

# **Pax-i3D** (PHT-6500)

**Installation Manual** | Version 1.3.0

**HARDWARE and SOFTWARE**

**English**



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## **i**nnovation **i**nside

"i" stands for 'innovation', one of the core values of VATECH, which aims to expand accessibility of medical solutions to more people.

## Notice

This manual covers the installation procedures for the PaX-i3D dental X-Ray unit. An installation manual and user manual are shipped with each hardware unit.

**Product name: PaX-i3D (Model: PCH-6500)**

**Manufactured by : VATECH Co., Ltd.**

In this manual, Equipment refers to the **PaX-i3D**.

In abbreviated forms, **CEPH** and **PANO** denote **Cephalometric** and **Panoramic**, respectively.

The “**Optional**” in this manual means that the function or features are left to customer’s or user’s choice

Thorough review of this manual is recommended before installation to ensure proper installation of this equipment. The **PaX-i3D** is in steady improvement. The information contained in this manual may be subject to change without notice, justification or notification of the persons concerned.

All brand names and logos used in this manual are copyrighted.

For further information not covered in this manual or in the accompanying documentation, please contact us with any method listed below:

Telephone: +82-1588-9510

E-Mail: [gcs@vatech.co.kr](mailto:gcs@vatech.co.kr)

Website: <http://www.vatech.co.kr>

Address: 23-4, Seogu-dong, Hwaseong-si, Gyeonggi-do, KOREA



CAUTION

**When installing the equipment in cold weather conditions which could cause condensation due to a sudden temperature change, allow at least an hour before turning ON the equipment.**

**Be careful when moving the equipment. Excessive force to it under its unstable position could cause it to fall down, resulting in personal injuries and/or property damage**









IMPORTANT

**Failure to read and understand the information provided in this manual may result in physical injury, damage to the equipment or equipment failure. Please read each CHAPTER in its entirety and understand the information therein before attempting any of the installation procedures.**

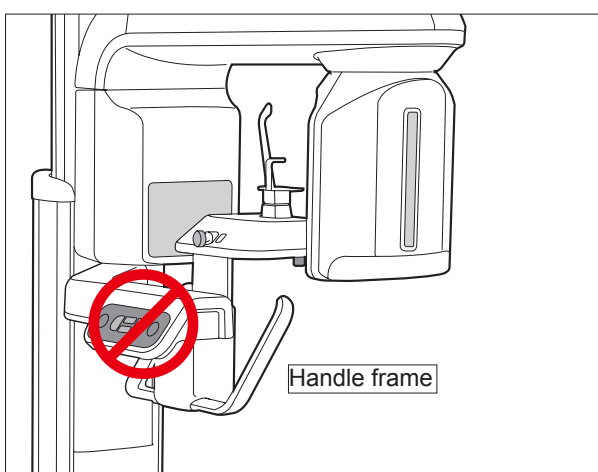
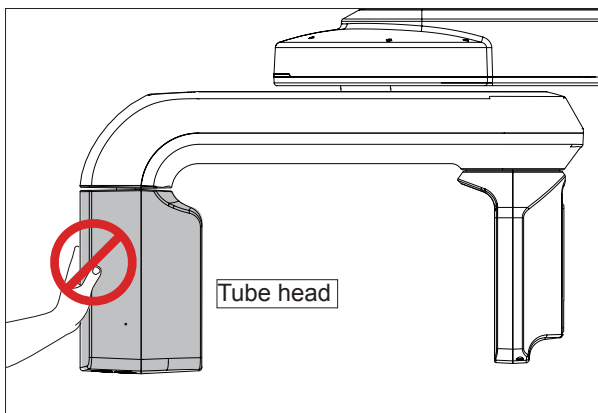
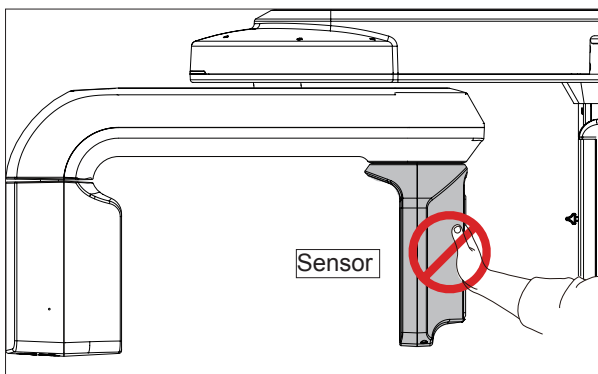


## Conventions Used in this Guide

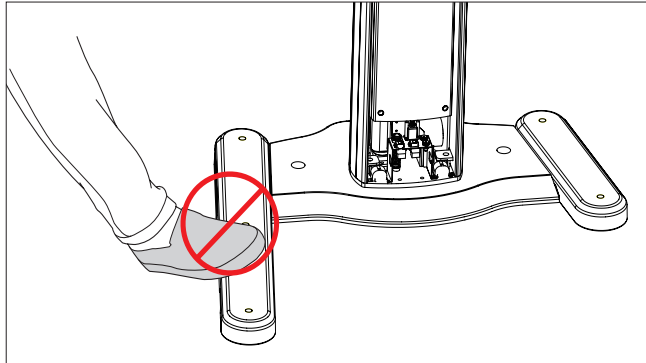
The following symbols are used throughout this manual to emphasize information or indicate a potential risk to the equipment or user. Make sure that you fully understand each symbol and obey the instructions which appear to the right of the symbol.

	<p><b>Notes</b> help you optimize system performance. Carefully read each note to ensure that the equipment is used to its full potential.</p>
	<p><b>Cautions</b> indicate a situation that demands prompt but careful action, remedy or emergency attention.</p>
	<p><b>Warnings</b> indicate information that should be followed with the utmost precision. Failure to comply with warnings may result in severe damage to the equipment and/or physical injuries to the patient or operator.</p>
	<p><b>Radiation symbols</b> indicate a possible danger from exposure to radiation.</p>
	<p><b>Important symbols</b> indicate a compulsory action or instruction.</p>
	<p><b>ESD susceptibility symbols</b> indicate that an item is susceptible to damage from electrostatic discharges.</p>

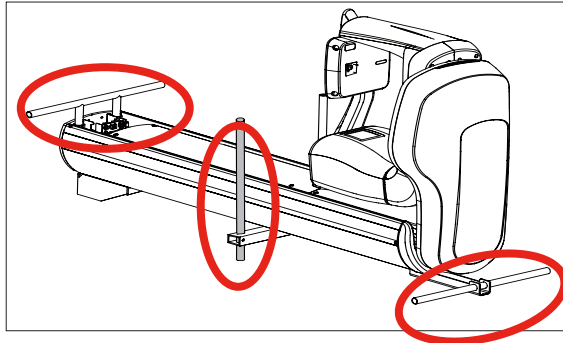
**Never touch or hold the sensor or tube head areas while moving, installing or operating the equipment.**



**Do not step on the base unit while installing or operating the equipment.**



**Recommended holding area during transportation(OK)**



**WARNING**

**Do not use the electrical power drill during installation unless it is allowed to do so.**



**At least 3 installers are required to install the equipment safely,  
However, the number of the installers at the individual steps is various.**



## Cautions

1. It is critical that installers read and understand the installation instructions fully before installation.
2. The installer must confirm that the system is installed according to the instructions provided by this manual and perform the appropriate procedures therein.
3. If the equipment has been stored at temperatures of below 10°C (50°F) for more than a couple of hours, allow the equipment to reach room temperature before applying mains voltage.
4. Installation and related work must only be performed by people authorized by VATECH.
5. Do not connect any items or equipment to this system which are not part of the system: **IEC60601-1-1** (3<sup>rd</sup> edition: 2005).
6. Any equipment not approved by VATECH must comply with the applicable standards: **IEC 60950-1** (2<sup>nd</sup> edition: 2005) for IT equipment (Ex: PC) and **IEC 60601-1** (3<sup>rd</sup> edition: 2005) for medical electrical equipment.
7. All operators of this equipment are responsible for ensuring that the requirements outlined in **IEC 60601-1-1** (3<sup>rd</sup> edition: 2005): Safety Requirements for Medical Electrical Equipment are fully met to ensure the safety of patients, operators and the environment.
8. Never touch sensitive areas such as sensors during installation. These areas are indicated at the applicable stages during the installation procedures.
9. Use of wireless phones may interfere with the operation of this equipment.
10. Use an ESD (electrostatic sensitive device) wrist band during installation and connect it to a ground wire.
11. Touch a ground point to discharge static electricity before handling PCB boards.



## Installation Site

1. The PC monitor, emergency cut off switch and X-Ray exposure switch should be installed in the vicinity of the operator so that he or she can manage them simultaneously in an emergency.
2. Proper shielding of the room is essential: Since these requirements vary depending on the country, it is the installer's responsibilities to verify that all applicable radiation safety requirements are met.
3. This equipment should not be installed in the immediate vicinity of other devices.
4. Do not install the equipment in an area that is exposed to strong electromagnetic fields.
5. Do not install this system in an area where there is the risk of an explosion.
6. The electrical installation of this system shall comply with all local code requirements for electro-medical systems: **IEC 60364-7-710:2002**.
7. It is strongly recommended that a UPS be installed at the same time as the equipment.
8. The equipment, PC, and all peripheral devices must be well grounded



## Warnings Regarding X-Ray Radiation

1. Failure to install this equipment in an approved location may be dangerous to the patient and operator.
2. Stationary radiation shielding must be installed to protect the operator from radiation.
3. The X-Ray system may cause injury to the patient if improperly used. Obey all federal and municipal standards regarding radiation safety.
4. When exposing the patient to the X-Ray, the operator must be behind a protective wall or take other protective actions. The operator should remain at least 2 m (7 feet) away from the X-Ray when pressing the exposure switch and observe the patient and capture-progression.
5. Operators must provide protective clothing to the patient before X-Ray capturing. Pregnant women must consult with a doctor prior to being exposed to an X-Ray.



**This equipment complies with the following standards:**

Installation and operation of this equipment complies with the following standards:

**IEC60601-1-1:2005** Standard Safety Requirements for Medical Electrical Equipment

**IEC 60601-1-2:2005** Electromagnetic Interference

**IEC 60601-1-3:2005** Radiation Protection

**IEC 60601-1:2005** Standards for Medical Electrical Equipment

**IEC 60950-1: 2<sup>nd</sup> edition:2005** Standards for Information Technology Equipment

**IEC60601-2-7 and IEC60601-2-28:** X-Ray Tube Heads

**IEC60364-7-710: 2002:** Local Code Requirements for Electro-medical System Installation

1. **IEC 60601-1-1:2005** regulations must be fully met in order to ensure the safety of patients, operators and the environment when any person assembles or modifies a medical electrical system or combines it with other equipment.
2. Any equipment not provided by VATECH must be connected in compliance with the following standards: **IEC 60950-1** and **IEC 60601-1**.
3. The electrical installation of this equipment must comply with local code requirements for electro-medical systems: **IEC 60364-7-710: 2002**.

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# Introduction

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## 1.1 Manufacturer's Liability

As the manufacturer, VATECH assumes liability for the safe and reliable installation and operation of this equipment only when:
















- Equipment installation, including software installation, was carried out by an authorized agent in accordance with this installation manual.
- Electrical installation was carried out in accordance with the appropriate requirements specified in **IEC-60363**.
- Genuine original or approved replacement parts are used.
- Maintenance/repair service has been performed by a qualified technician(s) from one of our authorized agents.
- The equipment has been used under normal condition in accordance with the user's manual.
- PC Software has been properly used in accordance with the manufacturer's installation instructions and user manuals.

## 1.2 Customer's Responsibility

Site planning and preparation are the responsibility of the customer. The following points should be considered fundamentally important to all customers of this product:

- Install all required materials prior to delivery of the system.
- Complete the floor, ceiling and walls of the room before installing the equipment.
- Install proper sized junction boxes, with covers, at the necessary locations.
- Install a mains power with the proper voltage output and an adequate kVA rating.
- Install the circuit breaker specified by this manual.
- Provide the installer(s) with the current dimensions of the room including the hall way and entry door sizes.
- The customer must have an electrician install more than two power outlets in the room.

## 1.3 Marks & Symbols

Symbols	Description	Location
	Alternate current	
	Attention: consult accompanying documents	<b>Label</b>
	Dangerous voltage	<b>Power board</b>
	Protective earth (Ground)	<b>Power board</b>
	Off (power: disconnect from the main switch)	<b>Main switch</b>
	On (power: connect to the main switch)	<b>Main switch</b>
	TYPE B Equipment	<b>Label</b>
	Radiation hazard	<b>Label</b>
	EC representative	<b>Manual</b>
	The CE symbol indicates that this product complies with the European Directive for Medical Devices 93/42/EEC as amended by 2007/47/EC as a class IIb device.	<b>Label</b>
	This equipment is UL-marked according to UL60601-1 and CAN/CSA C22.2 No. 601.1	<b>Label</b>
	Address where the equipment was manufactured	<b>Label</b>
	This symbol indicates that electrical and electronic equipment must not be disposed of as unsorted municipal waste and must be collected separately.	<b>Label</b>
	This symbol warns the user to take precautions when dealing with electronic components which are sensitive to static charges	<b>MCU board packaging</b>
	This symbol indicates that this equipment is classified as a CLASS 1 LASER PRODUCT in accordance with IEC 60825-1 ED.1 regulations.	<b>Label</b>

## 1.4 Standards and Regulations

### A. Standards

This X-Ray equipment complies with the following standards:

IEC/EN/UL 60601-1, IEC/EN 60601-1-1, IEC/EN 60601-1-2, IEC/EN 60601-1-3, IEC/EN 60601-2-7, IEC/EN 60601-2-28, IEC/EN 60601-2-32, IEC/EN 60601-2-44, ISO 9001, ISO 13485



The CE symbol indicates that this product complies with the European Directive for Medical Devices 93/42/EEC as amended by 2007/47/EC as a class IIb device.

### B. Classification: (IEC60601-1 6.1)

**Protection against the ingress of water: IEC60529 edition 2.1**

Ordinary Equipment: IPX0

**Protection against electric shock:**

Class I equipment, Type B Applied Parts



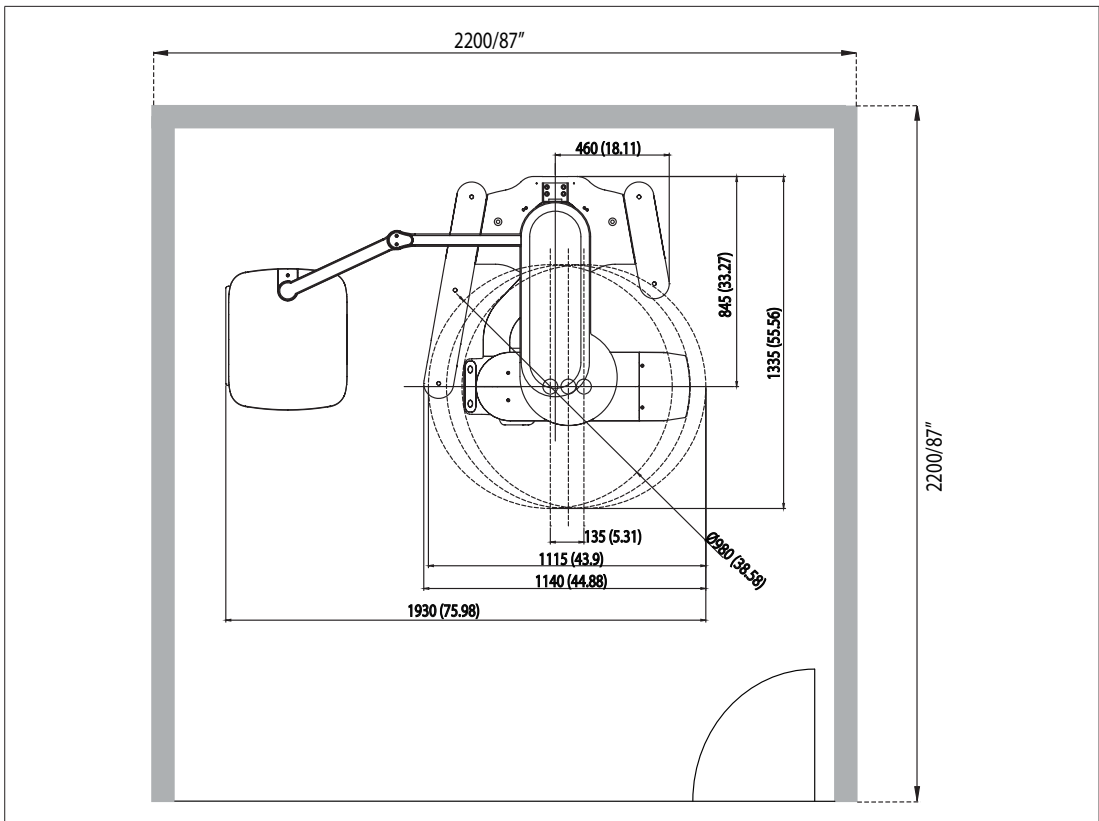
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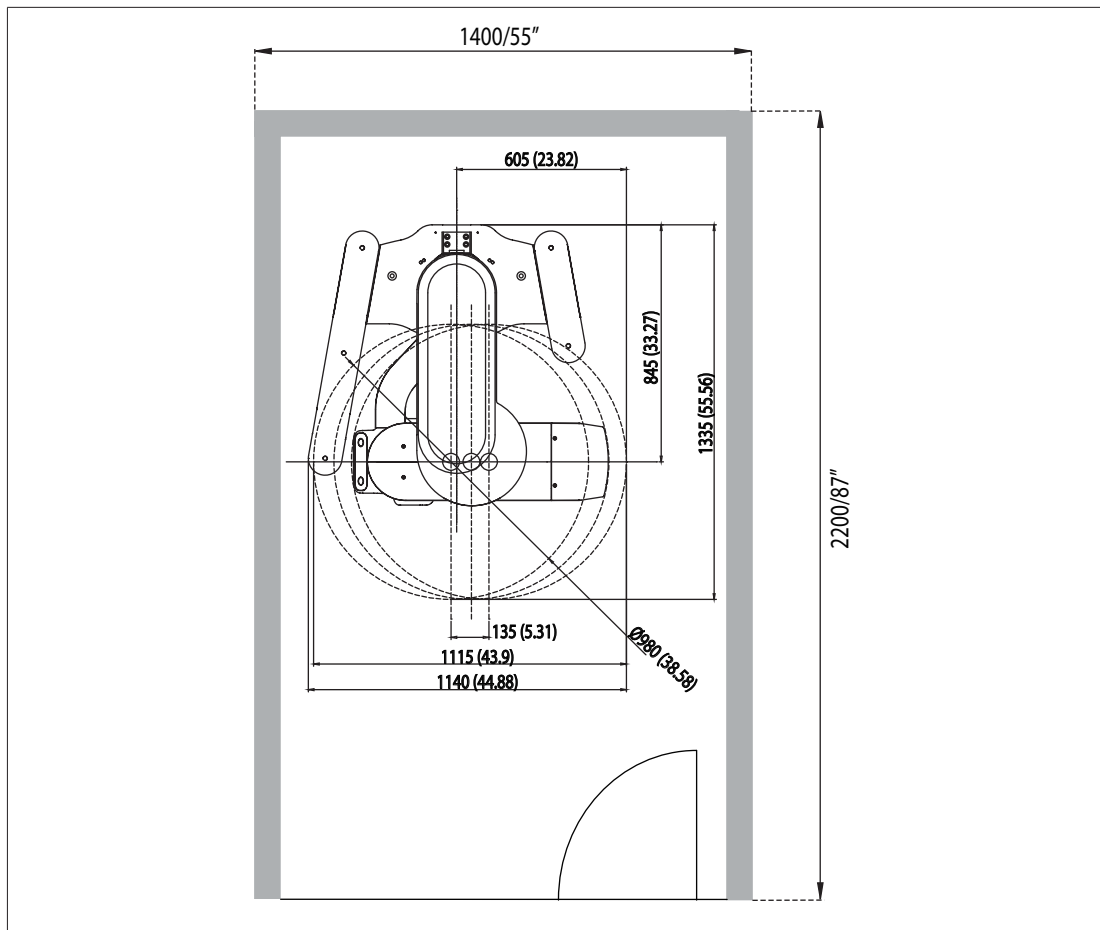
## 2.1 Room Requirements



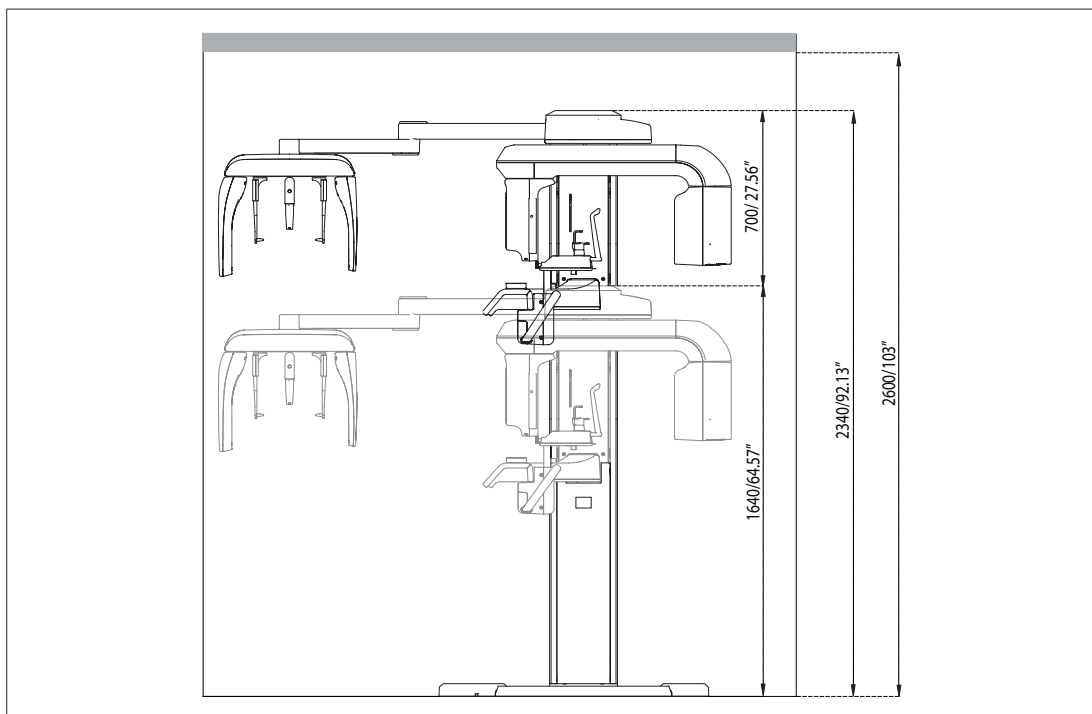
1. The location of this equipment should allow for high visibility of the patient by the operator and the operator should be as near to the patient as possible.
2. This equipment should not be installed on thick carpets for stability reasons.
3. Anti-static floor materials should be used around the equipment.
4. The PC monitor, emergency cut off switch and X-Ray exposure switch should be installed in the vicinity of the operator so that he or she can manage them simultaneously in case of emergency.



**With Cephalometric unit (optional):** 2,200 mm x 2,200 mm/87" x 87" or wider



**Without Cephalometric unit:** 2,200 mm x 1,400 mm/87" x 55" or wider

**Ceiling Height:  $\geq 2,600\text{mm}/103''$** **Minimum space required:**

- **With Cephalometric unit:** 2,200 mm(L) x 2,200 mm(W) x 2,600 mm(H) / 87"(L) x 87"(W) x 103"(H)
- **Without Cephalometric unit:** 2,200 mm(L) x 1,400 mm(W) x 2,600 mm(H) / 87"(L) x 55"(W) x 103"(H)

The system is normally installed beside a wall, and the operator uses the system on the left.

**Lead thickness:  $\geq 1$  mm****Width of the entrance:**

The door of the X-Ray room should have a clearance of more than 800 mm (31.5") wide.

**Floor area:**

The floor of the X-Ray room must be stable and level for system balance.

The floor must be able to support a minimum weight of  $500 \text{ kg/m}^2$  (110 lbs/feet<sup>2</sup>).

**Protection against radiation**

- To protect against radiation hazards, follow all federal and municipal requirements.
- During exposure, the operator should follow applicable radiation shielding requirements and remain at least 2m (7') from the source of the radiation.
- Maintain visible contact with the patient and a clear view of indicators such as the warning lamp and imaging status on the PC.



## 2.2 Specifications for Electrical Installation

These specifications are based on the **MEIGaN** (Medical electrical installation guidance notes).

Consult the companion manual for further information. : **Volume 3: Specification for Electrical Installation.**

## 2.3 Electrical Requirements



**This equipment must be connected to a grounded outlet to fulfill the safety provisions specified in IEC 60364: the 2<sup>nd</sup> edition (2006).**



**It is mandatory that both PC and equipment use the same power line if connected to an MPSO.**

**Whenever possible, use different power outlets for each device. If a multiple portable socket outlet (MPSO) must be used, ensure that the PC and equipment are connected to the same MPSO.**

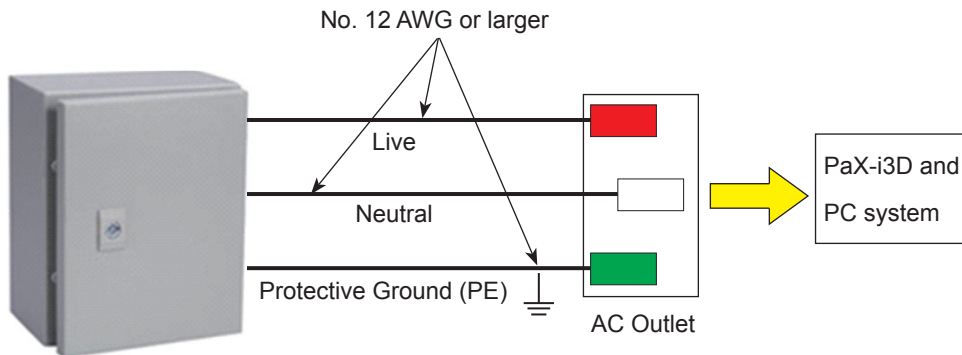


**Use a dedicated power outlet for the power cord. Failure to do so may result in unstable system operation caused by power fluctuations.**

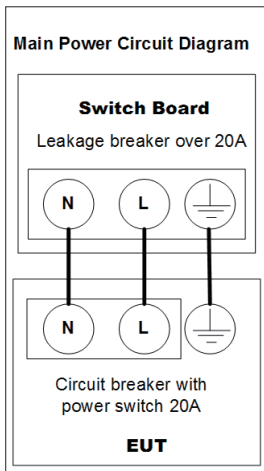


**It is strongly recommended that you install an AVR. An AVR (automatic voltage regulator) maintains a constant voltage and allows for continuous operation in the event of a power fluctuation.**

Power supply voltage	AC100-120 V / 200-240 V
<ul style="list-style-type: none"> <li>The input line voltage depends on the local electrical distribution system.</li> <li>Allowable input voltage fluctuation requirement: <math>\pm 10\%</math>.</li> </ul>	
Frequency	50/60 Hz
Phase	single
Power rating (maximum power consumption)	Max.2.2 kVA (during exposure)



Central distribution panel w/a circuit breaker



1. To assure line voltage quality, a separate 3-core grounded power cable connected directly to central distribution panel with over-current circuit breaker rated for 20/15A must be used.
2. The mains resistance should not exceed 0.5  $\Omega$ .
3. This equipment should be connected to the earthed outlet.



## 2.4 Temperature and Humidity

During operation:

Ambient temperature	10 ~ 35 °C (50 ~ 95 °F)
Relative humidity	30 ~ 75 %
Atmospheric pressure	860 ~ 1060 hPa

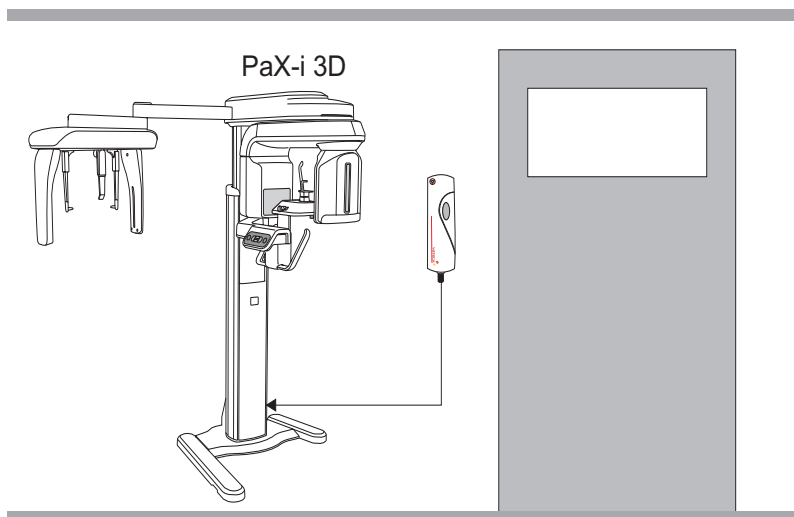
During transportation and storage:

Temperature	-10 ~ 50 °C (14 ~ 122 °F)
Relative humidity	10 ~ 75 % non-condensing
Atmospheric pressure	860 ~ 1060 hPa

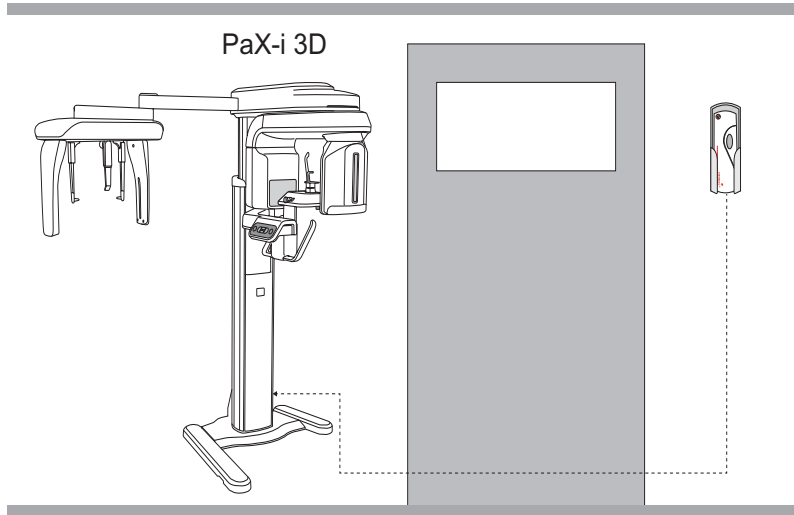
## 2.5 Exposure Switch Installation Options

There are three options for installation, depending on the configuration of the site. Nevertheless, the 2<sup>nd</sup> option is preferred.

