

EZ3D2009 Premium supports following value-added functionality with all functionality at EZ3D2009 Professional.

- Auto Canal Drawing
- Knowledge Info
- Auto Cross-Sectional
- Tooth Detachment

5.5.4. Database & File Server, 2D Image Viewer (EasyDent)

- One click operation
- User friendly graphic interface
- Various image format support
- Various image process & accurate measure tool
- Main Tools

  <Edit>

  Initialize

  Edit Image (Rotation)

  <View (Construction of Screen)>

  Overlay

  Information

  Memo

  <Patient Management>

  Patient

  Export

  User Account Manager

<Draw Tool>

Free Draw

Line

Poly-Line

<Measure Tool>

Distance

Continuous Distance

Angle

<Image Processing>

Invert

Sharpen

Film Effect

<Tool(Image Analysis)>

Magnifier

Slide

Profile

<Implant Simulation>

Add Implant

Add Implant Crown

<Various View Mode>

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CE 0499

CE symbol grants the product compliance to the European Directive for Medical Devices 93/42 as a class IIB device. Authorized by **Grand-Duche De Luxemburg**.

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PaX-Reve3D

Installation Manual
Release Version 1.0.0
Dated 6th May 2009

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