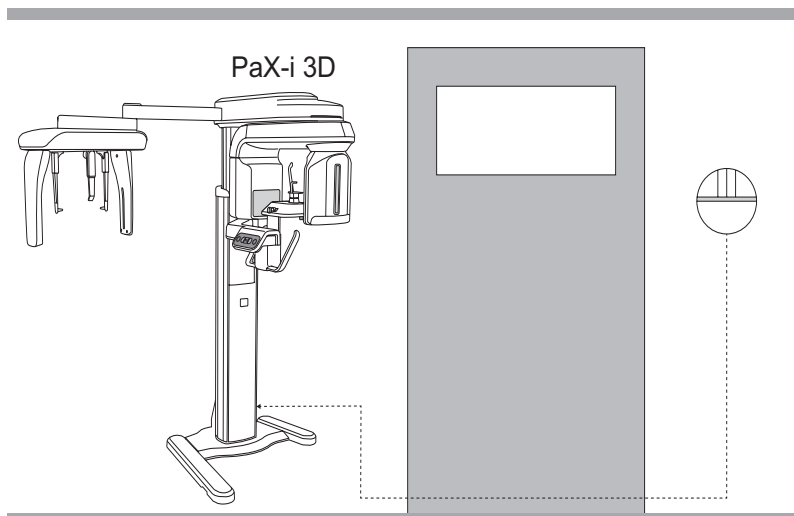
**Option No. 1:** The user operates the exposure switch from inside the X-Ray room.



**Option No. 2:** The user operates the exposure switch from outside the X-Ray room.  
The exposure switch holder is mounted on the wall.

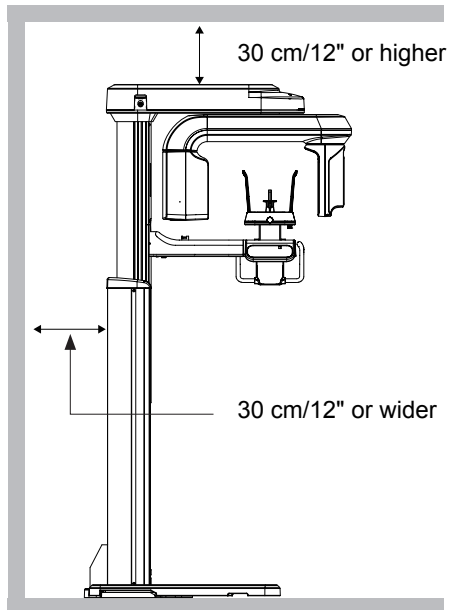


**Option No. 3:** The 3rd party exposure switch (not VATECH's) is used on demand of the customers.  
For this scenario, see the Appendix D “**Connecting the 3<sup>rd</sup> party exposure switch**” for details.

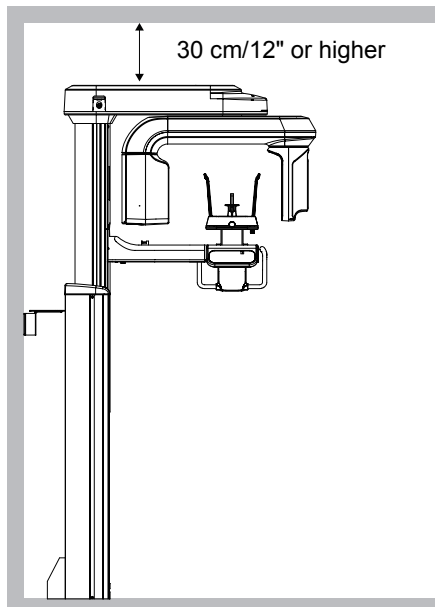


## 2.6 Installation Versions

### Base-mounted type: Default



### Wall mounted type: Optional



## 2.7 Installing the Warning Lamp and Door Interlock Switch

Refer to Appendix **A** for a complete installation guide.

- This system can be equipped with a warning lamp and the door interlock switch which are activated when the X-Ray is energized.
- The warning lamp and the door interlock switch are not included with the equipment.
- The warning lamp and the door interlock switch must be installed by a qualified technician.

## 2.8 Installing the Emergency Stop Switch

Refer to Appendix **B** for a complete installation guide.

- Install the emergency stop switch along the main power cable in the central distribution panel.
- Install this switch so that it is within easy reach of the operator but cannot be accidentally pressed.
- The switch must be a fool-proof model..


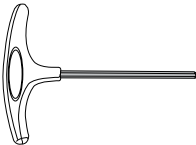
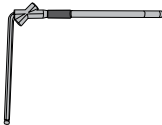
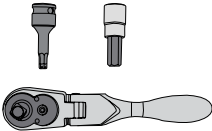
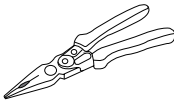
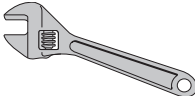
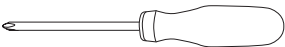

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## Before Installing the System





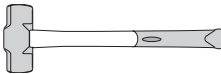
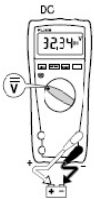

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### 3.1 Required Tools

The following tools are necessary to install the **PaX-i3D**.

Item	Figure	Size
Wrench set	 <p>Allen wrench set 1.5 mm - 10 mm (0.05"-0.4")</p>	1.5 mm-10 mm/0.05"-0.4"
T-shaped hex wrench		6 mm-10 mm/0.23"-0.4"
Hex wrench w/ handle		6 mm-10 mm/0.23"-0.4"
Ratchet wrench		Tips: 3 mm-8 mm/0.12"-0.3"
Needle-nose pliers		regular
Monkey wrench		
Cross head screw driver w/ magnetic tip		L=200 mm(7.9")
Spirit level		



Item	Figure	Size
Anti-static glove		
Knife		
Tape ruler (Optional)		5 m: for wall mounted type
Marker pen(thick tip)		For wall mounted type
Hammer (Optional)		For wall mounted type
Multi-meter		
Hammer drill(Optional)		For wall mounted type

## 3.2 Checking the ShockWatch and TiltWatch Indicators

This equipment is carefully inspected and packed prior to shipment. Nevertheless, the recipient of this equipment should carry out a visual inspection of all packages before opening them in order to ensure that the equipment was not damaged during shipping.



**The installers and/or supervisor should check the status indicators on each package before opening the package.**



**The ShockWatch and TiltWatch indicators become red if the package has suffered any physical impacts during transportation. However, a red indicator does not necessarily mean that the unit has been damaged.**

**These indicators are affixed only on the main box, which contains the equipment very sensitive to external impacts**

### Check the followings before opening each package:

1. These indicators are affixed only on the main box, which contains the equipment very sensitive to external impacts
2. Check the packaging for signs of damage visually.
3. Locate the ShockWatch and TiltWatch indicators and check if they have been activated.

If either the packaging is damaged or the **ShockWatch** or **TiltWatch** indicators have been activated, please do not open the package and immediately contact the shipping company, agent or **VATECH**.



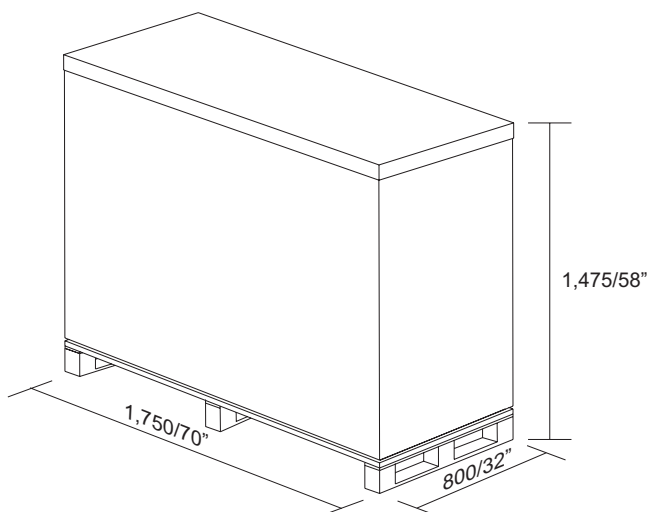
### 3.3 Unpacking the Boxes



All packaging and Styrofoam used to ship this equipment is recyclable. Return the packaging to VATECH representatives or dispose of it in compliance with the legal regulations of your country.

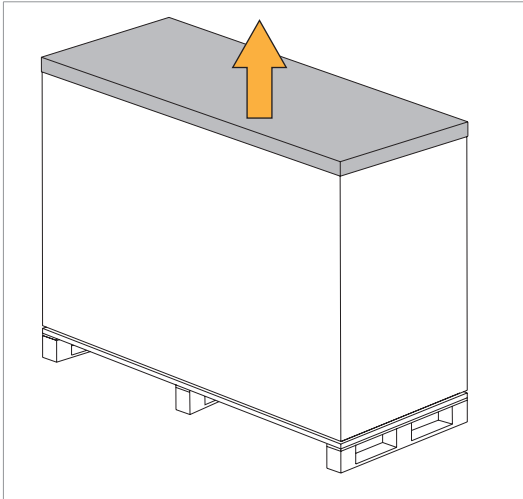
#### Box No.1: Main box

<b>Components</b>	<ul style="list-style-type: none"> <li>• Column and Rotating unit assembly</li> <li>• Accessories and parts</li> <li>• PC system(optional)</li> </ul>
<b>Size(mm/inch)</b>	1,750 (L) x 800 (W) x 1,475 (H)/70"(L) x 32"(W) x 58"(H)
<b>Weight(kg/lbs)</b>	145/320

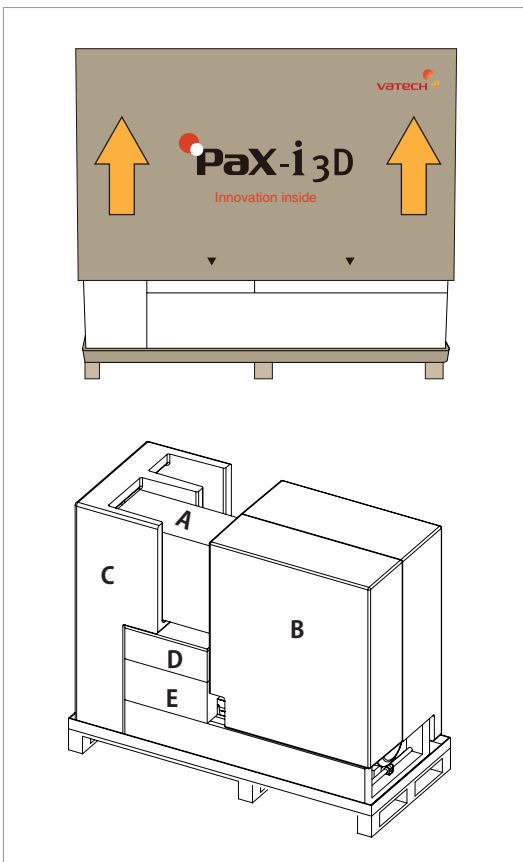


Main box

1. Move the main box to a convenient place as close as possible to the installation location



2. Separate the top cover after removing the strapping bands.



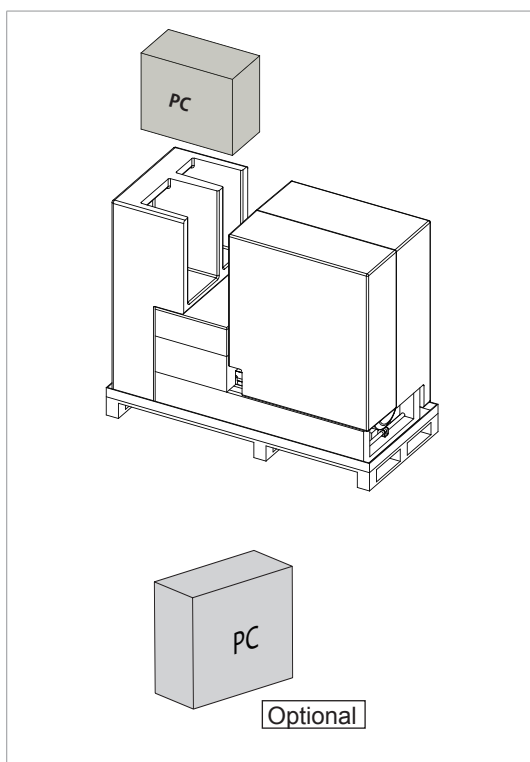
3. Lift up and remove a single side cover.



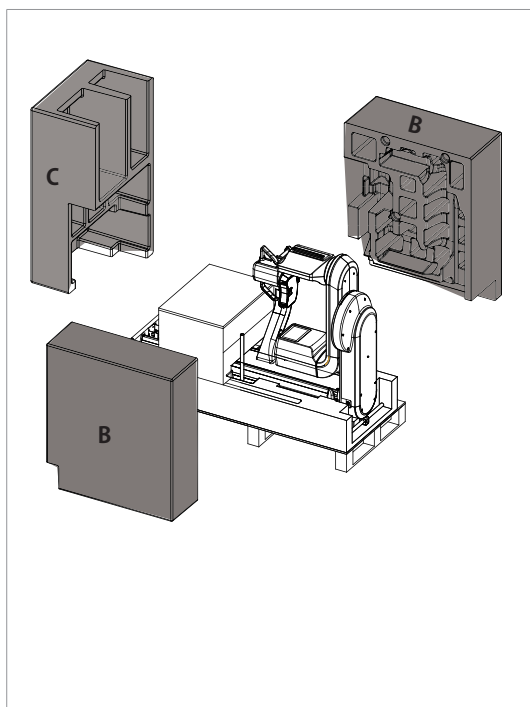
NOTE

In case of unable to lift the side cover up fully, due to ceiling height, cut the box in half using the utility knife instead.

- A: PC system (Optional)
- B: EPS
- C: EPS
- D: Accessory and part box1
- E: Accessory and part box2

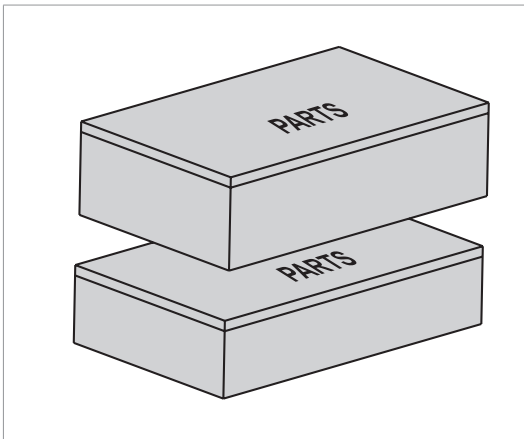


4. Put the PC system down on the floor.

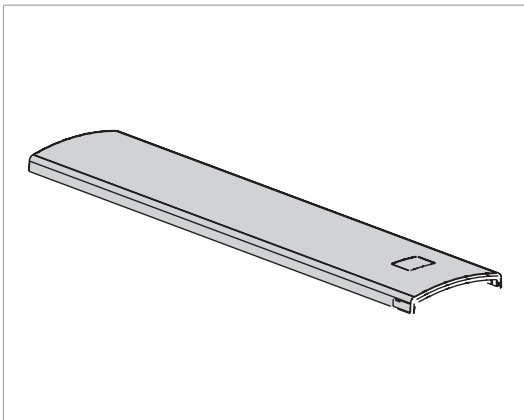


5. Separate 3 side EPS(B, C) in the following order.

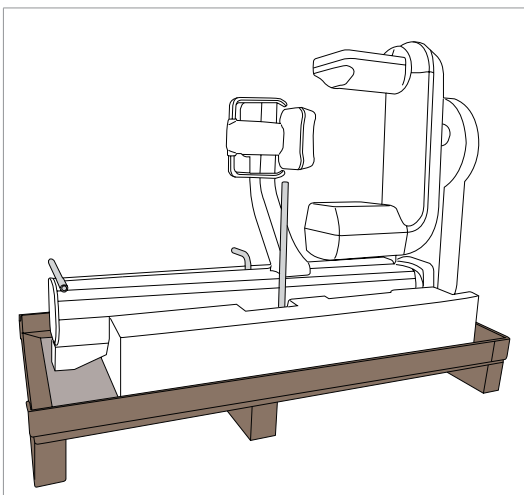
**B→C**



6. Remove two parts boxes(D, E).



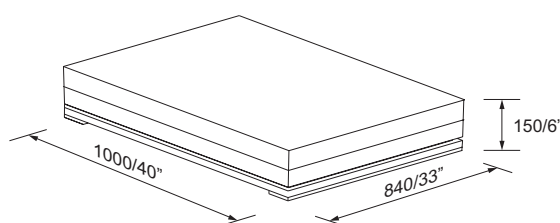
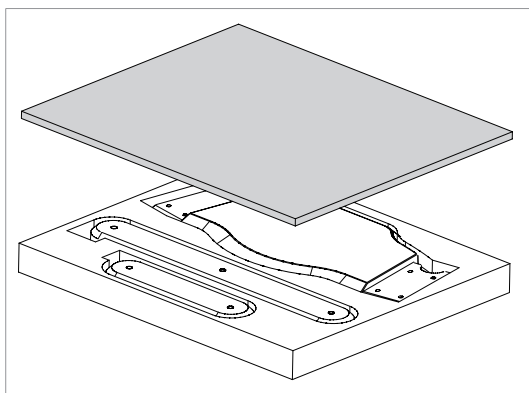
7. Remove the case column front cover.



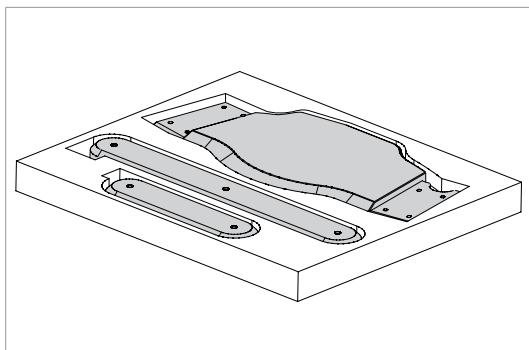
View after the removal of the EPS foams

**Box No. 2: Base unit**

Component	Size(mm/inch)	Weight(kg/lbs)
Base	1000 x 840 x 150/ 40" x 33" x 6"	50/110

**Removing the cover**

1. Remove the top cover of the box

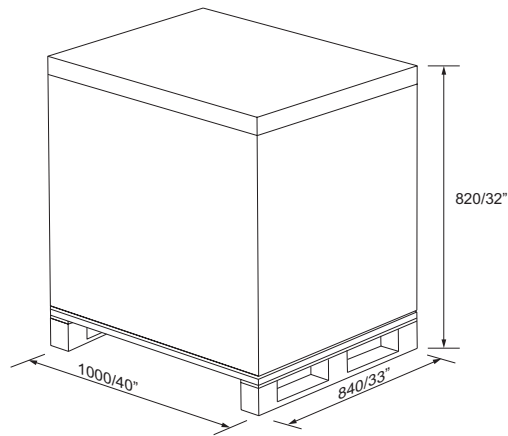
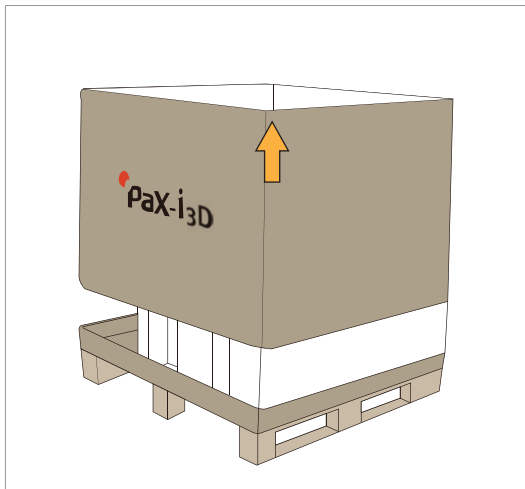


2. Check if three pieces of the base unit are in their places.

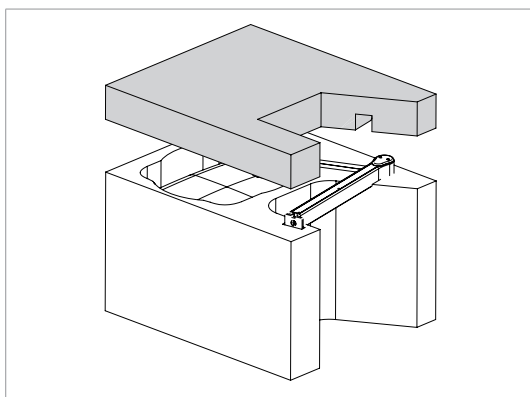


**Box No. 3: Cephalometric unit (Optional)**

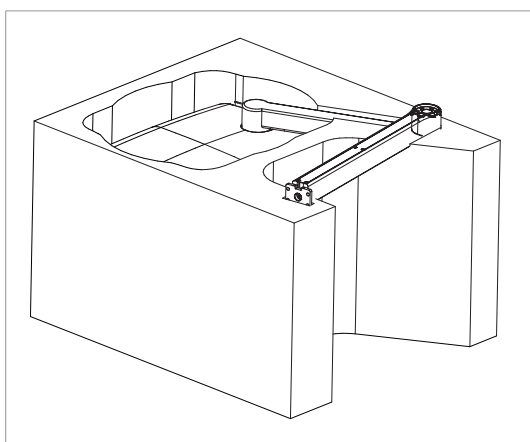
Component	Size(mm/inch)	Weight(kg/lbs)
Cephalometric unit	1000 x 840 x 820 / 40" x 33" x 32"	45/100

**Removing the cover**

1. Open the box cover, starting with the top cover.



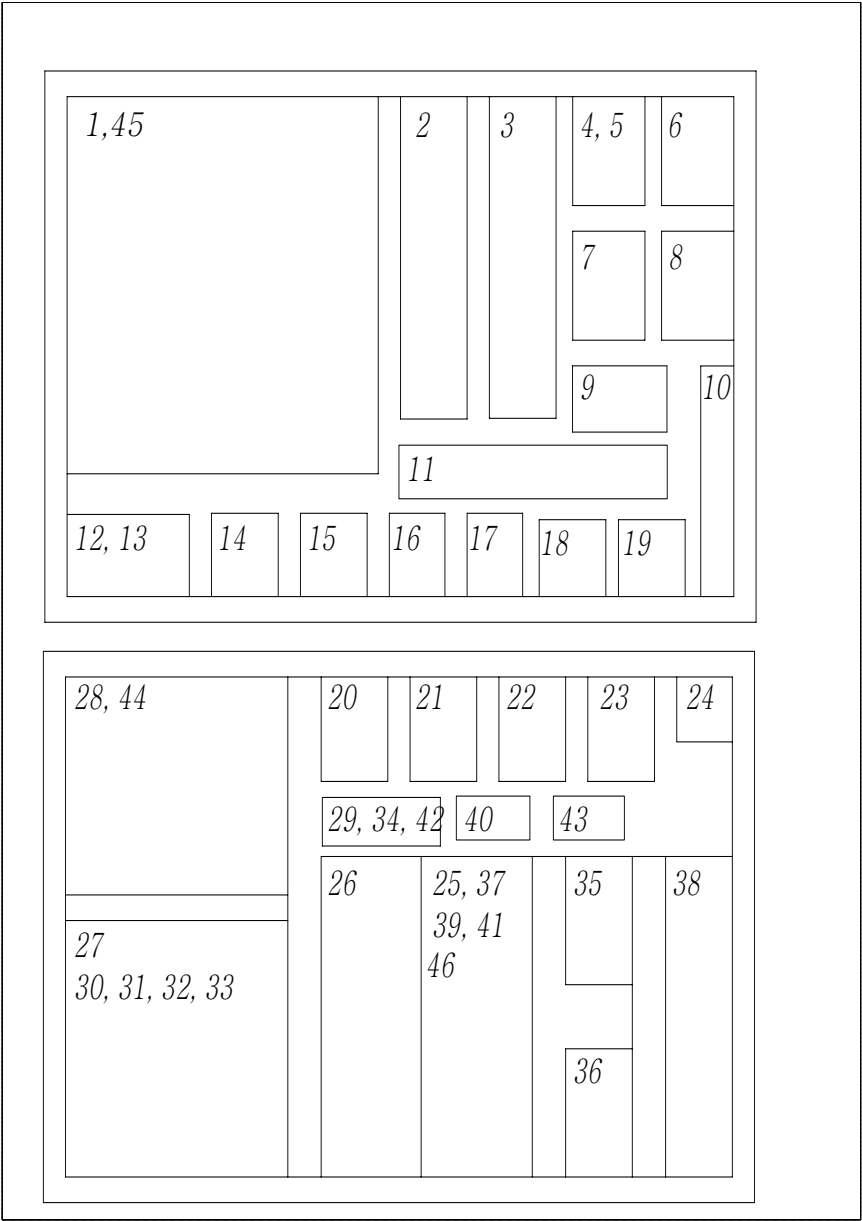
2. Remove the top Styrofoam cover.






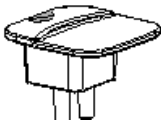

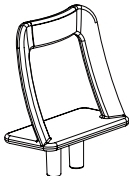
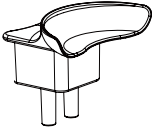
The view after removal of the Styrofoam.



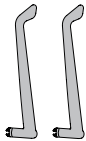


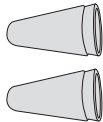
### 3.4 Checking the Parts

Location layout of the parts and accessories









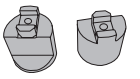


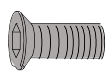
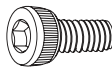




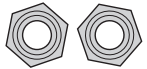
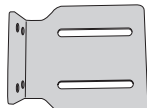
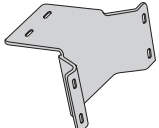
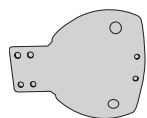
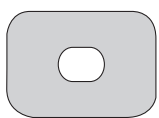
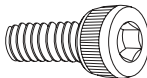
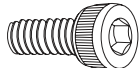
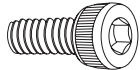
## Parts list: In the accessory box

Part No.	Items	Specification	Figure	QTY	Comments	Confirmed (OK?)	
1	MANUALS	User		1		Yes <input type="checkbox"/>	No <input type="checkbox"/>
		Installation		1		Yes <input type="checkbox"/>	No <input type="checkbox"/>
		EasyDent		1		Yes <input type="checkbox"/>	No <input type="checkbox"/>
		Ez3D plus		1		Yes <input type="checkbox"/>	No <input type="checkbox"/>
	INSTALLATION CD			1		Yes <input type="checkbox"/>	No <input type="checkbox"/>
2	EXPOSURE SWITCH			1 set		Yes <input type="checkbox"/>	No <input type="checkbox"/>
3	UP/DOWN SWITCH			1 set	Optional	Yes <input type="checkbox"/>	No <input type="checkbox"/>
4	CHIN SUPPORT	NORMAL		1		Yes <input type="checkbox"/>	No <input type="checkbox"/>
5	BITE BLOCK			1		Yes <input type="checkbox"/>	No <input type="checkbox"/>
6	CHIN SUPPORT	TMJ		1		Yes <input type="checkbox"/>	No <input type="checkbox"/>
7	CHIN SUPPORT	For the edentulous		1		Yes <input type="checkbox"/>	No <input type="checkbox"/>


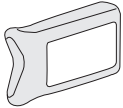
Part No.	Items	Specification	Figure	QTY	Comments	Confirmed (OK?)
8	CHIN SUPPORT	SINUS		1		Yes <input type="checkbox"/> No <input type="checkbox"/>
9	PANO COVER BOX			1		Yes <input type="checkbox"/> No <input type="checkbox"/>
10	CABLE TIE			10		Yes <input type="checkbox"/> No <input type="checkbox"/>
11	TEMPLE SUPPORT	Right and Left		1 set		Yes <input type="checkbox"/> No <input type="checkbox"/>
12	SWITCH HOLDER			1	w/sticker and 3 screws (exposure switch)	Yes <input type="checkbox"/> No <input type="checkbox"/>
				1	w/o sticker (up/down switch)	Yes <input type="checkbox"/> No <input type="checkbox"/>
13	DOUBLE STICKER			1		Yes <input type="checkbox"/> No <input type="checkbox"/>
14	EAR ROD CAPS			4	For CEPH	Yes <input type="checkbox"/> No <input type="checkbox"/>
15	EAR ROD CAPS			1 set		Yes <input type="checkbox"/> No <input type="checkbox"/>

Part No.	Items	Specification	Figure	QTY	Comments	Confirmed (OK?)
16	SILICON CAP A	White		11		Yes <input type="checkbox"/> No <input type="checkbox"/>
17	SILICON CAP B	Gray		10	Some extra For the CEPH unit	Yes <input type="checkbox"/> No <input type="checkbox"/>
18	HOLE CAPS	White		2	Base	Yes <input type="checkbox"/> No <input type="checkbox"/>
19	LEVEL FOOT HOLE CAPS			5	Base	Yes <input type="checkbox"/> No <input type="checkbox"/>
20	WRENCH BOLTS	M10 x 70 w/ spring and flat washer and nut		2	Assembling Column To Base	Yes <input type="checkbox"/> No <input type="checkbox"/>
21		M12 x 35 w/ spring and flat washers		4	Assembling Column To Base	Yes <input type="checkbox"/> No <input type="checkbox"/>
22		M8 x 25		4		Yes <input type="checkbox"/> No <input type="checkbox"/>
		M6 x 20 w/spring washer		2		
23		M10 x 25 w/ spring and flat washers		8	Sub base bolt	Yes <input type="checkbox"/> No <input type="checkbox"/>

Part No.	Items	Specification	Figure	QTY	Comments	Confirmed (OK?)
24	TRUSS BOLTS	M4 x 8		11		Yes <input type="checkbox"/> No <input type="checkbox"/>
25	RS-232 CABLE	10 m/32.8'		1		Yes <input type="checkbox"/> No <input type="checkbox"/>
26	LAN CABLE	10 m/32.8'		1	If one shot CEPH installed	Yes <input type="checkbox"/> No <input type="checkbox"/>
27	FRAME GRABBER BOARD	Optic cable (10m/32.8')		1		Yes <input type="checkbox"/> No <input type="checkbox"/>
		Fiber optic board		1		
28	WARNING SYSTEM			1 set	Optional	Yes <input type="checkbox"/> No <input type="checkbox"/>
29	CEPH ARM			1	CEPH	Yes <input type="checkbox"/> No <input type="checkbox"/>
30	PLATE HAND REST CEPH			1	CEPH	Yes <input type="checkbox"/> No <input type="checkbox"/>
31	BLOCK ACRYL FIX BOLT			2	CEPH	Yes <input type="checkbox"/> No <input type="checkbox"/>
32	KNOBS			2	CEPH	Yes <input type="checkbox"/> No <input type="checkbox"/>
33	HANDREST STICKER			1	CEPH	Yes <input type="checkbox"/> No <input type="checkbox"/>
34	WRENCH BOLT	Flat head: M6 x 15		1	CEPH	Yes <input type="checkbox"/> No <input type="checkbox"/>
		M6 x 15: Regular		4	CEPH Some extra	Yes <input type="checkbox"/> No <input type="checkbox"/>

Part No.	Items	Specification	Figure	QTY	Comments	Confirmed (OK?)
35	ANCHOR BOLTS	M8		10	Wall mount (Optional)	Yes <input type="checkbox"/> No <input type="checkbox"/>
36	BOLTS	M8 x 20 w/ flat and spring washer		6	Wall mount (Optional)	Yes <input type="checkbox"/> No <input type="checkbox"/>
	NUTS	M8 size		2		
37	COLUMN BRACKET			1	Wall mount (Optional)	Yes <input type="checkbox"/> No <input type="checkbox"/>
38	WALL BRACKET			1	Wall mount (Optional)	Yes <input type="checkbox"/> No <input type="checkbox"/>
39	ALIGNMENT PLATE	Template		1	Wall mount (Optional)	Yes <input type="checkbox"/> No <input type="checkbox"/>
40	COLUMN SUPPORT BLOCKS			2		Yes <input type="checkbox"/> No <input type="checkbox"/>
41		M8 x 45		2	Wall mount (Optional)	Yes <input type="checkbox"/> No <input type="checkbox"/>
		M12 x 15		1	Align to wall type	
42	WRENCH BOLT	M6 x 15		3	ARM fixed Bolt	Yes <input type="checkbox"/> No <input type="checkbox"/>
43		M10 x 35		2	Base guide bolt	Yes <input type="checkbox"/> No <input type="checkbox"/>



Part No.	Items	Specification	Figure	QTY	Comments	Confirmed (OK?)
44	ACCESSORY TRAY			1		Yes <input type="checkbox"/> No <input type="checkbox"/>
45	Ez3D plus key			1		Yes <input type="checkbox"/> No <input type="checkbox"/>

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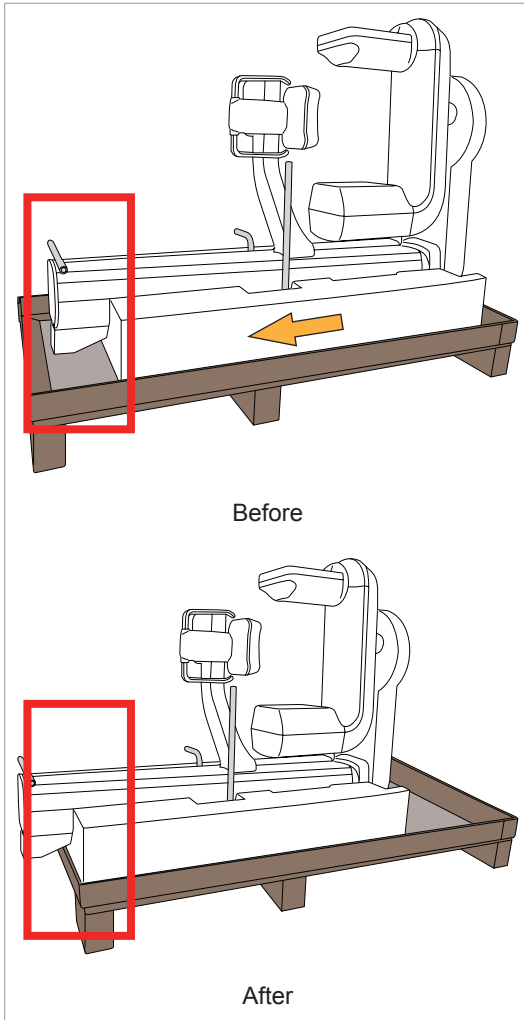
# 4

## Installing the Equipment: Floor Standing

4.1	Assembling the Base and Main Units.....	48
4.2	Removing the Transportation Jigs.....	54
4.3	Removing the Transportation Safety Bolt.....	55
4.4	Installing the CEPH Unit (Optional) .....	56

## 4.1 Assembling the Base and Main Units

### Before start working



1. First pull the main unit and EPS package together forward the front edge in a manner shown in the following figure.



2. Remove the protective plastic cover with knife. Then put the cable down on the floor carefully.

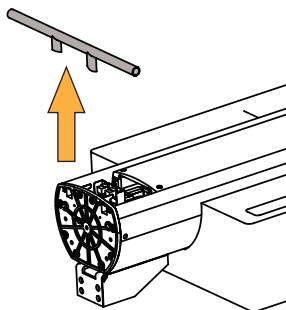
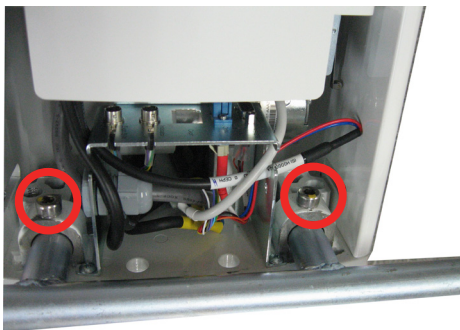


**Be careful not to damage the cable and have the column surface scratched.**

3. Remove the carrying handle at the bottom of the column unit.



**Be careful not to damage the cables. Especially, the fiber optic cable is very sensitive to the external impact.**

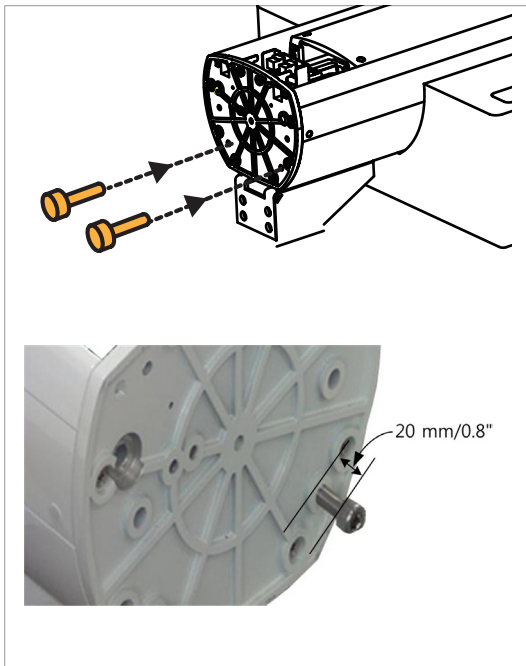


Allen  
wrench

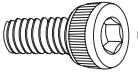



6 mm/0.23"

## Assembling the base with column units



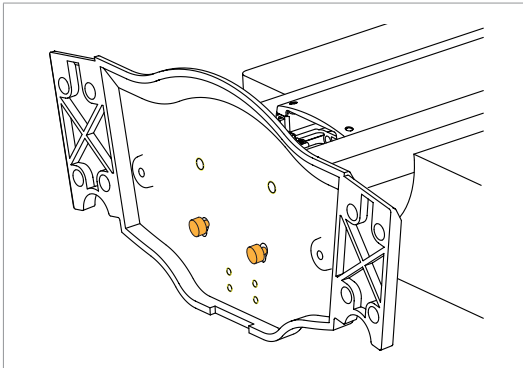
1. Move the base unit box to the installation site open it.
2. Insert 2 wrench bolts (**Part No.: 43**) into the holes on the bottom of the column unit, leaving 20 mm exposed from the wrench bolt head.

Wrench Bolt		M10 x 35: Part No.:43 Qty: 2
Allen Wrench		8 mm/0.31"



CAUTION

**Do not fasten bolts fully yet.**



3. Attach the base unit to 2 protruded bolts.

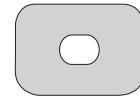


**An installer should hold the base unit to keep it from falling down.**

4. Insert 2 column support blocks (Part No.: 40) and then fix them with 2 wrench bolts(Part No.: 20)

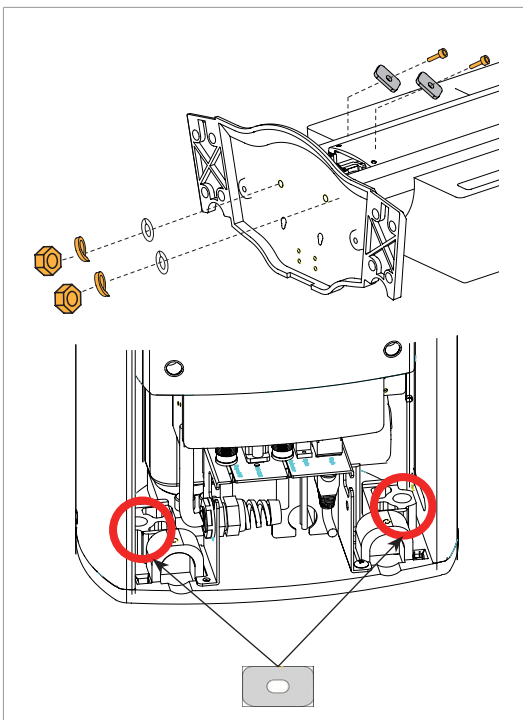
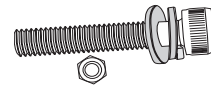
Column support blocks

Part No.: 40  
Qty: 2



Wrench bolts w/ spring and flat washers and nut

M10 x 60:  
Part No.:20  
Qty: 2

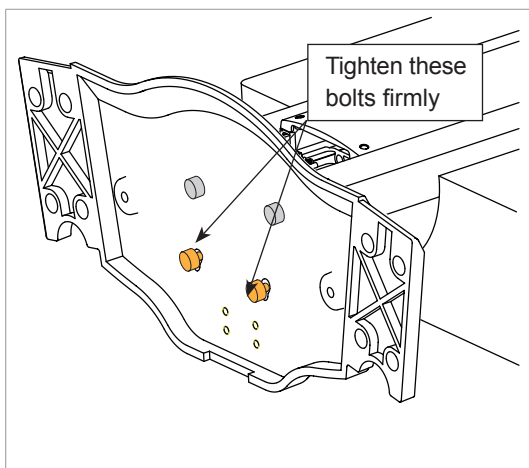


Monkey wrench

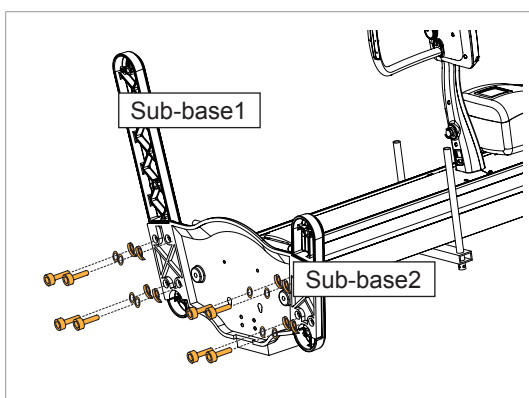


Allen wrench  
(8 mm/0.32")






5. Tighten 2 loose bolts firmly which are illustrated at the step 2.



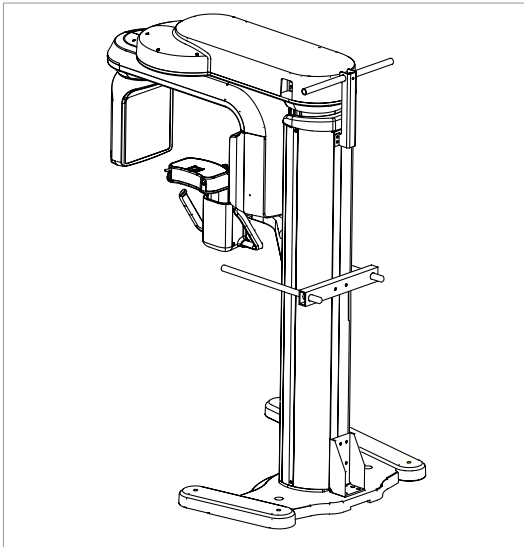
6. Assemble the 2 sub-bases with the main base unit using 8 wrench bolts (Part No.: 23).

Wrench bolts	M10 x 25	
	w/spring and flat washers	
	Part No.: 23	
	Qty: 8	



7. Turn the 5 level feet on the base unit clockwise completely to let the equipment move easily to the installation site, after it is erected. Only 2 are shown in the figure.





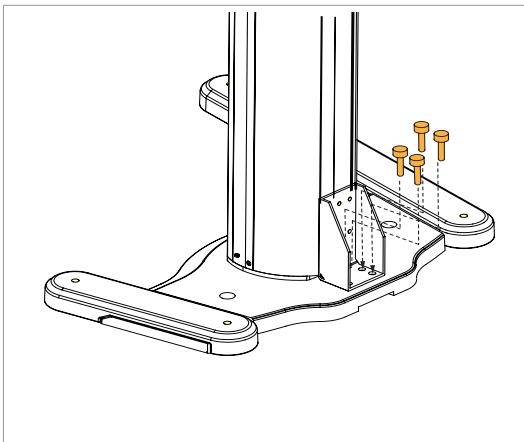
8. Erect the equipment in an upright position.





CAUTION

Be careful not to damage the cable.

Before erecting the equipment, keep it clear of the equipment

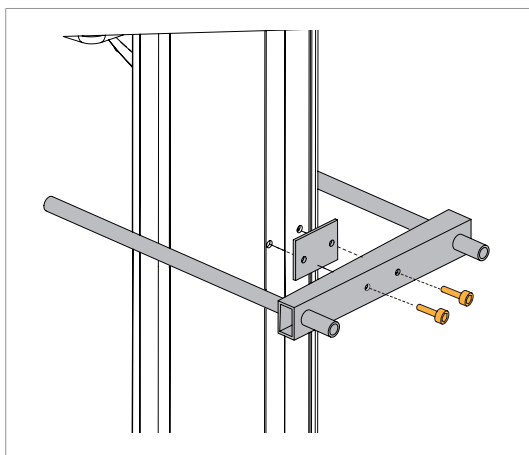
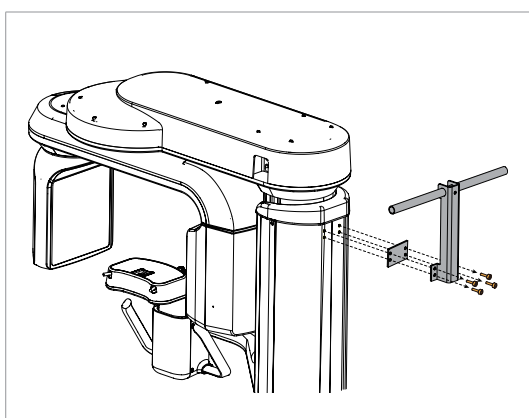
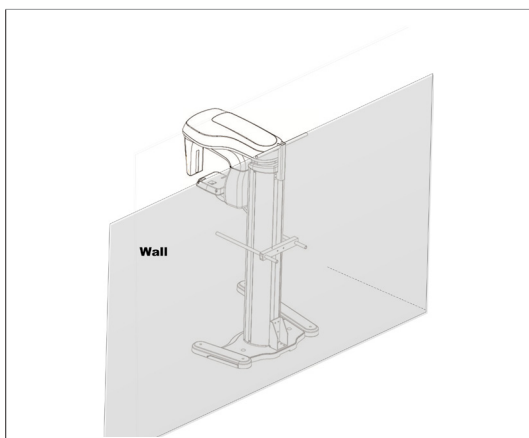


9. Fix the base and column units together with 4 wrench bolts (**Part No.: 21**).

Wrench bolts	M12 x 35 w/ flat and spring washers Part No.: 21 Qty: 4	
Allen wrench		10 mm/0.4"

## 4.2 Removing the Transportation Jigs

Without the CEPH unit



1. Move the equipment to installation location in the following manner.

2. Remove the upper carrying handle.

Allen wrench

6 mm/0.23"



CAUTION

One installer should hold the handle, while the other is removing the bolts.

3. Remove the handle in the middle



NOTE

If the CEPH unit is to be installed, this is used as the carrying handle.

Do not detach it until indicated later after the equipment is moved to the installation site.

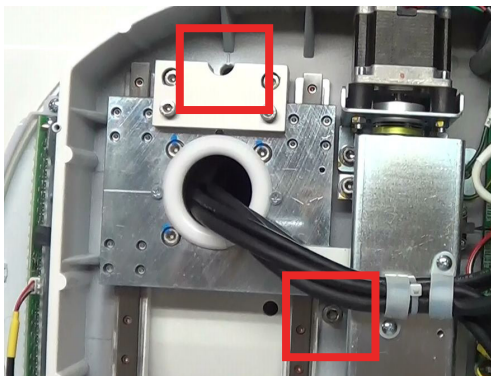
### 4.3 Removing the Transportation Safety Bolt




1. Remove the semi-clear tape on the both sides

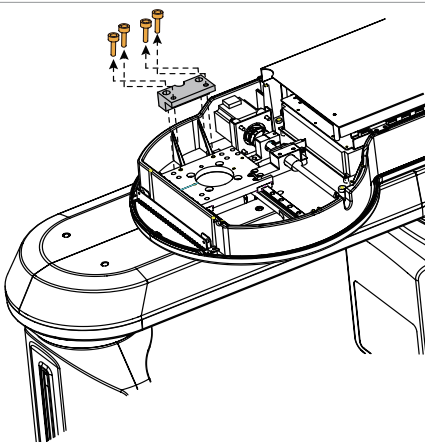


**Be careful not to scratch the cover.**



2. Remove two safety bolts.

Wrench bolts	M 8	
Allen wrench	6 mm/0.24"	



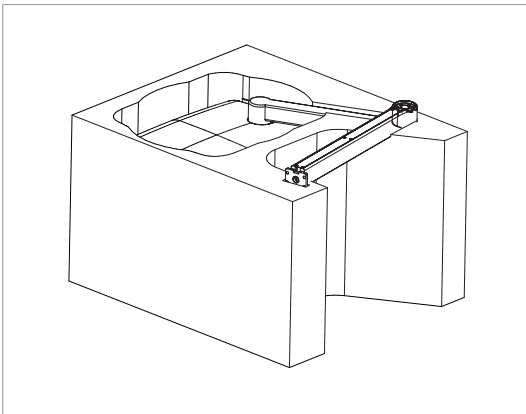
3. Separate the fixing block for the rotating unit after removing 4 bolts.

## 4.4 Installing the CEPH Unit (Optional)

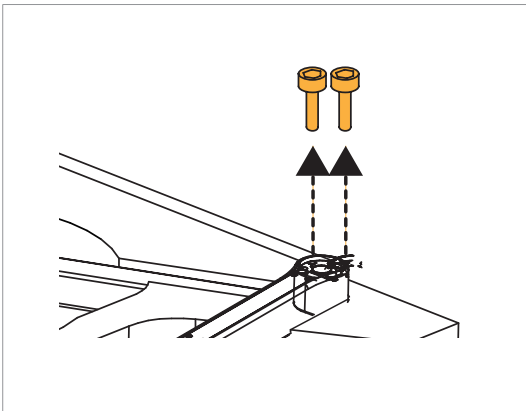


**Never hold the areas of the collimator, sensor and tube head.**

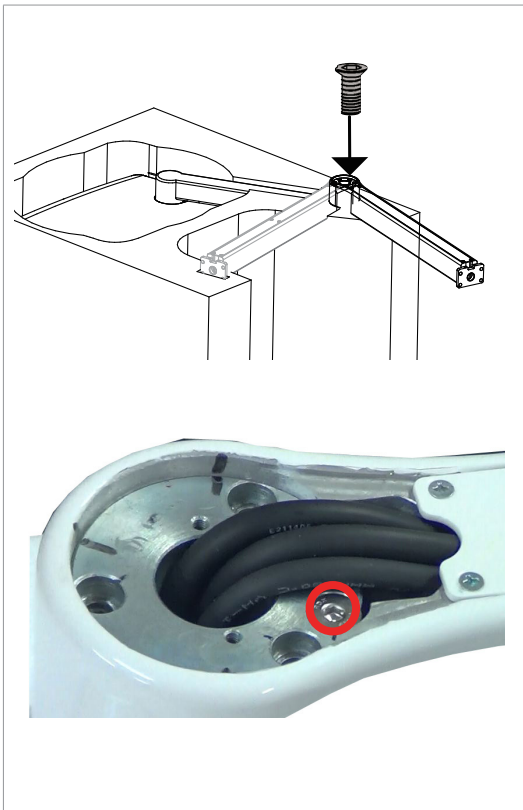
### Preparing for the CEPH unit



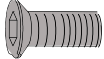

1. Now it is assumed that the CEPH box has already been opened

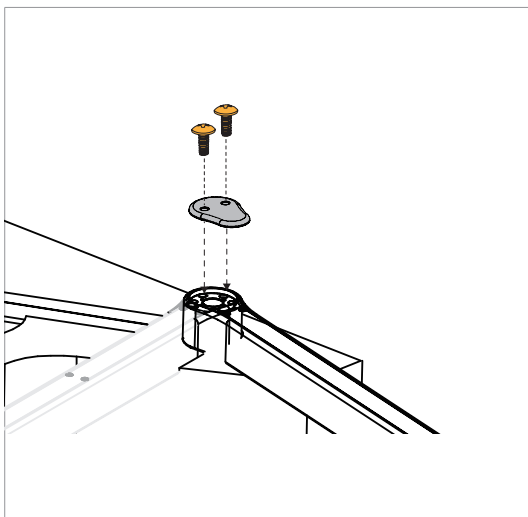
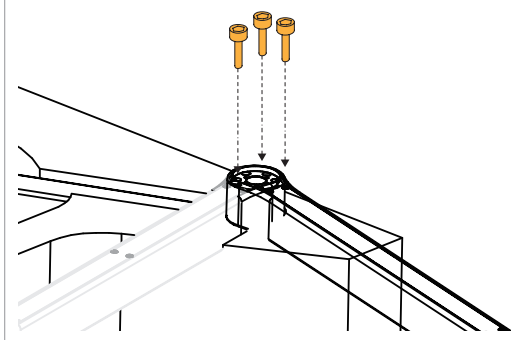
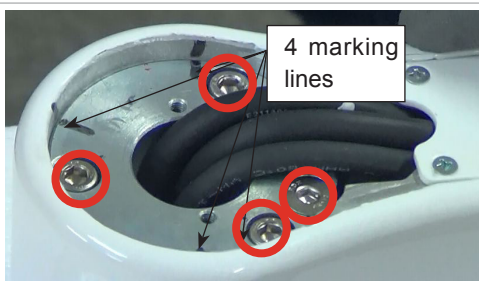


2. Remove 2 bolts from the Cephalometric arm's joint



3. Stretch the arm fully and then secure them loosely with the flat head wrench bolt(M6 x 15, Part No.: 34).

Wrench bolts	M6 x 15 Part No.: 34 Qty: 1	
Allen wrench	4 mm	



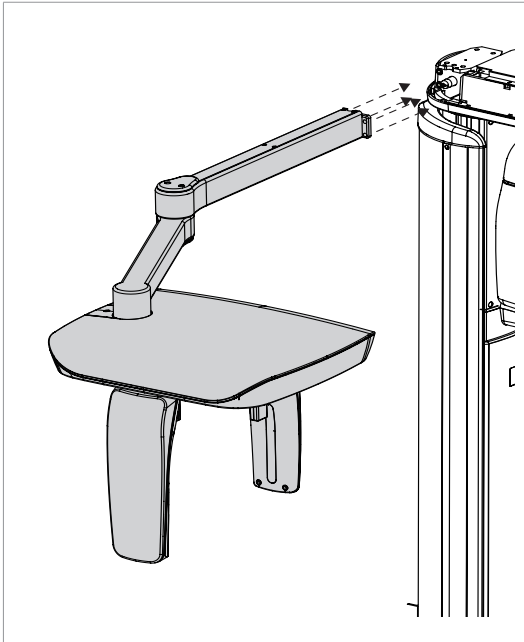
4. After inserting another 3 bolts(M6 x 15, Part No.: 42) loosely, align 4 marking lines and tighten 4 bolts firmly(red circle)

Wrench bolts	M6 x 15 Part No.: 42 Qty: 3	
Allen wrench	5 mm	

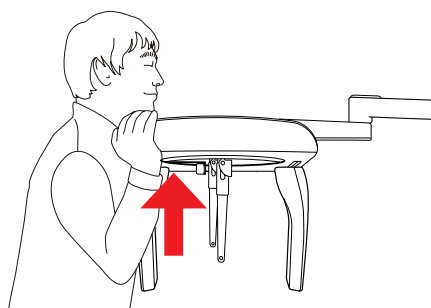
5. Fix the CEPH arm cover (**Part No.: 29**) using 2 truss bolts(**Part No.: 24**).

Truss bolts	M4 x 8 Part No.: 24 Qty: 2	
CEPH Arm cover	Part No.: 29	
Cross head screw driver w/ magnetic tip		

## Mounting the CEPH unit



1. Move and mount the CEPH unit on the main unit carefully, while observing the insertion state of 4 studs.



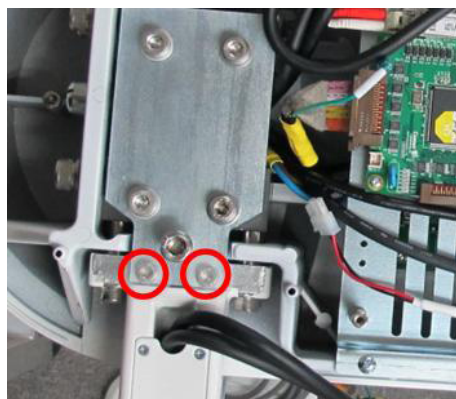
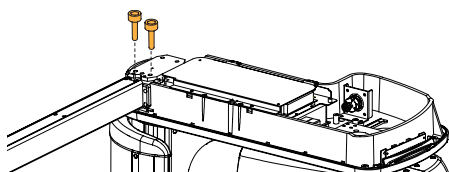
2. Secure them using 4 wrench bolts (Part No.: 22) in the numbered order. **One installer should push the end of the CEPH unit up as hard as possible.**



CAUTION

**Be careful not to scratch the surface while tightening the bolts.**

Wrench bolts	M8 x 25 Part No.: 22 Qty: 4	
Allen wrench	6 mm	



3. Tighten 2 wrench bolts (Part No.: 22) firmly at the following locations. One installer should keep on lifting the CEPH unit up slightly.

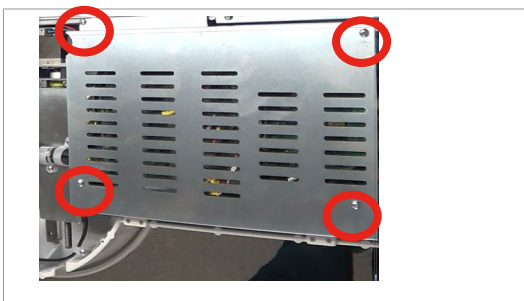
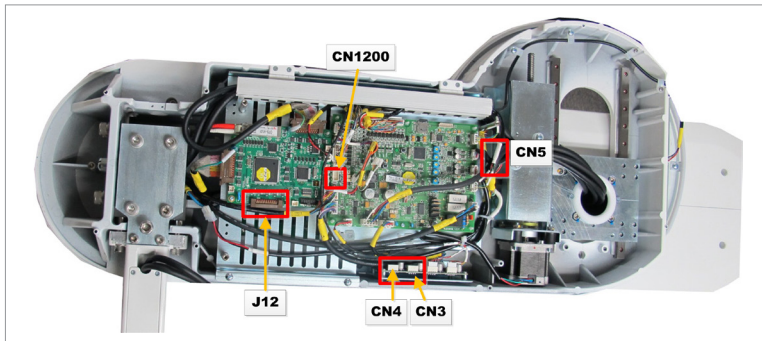
Wrench bolts	M6 x 20 w/ spring washer Part No.: 22 Qty: 2	
Allen wrench	5mm	



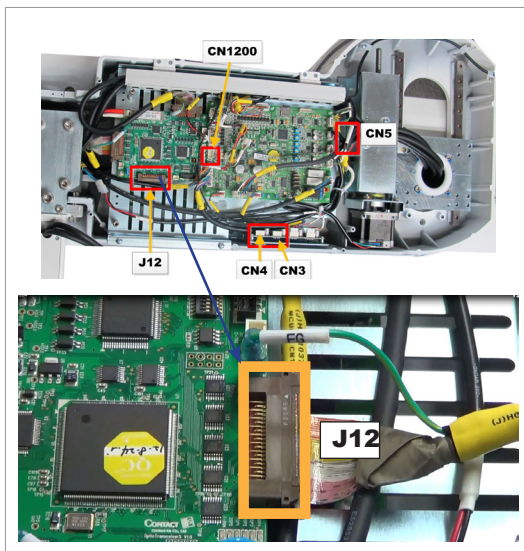
## Cabling between the CEPH and main units

### Scan type

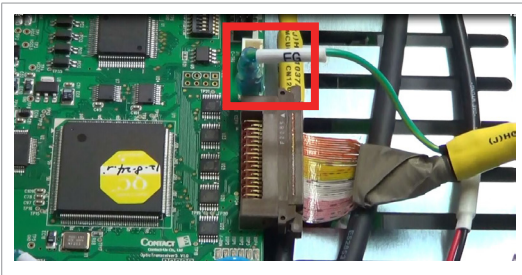
Connectors' layout



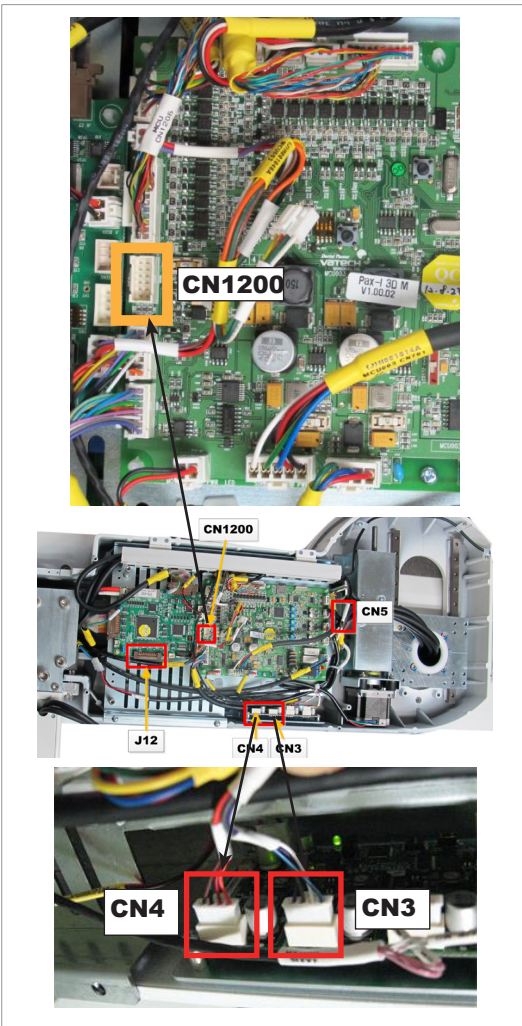
1. Remove the 4 screws to separate the top cover.



2. Connect the cable **H000055A** from the CEPH unit with the connector **J12** on the main CPU board



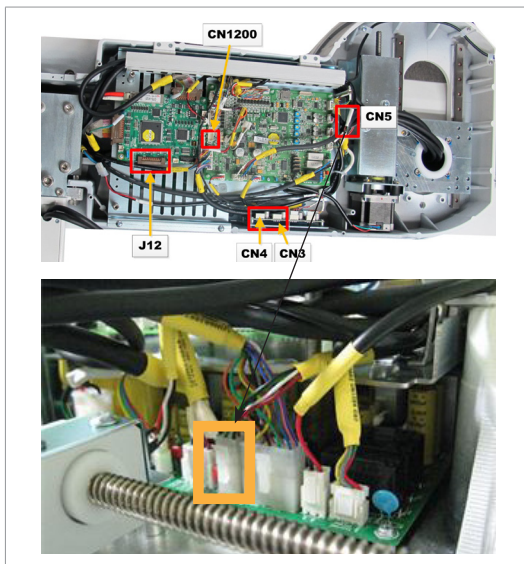
3. Connect the ground cable(FG) to the frame.



4. Connect the cable **H001038A (MCU003)** from the CEPH unit with the Connector **CN1200** on the main MCU board. And **CSMO** and **C2MO**.

CSMO → CN3

C2MO → CN4

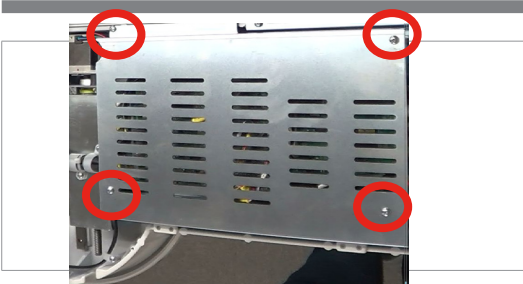
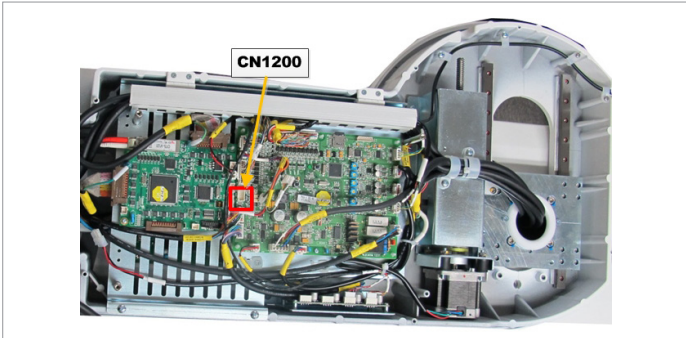


5. Connect the cable **H001039A** from the CEPH unit with the connector **CN5** on the power board

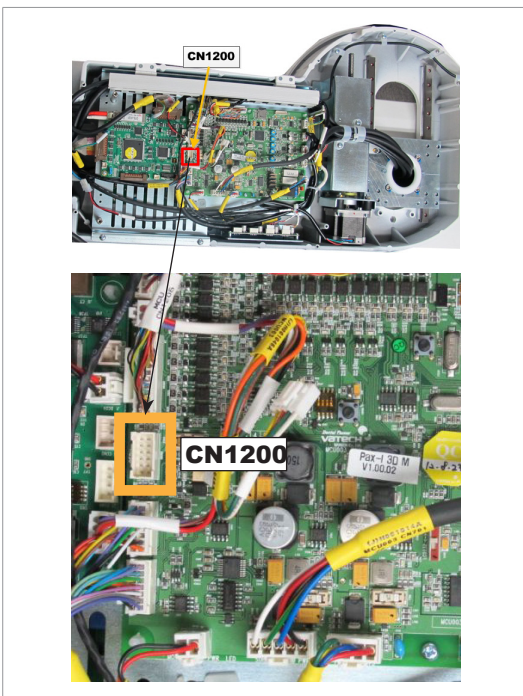
6. After arranging and tying the cables, put the top cover back.

## OS (one shot) type: Optional

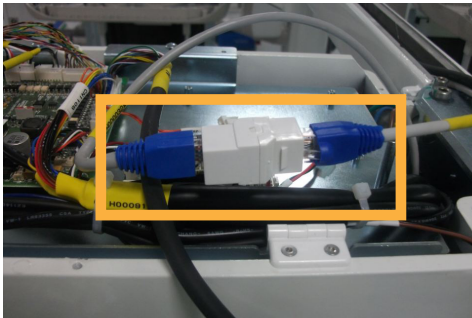
Connectors' layout:



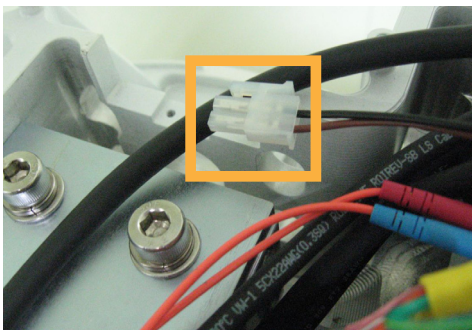
1. Remove the 4 screws to separate the top cover.



2. Connect the cable **H001038A (MCU003)** from the CEPH unit with the Connector **CN1200** on the main MCU board.



3. Connect the LAN cable.



4. Connect two connectors: one (**H000927A**) from the CEPH unit and the other from the main unit.
5. After arranging and tying the cables, put the top cover back.

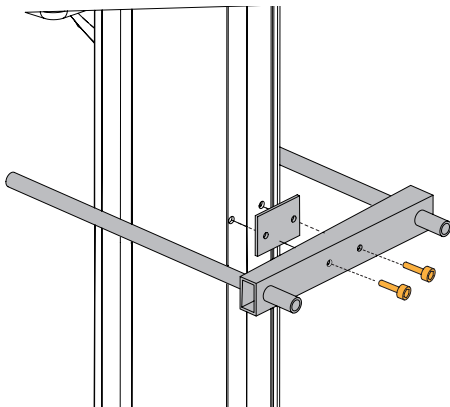
## Removing the carrying handle (When the CEPH unit is installed)



1. Move the equipment to installation site near the wall.



**Two installers should hold the carrying handle firmly while moving the equipment.**



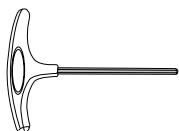
2. Remove the carrying handle in the middle.

# 5

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## Leveling the Equipment





8mm / 0.3"

T-shaped hex wrench

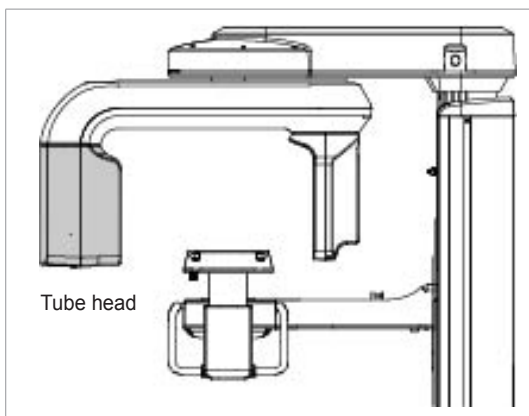


Spirit level

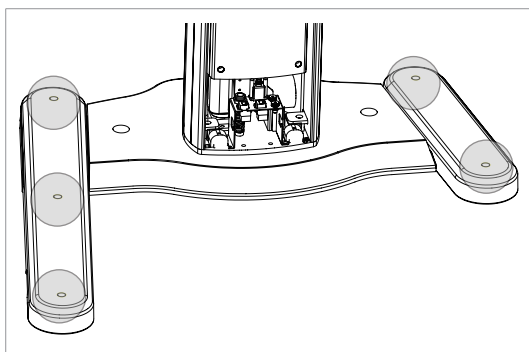


**Ensure that the spirit level should rest only on the locations indicated in the following figures to obtain the accurate center.**

1. Prepare the spirit level.



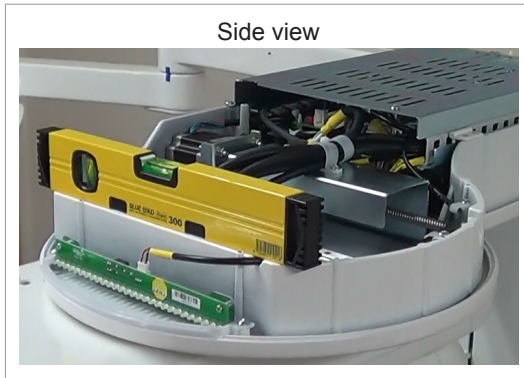
2. Position the rotating unit so that the X-Ray tube head faces the front.



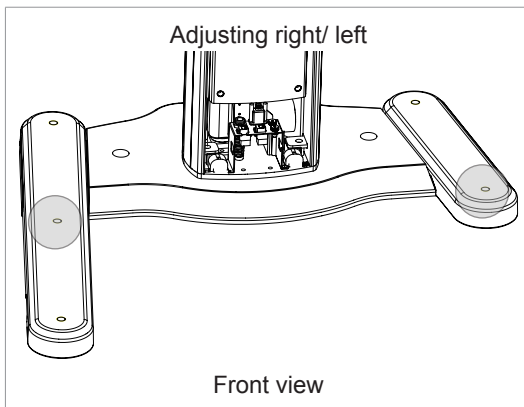
3. Turn all 5 screws on the base plate unit clockwise until they touch the ground.



## Leveling right and left



1. Place the spirit level, as follows



2. Adjust the base until the bubble on the spirit level is centered in the middle, by turning left and right screws clockwise or vice versa

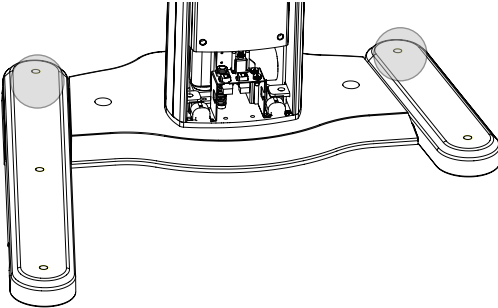
## Leveling the front and back

Front view

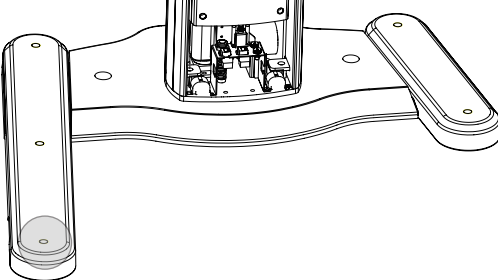


3. Place the spirit level on the vertical frame, as shown in the following figure

Adjusting back



Adjusting front



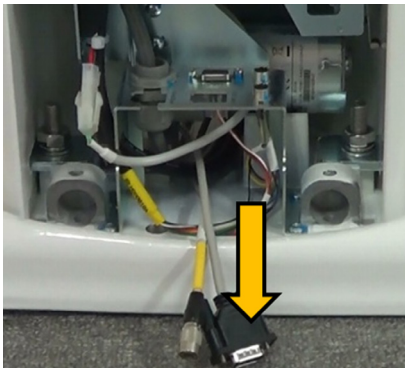
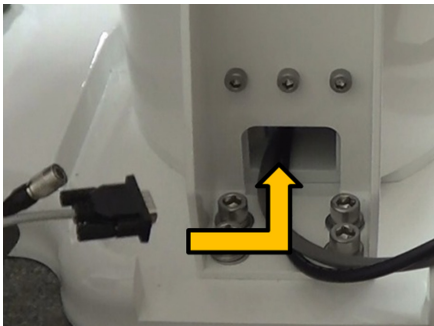
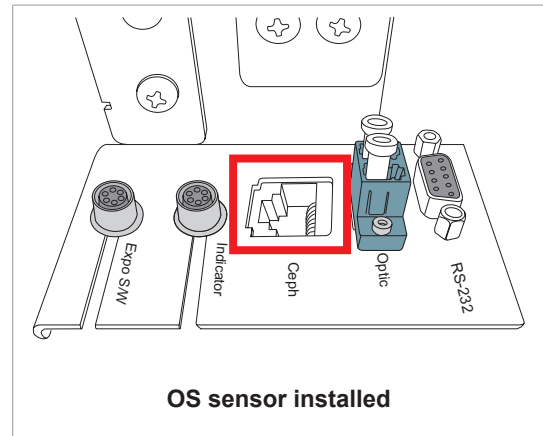
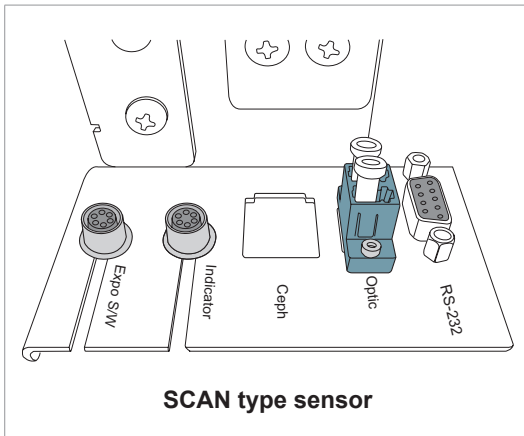
4. Adjust the screws until bubble of spirit level is centered (level), by turning the front and/or back screws clockwise or vice versa

## Completing Miscellaneous Works

<b>6.1</b>	Connecting the Cables to the Equipment.....	72
<b>6.2</b>	Assembling Various Covers .....	76
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<b>6.4</b>	Covering the Holes.....	78
<b>6.5</b>	Installing the Switch Holders .....	79
<b>6.6</b>	The Leftover Components.....	80

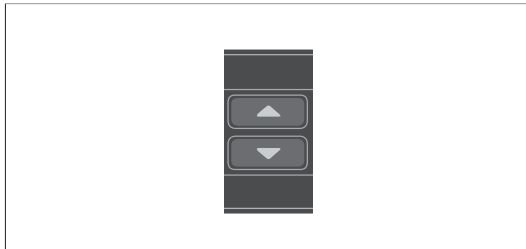
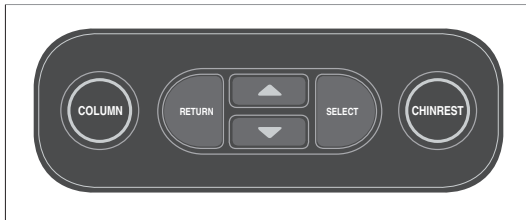
## 6.1 Connecting the Cables to the Equipment

### Connector layout



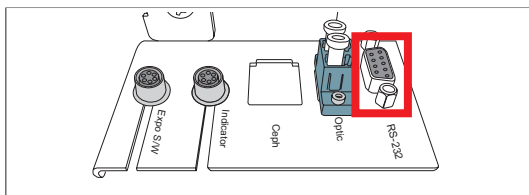
1. Insert all the cables into the opening from back to front.

## Raising the Column unit up

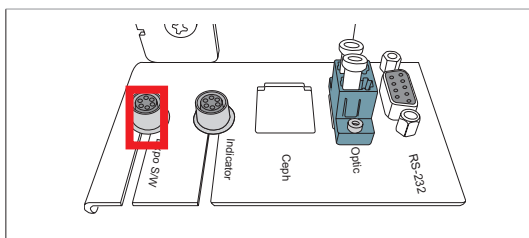


1. Plug the power cord to the power outlet.
2. On turning ON the equipment, ensure that 'COLUMN' button is ON on the panel.
3. Raise the column unit up about by 10 cm/4".

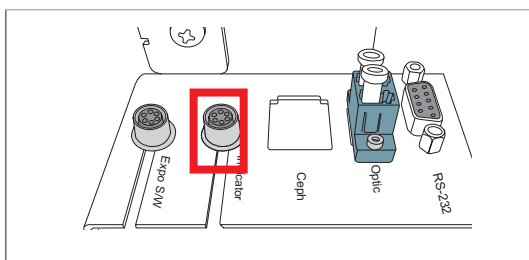
## Connecting the cables



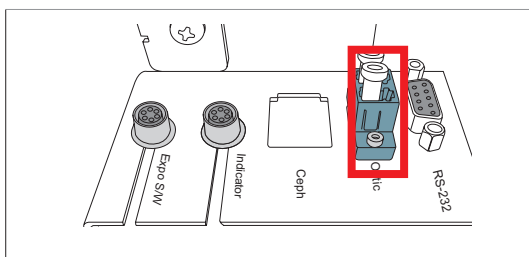
1. Connecting the serial cable (RS-232): Part No.: 25.



2. Connect the exposure switch (Part No.: 2) Cable No.: H000071A



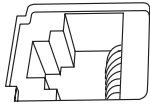
3. Connect the warning control system (Optional: Part No.: 28). Cable No.: H000082A



4. Connect the fiber optic cable (Part No.: 27)



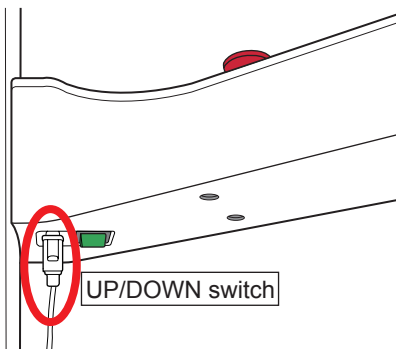
1. Do not bend, pull and/or crushing it when handling.
2. Ensure that the caps of the fiber optic cable be removed.
3. Do not touch the tip of the fiber optic cable to prevent it from being dirty.
4. Insert the fiber optic cable fully until the click sound is heard.



Ceph



View from the bottom of handle frame



5. (Optional) connect the Ethernet cable (**Part No.: 26**) if the OS sensor is installed.

6. Arrange the cables exactly in the same way as shown in the figure and secure them with the cable ties (Part No.: 10)

7. Connect the UP/DOWN switch (**Optional: Part No.: 3**)

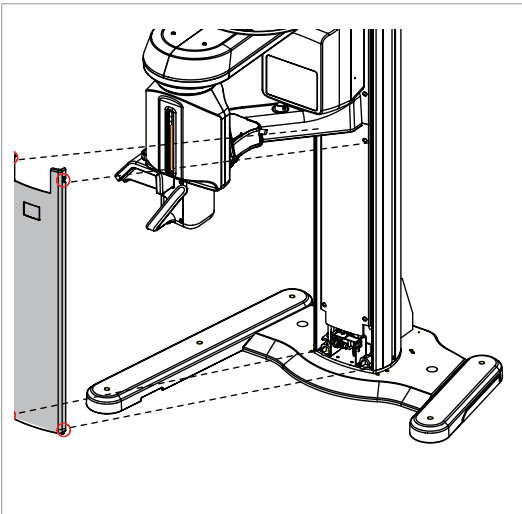
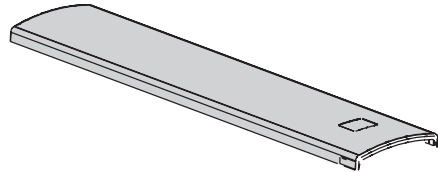
8. Turn On the equipment.

9. Check to see if the column moves smoothly up and down..

## 6.2 Assembling Various Covers

Part required:

Case column Front



1. Assemble the front column cover.

1-1 Apply power to the equipment.

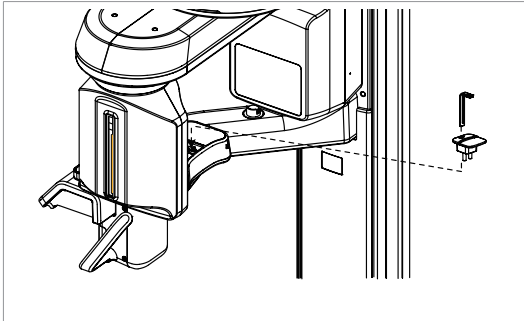
1-2 Raise the column unit up by 4 cm/ 2".

1-3 Insert the cover.

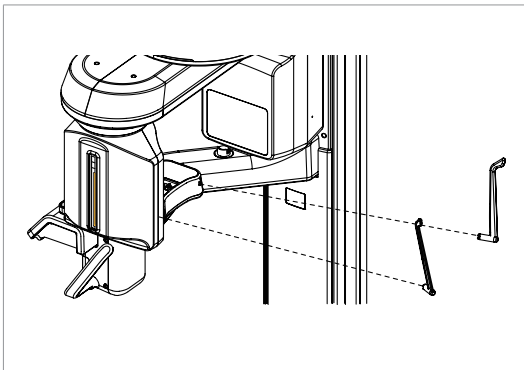
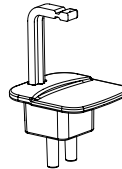
1-4 Turn OFF power..



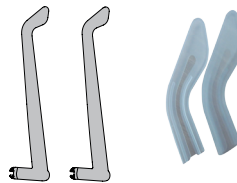
## 6.3 Assembling Temple and Chin Supports



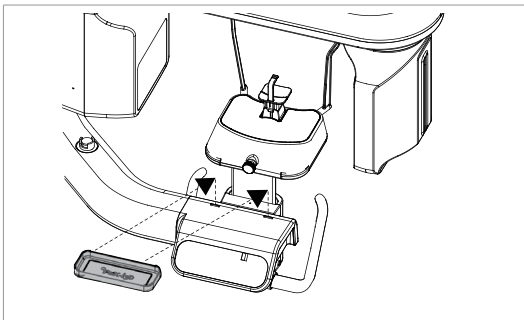
1. Insert the normal chin support and bite block (Normal) (**Part No.: 4, 5**).



2. Insert 2 temple supports (**Part No.: 11**) and ear rod caps (**Part No.: 15**).





Left Right Caps

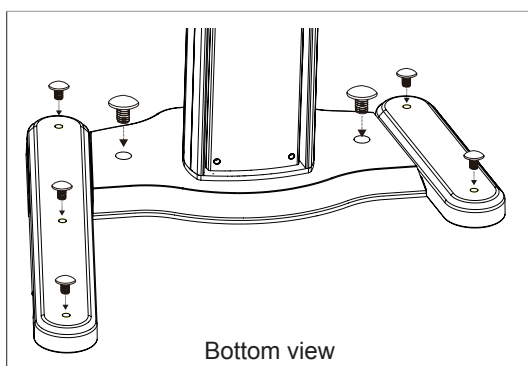


3. Install the accessory tray (Part No.: 44).

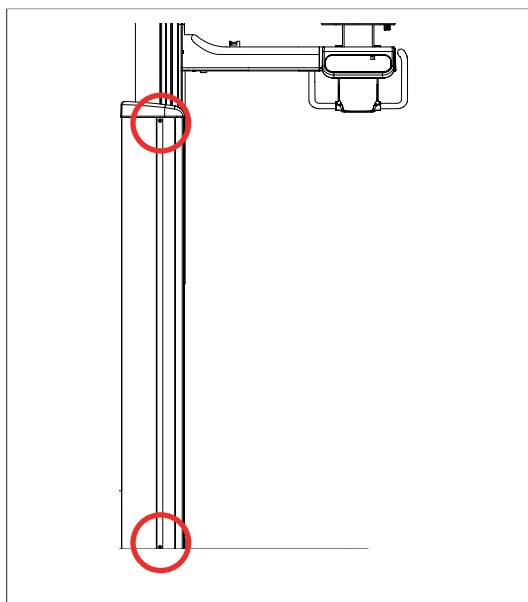


## 6.4 Covering the Holes

Item	Part No.	Figure
Base hole and anchor caps	18,19	
Silicon caps(white)	16 17: for the CEPH unit	

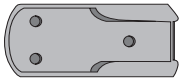



1. Cover the base unit holes with 5 level foot hole caps and 2 anchor hole caps (**Part No.: 18,19**)



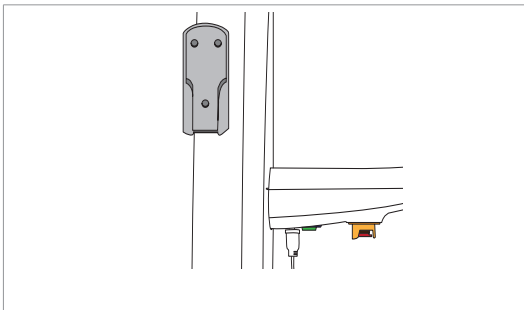
2. Cover 4 locations on both sides of the column with silicon caps.
3. If the CEPH unit is being installed, cover its holes with the silicone caps(Part No.: 17).

## 6.5 Installing the Switch Holders

Item	Part No.	Figure	Qty	Comment
SWITCH HOLDER	12		1	w/sticker and 3 screws
			1	w/o sticker
DOUBLE STICKER	13		1	

### UP/DOWN switch holder

1. Peel off the paper from both sides: **Part No.: 13**



2. Attach the UP/DOWN switch holder on the left side of the column at the appropriate position.

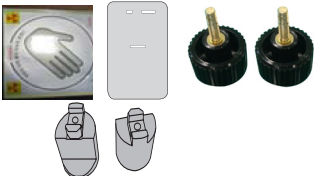
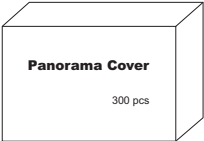
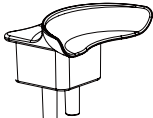



### Exposure switch holder

1. Locate the exposure switch holder (Part No.: 12) with a sticker and 3 screws.
2. Install the switch holder on the wall at the appropriate height using 3 screws.

## 6.6 The Leftover Components

The following list summarizes the leftover components after the hardware installation has been completed.

### The components for the user

Item	Figure	Comments
Handrest set (if CEPH unit installed)		For CEPH unit
Bite cover		
Chin support: Edentulous		
Chin support: Sinus		
Chin support :TMJ		
Installation CD		
Manuals		

## Installing the Equipment: Wall Mount (Optional)

<b>7.1</b>	Installing the Equipment.....	82
<b>7.2</b>	Installing the Cephalometric Unit (Optional).....	93
<b>7.3</b>	Leveling the Equipment.....	93
<b>7.4</b>	Tightening the Bolts firmly .....	95
<b>7.5</b>	The Rest of Works.....	95

## 7.1 Installing the Equipment



You are advised to plan and study the installation environment carefully in advance before proceeding, since the installation involves drilling the wall and floor. Pre-installation planning is crucial to a successful installation.



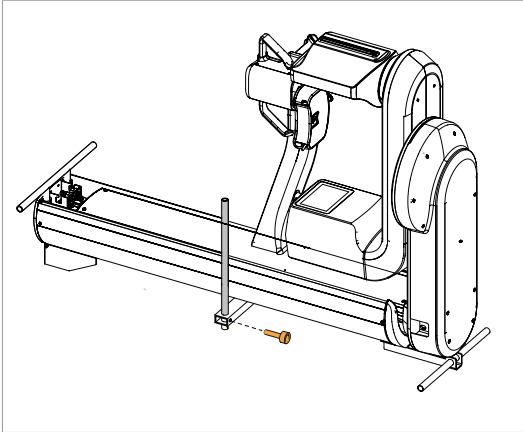
This equipment is assumed to be installed on the concrete wall and floor.

Installers required	3
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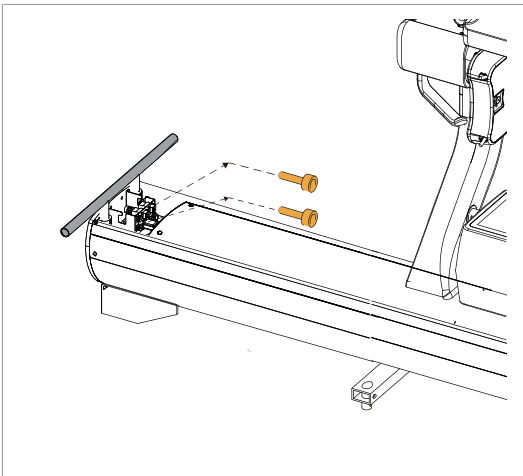
## Unloading the equipment

1. To unload the equipment from the crate, take the steps from 1 to 4 specified in the section 3.3

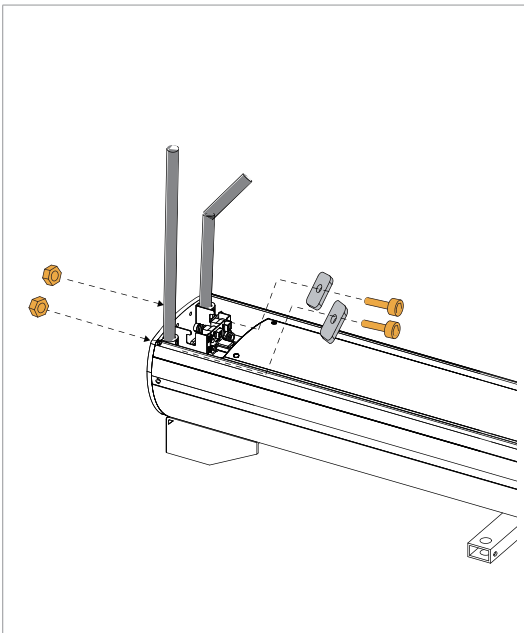
## Replacing the carrying handle with system supports



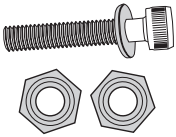
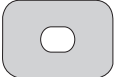
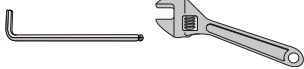
1. Separate the middle handle of the column.

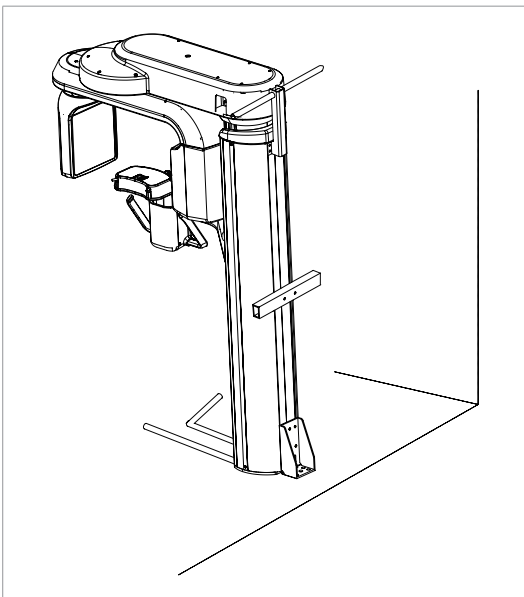


2. Separate the handle from the bottom of the column



3. Attach 2 system supports to the bottom of column in the manner, as illustrated in the figure.

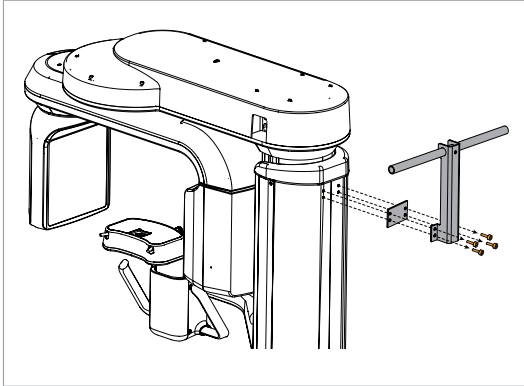
Wrench bolts	M8 x 20 w/spring and flat washers Two Nuts Part No.: 36	
Column support blocks	Part No.: 40 Qty: 2	
Allen wrench Monkey wrench		



4. Erect the equipment in an upright position.



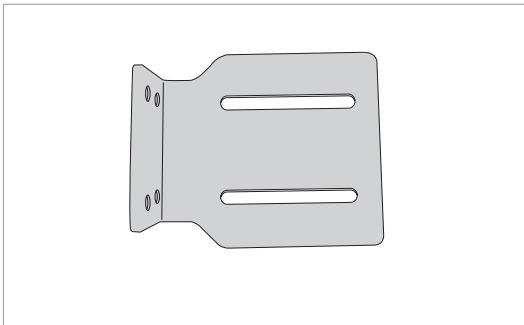
## Installing the Column Bracket on the Back of the Equipment



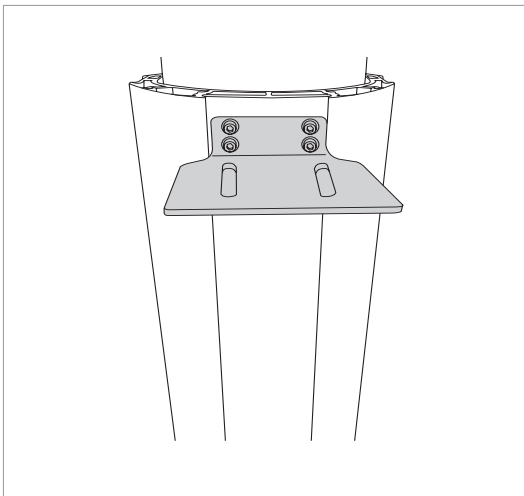
1. Separate the carrying handle on the top.



**One installer should hold the front, while the other is separating the handle.**

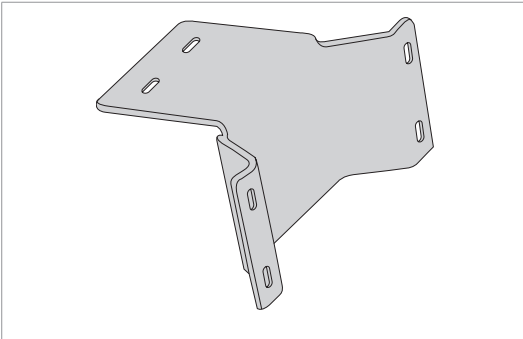


2. Prepare the wall bracket(part No.: 37).

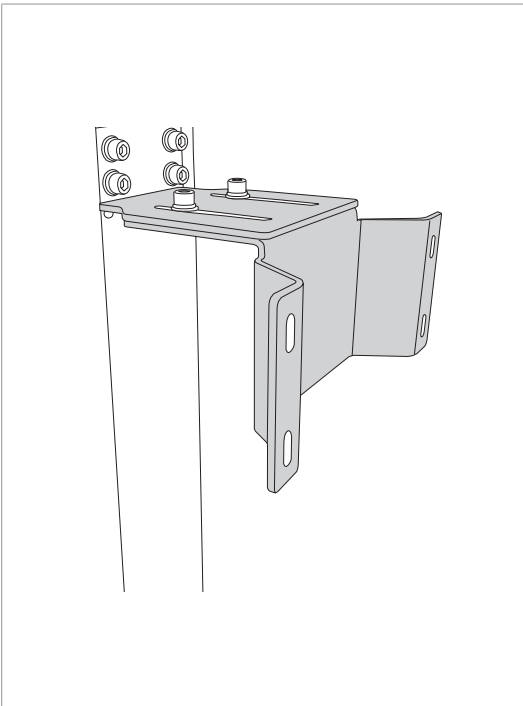


3. Attach the above bracket to the back of the column unit with the 4 bolts(part No.: 36).

## Combining column and wall brackets



1. Prepare the wall bracket(Part No.: 38).



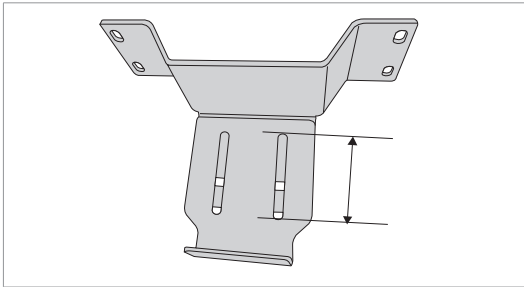
2. Combine the column and wall brackets in the following manner with the 2 wrench bolts(part No.: 36)



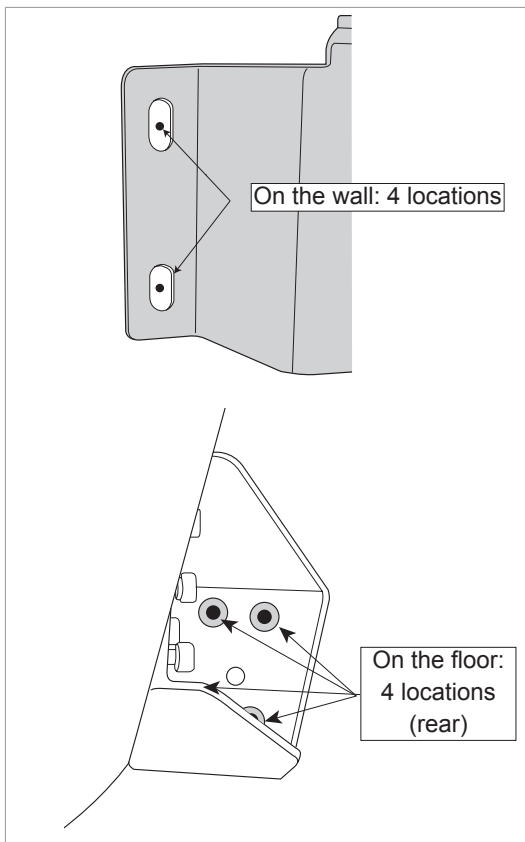
**Do not tighten the bolts yet.**

Wrench bolts	M8 x 20 w/spring and flat washers Two Nuts Part No.: 36	
Allen wrench Monkey wrench		

## Marking 6 locations on the floor and 4 on the wall



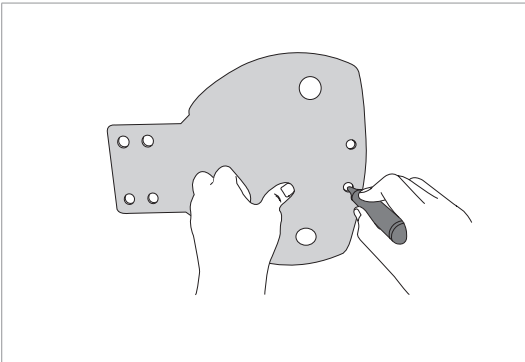
1. Move the equipment to the installation site as close as possible.
2. Adjust the distance between the wall and equipment by moving it slightly, so that the wall bracket touches the wall.



3. Mark 4 anchor bolts locations on the wall and 6 on the concrete floor.

Marker





4. Move the equipment aside so as to mark the other 2 locations (front).



CAUTION

**Move the equipment aside a little farther from the installer to make enough space to drill the floor.**

## Drilling 10 locations on the floor and wall

1. Put the alignment plate (Part No.: 39) aside.

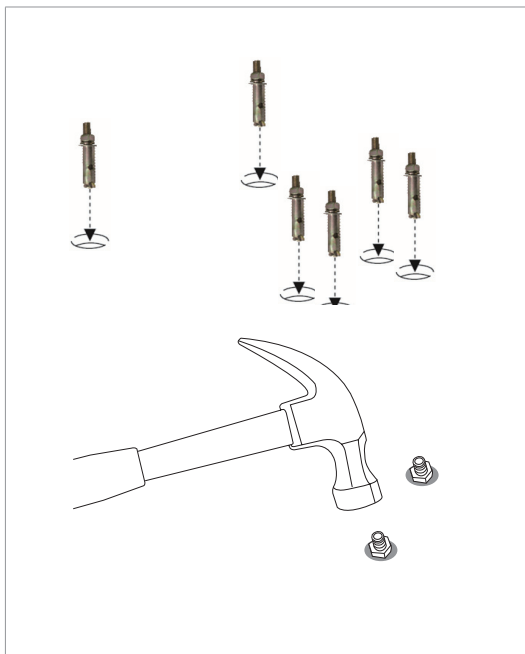


2. Drill the ground and wall holes of size 10.5 mm x 30 mm (depth) using the concrete hammer drill.

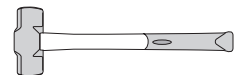
3. Remove the debris and clean the holes using the dust pump.

4. Anchor the bolts (M8 x 30, Part No. 35) with the hammer (ground and wall).

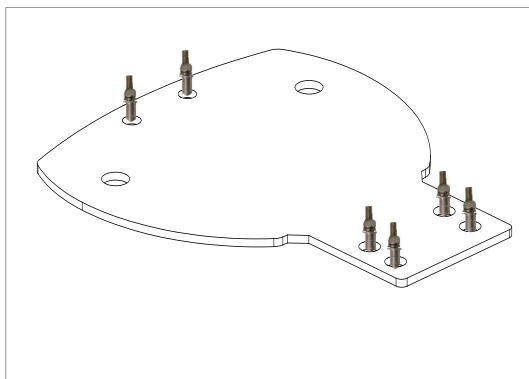
Verify that the anchors are secured



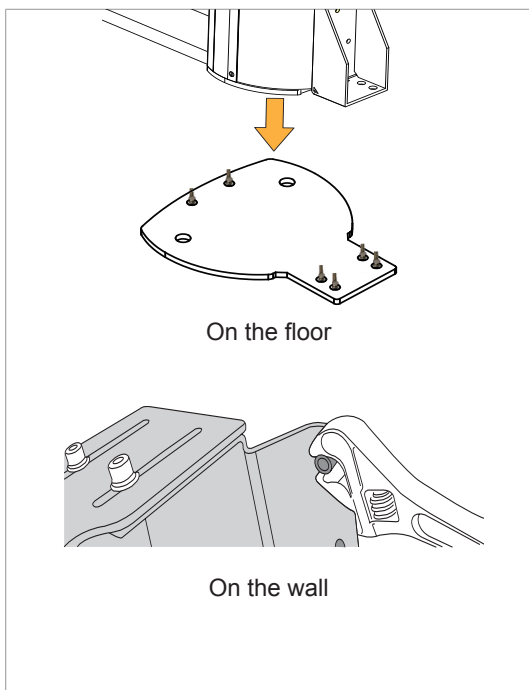
Hammer



## Combining the equipment with the anchor bolts



1. Place the alignment plate through 6 anchor bolts.



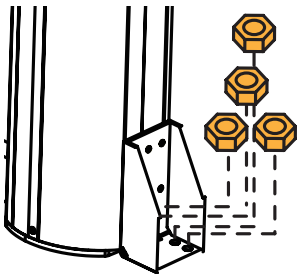
2. Place the equipment onto the alignment plate, while observing 10 anchor bolts are being inserted properly through each hole.

## Securing the equipment (10 locations)



For the following procedures(1-3), do not tighten the nuts until you are asked to do later when leveling the equipment

Rear side: 4 locations



1. Fix the rear of the column bottom to the floor with 4 nuts which come with the anchor bolts.

Front side: 2 locations

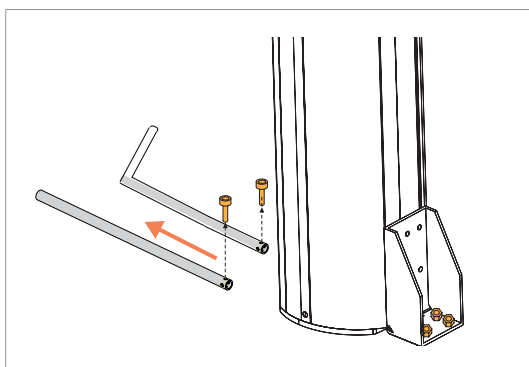


2. Fix the front of the column bottom with 2 nuts.

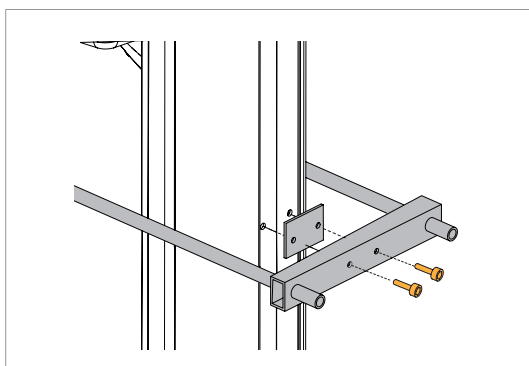
On the wall: 4 locations



3. Fix the column bracket to the wall with 4 nuts.



4. Separate the system supports from the column.



5. Remove the middle handle.

## Removing the Security Bolt from Rotating Unit

1. Open the vertical frame cover, if not opened yet.
2. To do this works, refer to the section: **4.3 Removing the transportation safety bolt.**



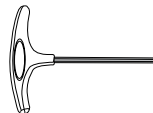
## 7.2 Installing the Cephalometric Unit (Optional)

For the Cephalometric unit installation, including the cabling between units, refer to the **section 4.4**.

## 7.3 Leveling the Equipment



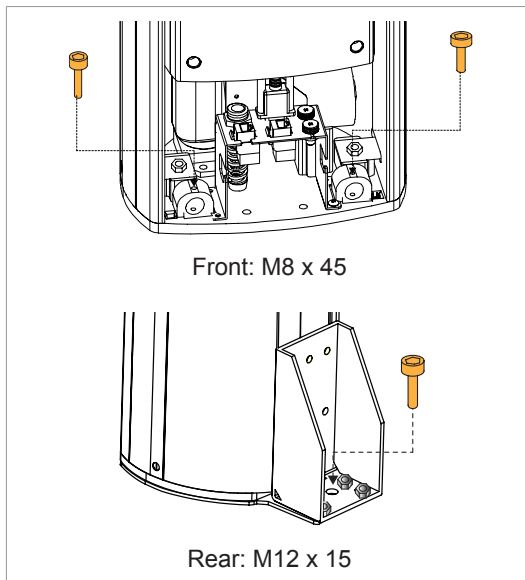
Spirit level



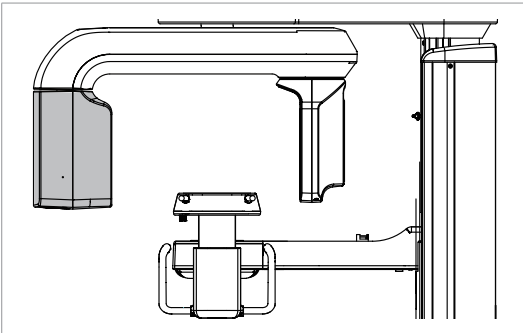
T-shaped hex wrench



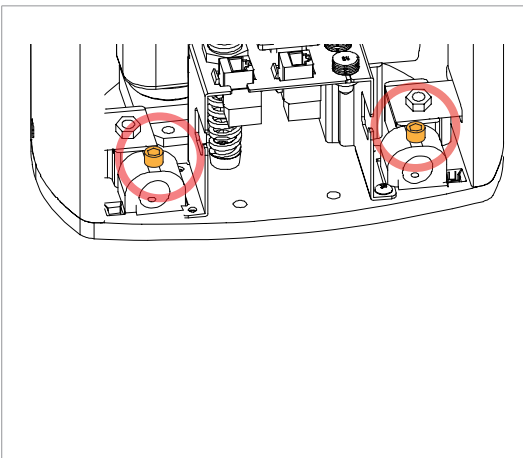
Ensure that the spirit level should rest only on the locations indicated in the following figures to obtain the accurate center.



1. Prepare the spirit level.
2. Screw 3 wrench bolts (**Part No.:41**) loosely.

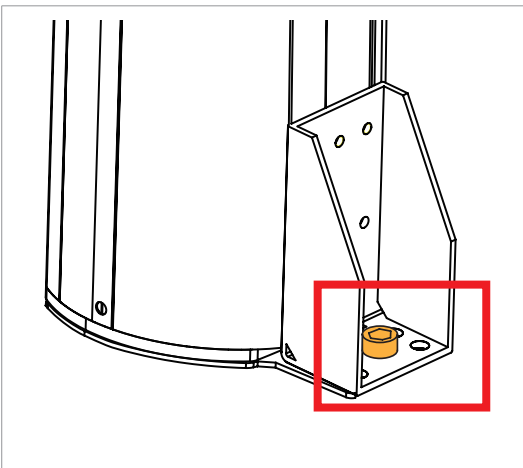


3. Position the rotating unit so that the X-Ray tube head faces the front.



#### **Left and Right**

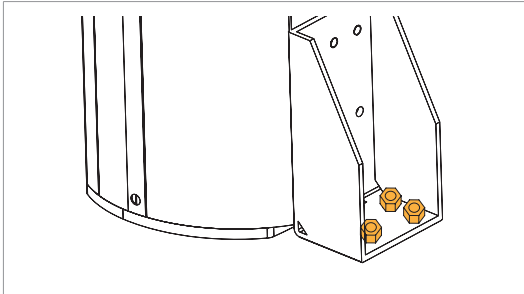
4. Positions of the spirit level are the same as those in the case of the base standing type. Refer to that chapter for the details.
5. Adjust the 2 bolts until the bubble on the spirit level is centered in the middle, by turning the above screws clockwise or vice versa.



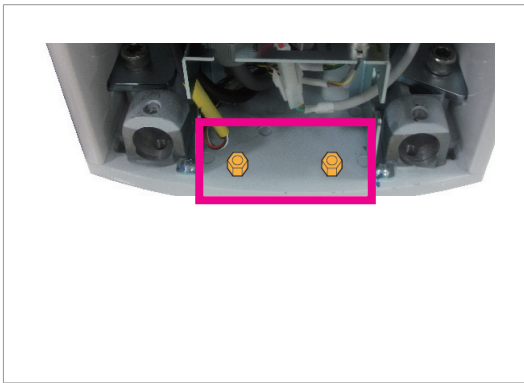
#### **Front and Rear**

6. Positions of the spirit level are the same as those in the case of the base standing type. Refer to that chapter for the details.
7. Adjust the one bolt until the bubble on the spirit level is centered in the middle, by turning the following screw clockwise or vice versa.

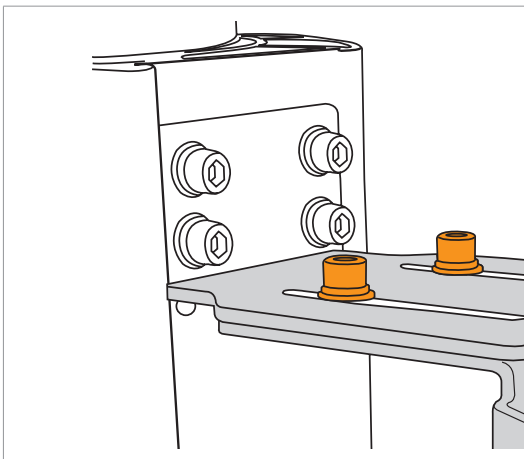
## 7.4 Tightening the Bolts firmly



1. Tighten the 4 bolts at the bottom of the column unit.



2. Tighten the 2 nuts at the front bottom.



3. Tighten the joint bracket bolts.

## 7.5 The Rest of Works

They are the same as those for the base installation type.

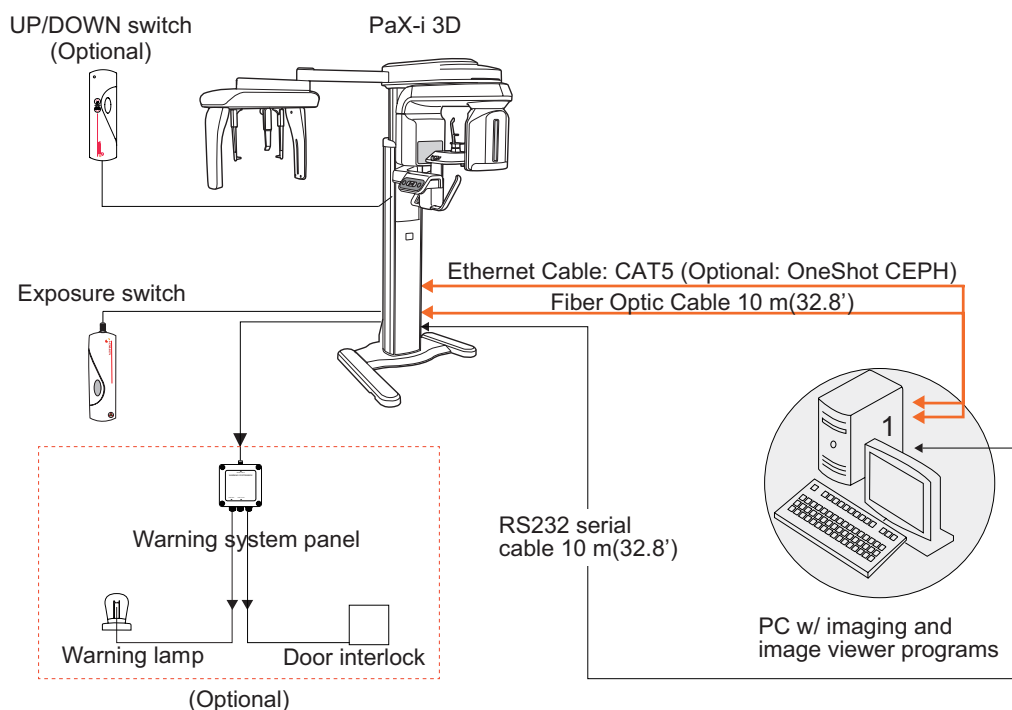
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# 8

## Setting up PC

<b>8.1</b>	Direct Connection Diagram .....	98
<b>8.2</b>	The Recommended PC Requirements .....	99
<b>8.3</b>	Installing the Internal Peripherals .....	101
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## 8.1 Direct Connection Diagram



**RS232 cable:** Used to command the unit and sometimes display the current status of the unit like parameter settings on the HyperTerminal program.

**Fiber Optic Cable & Ethernet cable:** Used to transfer image data to the PC.

**Warning system panel:** Used to provide a visible indicator: light when the equipment is irradiating X-Ray

## 8.2 The Recommended PC Requirements



1. It is mandatory to ensure that the PC system configuration is compatible with the PC system requirements for the imaging and image viewer software.
2. Since image quality may be deteriorated from lack of resources, observe the requirement guideline specified the following tables.
3. The PC components shall be approved by UL/CSA
4. The PC shall be grounded well protectively
5. The multiple portable socket-outlets shall not be placed on the floor
6. In case the equipment is to be installed in area with an unstable electric power supply, use of the AVR (automatic voltage regulator) is strongly recommended to keep the line voltage stable

The PC system provided with the PaX-i3D undergoes the rigorous test for software compatibility before shipping. Therefore any later changes to the hardware and/or software may cause malfunction

Item	HP	LENOVO
CPU	Intel Xeon E5-1607 3GHz 1600 4C or Faster	Intel Xeon E3-1225v2 3.20GHz Intel HD4000
RAM	4GB (2GB*2) DDR3-1333 ECC RAM	4GB (2GB*2) DDR3 1333MHz UDIMM – Non ECC
Hard disk drive	500GB SATA 7200 1st HDD	500GB SATA 7200 1st HDD
GPU	NVIDIA Quadro 600 1.0GB Graphics	NVIDIA Quadro 600 1.0GB Graphics
Ethernet interface	Broadcom 5761 Gigabit PCIe NIC	Intel 82579 Gigabit Ethernet
Serial Port	1	1 (On board)
Power supply	≥ 600 Watts (90% Efficiency)	≥ 280Watts (85% Efficiency)
PCI slots	1 PCI Express Gen3 x 8 Slot 2 PCI Express Gen3 x 16 slot 1 PCI Express Gen2 x 8 Slot 1 PCI Express Gen2 x 4 Slot	1 PCI Express Gen2 x 16 slot 1 PCI Express Gen1 x 1 Slot
	1 PCI Slots	2 PCI Slots
CD/DVD drive	SuperMulti DVD Drive	SATA DVD-ROM/DVD Recordable
Monitor	19" 1280 x 1024 screen resolution	19" 1280 x 1024 screen resolution
Operating system	Windows 7 Professional 64-Bit OS	Windows 7 Professional 64-Bit OS
Recommended system	<b>Z420</b>	<b>E31</b>



1. An insufficient memory could cause the image reconstruction failure in the UHD (ultra-high definition) mode.
2. It is mandatory to ensure that the PC system requirements are met, as specified in the table above



## 8.3 Installing the Internal Peripherals



Allow enough time to dissipate remnant energy after unplugging the power cord from the main outlet or PC.



It is strongly recommended to use the Ethernet card with slot type : PCI Express x1 interface.

Whenever handling the fiber optic frame grabber board:

1. Wear the ant-static glove.

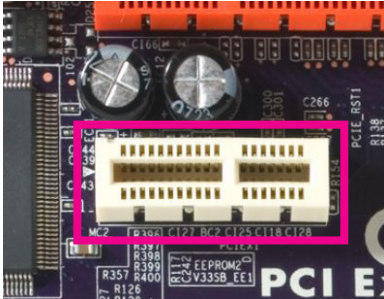


2. Do not wear the likes of a thick jacket.

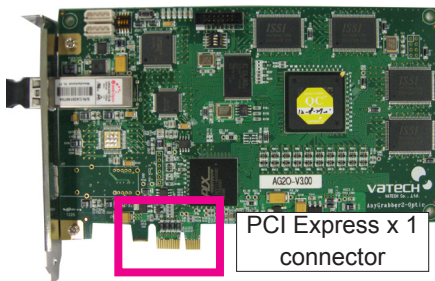
### Installing the fiber optic frame grabber board

1. Unplug the power cable from the back of PC and wait for a while
2. Open the PC cover.
3. Flip the peripheral boards' holder over at the back of PC





4. Locate the PCI Express x1 slot.

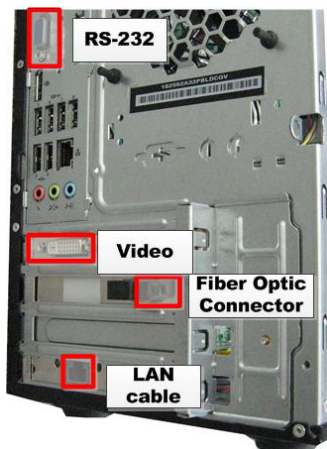


5. Insert the fiber frame grabber board (**Part No.: 27**) carefully into that slot.



Double check the locking status between the board and its holder after it is installed. A bad insertion of the board into the PC slot could cause failure for Dark calibration data acquisition or noisy image acquisition.

6. Tighten the card holder firmly with the screw.



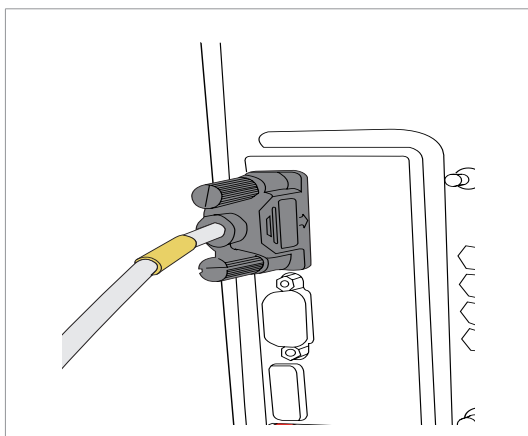
The end result after the peripheral installation

## 8.4 Connecting the Cables to PC

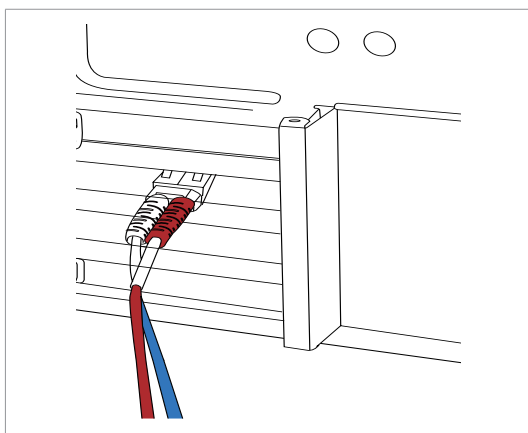


Always check the cable condition visually. Surprisingly, unexpected errors affecting image acquisition arise from the bad cable or its bad contact condition.

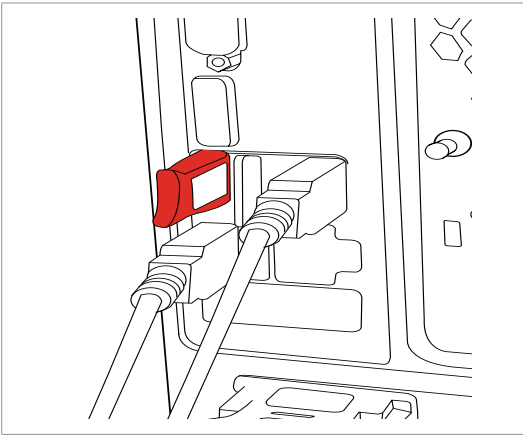
Connect the regular cables for PC: keyboard, mouse, and video in advance.



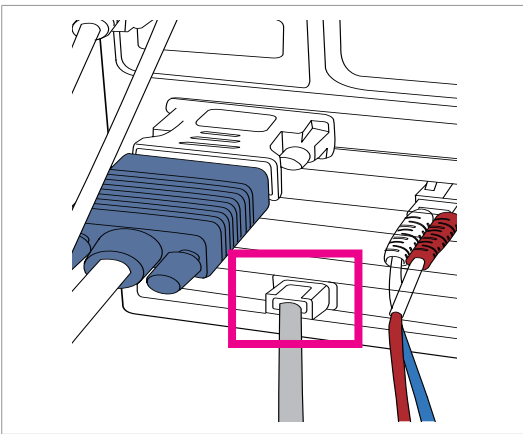
1. Connect the RS-232 cable.



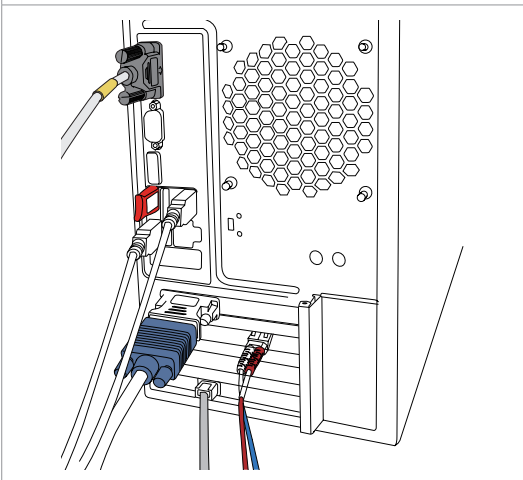
2. Connect the fiber optic cable.



3. Insert the USB type Ez3D plus key (Part No.: 45) into the USB port.



4. (Optional) in case for the OS sensor to be installed, connect the Ethernet cable.



The end result after connections are finished

# 9

## Setting up PC's Environment Variables

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## 9.1 The Important Notes



The PC system supplied with the equipment is intended to be used as an image acquisition only. For the purpose of the PC server for image management, use of a different PC is strongly recommended.

The programs related to acquisition, viewing and manipulation of images should be installed on the formatted PC, where no other program(s) except the operating system (OS) is present.

Do not install the programs irrelevant to image acquisition and view on the same PC. There may be subtle conflicts between them, leading to the malfunction.

Ensure that the emergency stop switch is in OFF position prior to starting with the installShield installation

Ensure that virus scan shall be performed before starting with the software installation.

Before InstallShield installation, ensure that the video card driver installed on PC is the most up-to-date version. To check this, go to the Website: [www.nvidia.com](http://www.nvidia.com).

## 9.2 Checking PC BIOS Settings

1. The PC is shipped, with its BIOS settings, as specified in the Appendix **E: Checking PC BIOS Settings**.

Before proceeding to the next sections, check the BIOS status.

## 9.3 Setting Folder exclusions with Anti-virus Software



1. Set the virus scan exception for the files and folder related to this equipment.
2. Do not run the memory-resident background programs unrelated to the equipment.
3. Running the virus scan is recommended to be performed only when equipment is idle.
4. Turn the firewall off.
5. Always use the blank USB drive, whenever possible.

Some files used by the PaX-i3D are incorrectly recognized as virus(es)/trojan(s) by anti-virus software. If you are using anti-virus software on your PC, you must exclude those files from all scans performed by the anti-virus software.

For the PaX-i3D, the following folder and files should be excluded with the virus scan.

Files	Path
C:\Program Files\Vatech	C:\VCaptureSW

**For example:** Suppose the Anti-virus program from McAfee is running in the background.

**Note:** The procedure to set folder exclusions is similar for most anti-virus programs.

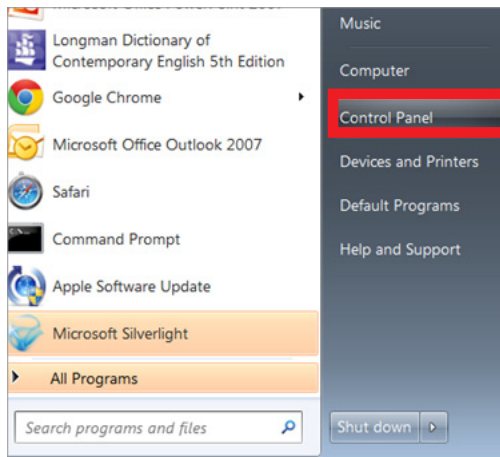
1. Open the McAfee Anti-Virus program, and select the "VirusScan".
2. Right-click on the "On-Access Scan" menu option, and left-click on the "Properties" tab.
3. Select the "**All Processes** → **Detection** → **Exclusions**" menu option, and choose the "**Add**" menu button.
4. Navigate to the folder or the files you want to designate an exclusion path for, and select the check box to "Also Exclude Subfolders". Click "OK" when complete, and exit McAfee for the path exclusion to be complete.

## 9.4 Turning the firewall off

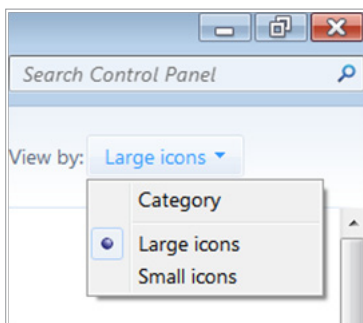
The LAN port and/or local IP may be blocked by the Windows firewall property, leading to interruptions in imaging acquisition and data transmission. For this reason, it is required that you disable the Windows Firewall by using the following procedure

### For Windows 7 users:

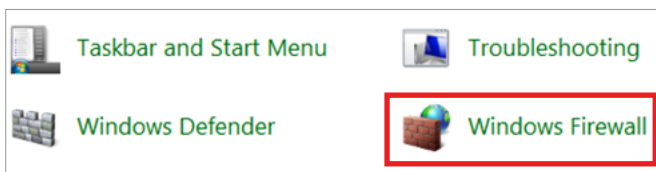
1. From the desktop, click **Start** → **Control**



2. Click the **View by** field on the upper right corner and select **Large icons**.



3. Double click on the Windows Firewall.

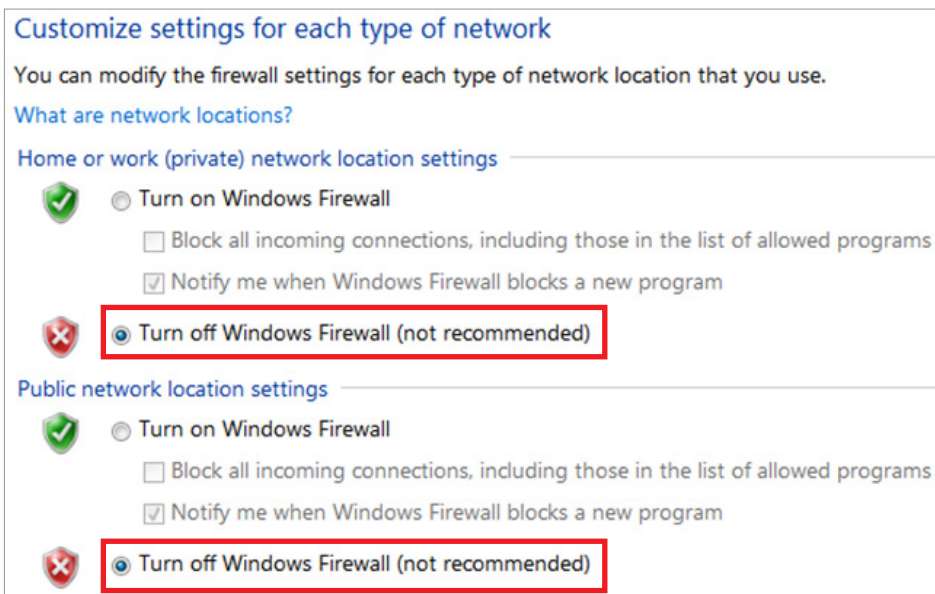




4. Select the **Turn Windows Firewall on or off**.



5. Select the **Turn off Windows Firewall** for both settings: Work and Public networks.



6. Click **OK** to apply the settings.

## 9.5 Setting up the Power Mangement Options

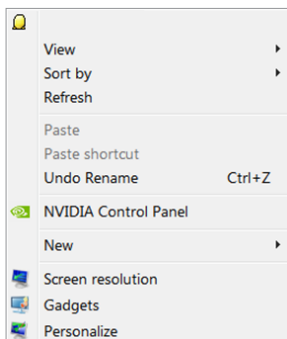
The following statements are based on the windows 7 environment. Depending on the operating system employed, the figures on your system may appear different slightly.

To avoid disruptive and abnormal operation while acquiring image, it is required to reconfigure some parameters on the Windows operating system.

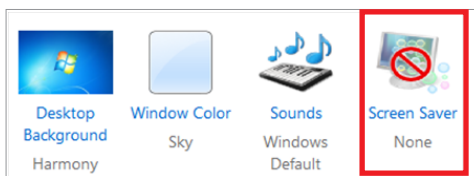
### Disabling the screen saver

From the desktop,

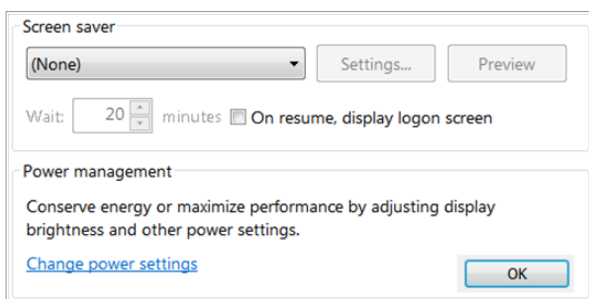
1. Click the right mouse button and select **Personalize**.



2. Locate and click the screen saver.



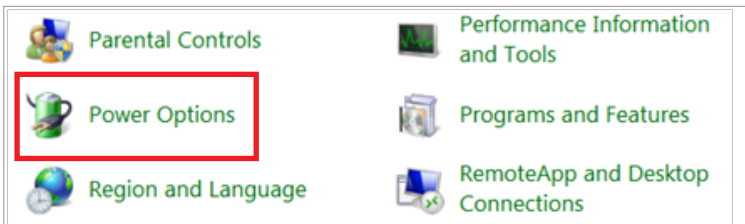
3. Select **None** in the pull-down menu.



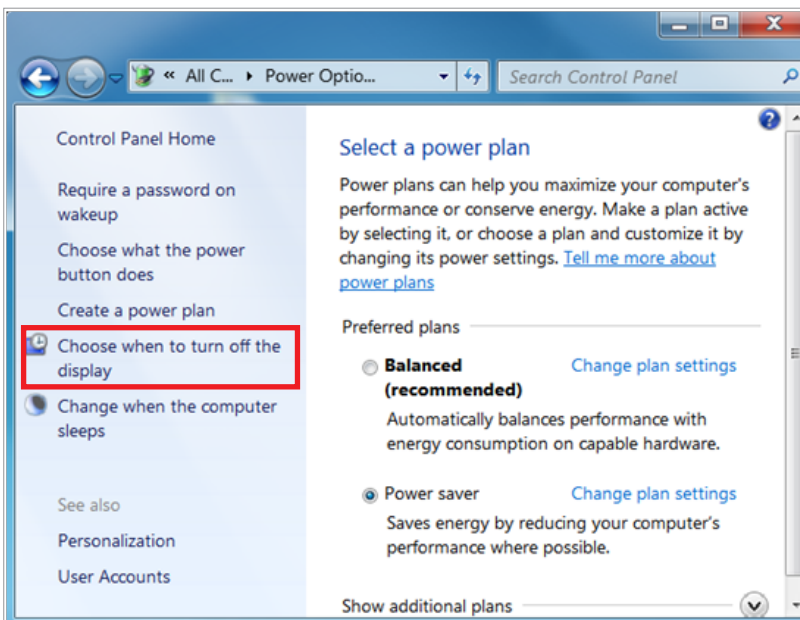
4. Click **OK**.

## Selecting the power options: monitor and system

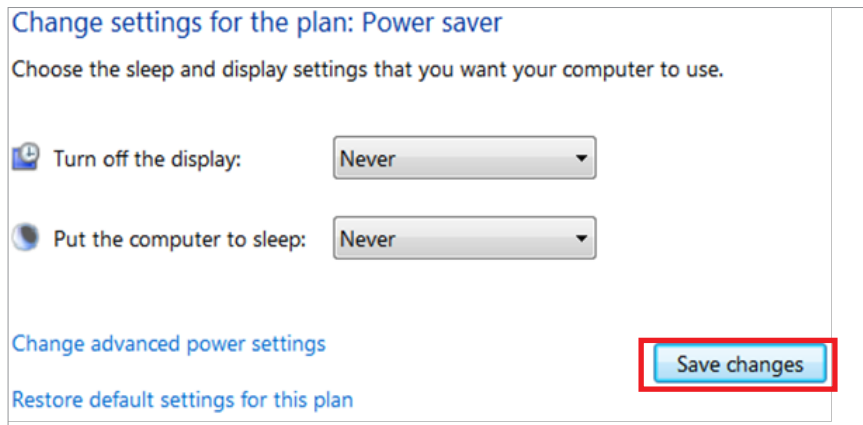
1. Go to the **Control Panel**.
2. Double click on the **Power Options** icon.



3. Select **"Choose when to turn off the display"**.



4. Select **"Never"** for both fields.



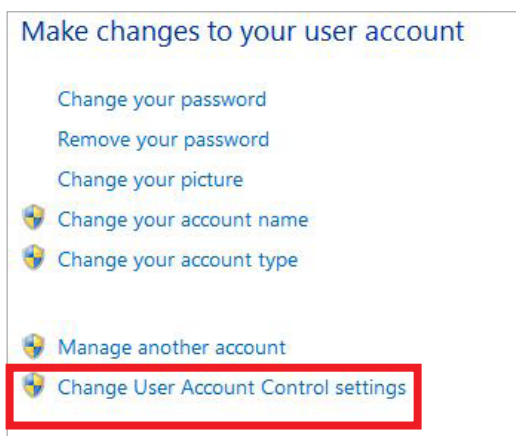
5. Click **"Save changes"**.

## 9.6 Turning off the User Account Control

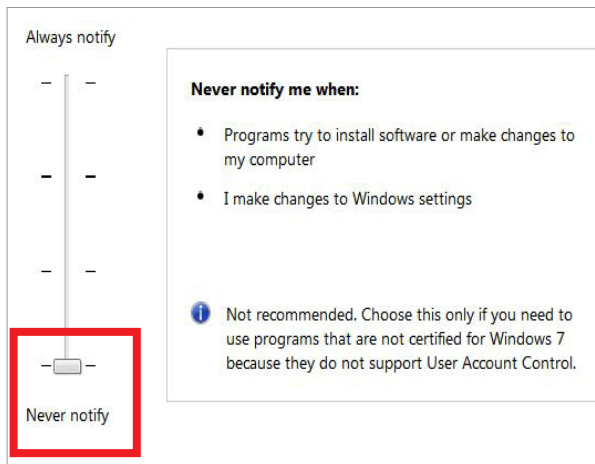
1. Open the control panel of Windows.
2. Click the User Account icon.



3. Click on the 'Change User Account Control settings'.



4. Disable the UAC by moving the slider bar down to the bottom, Never notify.



5. Click 'OK' and restart the PC.

## 9.7 Reallocating Memory Space (32-bit OS only)

For the details on how to reconfigure the memory space, refer to the appendix **F: Reallocating Memory Space**.

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# 10

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## Installing Software

<b>10.1</b>	Before Installing the installShield .....	116
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<b>10.4</b>	Setting Up the IP Address for the OS CEPH Sensor(Optional) ..	142

## 10.1 Before Installing the installShield



Install software on the CD in the following order.

EasyDent4 → Ez3D plus → Implant DB → Installshield

## 10.2 Installing the InstallShield



The image viewer program such as EasyDent or the one from the 3rd party should be installed in advance of the InstallShield installation.

**Do not** install the programs irrelevant to image acquisition and view together with imaging program on the same PC. There may be subtle conflicts between them.

Ensure that the **emergency stop switch is in OFF position** prior to starting with the installShield installation

Perform virus scan for the PC and InstallShield program with the anti-virus program prior to proceeding with its installation.

Before InstallShield installation, ensure that the video card driver installed on PC is the most up-to-date version. To check this, go to the Website: **www.nvidia.com**.



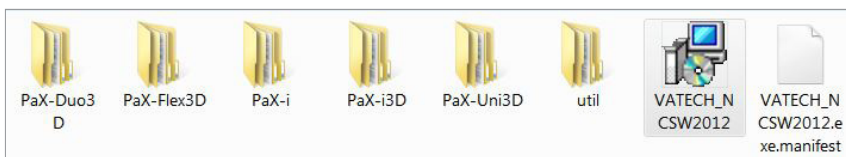
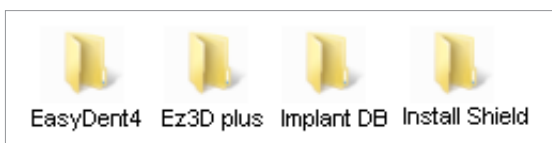
## For the first time installation



The EasyDent viewer program should be installed in advance before proceeding with installation.

1. Turn On the PC and Equipment.
2. Insert the CD into CD-ROM drive. and then perform virus scan for PC and Install CD
3. Given EasyDent4, Ez3D PLUS and Implant DB are already installed, go to the folder: InstallShield.

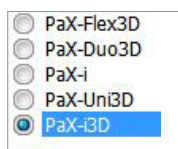
Then click on the **VATECH\_NCSW2012**



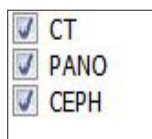
4. The following screen will appear and click **Next**.



5. Select the equipment model: PaX-i3D and then click **Next**.



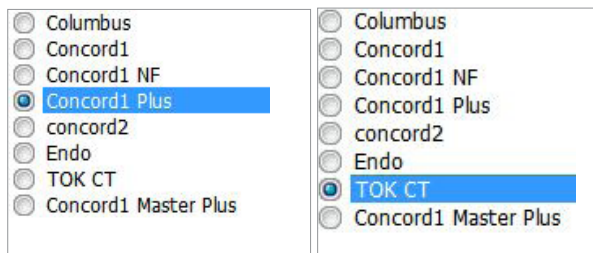
6. Select the modality and click **Next**. Note that if the CEPH feature comes with the equipment, also check the **CEPH**.



7. Select the CT sensor type: Concord1 plus or TOK CT.



The information about the sensor type is written on the cover of the installation CD.



8. Select the AnyPano(HQ) for panorama and click Next.

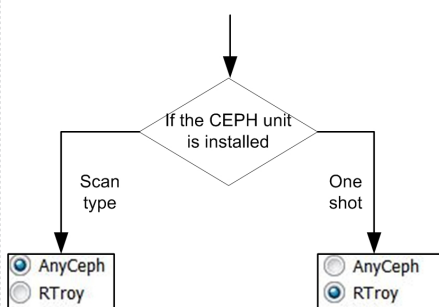



The AnyPano(HQ) should be selected. Otherwise erroneous image could be acquired. The AnyPano and AnyCeph are used for the other equipment.

9. Select the CEPH sensor, if it is installed.



Select an AnyCeph if the CEPH sensor is scan type, or RTroy for the one shot type.

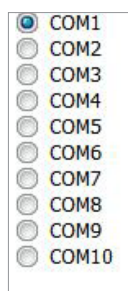


10. Select the default port number: **COM1**.



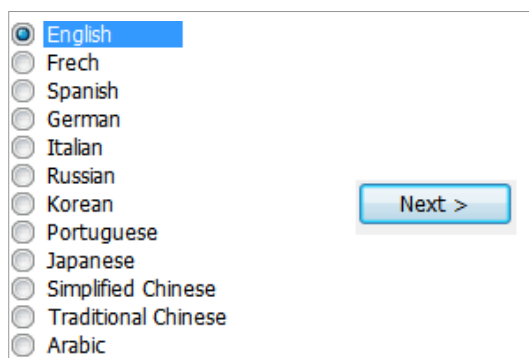
Select the port No.: **COM1**

The same COM port No. should be used between the equipment and PC.

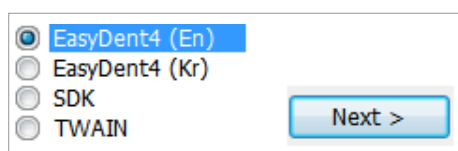


And click **Next**.

11. Select the language and click **Next**.



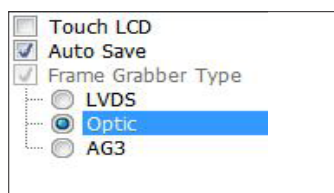
12. Select the image viewer program, where the EasyDent is the software developed by **VATECH**. If the third-party software is to be used, select the **SDK**.



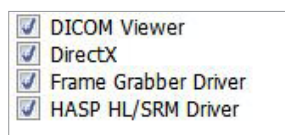
Click **Next** to continue.

13. Uncheck the Touch LCD. Select Auto Save and Optic.

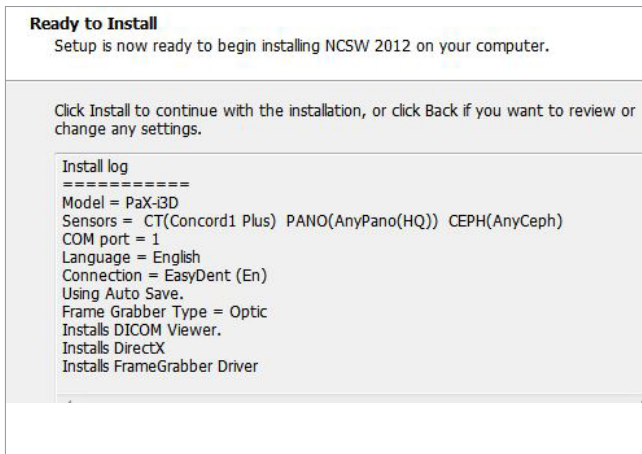
Note that, when the Auto Save is checked, the image data acquired saved automatically



14. The following is a list of various software components that can be installed on as-needed basis. For the first time installation, select all.

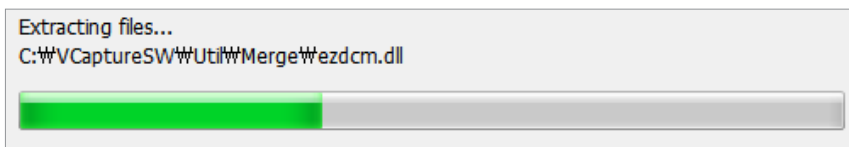


15. The following figure displays the information entered so far. If necessary, you can modify it by clicking **Back** button.



Click **Install** to continue.

Now extracting the files in the folder **C:/VCaptureSW/**.

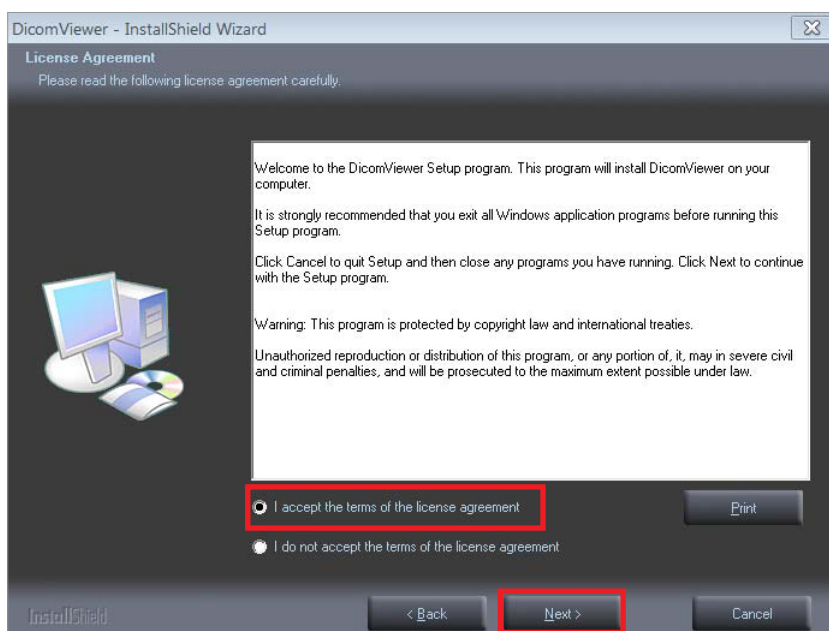


## Installing the DICOM viewer

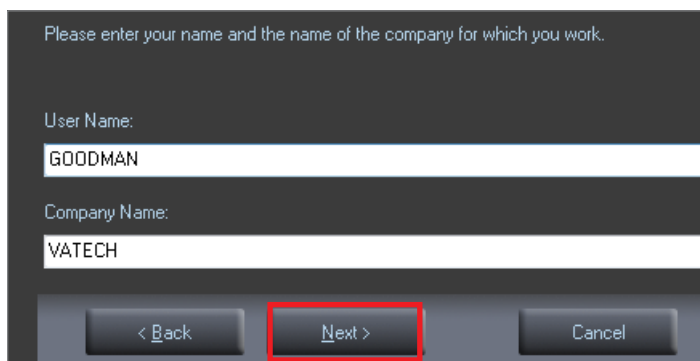
1. Click **Next** to install DICOM viewer.



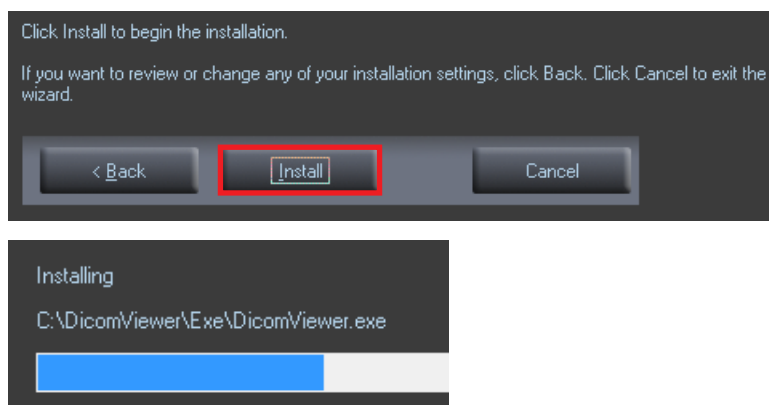
2. Select "I accept the terms of the license agreement" and click **Next**.



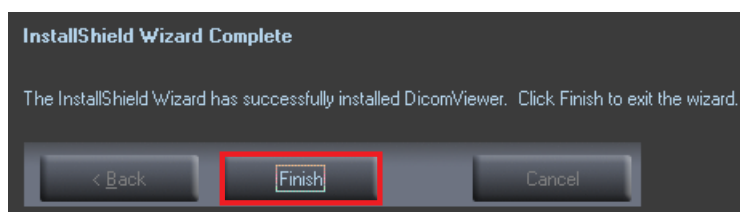
3. Enter the names of user and clinic and click **Next**.



4. From the following screen, click **Install**.



5. Click **Finish** to finish.

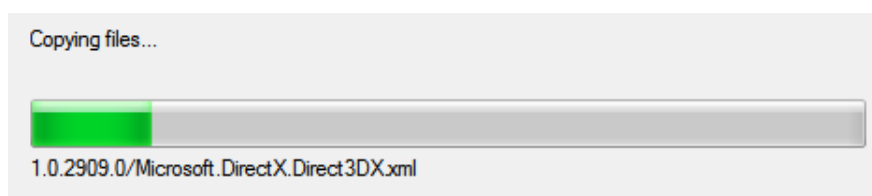


## Installing the DirectX

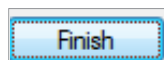
1. Now installing the **DirectX**: select "I accept the agreement".



2. Click **Next** to continue. Now installing...



3. Click **Finish**.





## Installing fiber optic frame grabber driver( AnyGrabber)

1. Click **Next** from the welcome screen.

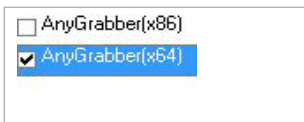


2. Select the '**AnyGrabber (x64)**' for 64-bit driver and click 'Next'.d.



For the 64-bit driver installation, the 64-bit CPU is required.

**AnyGrabber (x86): driver for 32-bit Windows**



3. From the following message, click '**Next**'.



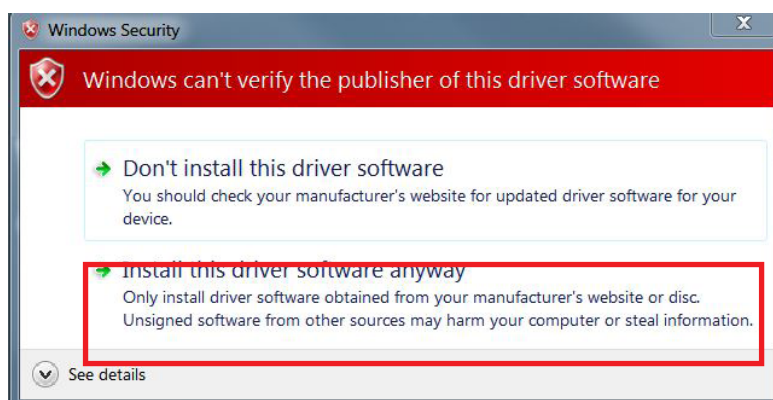
4. Installation has been completed.



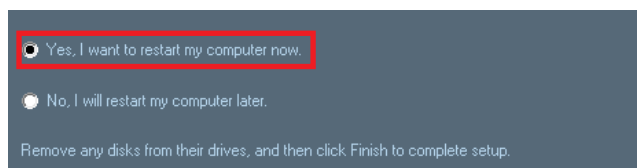
The default folder can be changed by clicking 'Browse' button



5. From the following screen, select 'Install this driver software anyway'

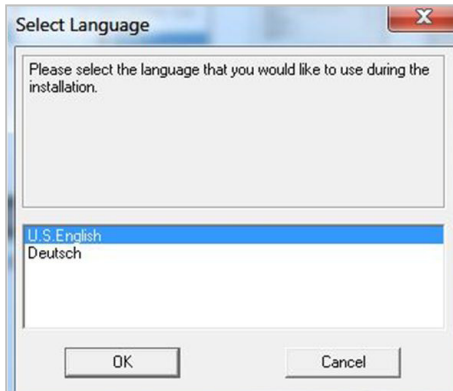


6. From the next message, click 'Finish' to restart PC.

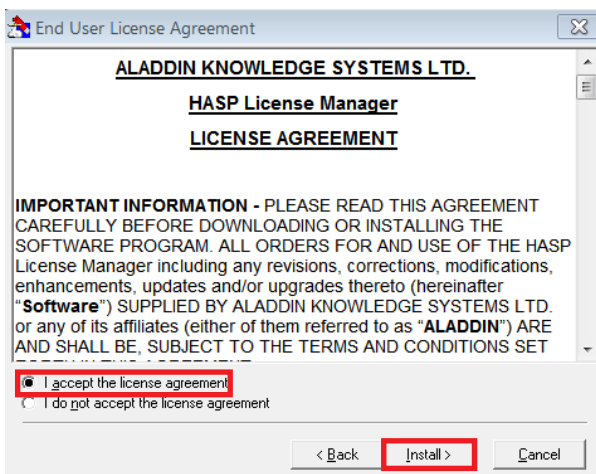


## Installing the HASP Key License

1. Select the language.



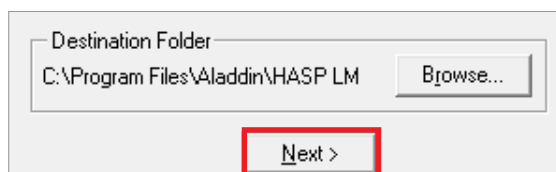
2. Select "I accept license agreement", followed by **Install**.



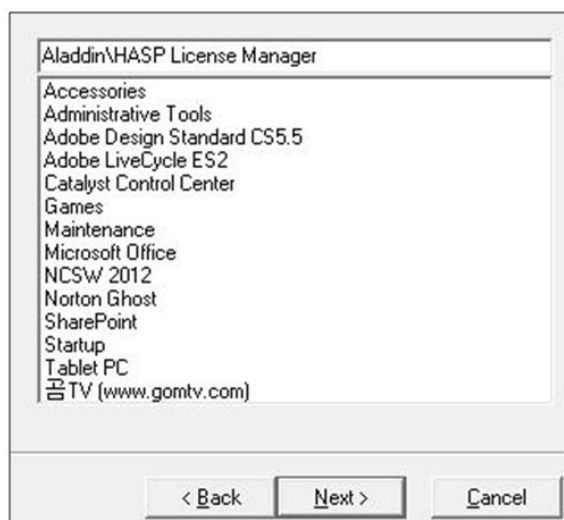
3. Leave as default from the following message.



4. Select the folder where the files are copied to and click **Next**.



5. Select the program group. Leave it at default and click **Next**.



## Installing the HASP Key driver software

1. From the welcome message, click **Next**.



2. Click 'Yes' to restart the program.



Ensure that the program should be restarted, with the HASP key being inserted into the USB port on PC.



## Finalizing Installation

1. The installation has just been completed. Click '**Finish**' and restart PC.



## Verifying that all Components are Properly Installed

1. Locate the file: **NCSW 2012\_Install\_Log.txt** on the desktop.



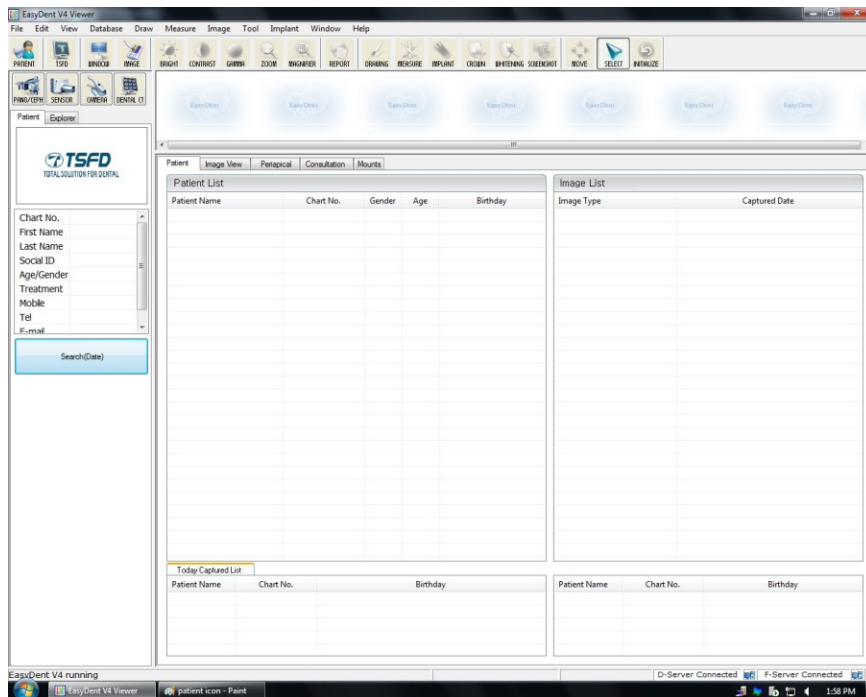
2. Open it to check the file. You can find out that all components are installed.



## 10.3 Setting up the User-specific Information

### Running the image viewer

1. Run the image viewer. On your desktop, double-click **EasyDent** or click **Start** → **All Programs** → **EasyDent**. The **EasyDent** main window will be displayed.

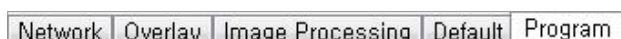


## Interfacing EasyDent with imaging program(one-time linking)

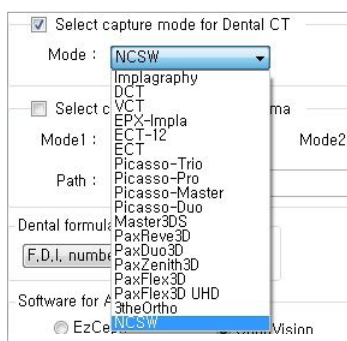
1. From the main screen of EasyDent, click the **Help** menu and select **Configuration**.



2. Click the Program tab.



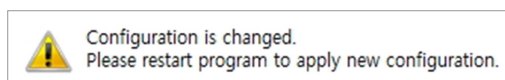
3. Check 'Select capture mode for Dental CT' select the **NCSW**.



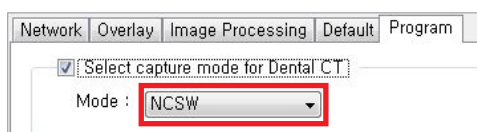
4. Click **Apply**



5. When the following message appears, click **OK** to restart the program.



6. Re-run the EasyDent program and check the change has been reflected.






## Creating a new patient record



For the further details on this subject, refer to the accompanying EasyDent manual.

1. Click the **Patient icon** (  ) on the upper left corner of the EasyDent's main GUI window.



The following dialog box will open.

**Add Patient**

\* Chart No. : 1 Recently

\* First Name : Vatech

\* Last Name : Vatech

Social ID :

Birthday : 1 / 1 / 1979

Gender : Male Treatment:

Address1 :

Address2 :

E-mail : @

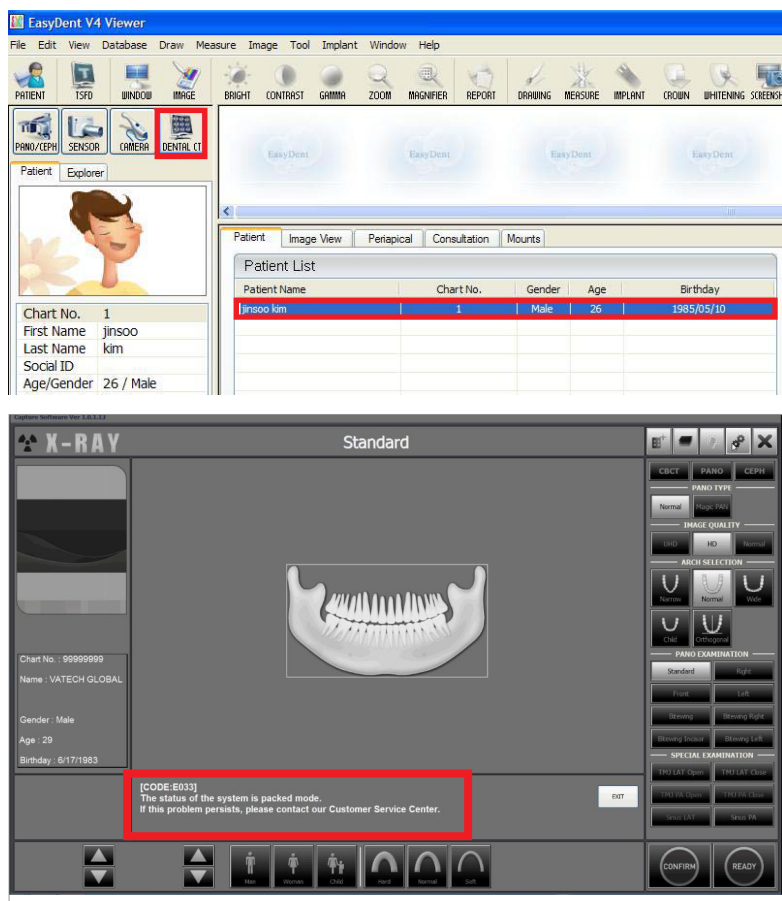
Tel : Mobile :

Add Cancel

2. Enter the required patient information. **Chart Number**, **First Name** , and **Last Name** are required fields which must be filled in. All other fields are optional, but it is recommended that they be filled in.
3. Click **Add** to save the patient record.

## Initiating the Imaging Program

1. First, click the patient information in the patient list, and click the **Dental CT** icon (  ) in the upper left corner of the EasyDent's main window to open the imaging program.



The error code E033(red box in the figure above), indicating that the equipment is still in the packing mode, should disappear when the command of exiting the packing mode is executed. See the next 'Disabling the packing mode'

## Disabling the packing mode



PaX-i3D has a unique feature— packing mode— built in the system to prevent the unit from being damaged while shipping and transporting. Thus it is in the packing mode by factory default. The unit is required to exit the packing mode at this step for successful installation.



Unless the packing mode disabled, no operation will happen even after the equipment is turned on.

1. From the main GUI window, click the setup icon highlighted by the red box in the figure below.



2. When the following screen appears, select Engineer. Then enter password in the Password field.  
Password: vatech

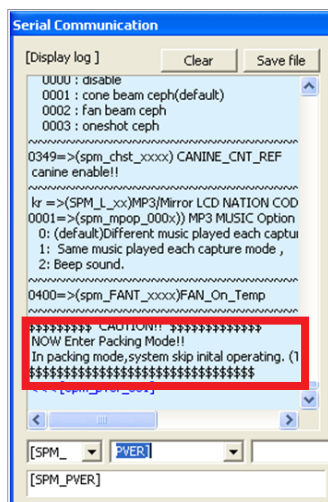
3. Click **General tab** → **Connect**

Serial Port: Checked

Port : COM1

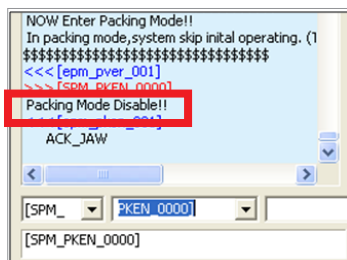
Baud rate: 19,200

4. Enter the command **PVER]** to verify the current mode. Note that the equipment is now in packing mode.



5. Enter the command **PKEN\_0000]** to exit the packing mode. Now note that the equipment is out of the packing mode.

Note: to re-enter the packing mode, use the command: **PKEN\_0001]**.



6. Click **Exit** button and terminate the control panel.
7. **Exit the imaging program (main GUI): important!**
8. **Reset the equipment to take the changes into effect**

## Configuring the parameters



The following information should be entered, in accordance with the user requirements

1. Run EasyDent and call the imaging program.
2. Click the setup icon to enter in control panel.

**User Setting**

---

**License**

☒ Use License String

License String

---

**DAP**

☒ Show DAP Value

DAP Unit

---

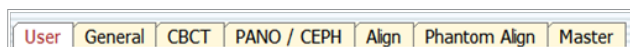
**Language**

---

**Capture Count**

CBCT	<input type="text" value="00000000"/>	<input type="button" value="Reset"/>
PANO	<input type="text" value="00000000"/>	<input type="button" value="Reset"/>
CEPH	<input type="text" value="00000000"/>	<input type="button" value="Reset"/>

3. Click **User** tab.



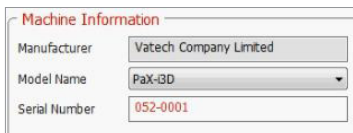
4. Set the Use License String option in the License field. When checked, the character string in the **License String** field is displayed on the left of the image. By default, the equipment name is displayed.

5. Set the unit for the **DAP** (Dose Area Product) value which is displayed on the screen.

You can expand the menu to see more units.

6. From the **User** tab, go to **Language** field and select your language, followed by **Send to Machine**.

7. Click **'General'** tab and enter the serial number of the equipment.



Machine Information

Manufacturer: Vatech Company Limited

Model Name: PaX-i3D

Serial Number: 052-0001

8. Click **Save** button.



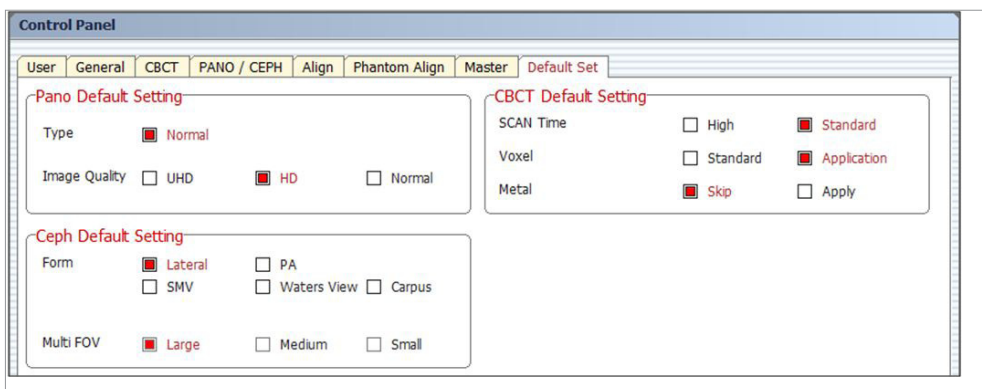
Save Close

9. Click **Default Set** tab and configure the user-defined parameters.



The default feature can be modified, according to the user's requirement.

Imaging program: default	
PANO	Normal, HD
CEPH(Optional)	Form : Lateral, Multi FOV : Large
CBCT(Optional)	SCAN Time : Standard(15 sec), Voxel : Application Metal Function : SKIP



Control Panel

User General CBCT PANO / CEPH Align Phantom Align Master Default Set

**Pano Default Setting**

Type ☒ Normal

Image Quality ☐ UHD ☒ HD ☐ Normal

**Ceph Default Setting**

Form ☒ Lateral ☐ PA ☐ SMV ☐ Waters View ☐ Carpus

Multi FOV ☒ Large ☐ Medium ☐ Small

**CBCT Default Setting**

SCAN Time ☐ High ☒ Standard

Voxel ☐ Standard ☒ Application

Metal ☒ Skip ☐ Apply

10. Click **Save** button.



Save Close

## Selecting an Announcement Mode: Music or Beep (Optional)

When the need to select an announcement between music and beep arises, take following procedures.

### Commands specification:

Command format: [SPM_MPOP_XXXX]			
XXXX	Imaging Modes	Announcement mode	Division
0000	CT/PANO	Music	Different for each mode
0001	CT/PANO	Music	The same for each mode
<b>0002 (Default)</b>	CT/PANO	Beep	The same for each mode

#### 1. Click **General tab** → **Connect**

Serial Port: Checked

Port : COM1

Baud rate: 19,200

**Networking & LCD**

Protocol Type
☒ Serial Port
☐ Ethernet Port

Machine IP
0 . 0 . 0 . 0

LCD IP
192 . 168 . 33 . 100

Serial Port No.
COM 1

Baud Rate
19200

Connect



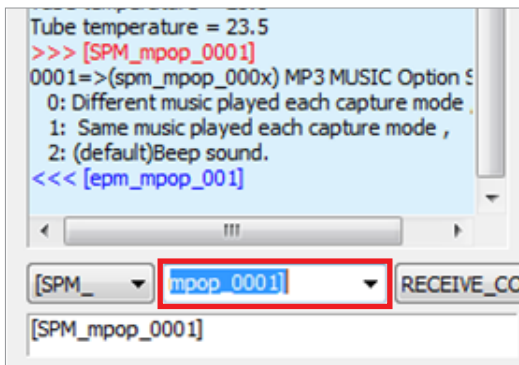
2. Send the command in accordance with the command specification, as specified in the table above.

Here are some examples.

Default mode: 0002(beep) for each imaging mode.

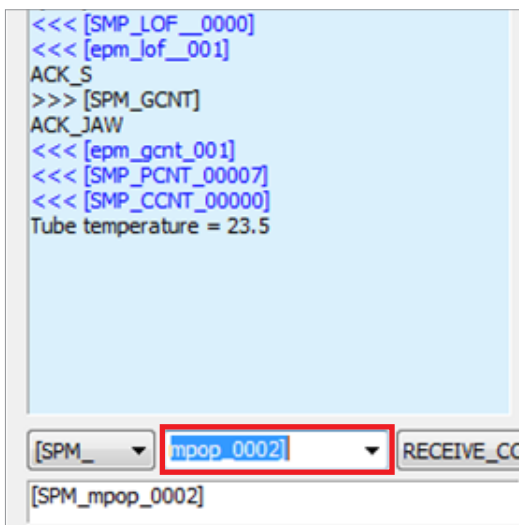
**When the same music announcement is desired for CT and PANO imaging modality.**

Enter the command **[SPM\_MPOP\_0001]** in the command field, followed by **Send**.



**When the same beep announcement is desired for CT and PANO imaging modality.**

Enter the command **[SPM\_MPOP\_0002]** in the command field, followed by **Send**.



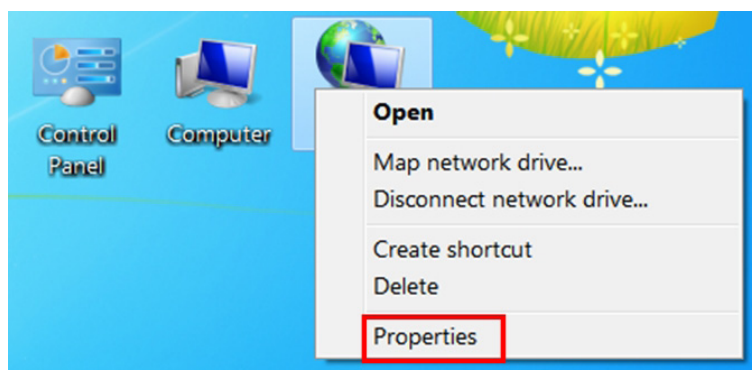
## Finalizing the Parameters Settings

1. Click **Exit** → **Close** button and terminate the control panel.
2. **Exit the imaging program (main GUI): important!**
3. **Reset the equipment to take the changes into effect**

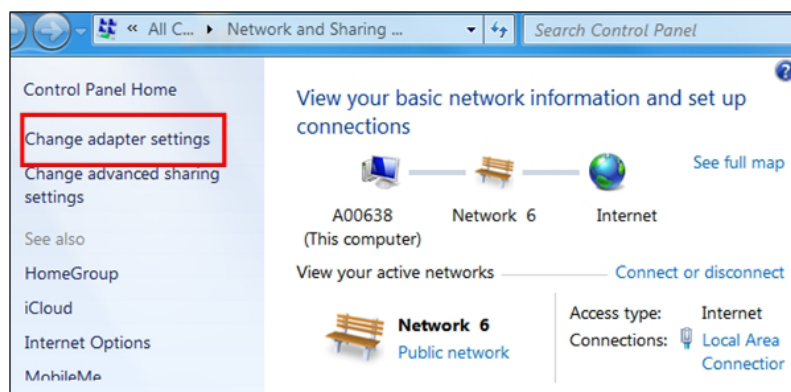
## 10.4 Setting Up the IP Address for the OS CEPH Sensor(Optional)

In order for the **OS CEPH** sensor to communicate with the **PC**, the proper IP address should be set on the PC. The following screenshots are taken in the Windows 7.

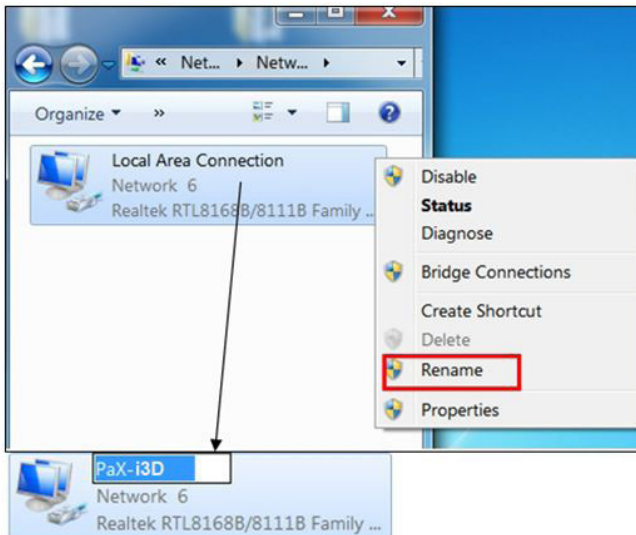
1. From the desktop, click the right button of the mouse on the **Network** icon.



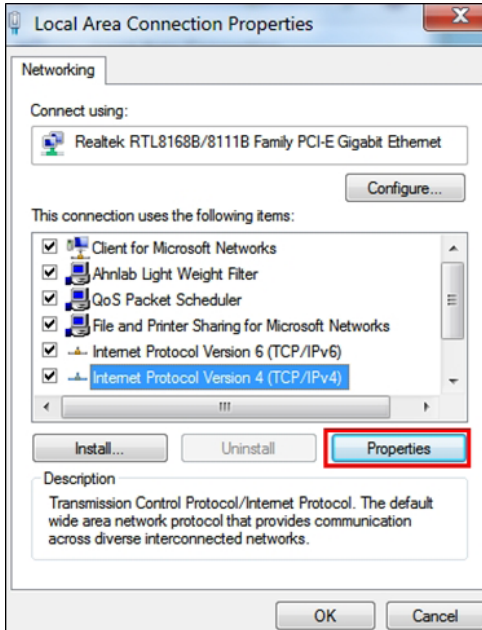
2. Double click the **Properties**.
3. Select the “**Change adapter settings**”.



- Click the right mouse button on the **Local Area Connection** and select the **Rename** to change its network name to **PaX-i3D**.



- From the following figure, select the **Internet Protocol Version 4** and click **Properties**.

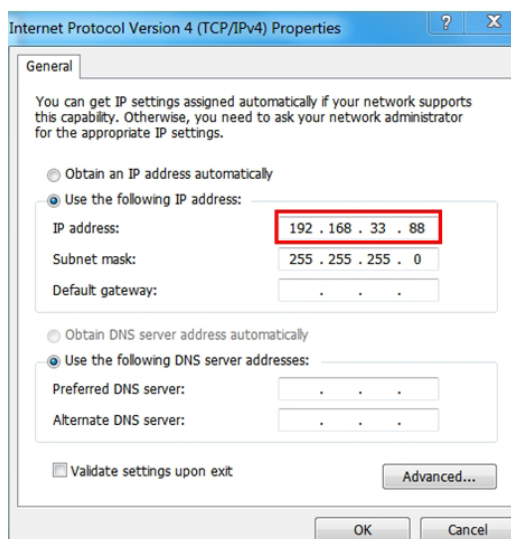


6. To set the new IP address.

6-1. Move to **Use the following IP address.**

6-2. Enter the IP address: **192.168.33.88** and leave the other fields at the default.

6-3. Click **OK**.



7. Reset the PC and equipment.

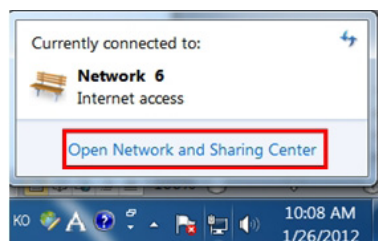
## Checking connection status

8. Check the connection status between PC and the touchpad screen in the following manner.

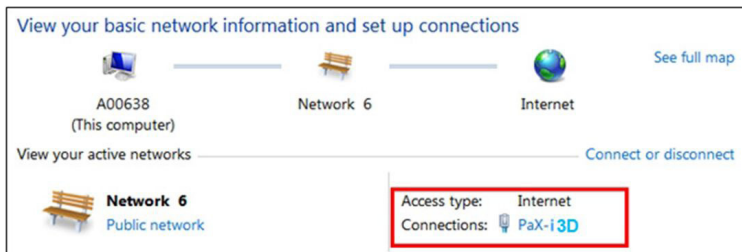
8-1. Click the left button of mouse on the network icon of the task bar.



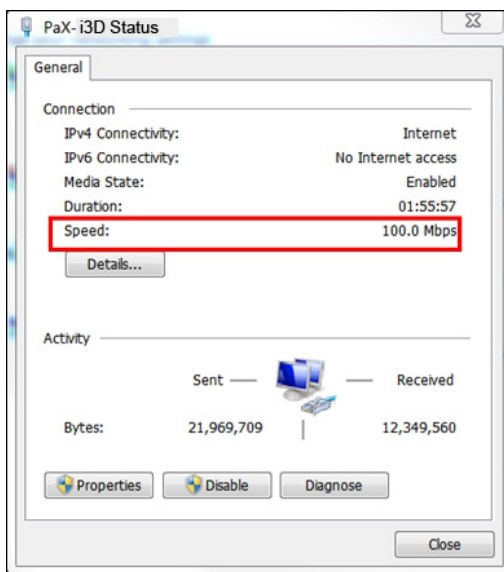
8-2. Select **Open Network**.



8-3. Click the **PaX-i3D** from the following figure.



8-4. Check the speed: 100.0 Mbps. If it is, a connection is successful.



9. **Reset** the equipment and PC to take the changes into effect.

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blank.***

---

## Acquiring a Test Image

## Acquiring the test image

1. Perform the test image acquisition after the software is installed.
2. Acquire a test image using the phantom jig. For the further details about the image acquisition, refer to the accompanying user manual.
3. Ensure that collimator is well aligned.



When collimator is misaligned, the correct test image can't be obtained, in which case the alignment correction must be performed first, according to the technical manual.



For the equipment with Cephalometric unit, if the noisy image on the lower part appears, this is caused by the improper leveling between the CEPH and the column units.

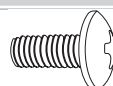
Level the CEPH unit again.

For other issues related to the image, refer to the section(s) regarding to X-Ray alignment in the accompanying service manual.

## Assembling the vertical frame cover

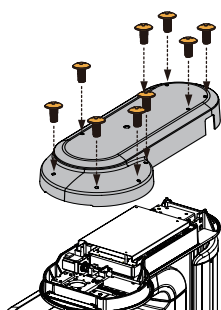
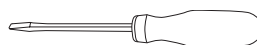
Truss bolts

M4 x 8  
Part No.: 24  
Qty : 9



Cross head screw driver  
w/ magnetic tip

L=200 mm(7.9")



1. Assemble the vertical frame cover and fix it with 9 truss bolts (Part No.: 24).



---

## Technical Specifications

## Image Magnification

Mode	FDD (mm)	FOD (mm)	ODD (mm)	Magnification
CT	642.3	409.7	232.6	1.56 constant
PANO	585.9	439.7	146.2	1.33 constant
CEPH	1745	1524	221	1.14 constant

- **FDD** : Focal Spot to Detector Distance
- **FOD** : Focal Spot to object Distance
- **ODD** : Object to Detector Distance (ODD = FDD – FOD)
- **Magnification** = FDD / FOD

## Dimension of the Equipment

Item		Description
Weight	Without CEPH unit	120 kg (264.5lbs)
		w/ base: 175 kg (385.8lbs)
	With CEPH unit	150kg (331lbs.)
		w/Base: 205kg (452lbs)
Total height		Max. 2340 mm (92.13 in.)
Vertical column movement		Max. 700 mm (Max. 27.56 in.)
Length x Width x Height	Without CEPH unit	1140(L) x 1335(W) x 2340(H) mm (44.88(L) x 55.56(W) x 92.13(H) in.)
	With CEPH unit (Scan Type)	1950(L) x 1335(W) x 2340(H) mm (76.77(L) x 55.56(W) x 92.13(H) in.)
	With CEPH unit (One shot Type)	1930(L) x 1335(W) x 2340(H) mm (75.98(L) x 55.56(W) x 92.13(H) in.)
Type of installation		Base Stand / Wall Mount

## X-Ray Generator Specifications

Item			Description
Model			HDG-07B10T2
Rated output power			0.9 KW
High voltage Generator	Type		40 KHz Inverter Type
	Normal/ Pulse	kV	50 ~ 90
		mA	4 ~ 10
	Cooling		Automatically controlled / Protect $\geq 60^{\circ}\text{C}$ Option: Air Cooling
	Total filtration		2.8 mm Al eq.
X-Ray Tube	Manufacturer		TOSHIBA
	Model		D- 052SB (Stationary Anode Type)
	Focal spot size		0.5 mm (IEC60336)
	Target angle		5 °
	Inherent filtration		At least 0.8 mm Al equivalent at 50 kV
	X- Ray coverage		95 x 380 mm at SID 550 mm
	Anode heat content		35 kJ
	Duty cycle		<b>1:60 or more (Exposure time : interval time)</b>

S/N	XXXX Size (mm)	XXX	XX	XX	XX	XXX	XXXX
	Model	Tube	Inverter ver.	F/W ver.	Weekly code	Yearly code	serial

## **Electrical Specifications**

Item	Description
Power supply voltage	AC100-120 V / 200-240 V
Frequency	50/ 60 Hz (Single)
Power rating	Max.2.2 kVA

- The input line voltage depends on the local electrical distribution system.
- Allowable input voltage fluctuation requirement:  $\pm 10\%$ .

## **Environmental Specifications**

Item		Description
During operating	Temperature	10 ~ 35 °C (50 ~ 95 °F)
	Relative humidity	30 ~75 %
	Atmospheric pressure	860 ~ 1060 hPa
Transport and storage	Temperature	-10 ~ +50 °C(14~ 122 °F)
	Relative humidity	10 ~ 75% non-condensing
	Atmospheric pressure	860 ~ 1060 hPa

---

# Appendix

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## A. Installing the Warning Lamp and Door Interlock Switch

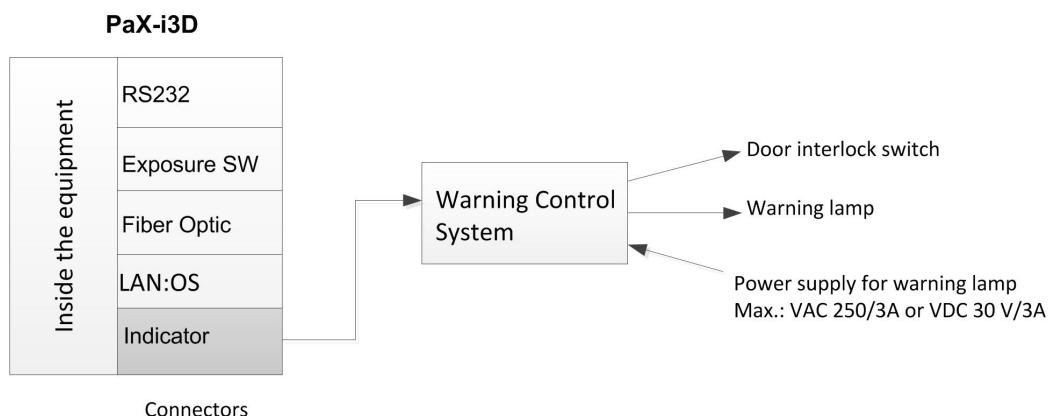
### Requirements:

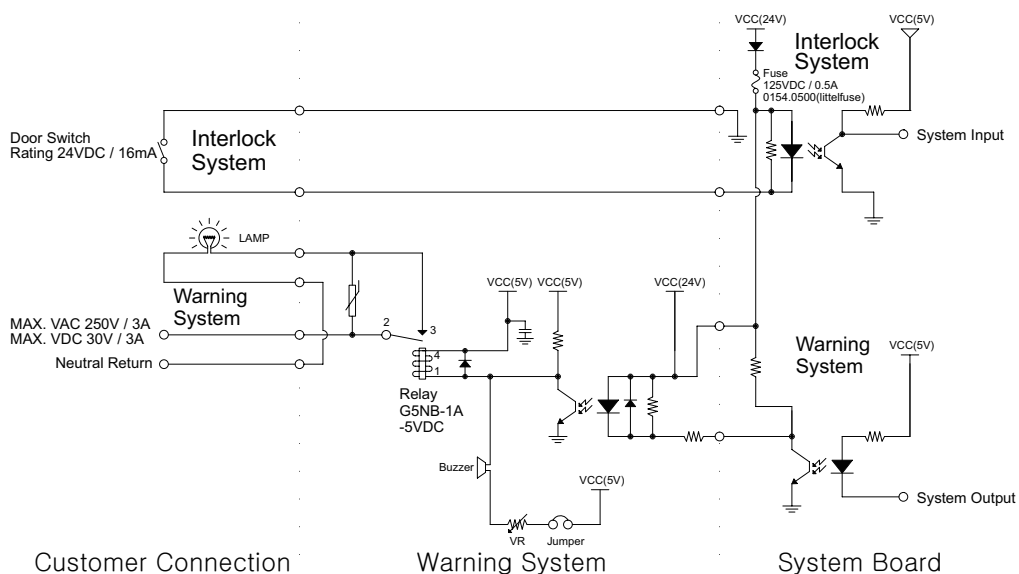
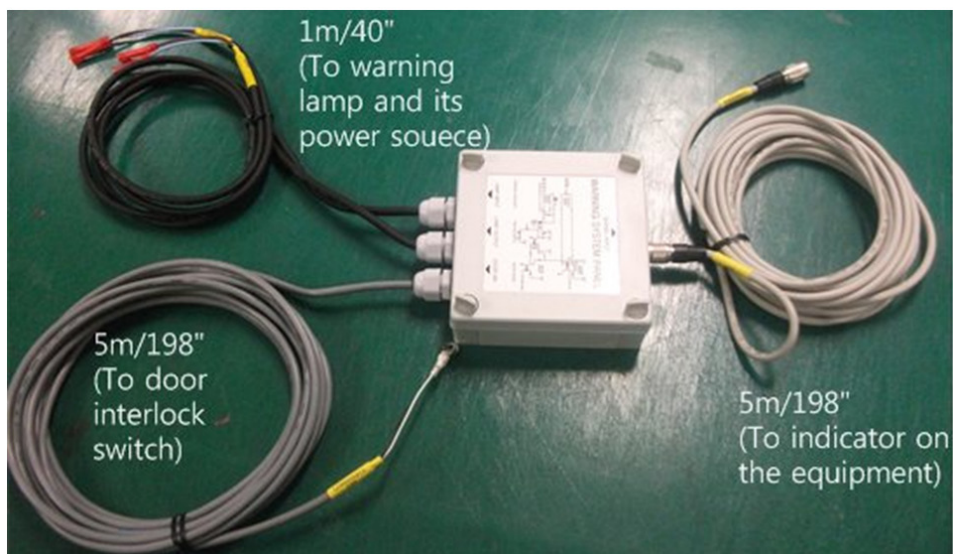
1. The warning control system shall be connected to the ERB (earth reference bar) of the room that it is associated with.
2. The switching arrangements, location, height, and number of illuminated warning signs shall be agreed with the local radiation protection advisor (RPA).(customer)
3. A fluorescent lamp shall not be used in the 'X-rays on' sign.
4. The customer shall be responsible for the proper installations for the warning control system, including the lamp and door interlock switch, based on the MEIGaN guideline.

MEIGaN: Medical Electrical Installation Guidance Notes

5. Pre-installation planning is crucial to a successful installation for these devices.
6. For the further details, refer to the accompanying volume: Specification for Electrical Installation

### Block diagram:

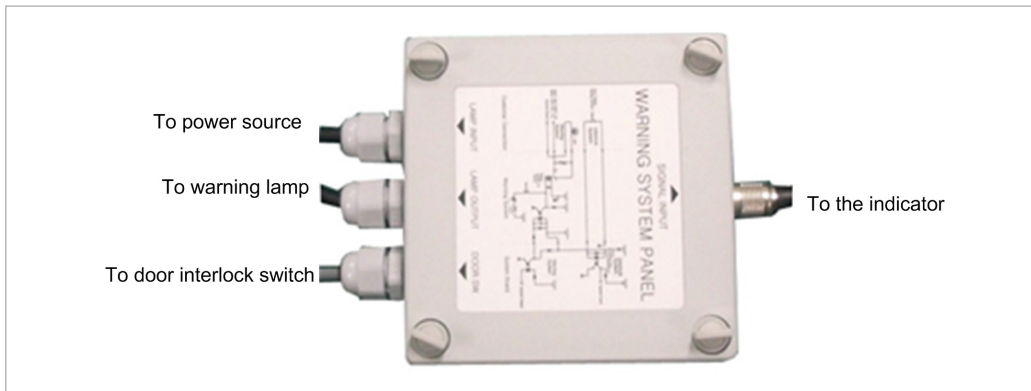


**Schematic diagram:****Components supplied:**

**Procedures:**

The individual cable length:

- Signal cable: 5m/198"
- Door interlock cable: 5m/198"
- Warning lamp: 1m/40"
- Power source cable: 1m/40"

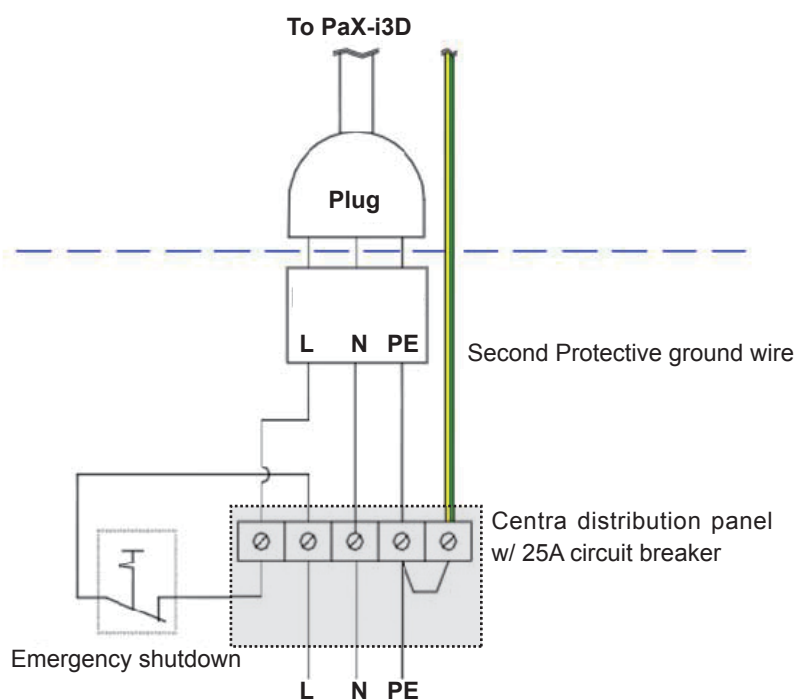


1. Prepare the Warning System Panel (Part No.: 28).
2. Install the Warning System Panel at the proper height after taking each cable length into account.
3. Connect the warning lamp(not provided)
4. Connect the door interlock switch (not provided).
5. Connect the power source for the warning lamp.



## B. Installing the Emergency Switch

- Install the emergency switch stop switch in the power cable line.
- Install this switch so that it is easy to reach in the emergency case but can't be pushed by mistake.
- The switch shall be a type of mistake-proof.
- The switch is not supplied.
- The switch shall be installed at a height of 1.2 to 1.5 meters(47 to 60").



1. The cable sizes: N, L and PE  $\geq 12$  AWG( $3 \times 4 \text{ mm}^2$ ).
2. The cable to emergency switch shall be the same size as the power cable itself.
3. Install the socket connector terminal for the 2nd protective ground wire.

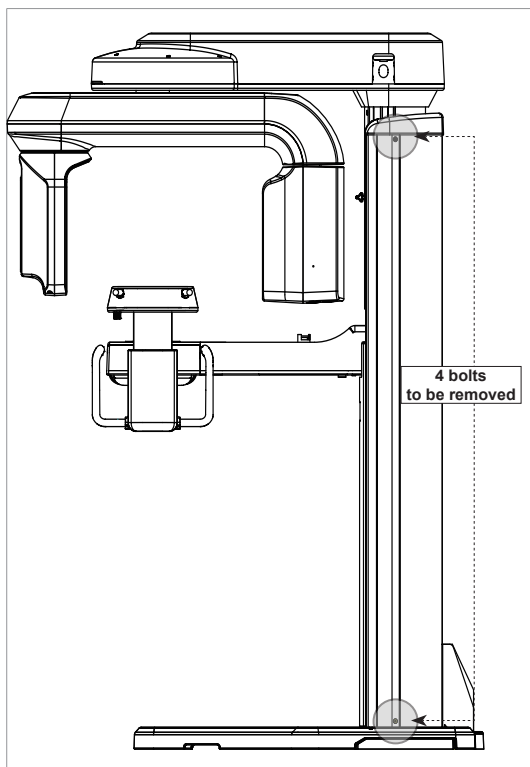
## C. Limiting the Column Height

This section explains how to limit the column height within permissible range.

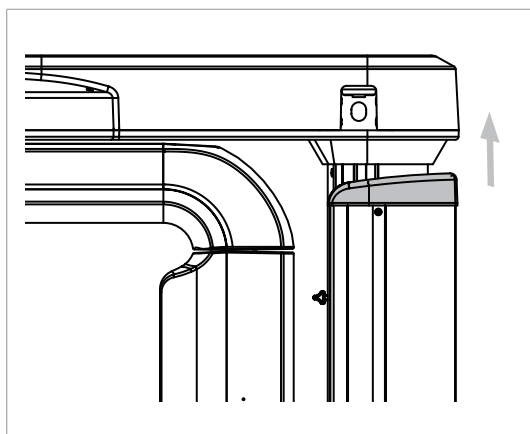
1. Measure the ceiling height in the X-Ray shield room :  $H_{\text{ceiling}}$

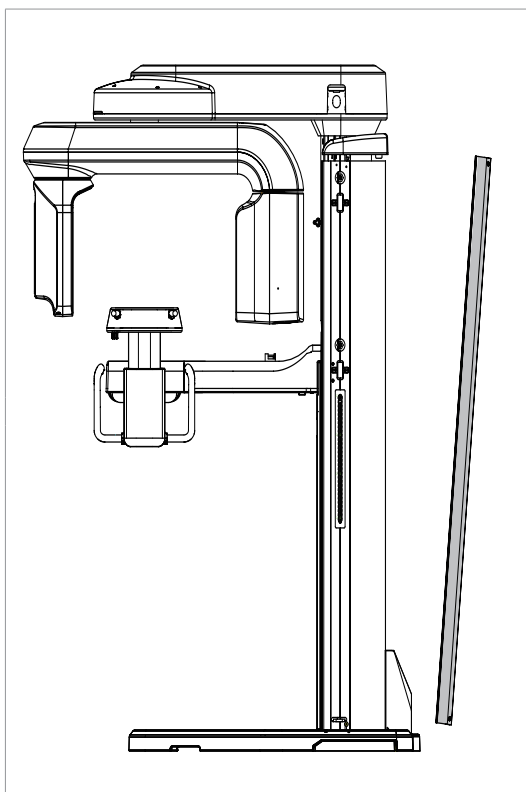
### Removing the side cover

2. Remove 3 bolts at the following locations.



3. Lift the cover up and remove.





4. Separate the side cover.

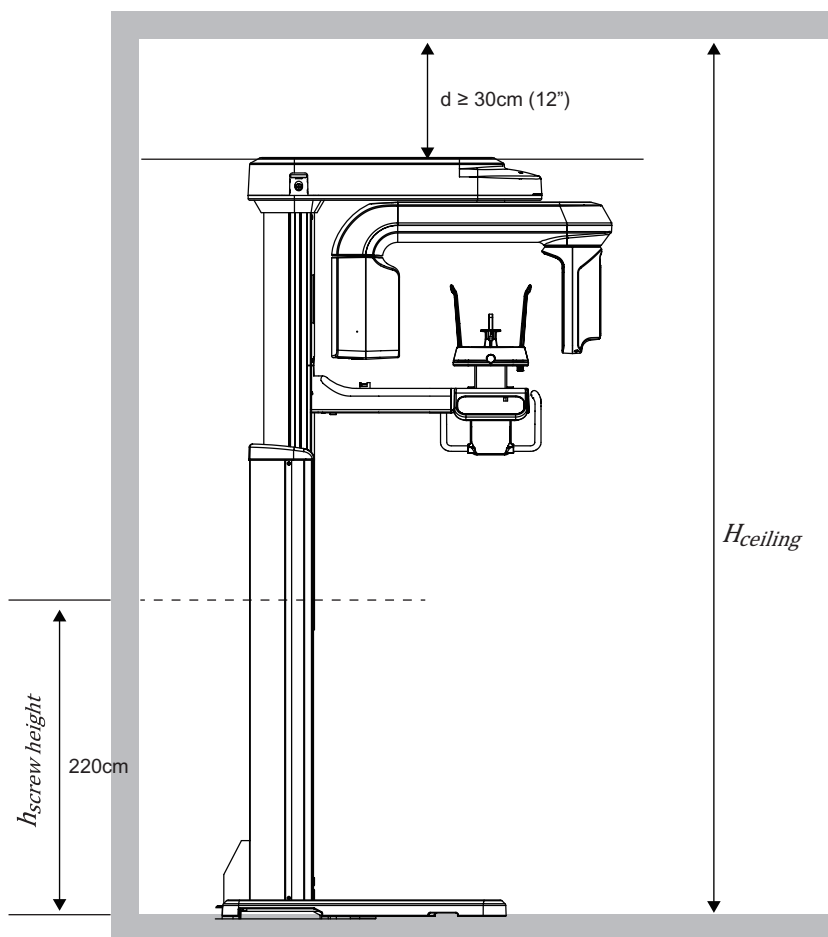
## Determining the height

1. Determine the screw height using the following formula.

$$h_{\text{screw height}} = H_{\text{ceiling}} - d$$

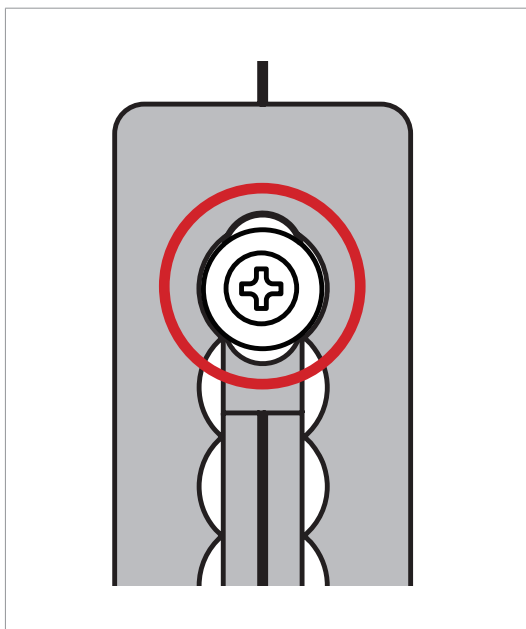
, where  $d$  is the distance between ceiling and the top of the equipment when the column is fully extended (at least 30 cm (12") is desired).

Ex): Let  $d=30$  cm,  $H_{\text{ceiling}}=250$  cm (99"), then  $h_{\text{screw height}}=H_{\text{ceiling}}-d=250-30=220$  cm, which means that the screw should be installed at this height.



## Adjusting the screw height

We know the screw height is 220 cm from the previous example. So we will move the screw from the default (current) position to new one.

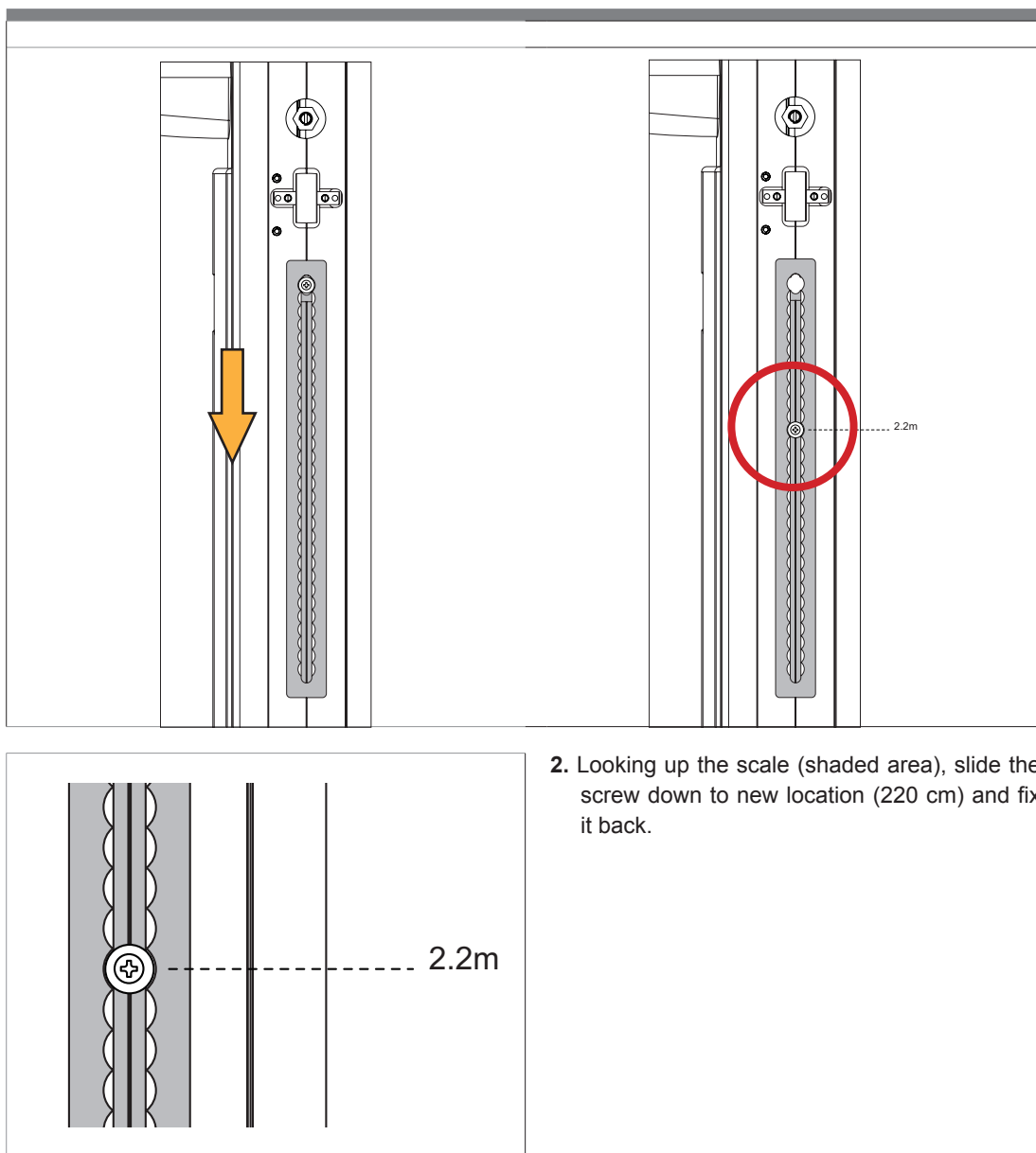


1. Loosen the bolt halfway (**important!**).



IMPORTANT

**Do not** unscrew completely the bolt or it could drop into the column, causing a big trouble to retrieve it out.



2. Looking up the scale (shaded area), slide the screw down to new location (220 cm) and fix it back.

### **Putting the cover back**

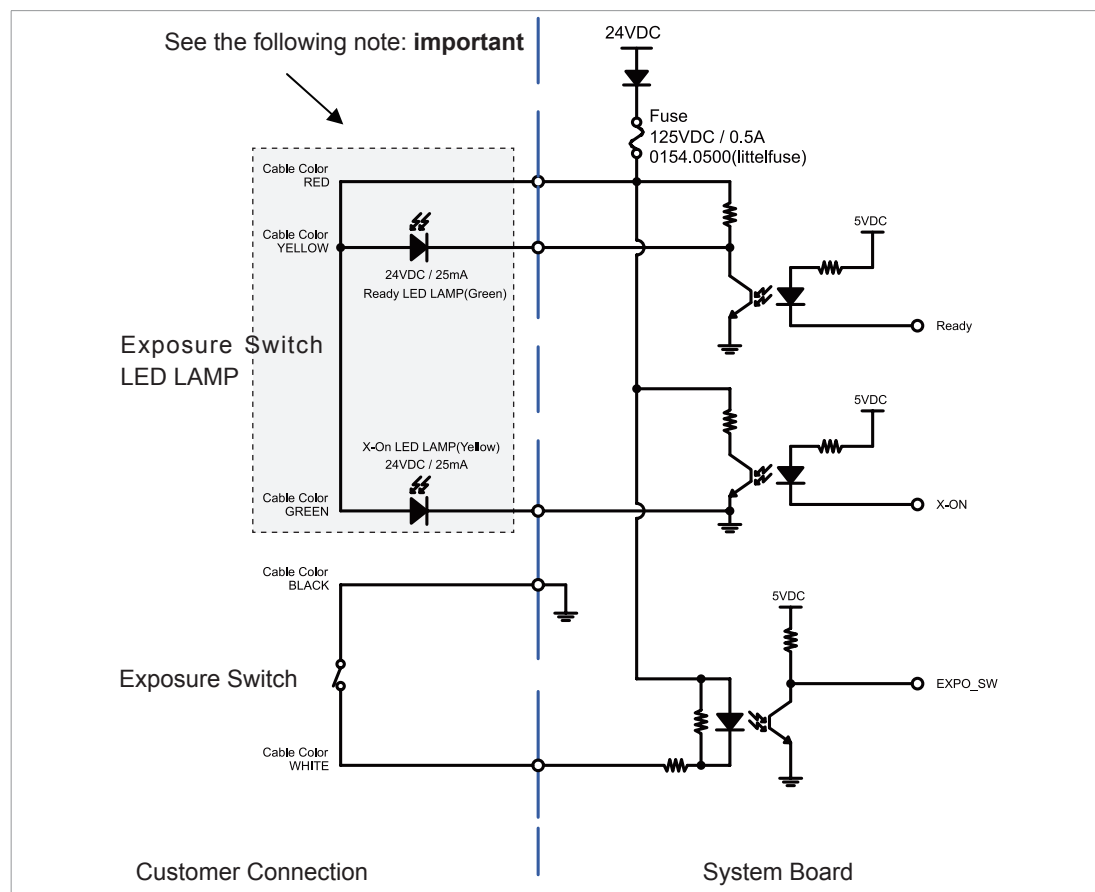
3. Put the covers back in reverse order.
4. Fix them with 3 bolts.

## D. Connecting the Third-party Exposure Switch(Optional)

This section explains on how to connect the third-party exposure switch with the equipment from VATECH.

### How-to:

1. Cut the exposure switch cable provided with the equipment.
2. According to the following schematic diagram, rewire the cables.
3. Double-check the wiring before use.



**Note:** tape the end of each unused wire to prevent the wires from causing an inadvertent short circuit

## E. Checking PC BIOS Settings

### Renovo PC BIOS Setup

PC Model : Revovo E31

PC BIOS default			
Main Menu	Sub1 Menu	Sub2 Menu	Setup Value
Devices	Network Setup	Boot Agent	[Disable]
Power	Enable Power Saving		[Disable]
Power	Automatic Power On	Wake on LAN	[Disable]
Advanced	CPU Setup	Hyper Threading Technology	[Disable]

### HP PC BIOS Setup

PC Model : HP Z420

PC BIOS default			
Main Menu	Sub1 Menu	Sub2 Menu	Setup Value
Security	Network Service Boot		Disable
Power	OS Power Management	Run Time Power anagement	Disable
Power	Automatic Power On	Idle Power Saving	Normal
Power	Automatic Power On	USB Wake on Device	Disable
Advanced	Device Option	S5 Wake on LAN	Disable



## F. Reallocating Memory Space

### Background:

The 32-bit memory space of the Microsoft Windows operating system based on the virtual memory Scheme is divided into two regions: **User space** and **Kernel space**, each having 2GB.

These spaces are adjustable within 4 GB limit. Thus for the applications handling heavy data the expanded memory space sometimes needs to be allocated beyond the 2 GB limit.

### Problem:

For the case of reconstructing the acquired image in the CT mode, which manages with the huge, voluminous data generated by the PaX-Reve3D, PaX-Zenith3D or PaX-Duo3D Plus, it is necessary to expand the user space to have 3 GB of virtual memory.

In this scenario the problem would arise when the graphic card with more than 512 MB memory on board is used in this circumstance (less than 1GB memory for the OS).

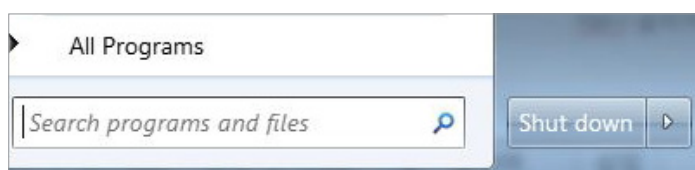
### Solution:

For the Windows Vista or 7 user.

1. Click **Start**.

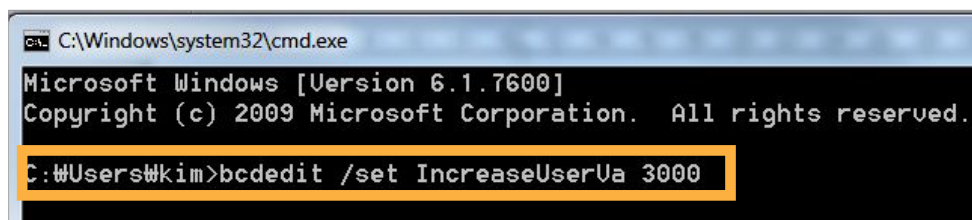


2. In the command line window, enter **CMD**.



3. From the console window, enter the following line of commands followed by **Enter**.

```
bcdedit /set IncreaseUserVa 3000
```



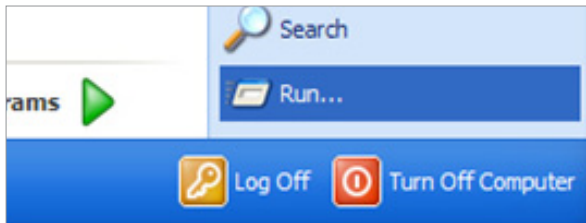
4. Reboot the system.

**For the Windows XP user.**

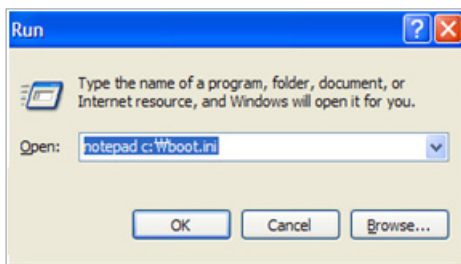
We need to edit the boot.ini, which is the hidden system file in the folder of Windows in C: drive.

To edit this file, do the following.

1. From the desktop, click **Start**.
2. Click **Run**.

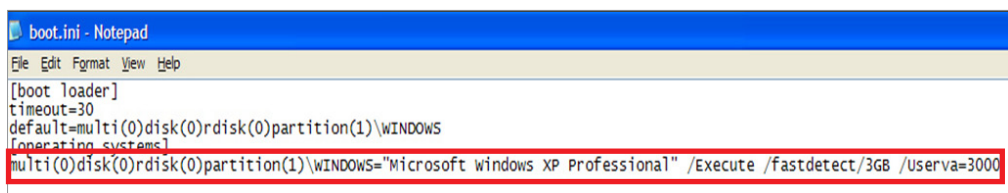


3. Enter "**notepad c:/boot.ini**" and click **OK**.



Then the current configuration on the PC is shown.

4. Add the **"/3GB /USERVA=3000"**.



5. Save it by clicking **file**.
6. Reboot the system.

## G. Installation checklist

### 1. General information:

#### Customer

Information about the equipment purchaser	
Name of Clinic or Hospital	
Address	
Phone	
E-Mail	
Web site	

#### Dealer

Information about the equipment seller	
Name of dealer	
Address	
Phone	
E-Mail	
Web site	

### 2. Installation information:

Address of Installation site	
Names of installers	
Scheduled date of installation	
Date of installation	
Model	
Serial No.	

### 3. System delivery to site:

	Yes	No
Did you review and identify the delivery route and method for equipment in advance?	<input type="checkbox"/>	<input type="checkbox"/>
Is the freight elevator available?	<input type="checkbox"/>	<input type="checkbox"/>
Is the security guard, if any, notified of the installation in advance?	<input type="checkbox"/>	<input type="checkbox"/>
Are two installers, including the helpers, available to move and unload the equipment?	<input type="checkbox"/>	<input type="checkbox"/>

### 4. Before installation:

#### Site check list

	Yes	No
Is the room large enough?. At minimum, with CEPH unit 2,200 mm x 2200 mm x 2,600 mm/ 87" x 87" x 103. Without CEPH unit, 2,200 mm x 1,400 mm x 2,600 mm/ 87" x 55" x 103"	<input type="checkbox"/>	<input type="checkbox"/>
Is the door entrance wider than 800mm (32")?	<input type="checkbox"/>	<input type="checkbox"/>
Is a radiation protection plan in place?	<input type="checkbox"/>	<input type="checkbox"/>
Does equipment and PC use same dedicated circuit?	<input type="checkbox"/>	<input type="checkbox"/>
Does the electrical input conditions to installation site meet the MEIGaN requirements?	<input type="checkbox"/>	<input type="checkbox"/>
Is the local Network IP address of clinic 192.168.33.xx?	<input type="checkbox"/>	<input type="checkbox"/>
Is compressor or air conditioner suction located right next to X-ray Room?	<input type="checkbox"/>	<input type="checkbox"/>
Is the floor flat and level?	<input type="checkbox"/>	<input type="checkbox"/>
Is the carpet on the floor? If so, remove it	<input type="checkbox"/>	<input type="checkbox"/>

Before opening Boxes

	Yes	No
Did delivery company carry and handle with caution?	<input type="checkbox"/>	<input type="checkbox"/>
Did installers take pictures of boxes before opening?	<input type="checkbox"/>	<input type="checkbox"/>
Did installer make sure there are not any suspicious holes or scratches on the box?	<input type="checkbox"/>	<input type="checkbox"/>
Is the ShockWatch indicator red?	<input type="checkbox"/>	<input type="checkbox"/>
Is the TiltWatch indicator red?	<input type="checkbox"/>	<input type="checkbox"/>

After opening Boxes

	Yes	No
Did installers make sure there are not any scratches or broken surface on equipment?	<input type="checkbox"/>	<input type="checkbox"/>
Are all accessories and cases included in the box?	<input type="checkbox"/>	<input type="checkbox"/>
Have you read the installation manual out in its entirety Before starting installation?	<input type="checkbox"/>	<input type="checkbox"/>
Did installer take pictures after opening the boxes?	<input type="checkbox"/>	<input type="checkbox"/>
Did installer make sure there are not any suspicious holes or scratches on the box after opening?	<input type="checkbox"/>	<input type="checkbox"/>

**5. While installing equipment**

	Yes	No
Are installers careful with any sensitive parts while carrying equipment?	<input type="checkbox"/>	<input type="checkbox"/>
Did installers make sure that various cables, especially optic cable, are not coiled too much?	<input type="checkbox"/>	<input type="checkbox"/>
Did installers perform installations, according to manual?	<input type="checkbox"/>	<input type="checkbox"/>
Did installers not touch or place pressure on sensors while installing?	<input type="checkbox"/>	<input type="checkbox"/>
Did installer make sure harness and equipment are well connected and not damaged?	<input type="checkbox"/>	<input type="checkbox"/>
Did installers check if the emergency button (switch) is working properly?	<input type="checkbox"/>	<input type="checkbox"/>
Did the equipment be well balanced?	<input type="checkbox"/>	<input type="checkbox"/>

## 6. After installation

	Yes	No
Does the chin rest successfully initialize after turning on the system?	<input type="checkbox"/>	<input type="checkbox"/>
Are cables organized well?	<input type="checkbox"/>	<input type="checkbox"/>
Is it OK after checking visually the equipment?	<input type="checkbox"/>	<input type="checkbox"/>
Is the normal voice message audible during system initialization after turning on the system?	<input type="checkbox"/>	<input type="checkbox"/>
Does the LED on the front of the equipment turn green?	<input type="checkbox"/>	<input type="checkbox"/>
Do the equipment's Up/Down switch works properly?	<input type="checkbox"/>	<input type="checkbox"/>

## 7. Software compatibility

	Yes	No
Anti-virus software installed?	<input type="checkbox"/>	<input type="checkbox"/>
A firewall installed? If yes, indicate software or hardware	<input type="checkbox"/>	<input type="checkbox"/>
	Type :	
Are the third-party software installed? If yes, indicate name(s) and versions	<input type="checkbox"/>	<input type="checkbox"/>
Are they compatible with software from VATECH? If No, indicate name(s) and versions	Version :	

## 8. Eletrical requirements:

	Yes	No
Is the circuit breaker installed and tested in distribution panel for over-current protection w/ 20A?	<input type="checkbox"/>	<input type="checkbox"/>
Is internal line impedance checked? $Z_{input} \leq 0.5\Omega$	<input type="checkbox"/>	<input type="checkbox"/>
Does equipment and PC use same dedicated circuit?	<input type="checkbox"/>	<input type="checkbox"/>

## 9. Network Configuration:

	Yes	No
Is network configured with 1 Gbit/s of CAT5?	<input type="checkbox"/>	<input type="checkbox"/>
Is the equipment connected with network?	<input type="checkbox"/>	<input type="checkbox"/>
Is the network installation company identified?	<input type="checkbox"/>	<input type="checkbox"/>
What is the TCP/IP address assigned?	Address :	
What is the subnet masking address?	Address :	
Is there DHCP server?	<input type="checkbox"/>	<input type="checkbox"/>

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**Manufactured by VATECH Co., Ltd.**

**Tel: +82-1588-9510**

**Email: gcs@vatech.co.kr**

**Website: www.vatech.co.kr**

**Head Quarters: 23-4, Seogu-dong, Hwaseoung-si, Gyeonggi-do, Korea**

**Factory: 23-4, Seogu-dong, Hwaseoung-si, Gyeonggi-do, Korea**



The CE symbol grants this product compliance to the European Directive for Medical Devices 93/42/EEC as amended by 2007/47/EC as a class II b device.



**EC Representative; Vatech Dental Manufacturing Ltd.**  
**Axiom House, The Centre, Feltham, Middlesex TW13 4AU**  
**UK**

**Tel: +44-0208-831-1660**

**Fax: +44-0208-831-1679**







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Postal Code: 445-170  
23-4, Seogu-dong, Hwaseong-si, Gyeonggi-do, Korea

[www.vatech.co.kr](http://www.vatech.co.kr)